IEEE Intercloud Testbed Project Announces Founding Members

Twenty-one global companies and research institutions have joined the IEEE Intercloud Testbed and launched work to create a diverse, interoperable, and federated cloud ecosystem

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PISCATAWAY, N.J.--(BUSINESS WIRE)--Today IEEE, the world's largest professional organization advancing technology for humanity, introduced the founding members of the IEEE Intercloud Testbed project. The IEEE Intercloud Testbed is developing cloud-to-cloud interoperability and federation capabilities to enable cloud services to become as ubiquitous and as mainstream as the Internet. Results from the project will also assist in the development of the forthcoming IEEE P2302™ Standard for Intercloud Interoperability and Federation, which is developing standard methodologies for cloud-to-cloud interworking.

> "The Information and Communications Engineering Group at the University of Ulster (Coleraine campus) in Northern Ireland is honoured to be involved with this groundbreaking IEEE Intercloud initiative. We look forward to collaborating with the rest of the founding members on international research and innovation in cloud technologies and protocols."

The IEEE Intercloud Testbed's founding members include 21 cloud and network service providers, cloud-enabling companies, and academic and industry research institutions from the United States, the Asia-Pacific region, and Europe. The members have volunteered to provide their own cloud implementations and expertise to a shared testbed environment. They will also collaborate to produce a working prototype and open-source global Intercloud.

"We are immensely pleased to introduce our founding members and thank them for their lab and engineering contributions, which are the backbone of this effort," said Steve Diamond, chair of the IEEE Cloud Computing Initiative. "The IEEE Cloud Computing Initiative is advancing an ecosystem in which clouds and cloud services can federate to enable new services and increase the value of cloud computing to industry and end users. By joining the IEEE Intercloud Testbed, these member organizations are providing the invaluable resources and capabilities needed to realize this vision. We appreciate their participation and collaboration in this fundamental and important work."

The founding members include

- Centre for Development of Advanced Computing (C-DAC)

- CITIC Telecom International CPC
- Cloudscaling
- ComputeNext
- DOCOMO Innovations, Inc.
- Fraunhofer FOKUS
- Global Inter-Cloud Technology Forum (GICTF)
- The Hong Kong Polytechnic University
- JT
- Juniper Networks
- Orange
- Second University of Naples (SUN)
- ServiceMesh
- 6fusion
- Telx Group
- University of Essex
- The University of Melbourne
- University of Stavanger
- University of Ulster
- Virtustream

The members have formed an executive committee to manage the IEEE Intercloud Testbed organization and technical and engineering work have begun. Activities underway include the initial design and implementation of Intercloud protocols as well as provisioning of the testbed topology.

“The cloud is rapidly evolving and maturing to support a wide variety of enterprise and consumer applications and real-world applications. It inevitably will require a variety of ecosystem players: cloud service providers, network service providers, brokers, markets, exchanges, hybrid and autoscaling management, and other intermediaries,” said Joe Weinman, senior vice president of cloud services and strategy at Telx Group and chairman of the IEEE Intercloud Testbed executive committee. “The Intercloud represents the next logical wave in computing, enabling complex hybrid applications, cost and performance optimization, enhanced reliability, customer flexibility and lock-in avoidance. It is an honor to be part of such an important initiative and work with such a distinguished group of members.”

David Bernstein, IEEE P2302 working group founding chair, originator of the IEEE Intercloud Testbed project

and the project's chief architect, said, "This project will enable a significant step in the evolution and maturation of cloud computing. Just as the ARPANET project made the Internet real, this IEEE Intercloud Testbed project will make the Intercloud real and provide a springboard for the Intercloud to become a commercial reality."

The technical architecture for cloud interoperability used by IEEE P2302 and the Intercloud is a next-generation Network-to-Network Interface (NNI) "federation" architecture that is analogous to the federation approach used to create the international direct-distance dialing telephone system and the Internet. The federated architecture will make it possible for Intercloud-enabled clouds operated by disparate service providers or enterprises to seamlessly interconnect and interoperate via peering, roaming, and exchange (broker) techniques. Existing cloud interoperability solutions that employ a simpler, first-generation User-to-Network Interface (UNI) "Multicloud" approach do not have federation capabilities and as a result the underlying clouds still function as walled gardens.

