VISION Cloud: Data-intensive Storage Services on Clouds

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We live in a rich digital environment...

(Mobile) smart devices exponentially penetrate the market

Cities go digital deploying sensors and actuators

Users co-develop and co-innovate

Unprecedented trend to participate and share content and experiences

5 Million TB of data on the internet, Google has indexed only the 200TB (0.004%)
VISION Cloud: **Virtualized Storage Services Foundation for the Future Internet**

**Goal**

Architect and implement an infrastructure for the reliable and effective delivery of data-intensive storage services, facilitating the convergence of ICT, media and telecommunications.

**Facts**

A 3-year project, started Oct 2010

€15.709 M (total budget all partners)

www.visioncloud.eu
Through an example…

VISION Cloud is a European Initiative on Cloud Storage…

9th TF-Storage Meeting

12:30 - 13:30 Registration, Lunch
13:30 - 13:45 Welcome, round of introductions - Maciej Brzezniak (PSNC)
13:45 - 14:30 GRNET's storage related activities - Panos Louridas (GRNET)
14:30 - 15:30 Overview on Fibre Channel over Ethernet - Andy Valley (Cisco)
15:30 - 16:00 Coffee
16:00 - 17:00 National updates
...

• Title of Event
• Date/time
• Agenda
• Video format
• Transcript

Speech recognition
Enabling data-intensive storage services on clouds (1/2)

Raise the Abstraction Level of Storage

A new data model enabling the encapsulation of storage into objects with user-defined and system-defined attributes

Computational Storage

Computational agents (storlets) released into the cloud and activated by events on data. The storlets define not only the computation but also triggering conditions whereby storlets are activated

Data Mobility and Federation

A layer enabling unified access to data across storage clouds and federation of data objects maintained by users across different administrative domains
Enabling data-intensive storage services on clouds (2/2)

Content-Centric Storage Access

Access to data objects through information about their content and its relationships rather than details of underlying storage containers.

Advanced Capabilities for Cloud-based Storage

Support multi-tenancy, guarantee secure and authorized access to the data and services, check compliance with standards and regulations, optimize service provision with regard to cost, monitor, analyze and manage SLA considering content-related terms.
The VISION Cloud Architecture

Access and Interface Layer

Data Access Layer (DAL)

Management Interface Layer (MIL)

Operating Layer

Data Operating Layer (DOL)

Management Operating Layer (MOL)

DATA SERVICE
Content networks/objects, Computation on storage, Mobility, availability, reliability, security

MANAGEMENT SERVICE
Monitoring, Metering, Billing, Security management, Tenant/User management, SLA
Physical Model

Data Center

Storage Cluster 1

Storage Cluster 2

Storage Cluster 3

Data Center

Data Center

Data Center
Global View

A cloud-wide service that runs on representative nodes in each of the storage clusters composing the storage cloud

The GV consists of three services

Global Catalog: Map from container name to the clusters where the container’s replicas are held. It also holds container metadata

Resource Map: Map of cloud resources – the location of clusters, the distances and bandwidth between clusters and the available resources in each cluster

User Service: Holds information about tenants, users and authentication information, including the list of containers owned by each user
Data Axis
Management Axis
Use Cases

Multi-tenant cloud-native business applications

Healthcare data access based on content and its relationships

Mobile users accessing content

Create, repurpose & distribute content through multiple channels
Data: storing, retrieving, associating, analyzing, distributing…

140 Million Tweets on Twitter per day (April 2011)
Thank You
Visit our Website:
http://www.visioncloud.eu

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