CUSTOMER PROFILE

The RESTENA ("Réseau Téléinformatique de l'Education Nationale et de la Recherche") Foundation operates the National Research and Education Network in Luxembourg. It supports scientific development by providing and maintaining high quality network infrastructure and services for the needs of education

RESTENA

https://restena.lu/restena/en/EN-Index.html

and research in Luxembourg. To achieve its mission, a national network infrastructure, the RESTENA network, has been set up. It connects educational institutions from primary to higher education as well as the public, private research centres and cultural institutions. RESTENA is an integrated part of the backbone network GÉANT on an international level, a state-of-the-art network providing fast network connections, where public and private research centres can connect to more than 6000 institutions, research centres, universities, scientific libraries and scientific centres.

RESTENA and CloudSigma collaborated in order to provide cloud services for a post-secondary education course through the GÉANT framework. The name of the course was "Installation and Configuration of Windows Server" (ISEWI), run by the Lycée des Arts et Metiers (LAM), an education institution in Luxembourg. It was designed to deepen the participants' knowledge in the area of Microsoft Windows ActiveDirectory services and Windows Server administration in general.

> *"The big thing that differentiates CloudSigma from the other vendors we were considering was the easy to navigate ACLs. CloudSigma's feature to delegate and partition access without delegating the money was very useful for us."*- Stefan Winter, R&D Engineer @ RESTENA

THE CHALLENGE

LAM conducted the first part of the course using the school's traditional on-premises computing equipment. However, using old desktop computers meant a slower and less flexible service. In addition, when using local hardware, as the size of the class grows, the potential for issues with that hardware and BYOD devices from the students get more pressing because the number of moving parts increases.

Another challenge that the on-premise solution imposed was that the number of compute re-

sources needed for a given teaching project could quickly go beyond what a typical school computer can manage. Ultimately, insufficient resources led to slow progress and disgruntled students.

"The course required that students do very complex tasks. For example, planning and executing Windows Server installation, deploying Windows Server Backup and installing Backup Domain Controller. Those are quite resource intensive. At the end of the day, the on-prem solution they had just wasn't up to the task."

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The on-premise solution had another limitation that RESTENA was looking to eliminate. As the VMs are stored locally, a student always had to use the same machine in the same classroom. This made it impossible to work at home or at off-times when the premises were closed.

"For our customer we knew that we needed a service that allows us to delegate access to one person, in our case the teacher, who then procures for the course and the students don't get to see anything of this complexity."

THE SOLUTION

Based on the several disadvantages of the on-premise solution, LAM was confident in its decision to switch the second part of the course to the cloud, supported by RESTENA. The partnership with CloudSigma was an easy choice for RESTENA, as the company's solution ticked all the boxes.

The first differentiator that sold them was Cloud-Sigma's comprehensive delegation model. The model allows for all resources to be tagged and Access Control Lists (ACLs) to be set up. Then, access to tagged objects could be delegated.

This allowed the students to work on their own virtual machines from any place while keeping the billing and cost away from them.

On top of the ACLs, RESTENA found CloudSigma's basic service and the lightweight and intuitive user interface advantageous to other cloud providers. This allowed for an affordable and faster solution which perfectly suited RESTENA's cloud needs.

"The switchover from on-premise to cloud solutions in the middle of the curriculum forced students to start fresh on their cloud VM. We worried that the process will lead to a loss of time for installing and configuring Windows and an ActiveDirectory domain again. Thanks to Cloud-Sigma, there was little to no timeloss. It also helped that CloudSigma's interface is very simple and intuitive." - Stefan Winter, R&D Engineer @ RESTENA

For RESTENA, CloudSigma's services were very reliable. In addition, the performance of the VMs was significantly superior than the local magnetic disks.

"In terms of CloudSigma's performance everybody was very happy. Both the teacher and the students thought that the speed was excellent. Even though we have made the decision to set up the machines with the minimum RAM that a Windows server needs, the performance was still great."

