

# Universidad del País Vasco

## Rationalizing and Optimizing Network Services Management



Universidad  
del País Vasco

Euskal Herriko  
Unibertsitatea

### Project Type:

- Network services management optimization and unification

### Key Benefits:

- Save time and money
- Improve service reliability
- Leverage existing investments
- Ensure solution scalability

The University of the Basque Country (University del Pais Vasco/Euskal Herriko Unibertsitatea) is an academic institution with a long educational lineage that took its name in 1980. That year, UPV/EHU replaced the University of Bilbao but kept intact the original intend to follow in the footsteps of the 1936 Basque University, the first public university of the autonomous Basque government. Currently, the university welcomes more than 50,000 students and contacted EfficientIP with a project to improve their IP Addresses Management (IPAM) tool.

*“Our system did not offer scalability and does not support IPv6. EfficientIP presented the best bid, it responded to all the defined needs. Their management tool is very simple and time saving for the technical engineers.”*

Iñaki Ortega, Head of the Communications Area Subdivision of the IT



Up until now, the organization was using SAURON, a solution combining a free software and manual development that was set up between 2006 and 2007. According to Iñaki Ortega, Head of the Communications Area Subdivision of the IT and Communications Division - ITC - of the UPV/ EHU, “[our solution] does not offer scalability and does not support IPv6”.

A combination of free software and manual development Nowadays, SAURON is still running and the corporate network DNS and DHCP services rely on it. This combination software is a critical element that must run properly, have redundancy and a fault-tolerant architecture. This IPAM system is called XIXARE and is composed of the following modules:

- Inventory: an inventory of the equipment and devices connected to the corporate network based on a LAMP environment (Linux + Apache + MySQL + PHP). This module was developed at the UPV/EHU itself.
- Sauron: dedicated to the IPAM, it contains the necessary information to properly run the DNS and DHCP servers and deploy the services configuration that we will detail later on. This module was developed at the University of Jyväskylä (Finland).
- Sarezain: another UPV/EHU development that enables to analyze if the network is used at its best potential comparing the theoretical data (the inventory) with the actual network connections transmitted by NetDisco.
- NetDisco: an Open Source web-based network management tool that retrieves network information and allows analyzing its use.
- DNS - DHCP services: both services are run through the ISC software. The DNS is deployed in a Master/Slave configuration and the DHCP in failover mode in order to give them both the best fault-tolerance possible.

## The IPv6 Challenge

The UPV/EHU has its own public addressing both in IPv4 and IPv6 - basically it has class B network in IPv4 and a /48 in IPv6 - therefore changing to IPv6 is not a paramount need. However IPv6 is more and more used on the Internet due to the IPv4 address exhaustion, so the UPV/EHU has been preparing its infrastructure for years to eventually deploy IPv6 services. At a technical level, the infrastructure is highly compatible with IPv6; in fact it has been providing IPv6 addresses for more than a year in some VLANs test environments and the corporate website servers (www.ehu.es) uses the dual stack protocol i.e. both IPv4 and IPv6 addresses. In spite of that, Sauron is not at 100% compatible with IPv6 and that is an issue that needs to be dealt with as soon as possible.

## Project Overview

The University was considering a complete renovation of the systems architecture using a professional tool in order to improve what it offers on campus. The requisite was that the new technology should integrate XIXARE, its own addresses routing system. Indeed, the system was providing services to more than 40,000 active IP addresses all assigned to devices connected to the corporate network in 79 buildings located on the three campuses that compose the UPV/EHU (the Álava Campus, the Guipúzcoa Campus and the Vizcaya Campus) and was a critical element that required redundancy and fault-tolerance as the DNS and DHCP services of the corporate network were relying on it.

With these requisites the project was subject to a public tender. After trying a number of different solutions, the University finally chose the bid submitted by EfficientIP as, like Ortega pointed out, “the management is very simple and time saving for the technical engineers”. The project included the installation of several hardware appliances: two NSIPAM 2000 to manage the infrastructure and the DNS and DHCP services as well as two NSIPAM 500 to deal with the external DNS queries on the Vizcaya Campus; and two NSIPAM 500, one on the Álava Campus and the other on the Guipúzcoa Campus, to respond to the internal DNS and DHCP needs.



## Key Benefits

For the University, this project will not only considerably reduce the time spent assigning IP addresses; it will also provide the following benefits:

- Enhance the DNS and DHCP services for the years to come.
- Leverage existing investments by integrating the University's own IPAM.
- Integrate IPv6 at 100%.
- Save maintenance costs when switching from generic DNS and DHCP servers to hardware appliances.
- Maintain and enhance the services reliability.
- Shortly increase the service capacity to respond to nowadays incessant demands for IPv4 and IPv6 addresses.

The project might also “develop new projects derived from the new functionalities that EfficientIP’s solution can offer”, says the Head of the Communications Area Subdivision of the ITC Division of the UPV/EHU.

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