

Editorial

Dear reader,

The October edition of our newsletter offers you current information on the activities and results of the OMEGA project in the home-networking area.

In this issue, the focus is on the OMEGA network architecture.

I hope you will find the contents of this newsletter interesting, and I would appreciate your comments and suggestions.

Milon Gupta, editor

Project results & activities

The OMEGA architecture

OMEGA is working on an innovative architecture for the home network, which will enable to provide a capacity of around 1Gb/s to users in the home. This architecture is built on three main ideas:

- the combination of heterogeneous broadband technologies, such as wireless IEEE 802.11n, Power Line Communications, Ultra Wide Band (UWB) communications, radio communications at 60 GHz, and Wireless Optics
- a mesh structured network, and
- the use of an Inter-MAC mechanism at layer 2, allowing the cooperation of the MAC layers of the different broadband home networking technologies.

The ever growing demand for high data rates inside the home highlights the importance to design a simple, flexible and efficient architecture that facilitates the set-up of a convergent gigabit per second interactive home network.

Elements of the OMEGA network

The OMEGA network is based on the even distribution throughout the home of physical network

elements, called the Extenders, improving the coverage in the home and ensuring the interconnection of the end devices (see figure 1). The Extenders support several networking technologies such as WiFi, PLC, and Wireless Optics, thus realizing their hybridization.

The home gateway ensures a continuous interconnection with the access network.

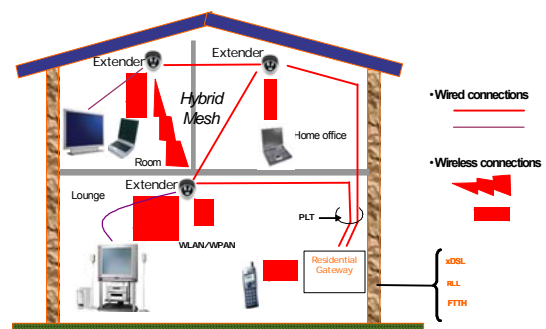


Figure 1

The OMEGA network is defined by its interfaces. First the Ω interface is defined: it is used by OMEGA devices to connect with each other through Ω links. The Ω interface is based on the Inter-MAC layer which is located below the IP layer (if available at the device) and above the IEEE 802.2 link layer (see figure 2 below illustrating the data plane OSI layer stack between two nodes A and B communicating through a Ω interface). The Inter-MAC is a layer 2 protocol allowing the cooperation of MAC layers of different broadband home networking technologies.

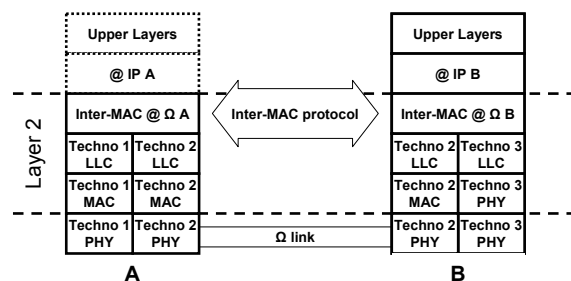


Figure 2

Past events

Workshop at PIRMC in Tokyo



At the PIRMC 2009 conference in Tokyo, OMEGA organised on 13 September 2009 a workshop entitled "Inter-Mac management and multiple interfaces for Multi-Gigabit Wireless Systems (MGWS)". Five out of the six presentations given during this half-day workshop were issued directly from the OMEGA project.

Results on the Inter-MAC as well as on 60 GHz radio and wireless optics were presented; the main authors of these papers include Orange Labs, Siemens, and the University of Oxford. Moreover, Orange Labs Tokyo presented complementary work done in the 60 GHz radio domain. The attendance, coming essentially from Japanese organisations, showed a large interest into the topics presented.

Further information is available on the [PIRMC website](#)

OMEGA tutorial at WSPLC 09 in Udine

The Third Workshop on Power Line Communications (WSPLC 2009) was held at the University of Udine, Italy on 1-2 October 2009. The workshop attracted international delegates from both industry and academia. Seven technical sessions were organized covering several aspects of power line communications, including channel modelling, modulation and coding, signal processing, resource allocation and applications.

OMEGA contributed to the workshop via a tutorial. The OMEGA tutorial on "Advances Towards Gbps In-home PLC Networks" met great interest by the audience. The tutorial presented a comprehensive set of topics, including: OMEGA Vision and System, by O. Hoffmann, PLC State-of-the-Art and Standardization, by O. Isson, PLC Channel Characterization, Modelling and EMC Issues, by P. Pagani, PLC Physical Layer Advances, by A. Tonello, Home Plug AV MAC Fundamentals, by O. Isson, and MAC Mechanisms Multi User Approaches, by A. Maiga.

The amount of interaction and feedback during the tutorial clearly indicated the importance of the OMEGA project and the high interest among OMEGA's target audiences in its results.

[WSPLC 09 website](#)

Upcoming events

IEEE GLOBECOM 2009

Honolulu, Hawaii

30 November - 4 December 2009

At least 3 papers from OMEGA

[GLOBECOM website](#)

2nd OMEGA Open Event

Rennes, France, 24 – 25 February 2010

Further information is available on the [OMEGA Open Event 2010 page](#)



OMEGA News

October 2009



About OMEGA

OMEGA is an Integrating Project in the ICT area funded by the European Commission under the Seventh Research Framework Programme (FP7). The project is running for three years from January 2008 to December 2010.

OMEGA will develop a user-friendly home area network capable of delivering high-bandwidth services and content at a transmission speed of one Gigabit per second. The interdisciplinary project consortium consists of 20 European partners from industry and academia.

[OMEGA website](#)