



IBM Midterm Update

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Our Project

- IBM is our sponsor
- Collaborating with the Computer Science Department and the College of Engineering to design use cases
- Academic uses of private clouds and open source solutions

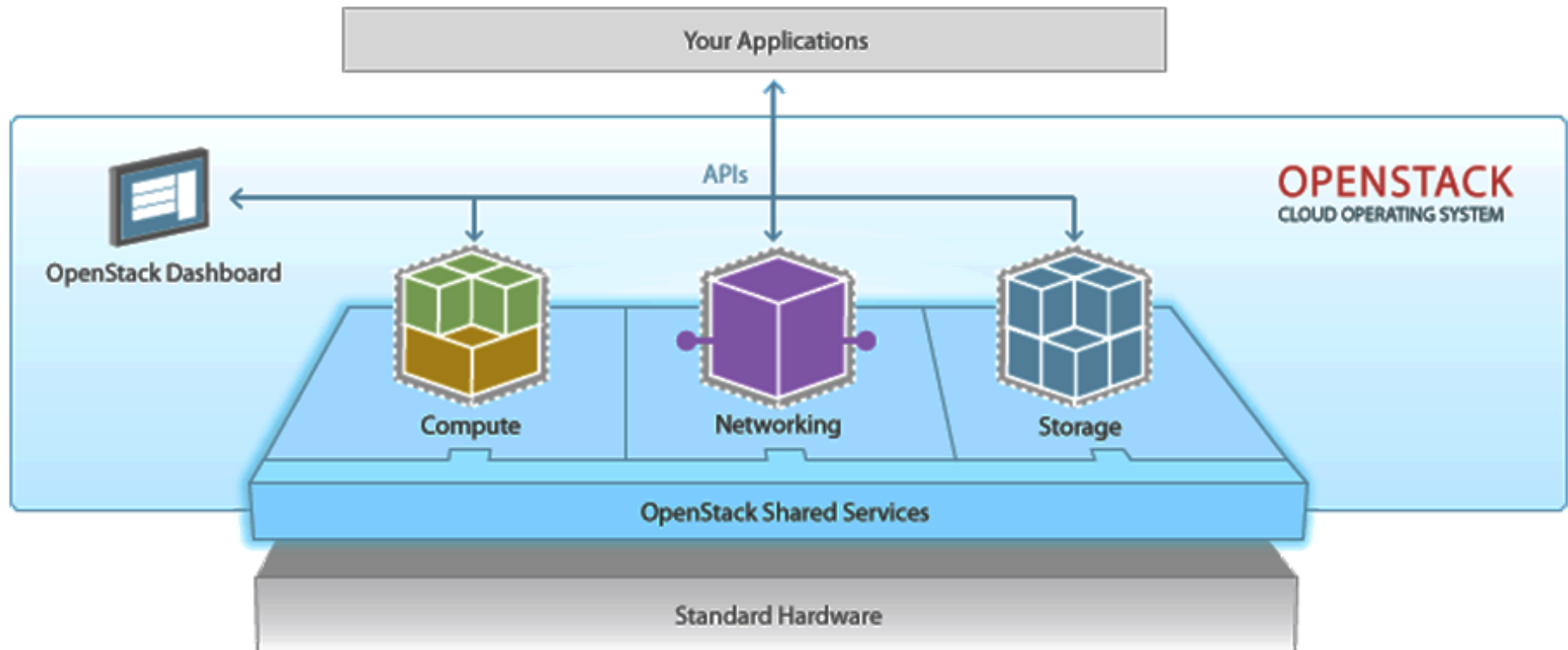


What Is OpenStack?



- OpenStack is an Infrastructure as a Service (IaaS) application that controls large pools of:
 - Computing Nodes
 - Storage Nodes
 - Network Resources
- These resources create a cloud environment
- Users control and deploy these resources through a web portal
- Similar to AWS and Azure

High-Level API





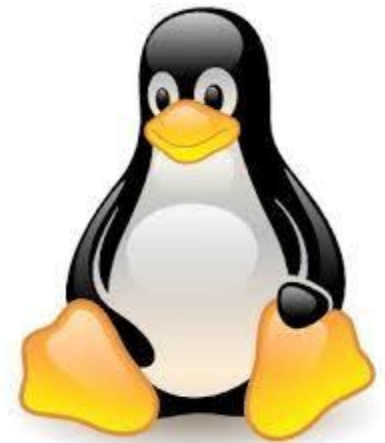
What Have We Done?



