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The **Cloud and Autonomic Computing Center** concentrates on topics in advanced distributed computing as part of the National Science Foundation Industry/University Cooperative Research Centers program.

The **Cloud and Autonomic Computing Center at Texas Tech University (CAC@TTU)** provides expertise in cloud security and standards, machine learning, data mining, parallel and distributed computing, business intelligence, Big Data, and general cloud application development.

The purpose of the **CAC@TTU** is to help its industry members accelerate adoption of cloud methods, standards and services by finding ways to utilize new technology while managing risk factors such as information security, privacy, compliance and regulation.

The **CAC@TTU** brings together professional research and higher educational expertise across fields that include Basic Sciences, Engineering, Business, Health Sciences and Law, to identify and support industry-research partnerships that strengthen industry's economic goals through cloud and autonomic computing.

Through **CAC@TTU** research partnerships and projects, we provide:

- Expertise and partnerships in advancing technology while identifying and ameliorating risk factors.
- Customized recommendations for current and emerging cloud standards, software and methods.
- Expertise in a wide spectrum of high performance computing, grid and cloud services and techniques to help industry serve multiple markets in their product line.
- Experience in medium and large-scale pre-competitive research that supports translation of ideas into business value and commercializable products.
- Assistance in the design of cloud service agreements and service level agreements, including technological and legal implications required for use in cloud management, and
- A trained workforce that can sustain opportunities created through the industry-research partnerships.

The High Performance Computing Center at TTU, <http://www.hpcc.ttu.edu>, supports the **CAC@TTU** as follows:

- Maintains memberships and strong working relationships with domestic and international cloud standards bodies, government entities, and working groups that coordinate future directions of cloud services.
- Provides experience in creating and managing high performance computing and Grid frameworks that span local, regional, and national scales.
- Conducts research in future computing capabilities that dramatically increase Texas Tech's novel computational research and opportunities in scientific innovations.
- Coordinates disciplinary and interdisciplinary research engagements and industry partnerships to identify, foster and develop new research and educational opportunities.
- Stays abreast with new computing, storage, and visualization technologies and their scope and impact in scientific computing.
- Collaborates with campus researchers, students, and other TTU supported projects and programs to create a skilled IT workforce that could connect domain sciences and computing capabilities.

CAC@TTU Leadership Team

The CAC@TTU site works with faculty drawn from several departments and colleges throughout the university to deliver on the promise of the Cloud and Autonomic Computing effort. The following team leads these coordination efforts.

The Site Director and Principal Investigator for the CAC@TTU is Dr. Alan Sill, who is also a Senior Scientist in High Performance Computing Center and Adjunct Professor of Physics. He currently serves as Vice President (Standards) for Open Grid Forum (OGF), an open standards community committed to improved adoption of advanced distributed computing, and is a member of several other standards organizations, including the Telecommunications Management Forum (TM Forum), the Distributed Management Task Force (DMTF). Through his role in OGF, Dr. Sill also participates in international and national-scale cloud standards road-mapping efforts in organizations such as the US National Institute of Standards and Technology (NIST), the International Telecommunications Union Telecommunications Standardization Sector (ITU-T) and the International Standards Organization (ISO). He is a current and past contributor to creation of several large-scale international, national and regional-scale cloud and grid research projects, including the Open Science Grid (OSG) and Worldwide Large Hadron Collider Grid. He leads the Cloud Interoperability Testbed Project for FutureGrid, and is one of the principal planners for the ongoing Cloud Plugfest series of hands-on developer-oriented cloud testing conferences. Dr. Sill has organized and led several conferences in cloud and advanced computing topics. His expertise in developing standards and prototyping standards-based reference implementations and cloud application programmer interfaces (APIs) is directly applicable to achieving the goals of the CAC@TTU.

Co-PI Dr. Ravi Vadapalli is a Research Scientist in High Performance Computing and Adjunct Professor of Petroleum Engineering. He has extensive experience in advanced distributed computing, research development in both disciplinary and interdisciplinary areas through data intensive computing. Dr. Vadapalli was one of the principal members of the developer team for the Texas Internet Grid for Research and Education (TIGRE), and led the demonstration of grid and cloud computing methods for the Petroleum Engineering Grid (PEGrid). He has also been deeply involved in development of methods for use of advanced high performance computing for simulation and modeling in cancer radiotherapy and other related applications. Dr. Vadapalli is a frequent speaker on these topics to a variety of professional industry-based and academic organizations. His current interests are in fostering new collaborations, industry-academia partnerships and grant opportunities that enhance the visibility and leadership of Texas Tech University in higher education.

Co-PI Dr. Yong Chen is an Assistant Professor of Computer Science. He leads the Data-Intensive Scalable Computing Laboratory (DISCL) at Texas Tech University, and has broad research interests in parallel and distributed computing, high performance computing, cloud computing, computer architectures and systems software. The focus of his recent work has been on building scalable computing systems for data-intensive applications in high-performance scientific computing and high-end enterprise computing. His group also has extensive expertise in hardware and software methods for data-intensive computing, and has made advances in hardware technologies for improving scalability and efficiency of scientific computing capabilities and Big Data applications, including dynamic active methods for high performance I/O in storage systems. Dr. Chen has co-chaired and served on the program committees of several recent conferences in data-intensive scalable computing systems and programming models for parallel computing, systems software, and cluster, grid and cloud computing. He led the Student Cluster Competition team for Texas Tech University at the 2012 ACM/IEEE Supercomputing Conference.