CloudSpaces

The CloudSpaces project advocates for a paradigm shift from application-centric to user-centric models where users will retake the control of their information. To this end, CloudSpaces will devise an open service platform providing privacy-aware data sharing as well as interoperability mechanisms among heterogeneous Personal Clouds.

AT A GLANCE

Project title:
CloudSpaces: Open Service Platform for the Next Generation of Personal clouds (STREP)

Project coordinator:
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Partners:
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Website:
http://cloudspaces.eu

Towards Personal Cloud 2.0

In the next few years, users will require ubiquitous and massive network storage to handle their ever-growing digital lives. In this line, the **Personal Cloud** model defines a ubiquitous storage facility enabling the unified and location agnostic access to information flows from any device and application. Popular providers like Dropbox or Ubuntu One already provide unified synchronization and sharing services to millions of users.

But Personal Clouds are in their infancy, and two major problems must be solved:

First, there is a big **privacy** problem that precludes the adoption of this model by many users, companies and public institutions. Most Personal Clouds follow a simple centralized synchronization model that stores all information in the Cloud as a remote file system. The entire data management process is in the hands of the Cloud providers, so the users really lose control of where their information is stored and who can access it.

Another important problem is the lack of **interoperability** between Personal Cloud services impeding information sharing, but also precluding information portability among them. This generates what is known as *vendor lock-in*: a best decision now may leave a customer trapped with an obsolete provider later, simply because the cost to switch from one provider to another is prohibitively expensive.

CloudSpaces aims to create the next generation of Personal Clouds, namely Personal Cloud 2.0, offering advanced issues like interoperability, advanced privacy and access control, and scalable data management of heterogeneous storage resources. Furthermore, it will offer an open service platform for third-party applications leveraging the capabilities of the Open Personal Cloud.

CloudSpaces Platform

CloudSpaces aims to create the next generation of open Personal Clouds using three main building blocks: CloudSpaces Share, CloudSpaces Storage and CloudSpaces Services.

CloudSpaces Share will deal with interoperability and privacy issues. The infrastructure must ensure privacy-aware data sharing and trustworthy assessment from other Personal Clouds. It will also overcome existing vendor lock-in risks thanks to open APIs, metadata standards, personal data ontologies, and portability guarantees.

CloudSpaces Storage takes care of scalable data management of heterogeneous storage resources. In particular, users retaking control of their information implies control over data management. This new scenario clearly requires novel adaptive replication and synchronization schemes dealing with aspects like load, failures, network heterogeneity and desired consistency levels.

Finally, CloudSpaces Services provides a high level service infrastructure for third-party applications that can benefit from the Personal Cloud model. It will offer data management (3S: Store, Sync, Share), data-application interfaces, and a persistence service to heterogeneous applications with different degrees of consistency and synchronization.

Impact

We are now in a decisive turning point that will definitely influence how we interact with the information in the following years. If the major players dominate this market with vertical walled garden solutions, there will be few space left for European Cloud providers, software solution providers and SMEs.

On the contrary, CloudSpaces foresees short time-to-market and important impacts. In particular, the project will reach a global impact thanks our contributions to three open source projects with huge communities: Ubuntu One Personal Cloud, eyeOs Personal Desktop, and OpenStack Cloud middleware.

Cloud providers will benefit from OpenStack Swift novel Personal Cloud services facilitating the emergence of European interoperable clouds.

End-users and companies will increase their trust in cloud-based applications and storage. This can ease the massive adoption of online services such as Ubuntu One or others.

Software solution providers and SMEs will be able to build innovative services on top of open Personal Clouds. eyeOS Personal Desktop is our key proof of concept demonstrating the capabilities of the platform.