- Got familiar with OpenStack
 - Learned how to **deploy** it
 - Learned how **use** it
 - Learned how **fix** it
- Researched various use cases
 - What ways could OpenStack be used?
 - Who are the target users
 - Under which cases OpenStack provides a better solution
- Started to implement use cases

VMs for Teaching Use Case

- A teacher wishes to teach a class on Linux
- The teacher will need to create a number of VMs
- Each VM should be accessible using CS domain credentials
- Features like snapshots and cloning would be a great plus

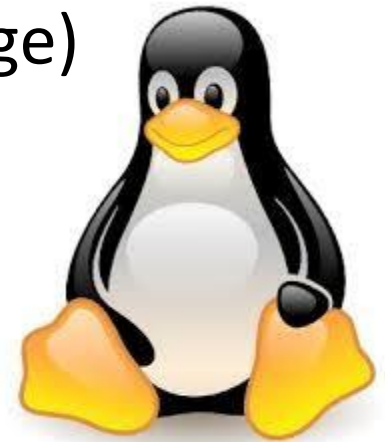




VMs for Teaching Use Case



- What can OpenStack do?
 - Openstack provides an easy-to-use web interface for creating/destroying/snapshotting VM's
 - OpenStack provides integration with LDAP for authentication
 - Quotas and limits can be set for all different resources(compute, network and storage)





Harvest Data Use Case



- John Deere/RDO is collecting harvest data on beets
- Dr. Simone Ludwig wishes to store this data in a distributed file system
- She also wishes to analyze the data using Hadoop
- She would like the ability to create a Hadoop network easily using OpenStack





Harvest Data Use Case



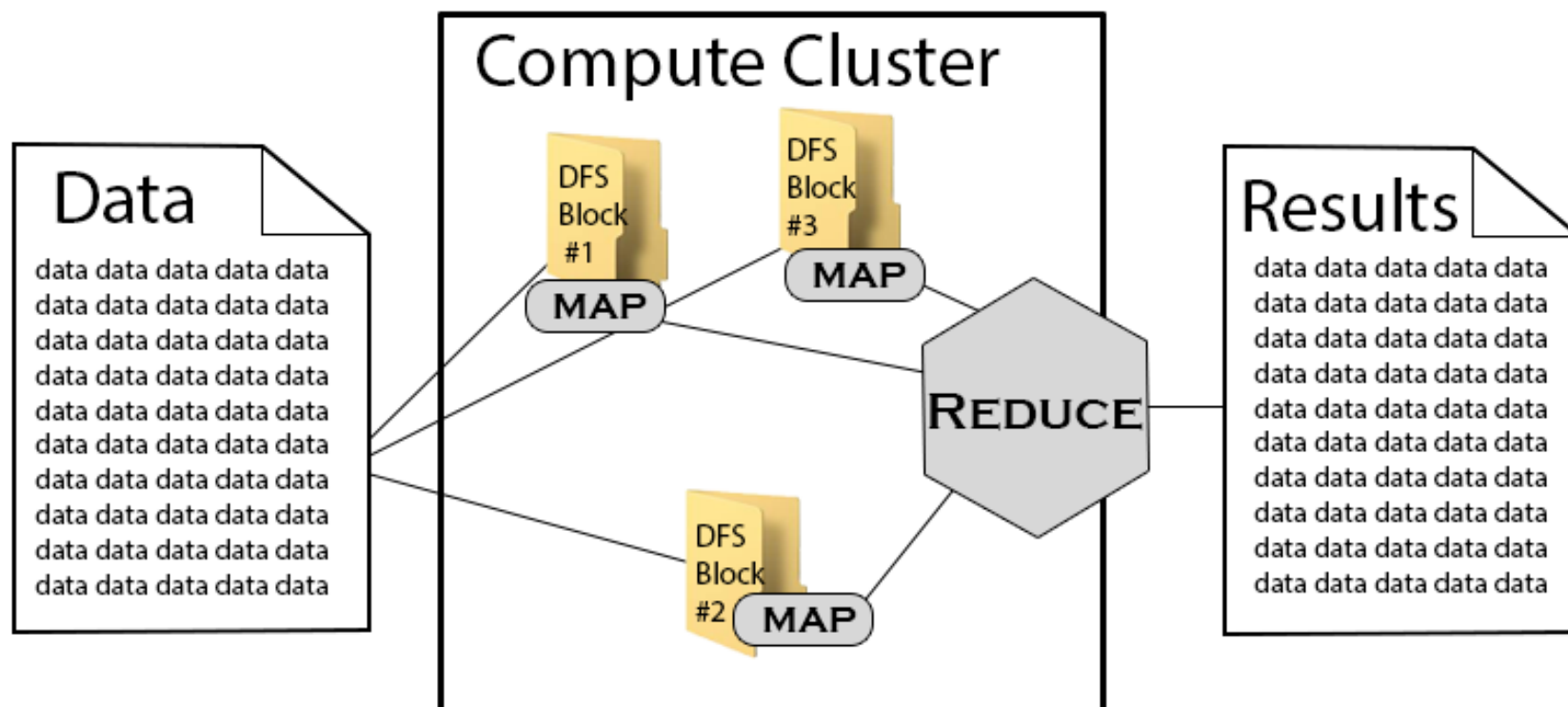
- What can OpenStack do?
 - OpenStack provides a network API for creating & managing virtual networks
 - OpenStack's Heat provides automated configuration & installation of VM's



What is Hadoop?

