

The Basics

The research-group "Institut für Telematik" of the department for computer-science at the University of Trier is a research and development-center formally administered by the Fraunhofer Society and was established on January 1, 1998 and has since then evolved into an ever-growing competence center that develops solutions for problems in the interfaces between telecommunications and information technology. Around 30 scientific staff members from various countries who are experts in different areas of science are currently with the institute.

The scope of the working group "Institut für Telematik" covers a wide spectrum: From application-oriented information technology and telecommunications research to the development of customized solutions and pilot systems for commerce, industry, medicine and administration. It is also focusing on new media training and continued education, which is offered to cooperation partners as well as employees of companies domiciled in the region and in other areas.

Project Partners

High tech businesses, as well as large and even small and medium sized companies support the institute as project partners. The partner firms implement the institute's scientific findings in practical applications. The focus of the work is on the development and utilization of new information and communications media for technical, medical and social applications.

Areas of Competency

The current research and development projects aim at the practical implementation of the latest scientific findings in the areas of electronic publishing, Internet/Intranet, tele-medicine, secure data transfer, system development and analysis. The Institut für Telematik focuses primarily on the following technological applications:

- Editor systems: Web-based information and knowledge management
- Navigation systems: Processing of information, data interfaces, EAI, data warehouse
- Database management: Innovative middleware on open standard basis, e.g., Smart Data Server (SDS)
- Open network security: Architecture, policies
- Network security: Firewalls, Lock-Keeper, Tiger Teams, CERT
- Content security: Public-Key-Infrastructures, digital signatures
- Mobile technologies and applications: Ubiquitous Computing, Mobile Security, ad hoc-Networks, Smart Cards
- Tele-medicine: Patient CD, DICOM-image management and compression,
- Consulting: Studies, evaluations, audits

Patent Protection has already been awarded to the institute for two of its solutions: <Lock-Keeper> – a security <sluice> between Internet and Intranet, that protects users more effectively against online attacks than firewalls – and <Dicomzip> an image compression process that reduces the transmission times of medical images from several hours to just a few seconds.

Universität-Trier



FG Institut für Telematik
Bahnhofstr. 30-32
54292 Trier, Germany
Telephone: +49 (0) 651 - 97551 - 0
Telefax: +49 (0) 651 - 97551 - 12
E-Mail: info@telematik-institut.de
Internet: www.telematik-institut.de

Head of working group:
Univ.-Prof. Dr. sc. nat. Christoph Meinel

Lock-Keeper Absolutly, Positively Combats Online At- tacks

When a company sends, for example, e-mail from its system, the Internet connection required for data transfer creates an area of vulnerability that so-called hackers can exploit for attacks and for the theft of internal company data. Such attacks are also called online attacks.

The standard procedure for the protection of in-house data against unauthorized access from the Internet is to install a firewall as a guard-house between Intranet and Internet. Thanks to their "creativity" hackers have, however, been able to gain unauthorized access to company-owned networks again and again. The patented Lock-Keeper system developed by the Institut für Telematik does, however, avert the threat of online attacks completely.

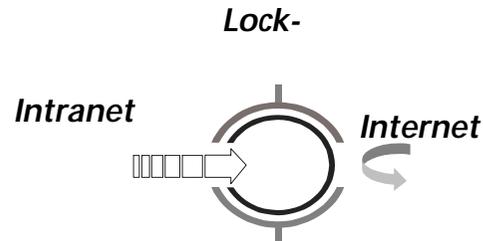
Lock-Keeper-Technology

Lock-Keeper technology is a modern system that works like a sluice to provide for completely secure data interchange between computer networks. Especially companies with extremely high security needs that desire passive, time-delayed information exchange (e.g., transfer of security relevant documents, e-mails, etc..) will profit from utilizing the Lock-Keeper system. It meets the highest security standards and is relatively easy to configure.

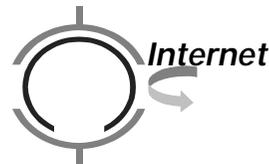
Functionality of the Lock-Keeper

The Lock-Keeper works just like a sluice – everything has to pass through it. A direct connection between the two networks, e.g., a company-

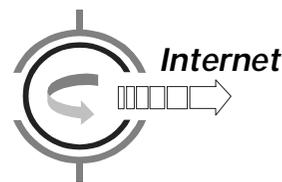
owned Intranet and the Internet, does not exist at any time. The exchange of information is instead executed only with one communications partner – depending on the status of the sluice doors (see figure below). The state-of-the-art Lock-Keeper architecture allows reduced data exchange time delays.



Step 1: Data transfer from the internal network to the Lock-Keeper system. A connection to the external network does not exist.



Step 2: Data is kept separately in the Lock-Keeper system.



Step 3: Data transfer to the external network.

Practical Utilization of the Lock-Keeper

The process described above has been implemented by the Institut für Telematik in the mail-exchange systems of various prominent banks. The objective of these projects was to safeguard

the security-relevant internal networks of these institutions from outside intrusions.

Summary and Preview

The Lock-Keeper concept offers unparalleled information exchange security for the communication between company-owned Intranets and the Internet. The simplicity of the concept and the free scalability of the data analysis depth are the primary strengths of this solution. This process has won the trust of the security experts of many large corporations that have to keep the flow of their information under control.

Thanks to the physical basis of the sluice doors, this system warrants that it will combat all online attacks against an internal network on even the highest security levels. Moreover, the Lock-Keeper architecture can adequately protect company data from theft or criminal access. The mechanisms can be expanded for increased performance and through-put or to reduce through-put cycles.

The concept can also be extended by adding additional Lock-Keepers to the Intranet server, which allows companies to adjust the system even more precisely to the different needs of different departments and employees.