THE IMPLEMENTATION

When it comes to migrating to the cloud, REST-ENA was very happy with CloudSigma's services. In particular, the ability to clone existing virtual machines enabled the teacher to prepare a basic installation of the Windows VMs and clone that for each student. As a result, the time offset that resulted from the switch from on-premise to the cloud was minimised.

Another point of concern that CloudSigma was able to solve was the cost of the service and the billing process. CloudSigma's solution provided the possibility to model a typical school setup. In this setup, one central administration can buy cloud resources and distribute slices of those to individual teachers. This alleviated the need to for every teacher to make his own payment, and prevented one single course to consume the entire overall budget.

"In terms of billing CloudSigma surpasses its competitors because other providers will keep the machines running and one day knock at your door with the bill. In a setting like ours, we wanted to have full control on how much we pay. So, we really appreciated that with CloudSigma if you run

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out of funds there is no additional billing. For us, this was very important. We were also happy with CloudSigma's five minutes burst cycles. They made billing very flexible and fit our particular needs for this project."

THE IMPACT

According to RESTENA, working with CloudSigma had numerous advantages over their previous on-premise solution. First and foremost, it gave both the teacher and the students a lot of flexibility. As a result, the students were finishing their assignments much earlier. This is a time win that could go into enlarging the curriculum with more content.

"One of the main impacts of switching to the cloud was the good response time of the VMs which enabled the students to work more efficiently. In the end they completed their assignments much earlier than in previous years, which is a pedagogical win.

Overall, there are many advantages of using cloud services in education."

Another advantage of the cloud was that students were not dependent on the available computers at the school. The virtual machines were always available to the students and they could access from any computer. It also eliminated the need for additional devices such as external HD/SSD or a laptop computer. For RESTENA, CloudSigma was exactly what they were looking for in cloud services in education provider.

"Working with VMs allowed the teacher to login to the students' machines for evaluation and problem solving. The students could not possibly lose their machines because of system failure. All in all, the services of CloudSigma were very reliable and the results of the switch were very positive."

"

"My first experience in working with a cloud service was very positive. My impression is that the students worked much more efficiently. They definitively finished their assignments earlier than during the other years. All in all, the cloud service, in my opinion, offers many advantages in teaching scenarios on ICT topics." - Teacher of the ISEWI1 and ISEWI2 courses.

THE FUTURE

The positive impact of the collaboration with CloudSigma led to plans for a continuation.

"The teacher liked the approach very much and would like to re-run the course with a larger class in a slightly different setup, but keeping the rest fairly similar."

In the future, CloudSigma is also looking to collaborate with RESTENA to solve one particular problem. It has caused inconvenience and has been a recurring issue in RESTENA's collaboration with other cloud providers as well – a mismatch of keyboard

