NEM Position paper on Home Networks for Multimedia Content Delivery

Introduction

Home networks become more and more complex to configure and to use for any non technical people. This is mainly due to a lack of harmonisation between the different solutions providing by a number of vendors. This paper has the objective to explain the situation and to push for an organisation solving the interoperability between the different existing standards. This situation logically leads to a limited attractiveness of proposed solutions for consumers and in consequence a reduced market potential for the industry.

Background and Scope

Today, the mobile, voice, data, video and IP networks are separated, in most cases sharing only the transport infrastructure. There is little or no service interaction, resulting in e.g. multiple customer profiles, multiplied operational costs and missed opportunities for creating more integrated services. There is an existing gap between the potential of services over multimedia networks and user needs. A high upfront investment is required every time a new service is introduced, since end-to-end network build-out is needed before any revenue can be generated.

The future network will accommodate seamless end-to-end multi-media communications across a complex combination of network constituents such as personal area networks, body area networks, home networks, fixed access networks, mobile access networks, metropolitan networks and core networks. This will involve interactions of multiple types of consumer devices and services via a broad variety of both wired and wireless access technologies, and result in an increase in the number of sessions with multiple flows per session, and in the bandwidth demands. The complex business relations between the multiple players in the value mesh will impact the network architecture evolution.

Strategic importance

In the future, an innovative service platform enabling this diversity of multimedia applications and services over heterogeneous access will be required for seamless and cross-platform and cross-operator integration management of the involved technologies, such as seamless, hardware-independent integration of different network technologies, flexible coupling of a diversity of services and service providers and their link-up to technologies, and structures for realisation of services supporting seamless network access and flexible service coupling.

The future network is thus a complex ecosystem to be designed taking into account all actors. The network is formed by the convergence of many players: network operators, service providers, terminal suppliers, IT suppliers, content providers, service aggregators. That part has to be addressed as well as the End-to-end QoS in order to provide a solution compliant to the customer needs (QoS vs. price) and fitting the future business plan.

Standardisation of the Home delivery network

Nowadays, the multimedia delivery chain is too much heterogeneous, there are too many solutions in competition, and some of them are provided by specific industrial actors some other from initiatives of a set of partners.

In order to help the market development, there is a need to clean all these solutions into a less complex standards scenario that will help end users to equip their home without having in mind the complexity of interoperability.

In particular, there are many type of devices connected at home from sensors to consumer electronics which does not require the same connectivity (bandwidth, wire/wireless, QoS, …). Such complexity needs to be studied with the objective to give end user easy to install and to use solutions which hide all the technical complexity. In addition, the complexity added by the extension of the home environment to the apartment building level, requires ensuring a seamless interconnection of devices and networks.

IETF is addressing those aspects, and strong links have to be developed with them in order that our requirements are fully taken into consideration. For instance, DCCP (Datagram Congestion Control Protocol), IPPM (IP Performance Metrics), PCN (Congestion and Pre-Congestion Notification), RMT (Reliable Multicast Transport), TSVWG (Transport Area Working Group), AVT (Audio/Video Transport), MEDIACTRL (Media Server Control), MMUSIC (Multiparty Multimedia Session Control), P2PSIP (Peer-to-Peer Session Initiation Protocol), SIGTRAN (Signaling Transport simple SIP for Instant Messaging and Presence Leveraging Extensions), SIP (Session Initiation Protocol), SIPPING (Session Initiation Proposal Investigation), SPEECHSC (Speech Services Control), SPEERMINT (Session PEERing for Multimedia INTerconnect), XCON (Centralized Conferencing) are working groups which should interest NEM SRA.

But, NEM strongly supports, above all, the ETSI/TISPAN/WG5 as the future European Standard for home networking. NEM is also encouraging collaborative research in that area in order to validate choices that should be done in the standardisation groups.
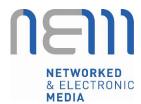
About ETSI/TISPAN/WG5

ETSI/TISPAN/WG 5 responsibilities :

- Analysing possible impacts on the "customer environment" derived from the high level system requirements for the support of the TISPAN defined services and capabilities with specific reference to the higher layers. The customer environment is intended as the customer network composed by customer gateway , end user equipment, network segments (physical wired or wireless connections between customer network elements), network adapters (performing a L1/L2 conversion between different network segments) and nodes (network adapters with L3 routing capabilities).

  The NGN architecture, procedures, protocols and interfaces already defined by the other WGs will be considered as the reference starting point to define these detailed requirements within the customer environment.

- As a result of the first activity, define some set of requirements to be applied to the customer environment elements (customer devices and customer network gateways). If, based on the evolution of user needs or usage scenarios, modifications of the existing NGN is foreseen, the WG will forward the specific requirements to the other WGs having the responsibility of defining specifications for the NGN architecture, procedures, protocols and interfaces, and for IMS control platform.

  Due to the particularities of the customer network gateways, other WGs in TISPAN may foresee modifications in such entity derived from the NGN solutions. Interaction with those working groups will be sought.

- Ensuring the coherence or identifying misalignments with the activities carried out by other bodies and standardisation fora in the home networking field, identifying and covering lacks in requirements definition and, on the other hand, avoiding overlaps.

WG 5 Activities:

- Define the different types of devices (including new and legacy devices) and their capabilities used in the customer network and specify the customer devices and network terminology.
- Study and define the impact of existing NGN specifications defined in the other TISPAN groups on the customer devices and customer networks.
- Study and define use cases and service requirements for customer devices and customer networks.
- Study and define the architecture, reference points and standardized interfaces within the customer network.
- Study and identify protocols within customer networks.
- Identify possible impact on the NGN network and indicate these impacts to the other TISPAN groups.
- Study and define security aspects for the customer network and customer devices when these are included within the NGN network in close cooperation with TISPAN WG 7.
- Study and define QoS aspects in the customer network.
- Study and define the impact of the ISIM, UICC in the NGN customer network (this includes both security and non-security aspects).
- Study and define device management aspects.
- Monitor and influence the work on customer devices and customer networking in other bodies.

Collaboration with other bodies (both inside and outside ETSI):

The WG5 will establish collaboration with some bodies inside ETSI and outside (if ETSI has an external relation to them). A possible list of other bodies and standardization fora includes:

§ ETSI DECT
§ ETSI STQ
§ ETSI AT/TM
§ ETSI SCP
§ ITU-T
§ 3GPP
§ IETF
§ DSL Forum
§ DVB
§ HGI
§ DLNA
§ OSGi
§ OMA
§ FMCA
§ Wi-Fi Alliance
§ CableLabs