

In this Inaugural Issue

- **Message from President - CCICI**
- **Message from the Editors**
- **CCICI – Since Inception till Date**
- **CCICI Task Forces**
- **Summary report of CCICI- NIST International Workshop on Cloud Computing and Cyber Physical Systems held on June 6th – 8th, 2016 at Bangalore**
- **Cloud matters ...**
- **Block your Calendar – Forthcoming Events**
- **Leveraging Cloud for Disaster Recovery Services**
- **Brief History of Cloud Computing**

Message from President - CCICI



Kris Gopalakrishnan,
Co-founder Infosys & Chairman Axilor Ventures

I am glad that CCICI is releasing its inaugural newsletter. This is another way we reach out to our members and professional community at large. Over the years, the activities of CCICI have increased in quantity and quality. An example of this was the recently concluded CCICI-NIST workshop in Bangalore. I thank all the people who have contributed to this newsletter and look forward to more contributions to future issues of the newsletter.

Message from the Editors



Deepak Maheshwari
Symantec



Raghu Nambiar
Stradus

Welcome to the inaugural issue of **Meghvaani**, the quarterly newsletter of **Cloud Computing Innovation Council of India (CCICI)** released in response to the suggestions and need evinced by several members in learning more about CCICI, its mission, workgroups and taskforces and their activities, etc. and what a better time than now to launch it during the ensuing monsoon season!

This inaugural issue includes message from CCICI President Kris Gopalakrishnan while CCICI Vice President Pamela Kumar traverses the journey of CCICI from a thought to reality; from an informal group of passionate enthusiasts to a formal and formidable organization into the thick of action. This is followed by a summary of the CCICI-NIST workshop on Cloud Computing and a use case of disaster recovery. But that's not all – there are pointers to policy and regulation; business adoption; research studies & reports besides calendar of upcoming events. There's even a cartoon to lighten your heart.

Browse through www.ccici.in for more information and be sure to read articles in our blog page at <http://ccici.in/blog/>. (Hint to non-members: To become a CCICI member click on <http://ccici.in/why-become-a-member/>). We fervently hope that you would enjoy reading it as much as we enjoyed putting it together. Being true to the cloud dictum, we look forward to vigorous two-way engagement - do drop us an mail at editor.meghvaani@ccici.in and tell us what you liked and what you didn't, so that we can optimize accordingly. Let the ideas pour in.

CCICI – Since Inception till Date



Pamela Kumar – Founder Chair, Vice President - CCICI
pamelakumar@ieee.org

CCICI is a collaborative platform bringing together technical experts across Industry, Academia, Government Labs and professional bodies to promote Innovation around Cloud computing in India. This is recognized as a “one of a kind” initiative rallying the technical community around an INDIA FIRST agenda.

The idea of CCICI was conceived in **October 2012** at the first IEEE CCEM Conference in response to a request by the President - National Innovation Council, to form a think-tank to advise the government on this emerging technology. In **June 2013**, with a membership of 40+ professionals, CCICI was registered as an Incubation Program in the Industry Connections Program of IEEE-SA with the objective of:

- Publishing a white paper outlining a 3 – 5 years’ roadmap for Innovations around Cloud Computing to:
 - Accelerate the adoption and deployment of Cloud Computing as the IT Infrastructure of choice by various market segments in the country.
 - Accelerate the emergence of India as a globally competitive provider of Cloud Services & Infrastructure
- Providing recommendations for –
 - Standards adoption & deployment (Interoperability test bed etc.)
 - Focused research and education initiatives
 - Industry – academia- government collaborations
 - Specific proposals for Innovative Cloud based solutions, delivery models, IP and product development
 - Regulatory, Legislation and Policy issues to promote innovation
- Establishing CCICI as a formal entity

By the time of the second IEEE-CCEM Conference in **October 2013**, CCICI had grown to 100+ members and published “Cloud Computing Adoption and Innovation in India - an Approach to a Roadmap Whitepaper v1.0” which was released by Kris Gopalakrishnan.

In **March 2014**, an Advisory Board of eminent personalities was formed. Based on its resolution, a Governing Board was formed in June 2014 and CCICI got registered as a not-for-profit society in **September 2014**. “Cloud Computing Innovation in India: A Framework and Roadmap Whitepaper v2.0” was released in **December 2014**, on the CCICI website as well as IEEE Explore.

The incubation period with IEEE_SA was completed in **June 2015** and an MoU was signed with IEEE-Computer Society, establishing CCICI as a Sister Society in **August 2015**.