IEEE offers an open and neutral environment for Intercloud research and development. The IEEE Intercloud Testbed was created by the IEEE Cloud Computing Initiative and is operated as an activity of the IEEE Standards Association Industry Connections program. The IEEE Intercloud Testbed project is a companion to—and runs in parallel with—the IEEE P2302 working group. As such, the IEEE Intercloud Testbed's efforts will also be used to help inform, refine and validate the development of the IEEE P2302 draft standard.

Member company representatives elected to the IEEE Intercloud Testbed executive committee include Joe Weinman (chair), Telx Group; Henry Chan (vice chair), The Hong Kong Polytechnic University; and Professor Kun Yang (secretary), University of Essex. They join three members appointed from the IEEE Cloud Computing Initiative: Mark Davis, Dell Corporation; Michael Lightner, University of Colorado, Boulder; and Jon Rokne, University of Calgary. Steve Diamond, chair of the IEEE Cloud Computing Initiative, serves as an ex officio member of the committee.

Companies, universities, and government agencies are welcome to participate in the IEEE Intercloud Testbed project.

For more information about the IEEE Intercloud Testbed project, please visit http://cloudcomputing.ieee.org/intercloud. For more information about the IEEE Cloud Computing Initiative, please visit http://cloudcomputing.ieee.org/. For more information about the IEEE P2302 Standard for Intercloud Interoperability and Federation Working Group, please visit http://cloudcomputing.ieee.org/standards/standards-guidance-p2302. For more information about Industry Connections, please visit http://standards.ieee.org/industryconnections.

About IEEE

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aerospace systems, computers and telecommunications to biomedical engineering, electric power and consumer electronics. Learn more at http://www.ieee.org.

Appendix: Supporting Quotes

Dr. Prahlada Rao, joint director, Centre for Development of Advanced Computing (C-DAC)
“Centre for Development of Advanced Computing (C-DAC) India is proud to be a founding member of the IEEE Intercloud Testbed interoperability initiative. This collaboration will help to bring in new innovations on standards for interoperability and Intercloud platforms to improve cloud adoption across the globe.”

Stephen Ho, CEO of CITIC Telecom International CPC Company Limited
“CITIC Telecom is honored to join forces with a team of dedicated industry experts to support the IEEE Intercloud Testbed project to promote regional cooperation and standardization of cloud computing.”

Randy Bias, CEO and cofounder, Cloudscaling and member, OpenStack Foundation board of directors
"We're excited to see forward progress on Intercloud interoperability by the IEEE. We are big believers in a globally federated cloud system and while it may take some time to materialize, it's efforts like the IEEE Intercloud Testbed that are foundational in these efforts. Cloudscaling is proud to have our product, Open Cloud System, participating in the initial testbed development."

M. Srikanth, CTO, ComputeNext
"As a federated cloud marketplace for cloud services, we are excited to be a founding member of IEEE Intercloud Testbed to support the testing and development of Intercloud technology and standards. With a normalized catalog of cloud services, the ComputeNext marketplace enables users to search, discover and consume cloud services from diverse cloud providers and platforms. As a member of IEEE Intercloud Testbed, ComputeNext will contribute to the development of resource semantics, cloud services catalog and Intercloud exchanges."

Takayuki Inagawa, president and CEO, DOCOMO Innovations, Inc.
“DOCOMO Innovations is looking forward to contributing to this pioneering and innovative effort to provide a global interoperable cloud platform. We are excited to join this IEEE initiative as a founding member with other cloud researchers and practitioners throughout the world.”

Thomas Magedanz, leader, Next Generation Network Infrastructures Competence Center, Fraunhofer FOKUS, and professor, Technische Universität Berlin
“Strongly believing in the importance and the significant potential of standardized federation and interworking mechanisms for cloud infrastructures and cloud services, Fraunhofer FOKUS’ department for next generation network infrastructures joined the IEEE Intercloud Testbed initiative and is delighted to collaboratively contribute to the technological advancements in this important field.”

Tomonori Aoyama, chairman, Global Inter-Cloud Technology Forum

"GICTF (Global Inter-Cloud Technology Forum) is honored to be involved in the IEEE Intercloud Testbed project as a founding member. GICTF is a nonprofit organization that was established in July 2009 to support R&D on Intercloud architecture and technologies and to proceed with world standardization of an Intercloud framework. GICTF is excited to establish a global Intercloud testbed platform in the project because it is indispensable to demonstrating Intercloud technologies and proposed standards and developing practical Intercloud systems."

