Secure networks for the Internet of the future

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Security in large data centres: This goal is being pursued by the european research project SENDATE. Credit: University of Würzburg

Two new projects at the University of Würzburg's Institute of Computer Science receive nearly EUR 750,000 worth of funding. The institute is working to make secure and efficient networks for the Internet of the

future happen.

Large data centres are the major checkpoints of the Internet. They save, process and forward business data and private information. Today's data centres have huge computing and storage capacities and are usually located in remote places far away from their customers with most facilities being operated by non-European companies.

Already today, these data centres have a lot to cope with and the end is not in sight. They have to serve an increasing number of smart phones, tablet computers and other terminal devices causing the associated Internet traffic to grow continuously. New Internet apps in the environment of industrial and health systems for example contribute to this trend.

Taking data centres closer to users

"If we want data centres to continue operating in a secure, flexible, reliable and instantaneous manner, telecommunication networks and IT will have to be consolidated," says Professor of Computer Science Phuoc Tran-Gia, Chair of the Department for Communication Networks at the Julius-Maximilians-Universität Würzburg (JMU) in Bavaria, Germany. "Also, we have to decentralize the computing and storage capacities and take them closer to end users."

A goal the new research consortium SENDATE (SEcure Networking for a DATa center cloud in Europe) is pursuing: Its member teams are seeking to develop a network architecture and technologies for secure and flexible distributed data centres. "Innovative technologies and approaches such as the virtualization of network functions (NFV) combined with software-defined networking (SDN) establish the basis for this," the professor explains.

Total budget worth EUR 72 million

The project is managed by Nokia Solutions and Networks GmbH & Co. KG. Set to run until February 2019, it has a research budget of more than EUR 72 million. The project is financed by various research sponsors within the scope of the Celtic-Plus IKT research cluster.

The SENDATE-PLANETS subproject involves a JMU research team from the Department of Communication Networks which develops security mechanisms for NFV/SDN networks. The scientists also investigate the development, operation and optimization of virtual network functions and their positioning in distributed data centres. The Federal Ministry of Education and Research funds the work with a little over half a million euros.

Cooperation with Würzburg-based InfoSim

Software Defined Networking (SDN) enables implementing flexible, virtualized and programmable networks in the Internet of the future. To study the possibilities and performance of network management using SDN, Tran-Gias's department also collaborates with InfoSim GmbH & Co. KG in the SDN-Perf project (Performance of SDN). The medium-sized company located in Würzburg has specialized in developing network management software. The Bavarian research programme IKT funds the cooperation project with around EUR 230,000 for three years.

Provided by University of Würzburg