Abstract

Every educational institution has its discrete goals, standards and regulations, security concerns, budget pressures, and technical legacies. No particular approach tackles all technology challenges, and solutions can hardly take a one-size-fits-all approach. The advancement toward cloud computing technologies facilitate organizations to access Internet-based information, applications, and services brings flexibility, increased choice, and capabilities to education IT departments. We provide a solution for academic institutions by building a highly scalable private cloud infrastructure based on Ubuntu Enterprise Cloud (UEC) with Eucalyptus. We discuss about deployment of minimal cloud infrastructure by considering fundamental network topology, with a single system serving as the "all-in-one
controller”, and one or more nodes attached to it. UEC infrastructure with Eucalyptus on different topologies such as implementation on a single server, two physical servers, three physical servers and more are discussed to identify how scalability is achieved. Finally we discuss the installation of education cloud with UEC based on Linux 10.04 and benefits of the private education cloud are analyzed.

References

- "Ubuntu - An introduction to cloud computing", 2011
- Deployment Guide - Ubuntu Enterprise Cloud on Dell Servers SE, DELL, 2011
- Canonical, "Ubuntu Case Study – Knowledge Tree Moves to the Cloud", 2011
- "What software environments are supported?", https://www.eucalyptus.com/faq#q7
- "UEC CDInstall - Community Ubuntu Documentation", https://help.ubuntu.com/community/UEC/CDInstall
- "UEC topologies", https://help.ubuntu.com/community/UEC/Topologies
- Understanding the Remote Desktop Protocol (RDP), http://support.microsoft.com/kb/186607
- "VNC remote access software for desktop and mobile platforms", http://www.realvnc.com/
- "Five Steps to Enterprise Cloud Computing (2013)", A Eucalyptus white paper
- "Clouds provide infinite scale", https://www.eucalyptus.com/resources/cloud-overview/cloud-myths-dispelled
- Xiaoyu Chen, Gary B. Wills, Lester Gilbert, David Bacigalupo, "Using Cloud For..."
A Highly Scalable Private Cloud Infrastructure for Educational Institutions based on Ubuntu Enterprise Cloud with Eucalyptus


Index Terms

Computer Science
Cloud Computing

Keywords
Cloud  Eucalyptus  Private Cloud  Ubuntu Enterprise Cloud  Scalability  Virtualization