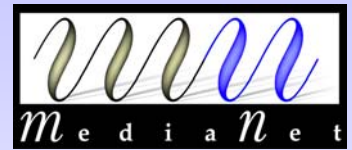


# QoS for Personal Multimedia Communication Services



Patrice MIGNOT / Pascal LE GUYADEC / Franck GEAY – Thomson Telecom

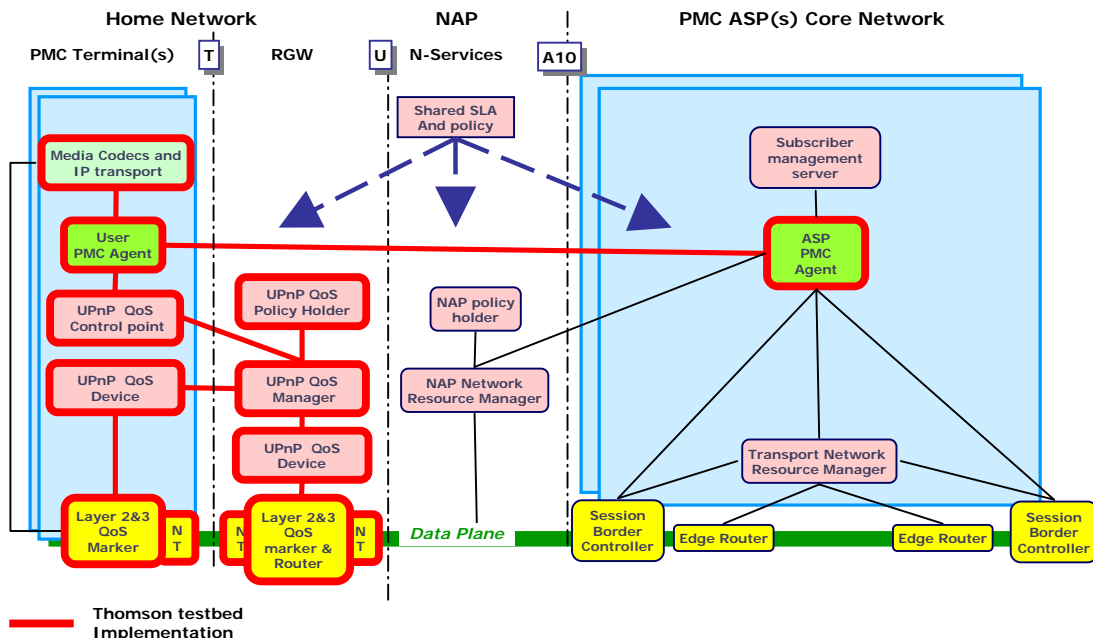
## Objectives:

- ❑ Guarantee the global Quality of Service for audio/video PMC services over wireless in the home environment.
- ❑ The QoS technologies used should be applicable to any kind of real time services (VOIP, V2IP, IP-TV, VOD, mobile, ...)

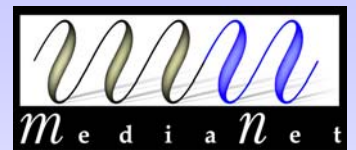
## How:

- ❑ Guarantee traffic class requirements (delay, jitter, packet loss)
  - by providing real time traffic oriented WMM wireless parameters
  - by providing class load repartition
- ❑ Provide Layer 2 traffic Admission Control over 802.11g WMM based on CUE (Channel Usage Estimation) monitoring and predictive computation
- ❑ Integrate Layer 2 Admission Control in the UPnP QoS framework
- ❑ Provide interaction between Admission Control and application

## PMC QoS Functional Architecture



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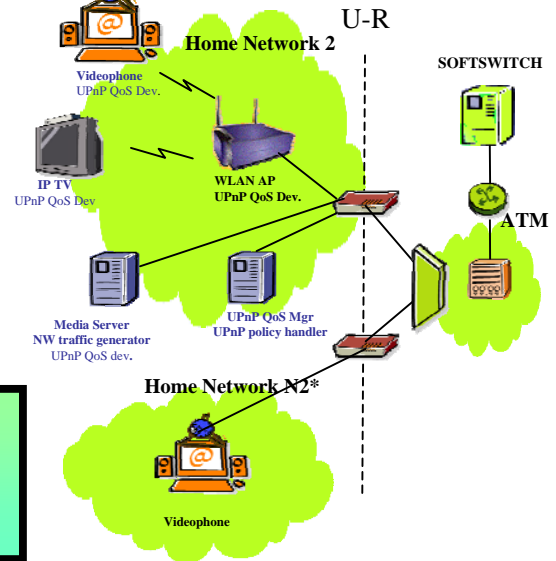
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## Testbed scenarios:

Videophony sessions are demonstrated in parallel with A/V services in a WLAN QoS environment to show the improvements steps and associated limitation:

- Legacy environment with no WLAN QoS
- L3 & L2-WMM prioritization scheme
- L3 & L2-WMM prioritization scheme + WLAN Admission Control based on CUE prediction and wireless statistics in UPnP QoS framework

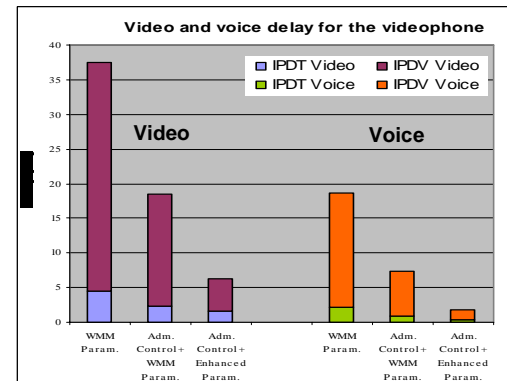
## Testbed configuration



$$CUE = \sum_{Traffic} ((tAifs_{Priority} + tHeader + tFrame_{Phyrate} + tSifs + tAck) * NbPackets/s * (1 + RestrasmisionRate))$$

## Results:

- Admission control with adapted WMM parameters provides:
  - Class isolation, lower delay and jitter for the highest prioritized classes
- In compensation:
  - Total throughput for the low priority classes may decrease
  - Compatible only with a full WMM network



## Conclusion :

- WMM is sufficient as long as real time services are limited to voice and video telephony services.
- WMM with Admission Control is mandatory for services requiring high bandwidth such as IP-TV

## Issue and further study:

- Impact over CUE from environment perturbation need to be evaluated and studied

