

Pilot Objectives

Raise energy awareness

- Mobilise student community - Change behaviour
- Reduce energy consumption - economic benefit
- IPv6 as enabler for the provision of a new service

Innovative educational methods

- Self-training and students collaboration
- Social bonds between communities across diverse geographical areas
- Interaction among students
- Promote energy efficiency and sustainability campaigns into school community

Analyse technical perspective

- Enhance technical expertise
- Data Streaming Analysis
- Enhance IPv6 Service portfolio

ABOUT GEN6



Work was in part supported by the European Commission as part of the project »Governments Enabled with IPv6« (GEN6). GEN6 is about stimulating EU-wide deployment of IPv6 by means of best practices and guidelines.

- National pilots to make a step further in IPv6 deployment in different sectors
- Cross-border pilots to demonstrate EU-wide interoperability of IPv6
- Communication activities and road shows to ensure dissemination in public administrations and with other relevant stakeholders



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Energy Efficiency in School Network with IPv6

Greek Pilot



Energy Stats

The display of the energy data is enriched with animations, graphical statistics, historical data, comparative school energy data, average factor, best performance school entity.

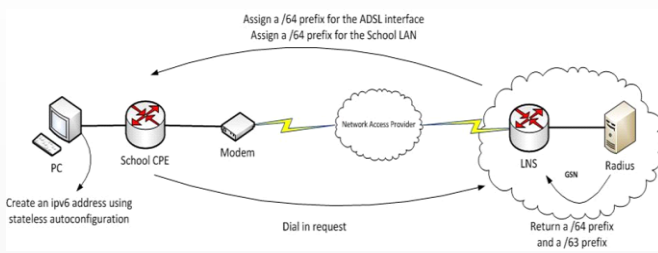


Energy Awareness & IPv6 @ Schools

What is the pilot about?

The pilot will implement real-time energy efficiency services over IPv6-enabled grids to the local educational community, providing students with information on their consumption patterns and raising awareness among them on the energy savings that behavioural changes may bring. Energy related information from participating schools will be recorded using smart meters, stored and processed using energy information system and disseminated to the users via a secure communication channel.

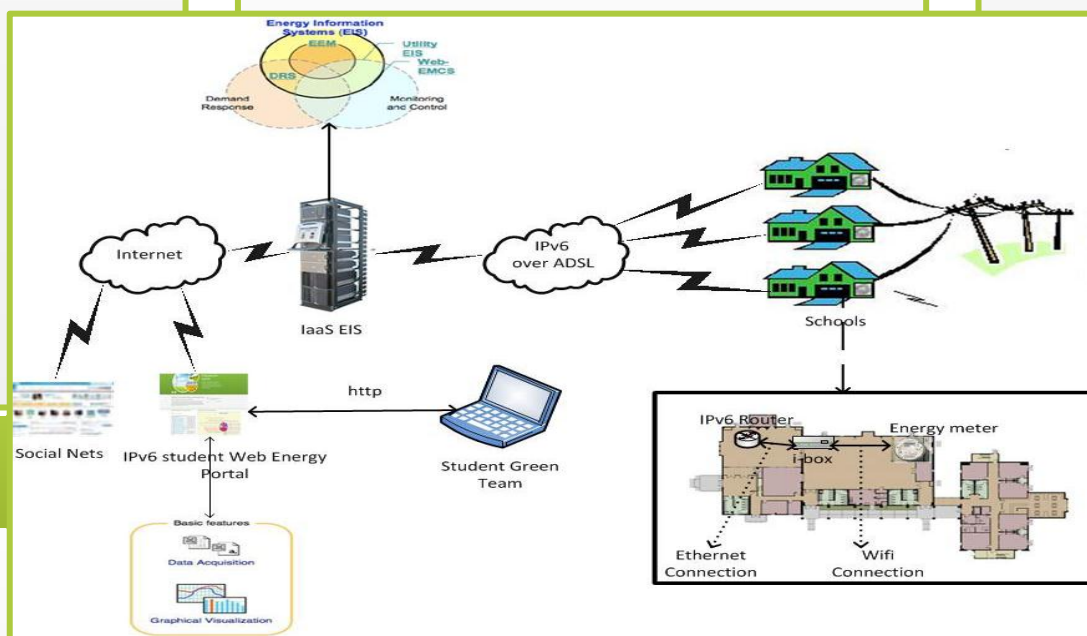
IPv6 in GReek School Network (GSN)



- The backbone network of GSN is fully IPv6 enabled.
- On the access network, IPv6 interconnection has been activated for the ADSL users, i.e. for 95% of the schools.
- The peering with GSN upstream provider (GRNET) is also IPv6 enabled (dual stack).
- OSPFv3 has been also selected as a routing protocol for IPv6 interconnection within the GSN.
- The backbone network of GSN is dual stack i.e. supports both IPv4 and IPv6.

Architecture Topology

The smart metering infrastructure in each school building consists of a consumption metering device (abbreviated CMD) along with its CT's (current transformer), a transmitter and the i-box. The i-box is a smart network device that acts as a data bridge between the power meter and the school router. Both i-box and school router have IPv6 global address using stateless auto configuration method (prefix delegation).



Smart Power Meters and IPv6

- The installed power meters in schools collect energy consumption data that are aggregated through Greek School Network via IPv6 to the energy information system.
- The storage infrastructure integrates near Real time stream analysis.
- The Energy information system feeds the interactive IPv6 web platform and schools' pages with distributed energy data management and stream analytics.
- IPv6 of students' web portal: 2001:648:2302:fc03::3/64

Energy Analytics

- The energy measurements are processed by Energy Information System, in order to display the data to the students through an enduser friendly interface
- In order to enable the students' community to understand better complex energy data, the display of the data in IPv6 student portal will be enriched with animations, graphical statistics, historical data, comparative school energy data, average factor, best performance school entity etc

The primary internet connection in schools with installed power meters is broadband (xDSL) connection with IPv6 characteristics. The installed power meters in schools collect energy consumption data that are aggregated through Greek School Network via IPv6 to Energy Information System (EIS).

Further Opportunities

- Introduce more services for the school community
- Interconnect more schools
- Involve governmental organisations
- Develop IPv6-enabled sensor labs, e.g. meteorological
- Dissemination plans that will be carried out within the schools and the wider educational community.
- Advanced services create new challenges for the design teams and operations