



Towards a Scalable, Fault-tolerant, Self-adaptive storage for the clouds

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Introduction

Context



Data-intensive applications on **clouds**

Build an efficient storage support for clouds

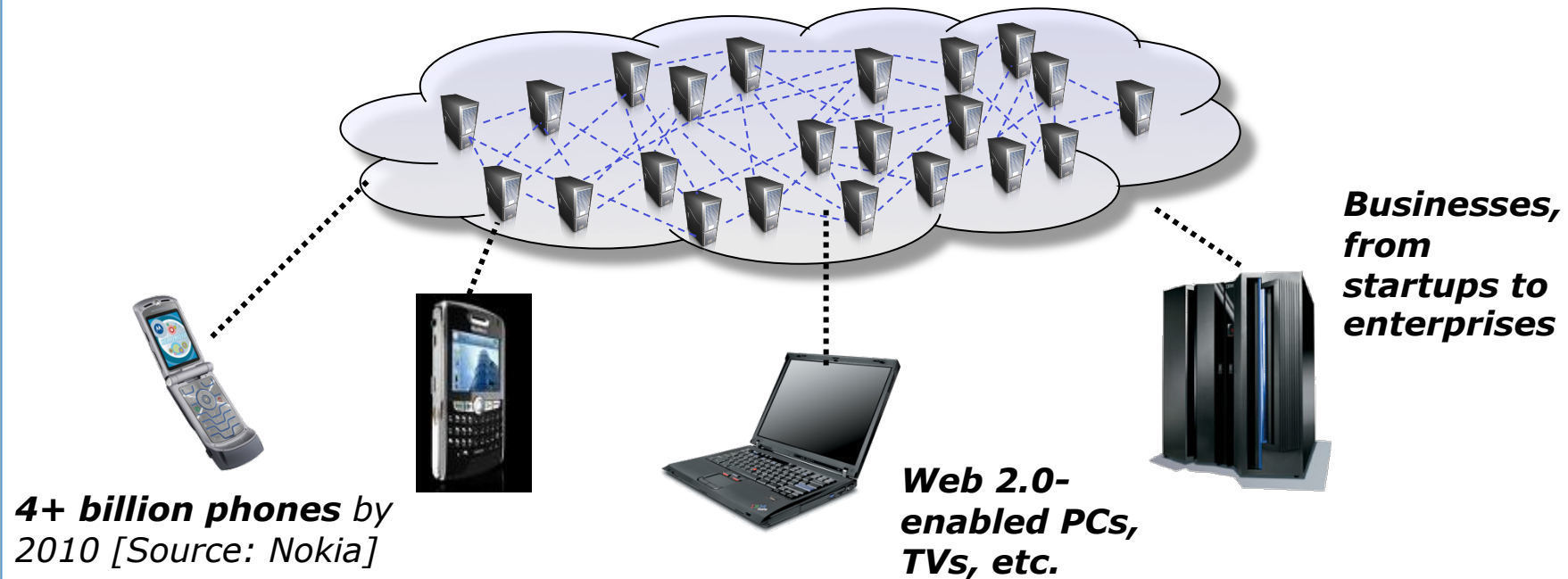
Challenges for storage

- Design scalable storage architecture
- Support huge file sharing with fine grain access
- Sustain high throughput under heavy concurrency

Cloud Computing

What is Cloud Computing ?

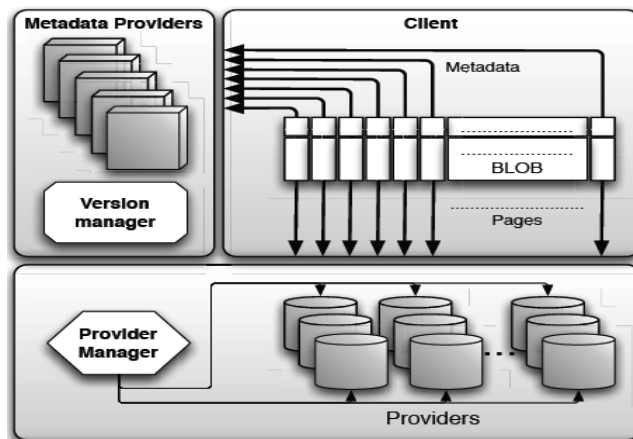
An emerging computing paradigm where data and services reside in massively scalable data centers and can be ubiquitously accessed from any connected devices over the internet.



