



**UNIVERSITÀ
DEGLI STUDI
DI UDINE**

hic sunt futura

With Endian, technology hub encompasses the security of the Internet of Things

University of Udine is a college committed to the highest education standards, research, interaction with surrounding territories. The collaboration with Endian brought its technological vocation beyond the academic field to translate into a project aimed to protect and safely manage accesses to electrical and thermal control systems, access control and video surveillance.

This project originates from IT and Multimedia Services Area (AINF) which supports Construction and Logistics Area (ALOG), and involved Claudio Castellano and Paolo Vicario.

Where we started from? Some control devices did not have sufficient security levels to be visible on the Internet. Consequently, it was necessary to connect them through a protection device: but at the same time this device had to be configured and managed through secure connections (VPN) with a centralized management software. In addition, the software had to be able to give users different roles, and authorize both the university staff and that of the maintenance companies (each with its own prerogatives and permissions).

In response to these needs, University of Udine chose Endian Connect Switchboard (ECS): thanks to full management of accesses for single users and user groups and, in general, to its architecture expressly designed for centralized management of network "objects", ECS has become the backbone of the project. It facilitated the operators duties and made available any necessary command - in a simplified way.

On the hardware side, the configuration was completed with the installation of two ENDIAN UTM Mercury 100 servers (one of which is available as a replacement) and the Endian 4i Edge 112 security gateways.

This infrastructure also made it possible to record a log of accesses, which can thus be verified as needed.

The operations aimed to setup the whole system started in the spring of 2017, to get up and running at the beginning of 2018: to achieve the solution which is currently in use, we made some tests with key-users for each plant or service, verifying the correspondence of the solution to the specific needs of each user.

The performance of the gateways used, Endian 4i Edge 112, have proved to be adequate to support heavy loads and traffic, such as those related to video streaming.

Virtual IP functionality proved to be successful as well, allowing to establish simultaneous connections to endpoints that used to have the same IP address. This feature made it possible to simplify the deployment phase of the equipment which (rather commonly) is supplied with an identical factory IP address. With a traditional VPN you should change the addresses of all the devices you want to access to avoid the so-called overlapping (and therefore, the impossibility of simultaneous connections on multiple sites). But - of course - this operation is time consuming. With Endian Switchboard we solved this issue due to the possibility of creating virtual addressing for each endpoint.

In conclusion, this first configuration is only the beginning of a wider project: the roadmap is to make the distribution of security gateways more and more widespread, so as to create a system of global management of the equipments that control the plants (and their components). All of them will be connected to the Internet to complete a totally "managed" and secure Internet of Things configuration.

University of Udine

Higher education, research and technology transfer, interaction with the surroundings territories, internationalization: these are purposes of University of Udine, in a consistent flow of knowledge, experience and projects. University of Udine is strongly characterized by these dynamics. Its environment grows and evolves in harmony with the multiplicity of ideas, initiatives, resources and contributions that defines a specific model through a process of constant exchange and enrichment: a culture based on thinking, seeking, making. In addition to the headquarters in Udine, university is rooted in the Friuli area and, in particular,



Endian 4i Edge 112

A scalable desktop solution that provides comprehensive network protection. The ideal product to connect remote locations that are not temperature sensitive. Maximum flexibility and easy integration in all networks.



Endian UTM Mercury 100

Fast, flexible and easy to use. The Mercury 100 guarantees high security standards combined with the globally recognized Endian Hotspot technology.

in the two provinces of Gorizia and Pordenone. With its activities based on education and scientific research, University of Udine responds both to social needs and productive and economic world.

Endian

Endian was founded in 2003 in Appiano, in the province of Bolzano, founded by a group of network specialists who share a passion for Linux. The goal of the project is immediately clear: to develop simple and powerful Unified Threat Management (UTM) solutions based on Open Source technology. Since the first release of 2005, the Enterprise version has been used in thousands of installations in over 50 countries, while the free version - called Endian Firewall Community - has been downloaded 1,700,000 times. Today the company has offices in Italy (Milan and Bolzano), Germany, United States.



Endian

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