

Lab Manual for Cloud Computing

Lab No. 1

Introduction to Cloud Computing

LAB 01: INTRODUCTION TO CLOUD COMPUTING

1. INTRODUCTION:

Cloud computing is all about using many computer systems that are "out there", whose physical address we do not even know. The "many" can range from just a few to thousands. Each of these systems may have TB of RAM, peta-bytes of hard disk space.

- TBD High Performance Computing HPC.
- High throughput computing
- Computing aimed at "beating" humans.
- Playing chess, Jeopardy, Voice recognition. Speech recognitions. Dictation.
- Elapsed time versus Total computing time.
- By 2014, cloud computing will be as common as mobile phones are today.

Distributed Computing Models Remote Computing

We can run computations on remote machines. The remote machine may not have our files, or our programs. It becomes our task to transport these.

Process Migration

Just like people migrate, we can think of processes migrating from one machine to another. Just like humans cannot migrate to Mars (yet?), processes can only (as of 2012) migrate from one Linux machine to another highly similar machine. Process migration involves "check-points", creating a frozen image of all their address spaces, and transporting the image to a remote machine and "thawing" it there.

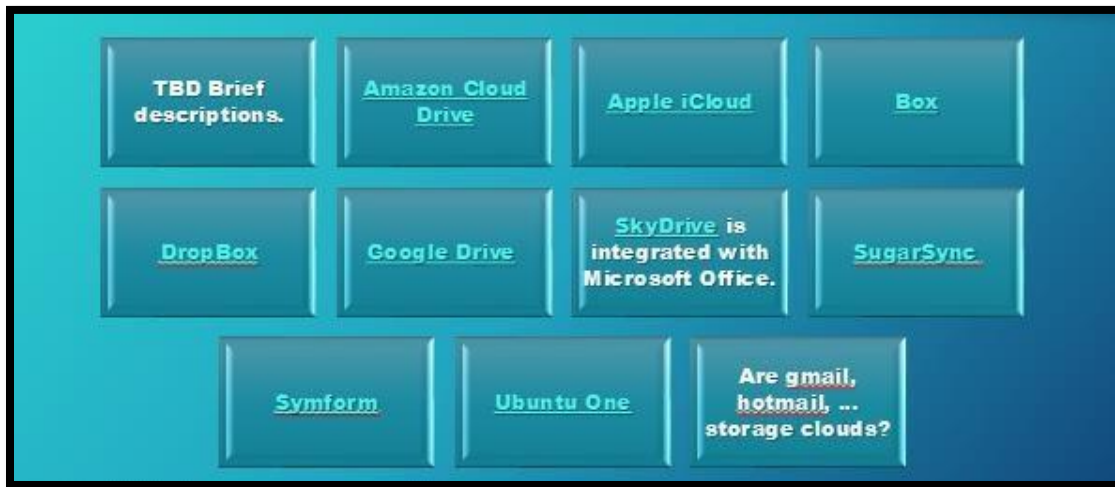
Using Idle Computers

In most departmental offices, there are probably dozens of PCs running screen savers. It is possible to put such idling machines to productive computing. E.g., a package known as Condor can be installed on Windows or Linux PCs that takes a description of jobs to be run and runs them on idle PCs as they become available. As soon as the "owner" of the idle PC begins an activity, the guest computation gracefully vacates and migrates to another. Condor is a standard package in Ubuntu: apt-get install condor.

Cluster Computing

A group of machines can be clustered together so that they an "awareness" of each other (cf. Star Trek Borgs). The Top Ten of the world's most powerful supercomputers are Linux clusters (visit <http://www.top500.org/>).

Well-Known Storage Clouds



2. OBJECTIVE:

After completing this lab the student should be able to:

- Clearly understand the purpose and benefits that **Cloud Computing** has to offer.
- Understand the concept of **Cloud Computing**.
- Use and learn **Cloud Computing** need.

3. TIME BOXING

Activity Name	Activity Time	Total Time
Login Systems + Setting up Cloud account	3 mints + 5 mints	8 mints
Walk through Theory & Tasks	60 mints	60 mints
Implement Tasks	80 mints	80 mints
Evaluation Time	30 mints	30 mints
	Total Duration	178 mints

4. LAB TASKS/PRACTICAL WORK

- Setting up First cloud account using Microsoft azure.