Credit: IBM Corp.

Bricks

BlobSeer



Key Features

- Data striping
- Distributed metadata management
- Versioning based concurrency control

GloBeM

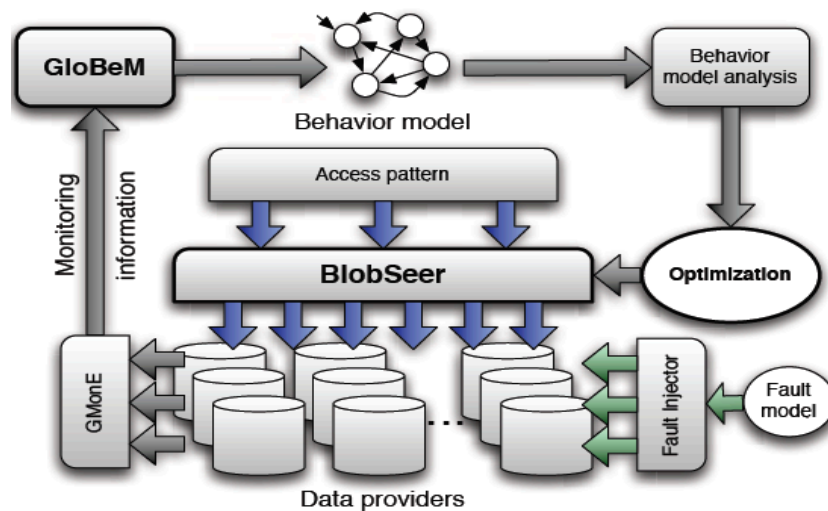
Global Behavior Modeling

Modeling the global behavior of a large scale distributed system :

- Observing the system
- Analyzing the data
- Building the model

Approach: BlobSeer + GloBeM

Enhance **QoS** of BlobSeer:
Higher more stable throughput for data transfers

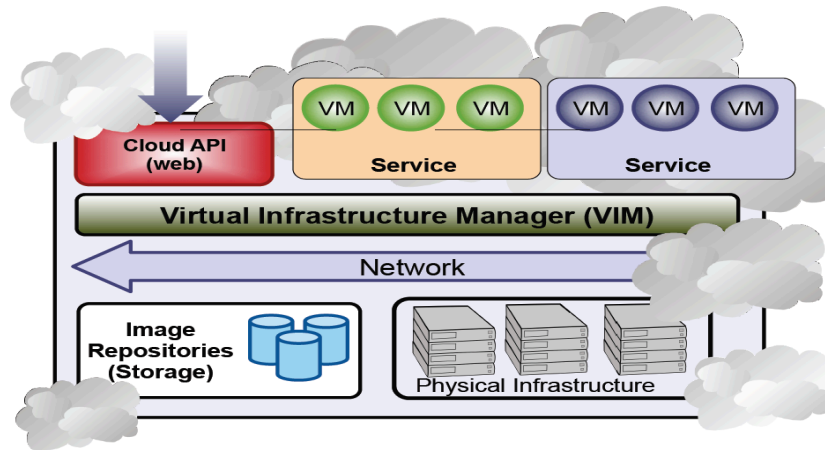


Methodology:

- Component monitoring
- Application-side feedback
- Behavior pattern analysis

Case study: OpenNebula Cloud

Flexible and extensible tool for building scalable Cloud environments



Storage for :

- **VM images** : NFS, SSH, LVM ...
- **Application Data** : not yet!

Roadmap

- Storage support designed for VM images
- Storage Support for Applications data
- Experimentations and comparison with other file systems on G5K
- Refining the behavior modeling phase to fit OpenNebula requirements

Thank you for your attention!