



SENDATE-TANDEM

Project ID: C2015/3-2

Start Date: 1 April 2016

Closure date: 31 March 2019

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 CityPassenger SA, France
 Creonic GmbH, Germany
 Fraunhofer FOKUS, Germany
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Project Website

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Tailored Network for Data cEnters in the Metro

“SENDATE-TANDEM” addresses the challenge for a new network infrastructure with reference to high volatile data traffic of mobile linked objects. A dynamic switching and a reliable transport of huge amounts of data as well as a handover of sensible, time critical application data without any interruptions must be provided between data centers with security guarantees.

Main focus

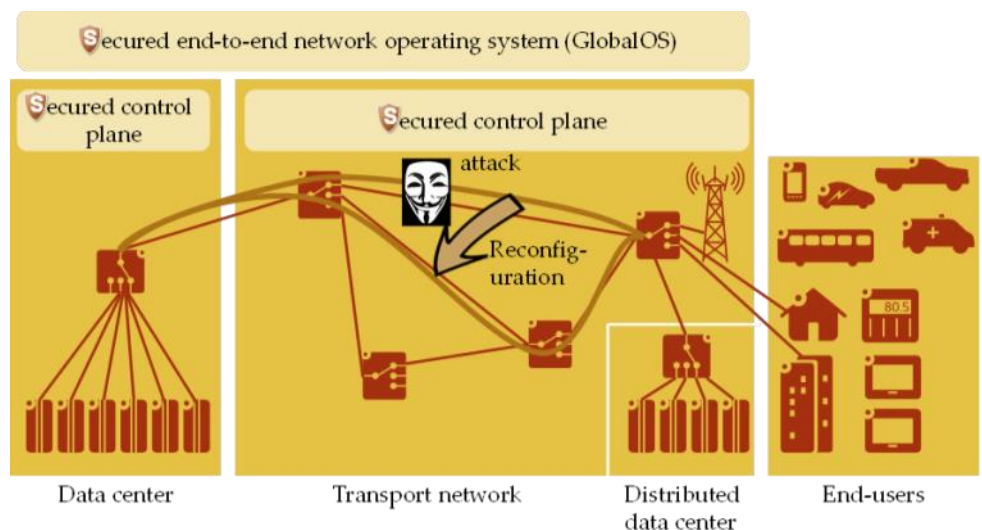
Data centers: Current centralized DCs offer high processing power, huge storage capacities and performance but due to the big distance to end users they show long response times and furthermore use the network as static transport medium only. SENDATE-TANDEM focuses on distributed data centers for enhanced flexibility and lower latency experienced by end-users.

Networks: Today’s networks lack automation, require specific, separate processes and operations for the telecom resources on the one hand and IT resources on the other hand, and generally lack flexibility to operate these resources. Time-to-market for new services is also too long.

Optical transport networks are too static and also lack flexibility. SENDATE-TANDEM focuses on automated, flexible, dynamic, pro-active networks that can reconfigure themselves even before a security breach is detected. **Security:** distinct contributions do not help to achieve a continuous end-to-end security path between multiple tenants but merely offer a toolkit of available security functions that may or may not combine smoothly. The fusion of telecommunication networks and IT Infrastructure, already observed for many years, progresses further. Meanwhile the most important control centers of the Internet are data centers. There both business and private data are stored, operated, forwarded and analyzed. SENDATE-TANDEM will focus on guaranteeing security within data centers, including for instance control plane securization and virtualization of the security functions.

Approach

Within the metro network, essential elements are virtualized: integrated nodes consisting of traditional DCs (RAM, processor) but also e.g. virtualized DSL- and radio access (vRAN) network elements or



IP-router and optical network elements like cross-connects. Virtualization shall lead to a flexible arrangement of single modules and to a dynamic provision of resources according to application demands. Here latency and bandwidth but also QoS classes and findings from simulative traffic investigations will be considered.

control plane architecture, intending to turn today's metro networks into a flexible platform for future services and applications.

Through a distributed infrastructure the security-related outage shall be improved, because resources of local distributed DCs are available as fallback in case of

and reconfigurable, which will merge the management of both IT and telecom resources in order to operate the network end-to-end, and will provide the associated end-to-end security mechanisms.

Impact

The project will change the way networks are built, operated, and secured. New components, architectures, software, algorithms mechanisms will be developed in TANDEM in order to enable the secure network of data centers required for tomorrow's applications. New services will be more easily and quickly deployed on the future networks, enabling novel industries to thrive, including but not limited to Internet of Things, Industry 4.0, the connected car, etc.



Furthermore a common control plane will be developed for an optimized control of network elements across levels. The first underlying assumption is based upon a flexible control plane and develops an application, which is able to adapt the network from one load status to another. The second assumption goes for full flexibility from scratch within definition of

failures. Finally integrity of network elements will be investigated to protect and observe configuration data and log-files with forensic methods in a way, that in case of doubts after intrusion one can verify manipulations.

Main results

SENDATE-TANDEM will build a data centre network that is flexible

About Celtic-Plus

Celtic-Plus is an industry-driven European research initiative to define, perform and finance through public and private funding common research projects in the area of telecommunications, new media, future Internet, and applications & services focusing on a new „Smart Connected World“ paradigm. Celtic-Plus is a EUREKA ICT cluster and belongs to the inter-governmental EUREKA network. Celtic-Plus is open to any type of company covering the Celtic-Plus research areas, large industry as well as small companies

or universities and research organisations. Even companies outside the EUREKA countries may get some possibilities to join a Celtic-Plus project under certain conditions.

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