remote Set Top Box

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Scope

Digital Television is getting well integrated in the common households nowadays, and step by step, the appliances in the home environment begin to communicate with each other. The latter currently knows a rapid development due to the Digital Living Network Alliance (DLNA), with an explicit mission statement "a global collaboration of 245 of your most trusted brands, all working together to help you create the home entertainment environment you've always imagined". In this paper the focus is on the opportunity to control media services available in the user's home from within the Digital Television Electronic Programming Guide (EPG).

In this case, the Digital Television provider is an important stakeholder that will have control of architectural components in the system. They usually supply the set-top-box (STB) that is installed in the home environment, and for various reasons the equipment has the desired characteristics to be simple, maintenance-free, cheap and robust, while keeping the functional possibilities as broad as possible.

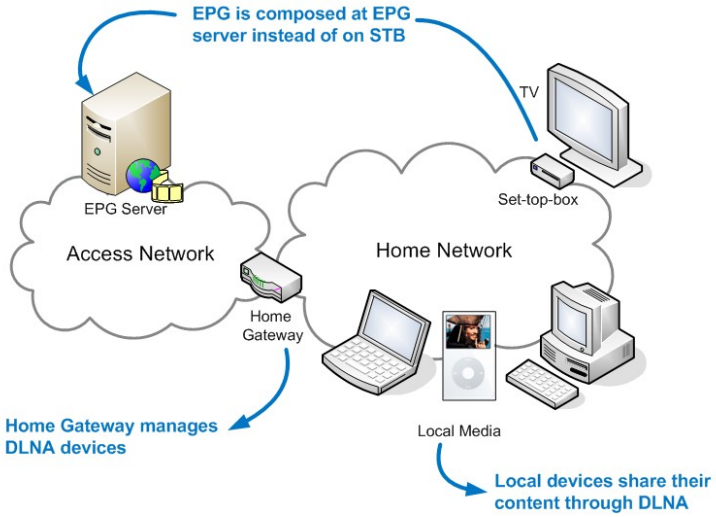

Fig. 1 – Remote STB architecture

We will demonstrate a proof-of-concept implementation of the aforementioned architecture outlined in Fig. 1, which comprises a subset of the functionality described in our accepted LCN paper [1], and explained in [2]. To this end, our presented approach allows to control in-home media content from within the EPG. With this approach, the STB is kept as lightweight as possible: it only intercepts user actions (such as remote control button press) and shows content on the television screen. The rest of the functionality that is needed to integrate both broadcast content and user private content is shifted into the network, i.e. away from the STB. We can expect that the Digital Television Service Provider will offer a server for this functionality located in its own controlled network rather than in the home environment.

The advantages of this approach are manifold. The STB will be very simple which means a decreased need for maintenance, reduced energy consumption, less hardware faults and lower cost of STB (concerning both hardware and service cost). Furthermore, since the functionality resides on a provider controlled server, there is the ease of upgrading and changing this functionality is increased because it does not involve the STB itself. There is also an opportunity to make the STB more generic so that it can connect to other services in both the home network and the broad Internet. In the video we show that with an STB we can connect to a PC and use any application. For the user, this could mean that he has one single piece of equipment to control all his devices, present in-home and even beyond.

Demo Equipment

The demonstratorfor this concept, as sketched in Fig. 2, consists of 2 laptops, running the EPG server and the STB software, an ALIX board as gateway, an Xtreamer containing the home content and a network switch interconnecting all these components. All the equipment fits onto a table of 80 cm by 120 cm (or 31,5" by 47.2") and needs at least one power plug. Setting up the demonstrator should not take more than 20 minutes. The demo has no external network access requirements.

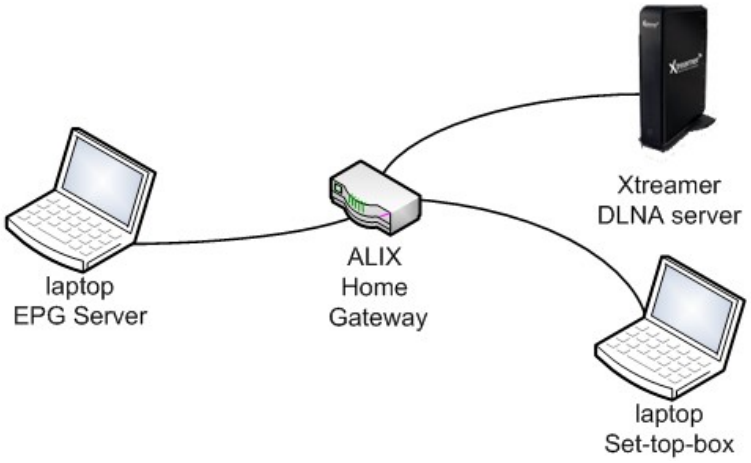

Fig. 2 – Demo set-up

Acknowledgements

This work has been partly funded by the Agency for Innovation by Science and Technology in Flanders (IWT-Vlaanderen), through the IWT Vampire project, in cooperation with Alcatel-Lucent.

Bert Vankeirsbilck is funded by a Ph.D grant of the IWT-Vlaanderen.

Chris Develder is supported as a postdoctoral fellow of the Research Foundation Flanders (FWO).

References

[1] "Integrating Personal Media and Digital TV with QoS Guarantees Using Virtualized Set-Top Boxes: Architecture and Performance Measurements", Bert Vankeirsbilck et al., LCN 2010

[2] http://www.youtube.com/watch?v=dNakJAF-nIc&hd=1