SUPERCLOUD - User-centric management of security and dependability in clouds of clouds

# Newsletter

August 2015 - Issue 1

## Main Project Information

**SUPERCLOUD** aims to support user-centric deployments across multi-clouds, enabling the composition of innovative trustworthy services, to uplift Europe's innovation capacity and thus improve its competitiveness. SUPERCLOUD will thus build a **security management architecture** and infrastructure to fulfil the vision of user-centric secure and dependable cloud of clouds. Despite many benefits in terms of business, distributed cloud computing raises many security and dependability concerns. At stake are an increase in complexity and a lack of interoperability between heterogeneous, often proprietary infrastructure technologies. The SUPERCLOUD project proposes new security and dependability infrastructure management paradigms that are:

- **user-centric**, for self-service clouds-of-clouds where customers define their own protection requirements and avoid provider lock-ins; and
- **self-managed**, for self-protecting clouds-of-clouds that reduce administration complexity through security automation.

### In this Issue



## Message from the Coordinator

The intention of this Newsletter is to open a new communication channel in order to provide news on the project progress and to discuss ongoing topics relevant to SUPERCLOUD for internal and external project partners, stakeholders and all other interested bodies. For more detailed information about and around the project we warmly invite you to have a look on our project website, which is constantly kept up-to-date with the latest project related news: www.supercloud-project.eu. The project has successfully started with the Kick-Off meeting in February 2015 and since then the project has been in its initial stages of formation. The overall architecture of the SUPERCLOUD and of its management services is being discussed and defined and the first steps towards the design of a security monitoring infrastructure for computing resources in the SUPERCLOUD plane have been taken. Also ground forming discussions on the requirements, specifications and the evaluation plan for the use-cases are ongoing. The SUPERCLOUD project has a well-balanced and focused consortium - comprising 9 partners from 6 countries - and brings together a European team of recognized organisations and respected universities with scientific and technological backgrounds. It is well-positioned intellectually and geographically to achieve its objectives.

## Publications


**The role of cloud services in malicious software: trends and insights?**
X. Han, N. Kheir, D. Balzarotti, Paper in proceedings of DIMVA 2015, Milano, Italy, July 2015.

**How many planet-wide leaders should there be?**
S. Liu, M. Vukolic, Distributed Cloud Computing Workshop, Portland, USA, June 2015.

**Nested Virtualization meets Micro-Hypervisors: Towards a Virtualization Architecture for User-Centric Multi-Clouds**
A.Palesandro, M. Lacoste, C.G. Guegan, N. Bennani, First COMPAS Workshop on Cloud Security (SEC2) , Lille, June 2015


## Concept

Our approach will be to define a new distributed architectural plane, the SUPERCLOUD, providing an end-to-end interface both between user-centric and provider-centric views of multiple clouds. Its role will be both to provide a distributed resource abstraction and flexible but unified control for management of security and resilience.

## Key Data:

| | |
|---|---|
| *Start Date:* | 1 February 2015 |
| *End Date:* | 31 January 2018 |
| *Duration:* | 36 months |
| *Project Reference:* | 643964 |
| *Project Costs:* | € 6.863.279 |
| *Project Funding:* | € 5.398.280 |


*Consortium:* 9 partners (6 countries)
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SUPER CLOUD

## Technical Approach

In order to maximise the efficiency of such a complex project, the work performed in the framework of SUPERCLOUD is organised in seven different work packages with significant dependencies and expected synergies among them. **WP1 "Architecture"** defines the architecture and framework for the remaining WPs. The focus is put on protocols and services that require interaction among different building blocks. **WP2 "Security Management and Infrastructure for Computation"** specifies and implements the main components and protocols of the federated cloud infrastructure for computing and the design of the corresponding security self-management framework. **WP3 "Data Management"** designs and implements SUPERCLOUD protection of user assets in the distributed cloud, focusing on autonomic security provisioning an end-to-end security. It provides a common user experience of data protection across multiple underlying clouds. **WP4 "Resilient Network Virtualization and Provisioning"** enables to create virtual networks for multi-clouds with resilience and security guarantees both for the control plane and for the data plane, using the software-defined networking approach. **WP5 "Use-case and testbed"** enables to demonstrate and validate SUPERCLOUD core technology. A testbed that will enable the reproduction in realistic settings of the two use cases, using component configuration and virtualization, will be set up. **WP6 "Dissemination, Communication, Exploitation, Standardization and Training"** focuses on communication and dissemination of scientific research results achieved within the WPs to outside and participating parties and it will support the partners to exploit the achieved results and impact the European as well as the international market. **WP7 "Project-, Risk-, and Innovation-Management"** ensures a successful project lifetime with respect to risk and innovation management and it coordinates the tasks of all other WPs so that they are in line with the project work plan in order to reach the objectives of SUPERCLOUD.

**SUPERCLOUD public deliverables submitted:**

- D6.1 Internal and external IT communication infrastructure and project website
- D7.1 Project Quality Plan
- D6.2 Data Management Plan

**Milestones achieved:**

- MS1 "Successful Project Start" (M01)

**Upcoming Milestones:**

- MS2 "Architecture Specification" (M09)

**SUPERCLOUD upcoming public deliverables:**

- D1.1 SUPERCLOUD Architecture Specification
- D1.2 SUPERCLOUD Self-Management of Security Specification
- D2.1 Architecture for Secure Computation Infrastructure and Self-Management of VM Security
- D3.1 Architecture for data management
- D4.1 Preliminary Architecture of Multi-Cloud Network Virtualization Infrastructure

## Ongoing Activities

After the successful project kick-off each partner has enthusiastically looked into their tasks within the particular WPs and started progress towards the objectives. The first deliverables have been submitted and quite some work has been performed during the last 6 months. In **WP1** a first preliminary design of the overall SUPERCLOUD security architecture and how policies could fit in its starting has been defined. In **WP2** a first infrastructure-based requirement analysis has been performed, along with a survey of virtualization technologies. Further, a preliminary high-level virtualization architecture for the multi-cloud computation infrastructure has been produced. Within **WP3** a preliminary security analysis from the data management perspective was performed of the use case descriptions, which is the first step towards the definition of the corresponding data management architecture. **WP4** can report the first published results on SDN-based security models and tools for autonomic network security management as well as on network security risks based on real world cloud provider incident/abuses reports. A draft version of the use case descriptions and high level requirements have been developed within **WP5**. Moreover, within **WP6** the project website has been created as a collaborative platform for information sharing. Also the announcement letter has been published and a leaflet has been designed and distributed. The communication infrastructure for internal and external information sharing and interaction has been set up, and D6.1 and D6.2 have been submitted within this WP. Furthermore, work with regards to administration and project management (**WP7**), such as reporting to the EC, distributing the pre-financing, designing templates, and handling day-to-day requests from partners and external bodies has been performed.

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