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From Grid Computing to Cloud Computing: Experiences on Virtualization Technology

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In recent years, we see a great change from grid computing to cloud computing. Cloud computing is among the most popular words in computing today. As technology foundation, virtualization technology (VT) becomes a re-emerging technology for recently years. It is a decoupling technique that separating system software from hardware platform, while making applications to run pervasively.

Many academic institutes and research lab from industries has devoted great research efforts in various aspects. In 2007, Chinese Ministry of Science and Technology initialize a basic research project (973 project) with 6 universities and 2 research institutes on virtualization technology for computing system in many topics, such as architecture design philosophy of virtualization technology, VT design for single computing system, VT design for multiple computing systems, user environment for VT, security, reliability and trust issue related to VT, and performance evaluation and benchmarking for computing system with VT.

In this talk, we will give insight for this project. Our experiences on VT research are discussed in detail, including power management, virtual machine live migration, memory/I/O virtualization, and desktop virtualization.