IEEE Standards Activities in Cloud Computing

Overview

Cloud computing offers the promise of ubiquitous, scalable, on-demand computing resources provided as a service for everything from mobile devices to supercomputers. Cloud computing offers end consumers a “pay as you go” model—a powerful shift for computing towards a utility model like the electricity system, the telephone system, or more recently the Internet. IEEE is coordinating the support of cloud computing through its Cloud Computing Initiative, the first broadbased collaborative project for the cloud to be introduced by a global professional association.

The concept of a cloud operated by one service provider or enterprise interoperating with a cloud operated by another provider is a powerful means of increasing the value of cloud computing to industry and users. Such federation is called the “Intercloud.” IEEE is creating technical standards for this interoperability.

The IEEE Intercloud Testbed (“Testbed” for short) creates a global lab—to prove and improve the Intercloud, based on IEEE P2302 Draft Standard for Intercloud Interoperability and Federation. To that end, IEEE is partnering with companies, universities, and research institutions around the world to create a well-connected standards-based platform for the Intercloud. The IEEE Cloud Computing Testbed also could be used to experiment with other IEEE cloud computing products and services such as eLearning education modules.

Relevant Standards Activities

[A partial list.]

Approved Standards

- IEEE Std 802.3-2015 IEEE Standard for Ethernet
- IEEE Std 802.3.1-2013 IEEE Standard for Management Information Base (MIB) Definitions for Ethernet
- IEEE Std 802.11-2012 IEEE Standard for Information Technology--Telecommunications and information exchange between systems--Local and metropolitan area networks--Specific requirements--Part 11: Wireless LAN
Medium Access Control (MAC) and Physical Layer (PHY) specifications Amendment 10: Mesh Networking
- IEEE Std 802.11ad-2012 IEEE Standard for Information Technology--Telecommunications and information exchange between systems--Local and metropolitan area networks--Specific requirements--Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications Amendment 3: Enhancements for Very High Throughput in the 60 GHz Band
- IEEE Std 802.15.1-2005 (R2010) IEEE Standard for Information Technology--Telecommunications and information exchange between systems--Local and metropolitan area networks--Specific requirements--Part 15.1: Wireless Medium Access Control (MAC) and Physical Layer (PHY) Specifications for Wireless Personal Area Networks (WPANs)
- IEEE Std 802.15.2-2003 (R2009) IEEE Recommended Practice for Information Technology--Local and metropolitan area networks--Specific requirements--Part 15.2: Coexistence of Wireless Personal Area Networks with Other Wireless Devices Operating in Unlicensed Frequency Bands
- IEEE Std 802.15.3-2016 IEEE Standard for Information Technology--Local and metropolitan area networks--Specific requirements--Part 15.3: Wireless Medium Access Control (MAC) and Physical Layer (PHY) Specifications for High Rate Wireless Personal Area Networks (WPANs)
- IEEE Std 802.15.4-2015 IEEE Standard for Local and metropolitan area networks--Part 15.4: Low-Rate Wireless Personal Area Networks (LR-WPANs)
- IEEE Std 802.15.5-2009 IEEE Recommended Practice for Information Technology--Telecommunications and information exchange between systems--Local and metropolitan area networks--Specific requirements--Part 15.5: Mesh Topology Capability in Wireless Personal Area Networks (WPANs)
- IEEE Std 802.15.6-2012 IEEE Standard for Local and metropolitan area networks--Part 15.6: Wireless Body Area Networks

Current New or Revision Projects
- IEEE P2301 Draft Guide for Cloud Portability and Interoperability Profiles (CPIP)
- IEEE P2302 Draft Standard for Intercloud Interoperability and Federation (SIIF)