Data management in personal clouds

Mots clés :

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- Ecole doctorale : École Doctorale Informatique, Télécommunications, Électronique de Paris
- Domaine scientifique principal: Divers

Résumé du projet de recherche (Langue 1)

Cloud computing has enabled an emergent provisioning, delivery and consumption model for IT resources based on Internet protocols, where computation and storage infrastructure, software components and platforms, as well as data access and application services are offered by remote providers, on demand and in a dynamically scalable and virtualized fashion. Among different deployment models employed for clouds, public clouds are provided by off-site third-party providers over the Internet, while private clouds are deployed on enterprise private networks, e.g., for hosting critical or strategic systems and data. Personal clouds are a special category of clouds, integrating a number of personal user devices as well as Web locations containing user data. Such Web locations may potentially be deployed on other clouds, thus making the personal cloud part of a greater cloud federation. Personal clouds are characterized by high dynamics and limited resources due to the volatility and constraints of mobile devices. Additionally, as continuous full connectivity cannot be assumed, decentralized peer-to-peer interaction seems to be the most appropriate coordination style among cloud constituents. Personal clouds enable users to have a unified view of their full data on any device, even in infrastructureless or disconnected settings, while at the same time controlling data ownership and privacy when these are priority issues. Hence, personal clouds complement nicely public and private cloud solutions for personal but also for enterprise applications. The aim of the proposed PhD thesis is to study data management issues in the context of personal clouds. In particular, the focus will be on data synchronization among personal cloud constituents (i.e., mobile devices and data stores on public and private clouds) as well as data sharing across personal clouds of distinct users. The former is currently a major issue with the growing quantities of user data stored on multiple user devices and Web locations. The latter allows users to selectively make their data accessible to other users. PhD research work description:
- State-of-the-art analysis of the recent area of personal clouds and of established data management solutions in areas such as mobile ad hoc and peer-to-peer networks;
- Elaboration of algorithms, protocols and programming abstractions for enabling data synchronization and sharing within and across personal clouds;
- Positioning and integration of such solution in cloud federation/interoperability settings;
- Dealing with security and privacy concerns for data management in the context of personal clouds/cloud federations;
- Validation through the implementation of supporting middleware architecture.

Résumé du projet de recherche (Langue 2)

- Elaboration of algorithms, protocols and programming abstractions for enabling data synchronization and sharing within and across personal clouds;
- Positioning and integration of such solution in cloud federation/interoperability settings;
- Dealing with security and privacy concerns for data management in the context of personal clouds/cloud federations;
- Validation through the implementation of supporting middleware architecture.

Informations complémentaires (Langue 1)

Recherche notamment en lien avec Projet EU CHoReOS