The Hadoop logo, featuring a yellow elephant icon and the word "hadoop" in a blue, stylized font.

OVERVIEW





College of Engineering Use Case



- Evaluate its uses for common IT resources
- Thin-clients for low cost and easy management
- Servers
- Storage Network



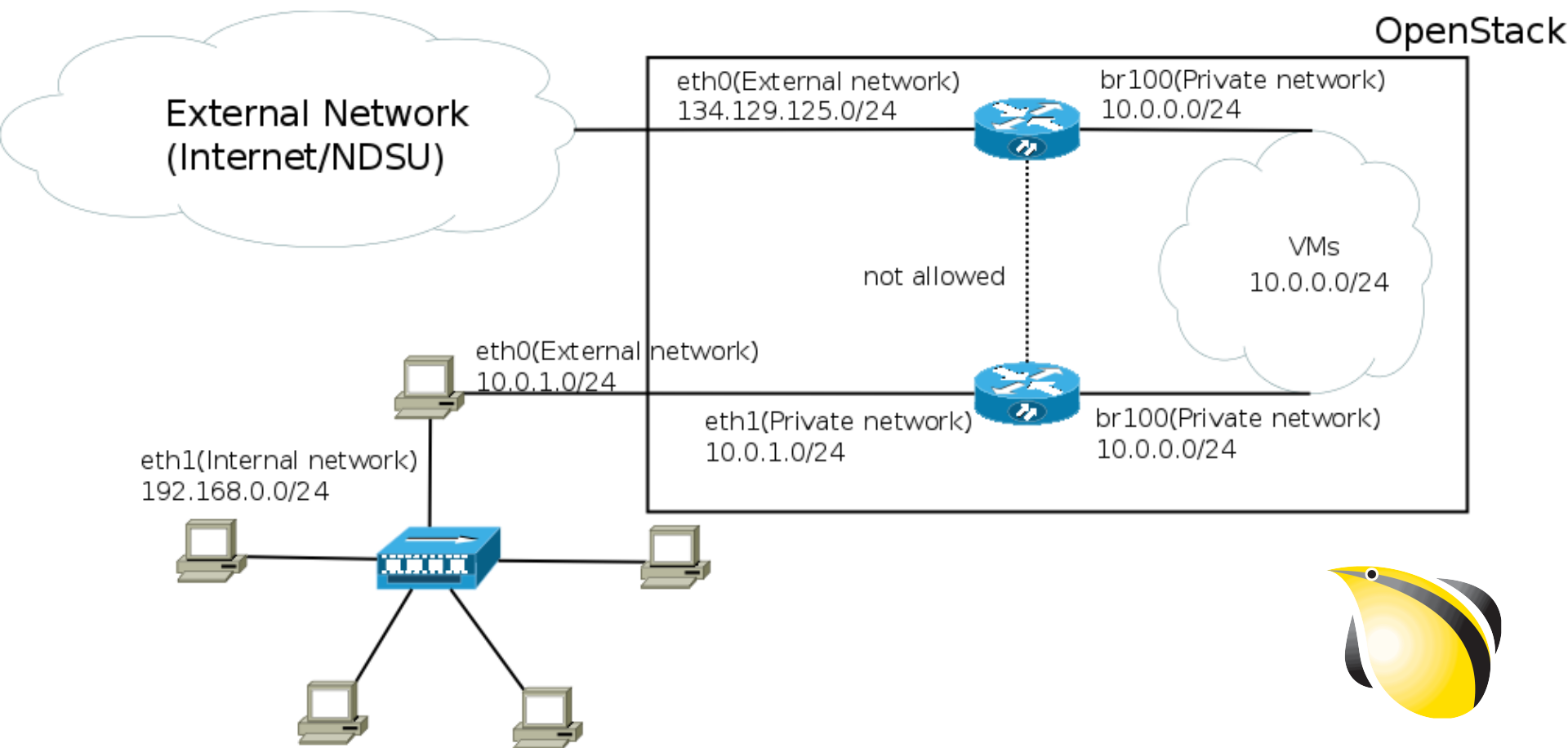


openstack

College of Engineering



Use Case - Network Topology





Demo



Risks and Issues

- Risks
 - DevStack
 - Quantum
- Issues
 - Last year's project wasn't in the appropriate status
 - Large upfront implementation



Looking Forward



- Multiple node OpenStack environment
 - Compute, Network, Controller, Storage
- More physical hardware
- Deployment Tools
- Use case deliverables
- Documentation



Summary

- Our Project
- What is OpenStack?
- Personal VM's for Teaching Use Case
- Harvest Data Use Case
- What is Hadoop?
- College of Engineering
- Demo