layouts. VMs are configured with a Swiss-French keyboard layout, and so was the keyboard on the client. However, the characters sent to the VM did not match. RESTENA and CloudSigma are planning to work together in order to eliminate this inconvenience.
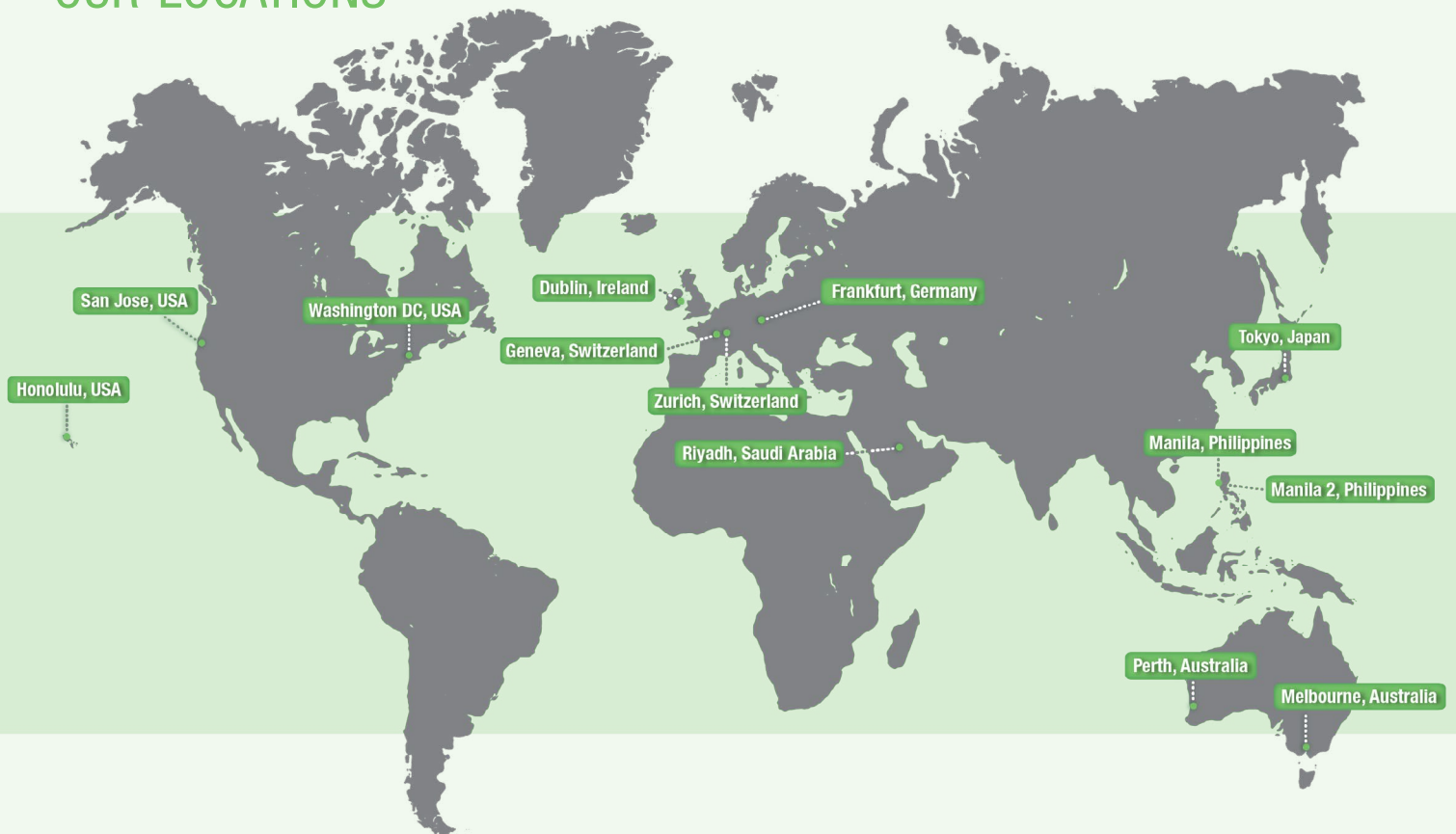
Both RESTENA and CloudSigma are positive that their successful collaboration, followed by a continuation of the project would lead to many other opportunities for partnerships that would achieve even better results.

ABOUT US

CloudSigma is a pure-cloud infrastructure-as-a-service (IaaS) provider that's enabling the digital industrial economy through its highly-available, flexible, enterprise-class hybrid cloud servers and cloud hosting solutions in Europe, the U.S., Asia and Australia. CloudSigma is the most customizable cloud provider on the market, giving customers full control over their cloud and eliminating restrictions on how users deploy their computing resources. With CloudSigma, customers can provision processing, storage, networks and other fundamental computing resources as they please, as well as extend private networks out of existing infrastructure and elastically into CloudSigma's IaaS cloud to create easy to manage and transparent hybrid cloud solutions.

OUR LOCATIONS

San Jose, USA

Honolulu, USA

Washington DC, USA

Dublin, Ireland

Geneva, Switzerland

Zurich, Switzerland

Riyadh, Saudi Arabia

Frankfurt, Germany

Tokyo, Japan

Manila, Philippines

Manila 2, Philippines

Perth, Australia

Melbourne, Australia

CloudSigma offers a range of locations from Europe to the United States and APAC. We are adding new locations over time as we expand our offering globally. We choose our locations very carefully to offer excellent connectivity, security and reliability for our clouds.

For more information, please visit us at **www.cloudsigma.com**

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