As a not-for-profit society, CCICI has put in place:

- **Membership and Financial Framework** – A financial corpus based on membership fees and donations from our Individual and Institutional members is available in CCICI Bank Account.
- **Governance Framework** - The Governing Board has been actively driving the overall direction of CCICI while the Executive Committee has been overseeing the Task Forces and Working Groups.
- **Collaboration infrastructure:** Our web page is www.ccici.in. Most interactions happen using the conference calling facility. A cloud repository to host all our artifacts along with a Wiki are in place.

The highlights of what CCICI has achieved during this brief period are:

- 1. Effective Interactions with Government:** We have been actively involved with DeitY in the roll out of their Cloud Computing Strategy. Specifically, we participated in the:
 - Consultation by the Cloud Strategy Committee driven by Kiran Karnik in October 2014
 - Consultation on formation of the Cloud Management Office and the Draft RFP for Cloud Management office from June to September 2015
 - Consultation on Draft RFP for Provisional Accreditation of Cloud Service Providers and formulation of MSA and SLAs since November 2015

We have also been invited to engage with several State Governments to participate in their Cloud Enablement Strategy. Specifically, we have with:

 - *Govt. of Karnataka:* An MoU on “Cloud Computing Adoption and Innovation” signed with CeG in March 2014. Subsequently, a workshop and series of consultations with various departments were held.
 - *Govt. of Telangana:* Submitted a draft MoU in November 2015 enable the establishment of their Cloud Enabled Data Center.
 - *Govt. of Andhra Pradesh:* In Feb 2016, we were invited to enable Skill development in Cloud Computing. A proposal has been submitted.
- 2. Release of the Whitepaper:** “Cloud Computing Innovation in India – A Framework and Roadmap” Whitepaper v2.0 was released on CCICI Website and IEEE Explore.
- 3. Conducted an effective outreach program:** Overall 12 workshops, participation in 30+ external events and continuation of numerous face to face sessions and stakeholder meetings.
- 4. Formed an affiliation with several institutions:**
 - Formal MoUs with IEEE-CS and CeG Karnataka.

- Informal affiliations with NIST (<http://www.nist.gov>) , TSDSI (<http://www.tsdsi.org>) and SNIA (<http://www.sniaindia.org>)

5. Launched several Task Forces to focus on specific aspects of Cloud Computing

The current taskforces in operation are detailed in the next section.

CCICI Task Forces

1. eGov Reference Architecture

The e-Government Reference Architecture task force focuses its efforts towards establishing a common reference framework for adoption across government entities in India by understanding global best practices and tailoring them to suit the needs of India, with special focus on DIGITAL INDIA.

Core Team - Ignasius Thambyraj, Srinivas Varadarajan, Narendra Nanjangud, Piyush Somani, Arun Narayanaswamy, Madhav Chablani, Parameswaran Seshan, Pamela Kumar

2. MeghRaj

This task force is working on guidelines for the Cloud RFP's, MSA and SLA's for consideration by DeitY or any other affiliated organization. The primary outcomes from this Task Force are:

- Recommendation for Master Service Agreement (MSA) for the "Provisional Accreditation of Cloud Service Providers",
- Recommendation for SLAs for the Services listed in the "Provisional Accreditation of Cloud Service Providers",
- Draft RFP template to be used by Government Agencies to avail accredited services.

Core Team - Piyush Somani, Srinivas V, Anil Chandilya, Narayana, Krishna M Kumar, Madhav Chablani, Rajeev Papneja, Raghavendra Rao, Satish Viswanath, Manoj Agarwal

3. Multi-Vendor Cloud Services Framework

The Objective of this task force is to develop a framework for multi-vendor cloud service providers' engagement. The components of the framework will be: Business Context, Drivers, Need and Vision, Risks and CSF's, Landscape and Ecosystem Players, Architecture or Reference Model, Deployment Scenario, Performance Management, SLA and MSA, Skills, Capabilities & Competencies Required, Business Case, Scenario and Use Case. This team is currently focused on providing consultation feedback on the Cloud Computing paper released by TRAI

Core Team - Madhav Chablani, Srinivas Varadarajan, Vikas Mathur, Sumit Monga, Subhranshu Banerjee, Anand Dev Mishra, Manish Tiwari, Rajan Vaswani, Arun, Girish Chandra, Vishwvasu Chobari, Rajeswar, Chengappa

4. Interoperability Test Bed

One of the major barriers to cloud adoption is lack of interoperability between different clouds, which in turn results in lock-in to proprietary technologies. Interoperability Test bed task force promotes the growth of intercloud applications by developing an integrated set of Standards, Reference Implementations and Tests.

