High Performance Object Storage Service for Internet Scale Workload

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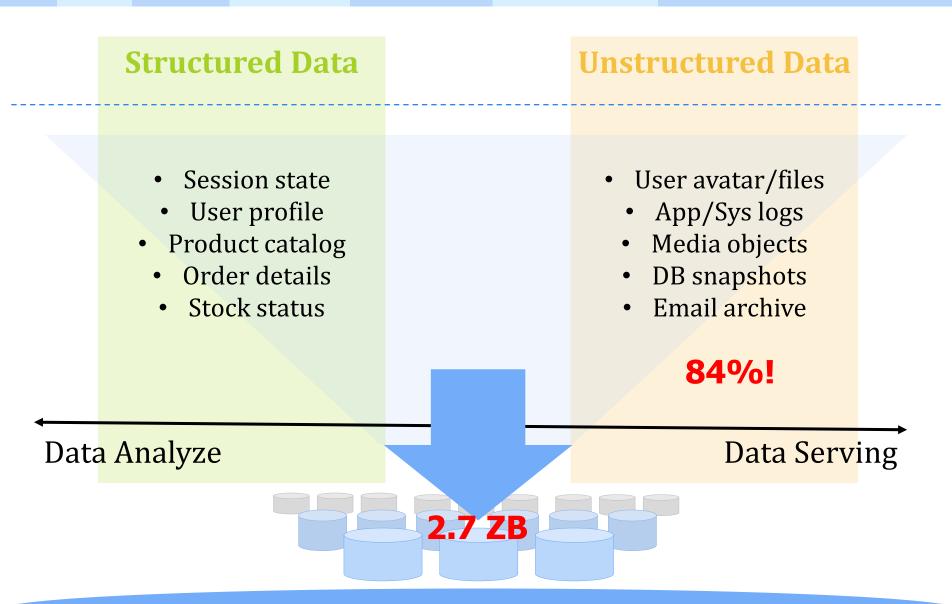
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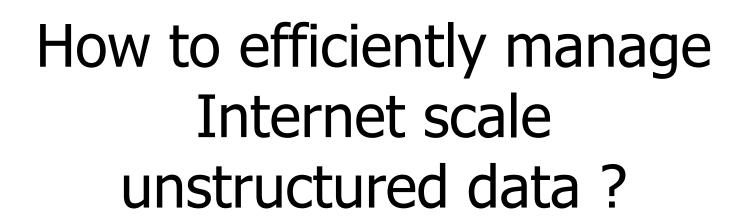
2 Kinds of Data





Challenge





Answer I: Cloud Computing



Cost Efficient

High Available

Massive Throughput

High Reliable

Highly Scalable

Highly Flexible

Self Service

Pay-as-you-go









Amazon Simple Storage Service Windows Azure Blob Storage Service Google Cloud Storage

Rackspace Cloud File

Answer II: Private Storage Platform





Private Storage Cloud

Openstack





Software

openstack

OpenStack Software delivers a massively scalable cloud operating system. The five major components are:

Compute Details & Download ▶

Object Storage Details & Download ▶

Image Service Details & Download ▶

New Projects: OpenStack Dashboard and Identity

All Software Projects...

Community

Join our global community of technologists, developers, researchers, corporations and cloud computing experts.

2642 PEOPLE 155 COMPANIES

Meet Our Community

Nimbus





Nimbus is cloud computing for science.

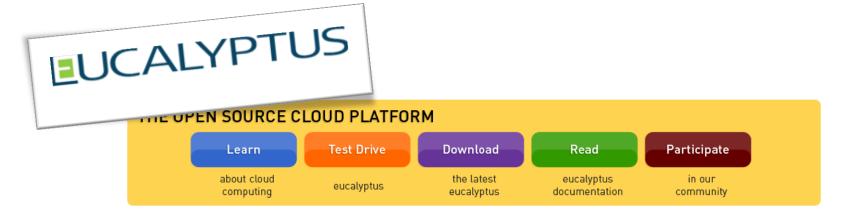
Nimbus Platform is an integrated set of tools that deliver the power and versatility of infrastructure clouds to scientific users. Nimbus Platform allows you to combine Nimbus, OpenStack, Amazon, and other clouds.

Learn more >

Nimbus Infrastructure is an open source EC2/S3-compatible Infrastructure-as-a-Service implementation specifically targeting features of interest to the scientific community such as support for proxy credentials, batch schedulers, best-effort allocations and others.

Eucalyptus





First steps with Eutester

Posted: Monday, 5 Mar 2012 11:00 AM by Graziano Obertelli

In one of my previous post I mention our mantra: "Listen to our community and deliver quality software". To deliver quality software, it isnecessary to have the QA process as a first class citizen. Our QA teamcreated quite a spectacular infrastructure to test all sort of combinations and configurations automatically (distro, architectures, versions, hypervisors, networking, images etc ...) to guarantee our users, regression-free releases. They also managed to have fun in the process (checkout Pigeons on a Euca).

<u>Eutester</u> is the latest brainchild of our QA team, andthis blog is about my experience writing a test using it. Eutester is a framework tocreate automatic tests against a Eucalyptus installations (or any cloudfollowing the AWS API for that matter).

These are the ingredients I needed to bake my first test:

More..

FASTSTART Your Eucalyptus Cloud · Recent posts Learn how User login **Developer Poll** Username: * What is the most important feature to you in the 3.0 Roadmap? Password: * High Availabilty Identity Authorization and Management Log in Active Directory/LDAP integration · Create new account · Request new password Windows Hosting Service Boot from EBS Active forum topics Resolved Issues

Navigation

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What is object storage?

Object Storage Overview



- For people to access and store
 - public or private files
- In object stores
 - one create containers
 - and put objects into these containers for storage.

RESTful API



- Reading file
 - GET http://reins.se.sjtu.edu.cn/objstor/container/object
 - 200 OK
- Upload file
 - PUT http://reins.se.sjtu.edu.cn/objstor/container/object
 - 201 Created
- Removing file
 - DELETE http://reins.se.sjtu.edu.cn/objstor/container/object
 - 204 No Content

Features



- Scalable
- Redundant
- Cost-effectiveness
- Ease-of-use
- Eventual consistent
- Consistent Hashing

Use Cases



- Data backup
- OS template repository
- User data storage
- Database archive
- Log/Email backend

Performance Evaluation





How to evaluate the performance of a cloud object storage service?

Motivation



Comparison

- hardware settings
- software configurations or implementation

• Optimization

- system tuning
- system refactoring or algorithm refining

Path-finding

- future improvements
- workload characterization

Challenge



- API Standard
 - S3, Cloud Files, ...
- Workload Model
- Simple & Extensible
- System Design
- Other issue
 - Ease-of-use (configuration, UI)
 - Benchmark performance & scalability
 - Background data
 - System stability
 - Side effects of operations

Workload Model



- Concurrency pattern
 - worker number
 - container range
- Access pattern
 - object size
 - read / write ratio

COSBench



- <u>COSBench</u>
 - Cloud Object Storage Benchmark
- Architecture style
 - master/slave
 - standalone

IEEE CLOUD 2012



- COSBench: A benchmark tool for cloud storage services
 - being reviewed



Thank You!