



CASE STUDY

ARNES Deploys a Secure, Nationwide Wi-Fi Network – on a Fast Track



The Academic and Research Network of Slovenia (ARNES) is a public institution with a mission to plan, design, and manage data networks among Slovenian research, educational, and cultural institutions. In addition, it provides services essential to the operation of the internet in Slovenia, serving as the country's Top-Level Domain Registry and maintaining its cybersecurity incident response center. It is a founding member of the European Union's GÉANT research network and supports eduroam Wi-Fi services for traveling academics. Overall, ARNES connects more than 1,500 Slovenian organizations and has a user base of more than 250,000.

Bringing Wi-Fi to Students Nationwide

In 2017, ARNES launched a four-year project, dubbed SIO-2020, to establish Wi-Fi infrastructure at all Slovenian primary and secondary educational institutions. The first phase of the project will provide more than 22,000 access points at 950 primary and secondary schools across the country. Collegiate-level institutions will be allowed to join the project as the first phase nears completion.

"We felt well prepared when the project was launched, as we had already spent three years researching Wi-Fi solutions offered by global vendors," recalls Avgust Jauk, CTO for ARNES. Based on this research, the team drew up an extensive and detailed list of required features. Besides Wi-Fi and IP features, ARNES required the ability to manage a nationwide deployment centrally using zero-touch provisioning. The team also needed the capability to manage the infrastructure using central WLAN controllers on virtual machines in the organization's private cloud. Due to the large number of sites, the ability to set group policies was a must.

Researching and Selecting a Solution

ARNES had prior experience with Fortinet Wi-Fi solutions. Back in 2013, Fortinet Partner Resultanta had worked with the organization to test and certify a list of FortiAP Wi-Fi access points to be used for Slovenia's eduroam services. Once Fortinet products were on ARNES' list of approved solutions, they were eligible to be purchased by other institutions.

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– Avgust Jauk, CTO, ARNES

Details

Customer: Academic and Research Network of Slovenia (ARNES)

Industry: Education

Location: Ljubljana, Slovenia

Business Impact

- Reduced cost and complexity through centralized control and zero-touch provisioning for 950 locations of different institutions
- Proved full visibility and control from central location
- Minimized deployment and administration time

ARNES issued two requests for proposals (RFPs) for implementing the countrywide Wi-Fi network—one to select the regional implementors and one to select equipment vendors. In all, the organization evaluated approximately 10 different proposals.

One of those proposals was for a Fortinet solution submitted collaboratively by Rezultanta and another Fortinet Partner, Iskra. The proposal included FortiAP 221E and 223E wireless access points, an FG-VM08V used as a controller for every 800 access points, and software development libraries and support from the Fortinet Developer Network. In its initial evaluation, ARNES determined that the Fortinet proposal met all the organization's technical requirements while offering the lowest total cost of ownership (TCO).

ARNES then tested the Fortinet solution in a testbed simulating the final operational model, including the use of sample scripts for zero-touch provisioning and the customization of management processes. The latter was done using Fortinet's robust representational state transfer application programming interface (REST API) based on software samples developed by Rezultanta. The team also tested security features, the connectivity of various endpoints, the number of concurrent sessions that could be supported, and minimum throughput. "Fortinet passed all of the testing with flying colors, meeting or exceeding every technical requirement," recalls Uros Juvan, head of research and development at Rezultanta.

Deploying at a Rapid Clip

To date, ARNES has successfully installed approximately 11,000 FortiAP access points across Slovenia, completing an average of 1.5 institutions per day. The deployment process is highly refined, with Iskra managing the financial and logistics aspects of the process.

Upon arrival at Iskra's logistics hub, the serial number of each FortiAP device is scanned into ARNES' database and paired with the school identifier and location code where it will be installed, along with the policies for that location. A regional implementor then receives the device and physically installs it. As soon as the new AP is detected at ARNES headquarters by its unique MAC address, it becomes a member of the national network.

Achieving Maximum Efficiency with a Quality Product

Besides the clear social benefit of making wireless internet access available to tens of thousands of students who did not have it before, ARNES has realized a number of operational benefits from deploying the Fortinet solution. Specifically, by building operational efficiency into the architecture of the system, ARNES was able to minimize operational costs and administrative headaches for the new network.

For example, centralized control and zero-touch provisioning have been a critical part of the project's success. "We have full visibility and control from a central location," Jauk notes. "Not only does this minimize the time required of our staff to administer the network, but it also eliminates the operational difficulties that would come from having it administered from 950 locations."

The customization enabled by Fortinet's REST API was a part of ARNES' initial requirements, and it has proven to be a benefit. "The REST API enables more processes to be automated, and therefore reduces the staff time required to build the system," Jauk contends.

The ARNES team has now passed the halfway point of its SIO-2020 deployment, and has enjoyed nothing but success to date. "The collaboration between Fortinet, Rezultanta, and Iskra has worked well for us," says Alenka Starc, SIO-2020 project leader for ARNES. "They all do their part exceedingly well, and the result is a fast, efficient, and nearly trouble-free deployment."

Solutions

- FortiAP 221E and 223E series
- FortiGate
- Fortinet Developer Network

Fortinet Partners

- Rezultanta
- Iskra

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— Alenka Starc, SIO-2020
Project Leader, ARNES