Core Team - Dinkar Sitaram, Emmanuel Pillai, Lalitha Valdamani, Reena Dayal

5. Digital Locker

The Digital locker task force is working on a reference framework for Digital Locker ecosystem. The framework includes Architecture and components, regulatory framework, API Specifications and Digital Locker rules.

Core Team - Ignasius Thambyraj, Subhranshu Banerjee, Vishwambhar Pathak, Arun Narayanaswamy, Nitin Upadhyay, Vibhakar Bhushan

6. IoT for Smart Cities

IoT for Smart cities task force is a technology driven open forum of domain experts from industry, academia, government, startups, professional bodies and user agencies joining hands to establish a common reference framework for adoption of IoT for Smart cities across India.

Core Team - Amrutur Bharadwaj, Hemant Darbari, Pamela Kumar, Bipin Kumar, Priyanka, Dileep Paruchuri, Sudheera, Sagari, Kishor Narang, Geetha Manjunath, Prasant Mishra, Arvind Tiwari, PVG Menon, Madhav Chablani, Tulika Pandey.

7. Education and Research

The charter of this task force is to:

- Provide a platform for Collaborative Research on innovative Cloud Computing technologies
- Nurture a framework for educating and training students and professionals in latest Cloud computing technology through curriculum development, best practices and certification.
- Promote effective partnership between Academia, Industry, Entrepreneurs and Government on Cloud computing.

Core Team - Vishwambhar Pathak, Ravindra Dastikop, Yogesh Simmhan, Himani

8. Hyderabad Chapter

Our active members in Hyderabad have come together and launched a Hyderabad Chapter. Current focus is on building Cloud Computing Skills across AP Engineering Institutes along with APSSDC (<http://www.apssdc.in>).

Core Team - Praveen Gurram, Lalit Mohan, Reena Dayal, Thirumal Chamarthi

Summary report of CCICI- NIST International Workshop on Cloud Computing and Cyber Physical Systems held on June 6th – 8th, 2016 at Bangalore



Cloud Computing Innovation Council of India (CCICI) and National Institute of Standards and Technology (NIST), an agency of the U.S. Department of Commerce - jointly organized the 3-day workshop on Cloud Computing and Internet of Things (IoT). It was the first major public event organized by CCICI. It was supported by the Department of Electronics and Information Technology (DeitY) of the Government of India and the IEEE Computer Society.

The objective of the workshop was to create a platform for interaction with and amongst experts on Cloud Computing and IoT from across the world and act as a

catalyst for next wave of innovation, provide useful input to TRAI's consultation paper and thus helping in making the vision of Digital India and the Smart Cities a reality.

The workshop featured almost 60 speakers – including several international experts who shared their knowledge and perspective during the 3-day workshop attended by more than 400 professionals. Thanks to the generous support of all the sponsors and the large team of committed CCICI volunteers, the workshop was a huge success.

More details on the keynotes, presentations, plenary sessions and panel discussions are given at the link <http://ccici.in/ccici-nist>.

iToons

Sunil Agarwal & Ajit Ninan



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Cloud matters ...

Policy and Regulation

- [Telecom Regulatory Authority of India](#) seeks comments by July 25, 2016 on its [Consultation Paper on Cloud Computing](#) dated June 10, 2016
- Aadhaar (Targeted Delivery of Financial and Other Subsidies, Benefits and Services) Act, 2016 notified by the Government of India on July 12, 2016
- European Union published its [General Data Protection Regulation](#) (EU GDPR) which comes into force with effect in May, 2018
- [US Government launches Privacy Research Strategy](#)

Business Adoption

- India's 'Smart Villages' centralize Solar Power with Cloud
- Digi Locker now even publishes CBSE mark-sheet

Study & Research Reports

- [Gartner Says By 2020, a Corporate "No-Cloud" Policy Will Be as Rare as a "No-Internet" Policy Is today](#)
- [Gartner Says Public Cloud Services in India Forecast to Reach \\$1.26 Billion in 2016](#)

Block your Calendar – Forthcoming Events

- Data Center Dynamics Conference, Bangalore, India July 20-21, 2016 <http://www.dcdconverged.com/conferences/india>
- [CII Twelfth India Innovation Summit 2016](#) - "The Spirit of Innovation : Celebrating the Entrepreneur" July 28-29, 2016, Bangalore, India
- CCICI Visioning Workshop, August 18, 2016 for CCICI members and invitees. <http://ccici.in/project/workshop-on-vision-2-0-at-vmware-bangalore-on-August-18th-2016/>
- ICANN 57, November 3-9, 2016 at Hyderabad, India <https://www.icann.org/news/blog/inviting-you-to-icann57-in-hyderabad>
- IEEE ANTS - 2016, November 6-9, 2016 at Bangalore, India <http://ants2016.ieee-comsoc-ants.org/>. Includes Workshop on *Standards for Cloud Interoperability and Federation (WSCIF)* on November 6-7, 2016.

