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# TClouds boosts security and adds trustworthiness to Cloud Computing

The TClouds project has improved the security and resilience of cloud computing platforms in response to widespread concerns about data privacy and robustness of services in the cloud model. It has realized a trustworthy cloud-computing platform, the TClouds platform, which integrates multiple advanced security technologies in a standard cloud distribution and in commercial cloud systems. Have a look at the video [1] of their eHealth solutions.

Some of the TClouds systems are already being exploited commercially by the industrial partners of the project. The project has also organized many prominent and well-attended scientific workshops and technical events in Europe, which focus on the theme of cloud security. With these and through their technical contributions, the project partners have achieved global visibility for their leadership in this domain.

The TClouds (Trustworthy Clouds – Privacy and Resilience for Internet-scale Critical Infrastructure) project, co-funded by the European Union, has come to a successful conclusion at the end of September 2013. The multinational project consortium, led by the Austrian company Technikon, has developed a novel cloud infrastructure, which will lead to increased security and privacy-protection in data processing. Equally important, it will remain cost-efficient, scalable, and simple.

Protecting data and services in the cloud is a challenge of increasing importance for governments and organizations across all industries, including healthcare, energy utilities, and banking. In a cloud environment, all pertinent data is stored on remote hardware via the Internet instead of being kept on a local server or computer. Current cloud computing systems involve the disadvantage that users do not know where their data is stored and how it is processed. Focusing in particular on cross-border data processing, a number of legal questions arise concerning the protection of sensible information, such as person-related data.

**Mission**

This is exactly what the project TClouds, focused on. During three years, its goal was to develop a trustworthy, reliable, and transparent cloud infrastructure allowing the processing of person-related as well as sensible company data in the cloud. The research focus was to design a secure cloud environment that meets European privacy protection requirements without compromising on the benefits of cloud computing, such as cost savings, scalability of services offered, and data availability. In addition, the project team worked on new open security standards and effective cloud management components.

Newly designed security mechanisms were also developed to remotely verify the security and resiliency of the cloud infrastructure, guaranteeing the integrity of a hardened cloud computing platform to users of cloud services.

Besides advanced technology, the TClouds consortium also studied the legal, business, and social aspects of cross-border cloud computing, such as country-specific privacy laws, writing cloud computing service agreements, and user–centric requirements, including languages and accessibility.

**Results**

The focus of the project was to prototype an advanced cloud infrastructure that can deliver a new

level of secure, private and resilient computing and storage that is cost-efficient, simple, and scalable. More specifically, two main results can be identified:

1. TClouds built a Trustworthy Cloud Platform where federations of standardised, resilient and privacy-protecting global infrastructure clouds offer virtualised computing, communication and storage resources. Therefore, novel resilient protocols, cloud security mechanisms, management components, and selected open source implementations could be created.

2. In order to evaluate the TClouds infrastructure empirically, TClouds worked on two scenarios comprising healthcare and smart lighting systems. These scenarios provided a set of critical IT-infrastructures through which the project team could demonstrate the applicability of their novel TClouds solutions in a real environment.

The project team has made significant progress towards realizing secure cloud computing systems, offering more security and reliability at low cost, scalability, and ease-of-use. Some of the achieved results are already state-of-the-art and published in the most prestigious conferences and journals.

For more information about the TClouds project please visit the project's website [2] and have a look at the video [1] of their eHealth solutions.

**Related Documents:** TClouds Poster [3]

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