Jiannong Cao, chair professor and head, department of computing, The Hong Kong Polytechnic University

“The department of computing of The Hong Kong Polytechnic University is honored to participate in this meaningful project. The Intercloud system and protocols will enable many useful and innovative cloud computing applications/services.”

Tim Ringsdore, chief relationship officer, JT

“This is a major achievement for JT and a firm recognition of how far we have come in being recognized as a global telecoms innovator. It is also recognition of our agility and resourcefulness in providing a secure and technologically advanced testing facility in the Channel Islands, close to Europe but outside of the EU. We have already partnered with organizations and companies who wish to develop and test innovative products and services using our JT Lab proposition and are very proud to now be a founding member of the world renowned IEEE and to work with them to advance the Intercloud Testbed initiatives.”

Kireeti Kompella, senior vice president and CTO, platform systems division, Juniper Networks

"The promise of cloud computing will be realized by accelerating service delivery through greater automation. A flatter native IP architecture that is open and elastic is critical to achieving interoperable clouds. We are pleased to be working with industry leaders on a global scale to make Intercloud real."

Georges Nahon, CEO, Orange Silicon Valley

“At Orange, we have developed a substantial body of thought leadership around interoperable and federated cloud computing and we are happy to see this groundbreaking initiative taking form at IEEE.”

Professor Beniamino Di Martino, Second University of Naples (SUN) and coordinator of the European Commission mOSAIC research project on cloud computing

"We at the department of industrial and information engineering of Second University of Naples are proud to join the IEEE Intercloud Testbed initiative and bring results from the mOSAIC project. We believe that cloud interoperability will enable mass adoption of the cloud paradigm in sectors (such as public administration) which are currently seriously concerned about vendors' lock-in and effective competition in offerings of cloud resources and services."

Eric Pulier, chairman and CEO, ServiceMesh Inc.

"It is a true honor to work shoulder to shoulder with this prestigious group of founding members as we collaborate on the foundation for tomorrow’s Intercloud technologies. We look forward to delivering on the IEEE Intercloud Testbed Project mission to help make Intercloud a reality.”

John Cowan, CEO and founder, 6fusion

"The technical interoperability of heterogeneous cloud services is considered a significant accelerator of market liquidity. As a staunch advocate of a truly open market for cloud computing, 6fusion is very excited about contributing to the development and advancement of the Intercloud test bed."

Joe Weinman, senior vice president of cloud services and strategy, Telx Group, and chairman, IEEE Intercloud Testbed executive committee

“For many years, Telx has played a critical role in providing the physical and management infrastructure enabling network service providers to interconnect and enabling cloud service providers to offer their services. Telx is delighted to contribute to this important global initiative aligned with the key role it is already playing in the ecosystem.”

Kun Yang, professor and head, Network Convergence Laboratory, University of Essex

“The Network Convergence Laboratory at the University of Essex in England is honoured to be part of this timely IEEE Intercloud Testbed project. We look forward to contributing our expertise and facilities in networking and cloud computing towards this exciting testbed in close collaboration with other international members in the project.”

Rajkumar Buyya, professor and director or the Cloud Computing and Distributed Systems (CLOUDS) Lab, The University of Melbourne

"CLOUDS Lab at The University of Melbourne is excited to be part of IEEE Intercloud project and we are honoured to be part of this exciting opportunity to contribute towards realization of interoperability between multiple and geographically distributed clouds. It enables scaling of application services across multiple vendor clouds and delivers services as per the quality expected by users. I believe the impact of the Intercloud initiative on society will be similar to one achieved by the Internet."

Chunming Rong, professor and head, Center for IP-based Service Innovation (CIPSI), University of Stavanger, and vice chair of the IEEE Computer Society special technical community for cloud computing

"The CIPSI center at the University of Stavanger in Norway is proud to take part in the IEEE Intercloud initiative, which marks an important milestone in interconnecting the current cloud technologies, standards and protocols."

Gerard Parr, professor and chair, telecommunications engineering, University of Ulster

"The Information and Communications Engineering Group at the University of Ulster (Coleraine campus) in Northern Ireland is honoured to be involved with this groundbreaking IEEE Intercloud initiative. We look forward to collaborating with the rest of the founding members on international research and innovation in cloud technologies and protocols."

Rodney Rogers, chairman and CEO, Virtustream

“Virtustream is pleased to be a founding member of the IEEE Intercloud Testbed Project. The focus of this project aligns well with our mission at Virtustream to deliver portability and interoperability options of

enterprise-class cloud computing resources for our clients."

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