Leveraging Cloud for Disaster Recovery Services



Subhranshu Banerjee - Co-Founder, RightCloudz Technologies
subhranshu.banerjee@rightcloudz.com

The Cloud is an Enabler

Witnessing the steady growth of the ecosystem and the maturity of cloud services offered, enterprises are embracing cloud for its various computing needs. The degree of cloud adoption varies from one usage scenario to another. Using cloud technologies for Disaster Recovery (DR) solutions is getting more acceptance in established businesses, even among those who might have already invested in its own datacenters.

Traditional Disaster Recovery Solutions

In a traditional DR solution implementation, an enterprise is required to prepare a DR site by creating a replica of the production system in a different datacenter. Keeping the requirements of business continuity in mind, the own-datacenter based DR solution is often designed with trade-off between system capacity and cost (includes both CAPEX and OPEX). Moreover, because of cost issues, small and medium enterprises may adopt manual or semi-automatic approach of data backup as their sole disaster recovery method.

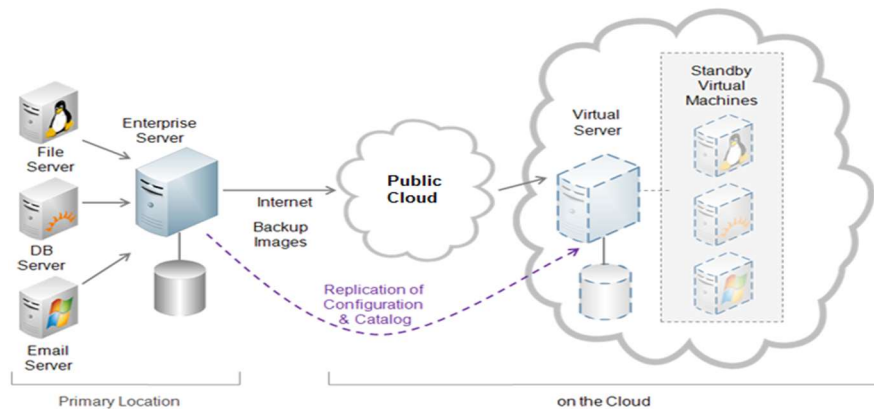
Reliable and Affordable Disaster Recovery Solutions on Cloud

In traditional disaster recovery solutions, corporations have to take tough stands on which applications to be covered under DR system based on their budget. However, the advent of disaster recovery offerings, via private and public clouds, are making DR solutions both easy to manage and affordable.

We can easily visualize three variants of cloud based DR:

- Private cloud based disaster recovery solution.
- Public cloud based Disaster Recovery as a Service (DRaaS).
- A combination that leverages both on-premise datacenter and public cloud for DRaaS (a hybrid solution).

The following diagram shows a schematic representation of a public cloud based DR Solution.



(Image courtesy: zmanda.com)

The prime benefits of using DRaaS from cloud are as follows:

- 1) **Reduction in cost:** It is substantial, w.r.t. setting up a secondary datacenter based DR system.
- 2) **Ease of deployment:** "Agents" keep track of dependencies such as required services, software and licenses, files to be replicated (with change order), etc.

- 3) **Continuous replication of data:** The replication of data from the production server to DR provider's site is done in a planned and secured manner.
- 4) **Automated operation:** In case of a disaster, the failover process gets started automatically. The DR orchestrator provisions virtual machines on-demand, and brings up applications and related services.
- 5) **Centralized management:** An integrated console which helps in setting rules, reviewing reports and monitoring the progress of a disaster recovery operation.

Like many other solutions, a DR solution on cloud also comes with few challenges that an enterprise should be aware of:

- 1) **Connectivity:** Bandwidth and network capacity should be sufficient to handle all redirected user requests.
- 2) **Restoring primary servers:** The cloud service provider should have the option of shipping backup disks (off-line mode) for data restoration when the volume is high and no data backup has been kept in primary datacenter.
- 3) **The reliability of cloud provider:** A cloud service provider should be selected after due diligence. The availability of service all the time and the ability to serve with acceptable Recovery Point Objective (RPO) and Recovery Time Objective (RTO) are critical requirements.

Brief History of Cloud Computing

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