Under the Industrial PhD Programme (IPP) framework initiated by Economic Development Board Singapore, TUM Asia and Lantiq Asia Pacific Pte Ltd have partnered to embark on the following research project. This project aims to also provide postgraduate training in a corporate research and development environment where suitable candidates will be offered opportunities to conduct research and pursue PhD conferred by TUM with support from the Singapore government.

Details of the programme:

Duration: 4 years (no bonds required after the completion of the project)

Remuneration: Up to SGD3,300 (neg) per month with CPF contribution and AWS

Application Criteria: Singaporeans and PRs ONLY.
                              Minimum education qualification – Master degrees holder

Supervising Professor: Prof. Andreas Herkersdorf (Chair of the Integrated Systems Laboratory,TUM)

Company attached to: Lantiq Asia Pacific Pte Ltd http://www.lantiq.com/

Project Title: Distributed DLNA Media Streaming Processing on Embedded NAS Gateway Platforms

Abstract

Directions for Broadband Gateways demand more often the 'embedded NAS" to support Media sharing in connected homes. The traditional split is the dedicated NAS box under the responsibility of the end user. Media Server enabled Gateways would offer this functionality pre-configured or even remote configured (Operator Service). Integration of such functionality into Broadband Gateway enhances the complexity and demands using the embedded processing resources in the Gateway SOCs. Standard implementations add the DLNA capability on top of the central Software OS stack and use in best effort mode the available main CPU processing power.
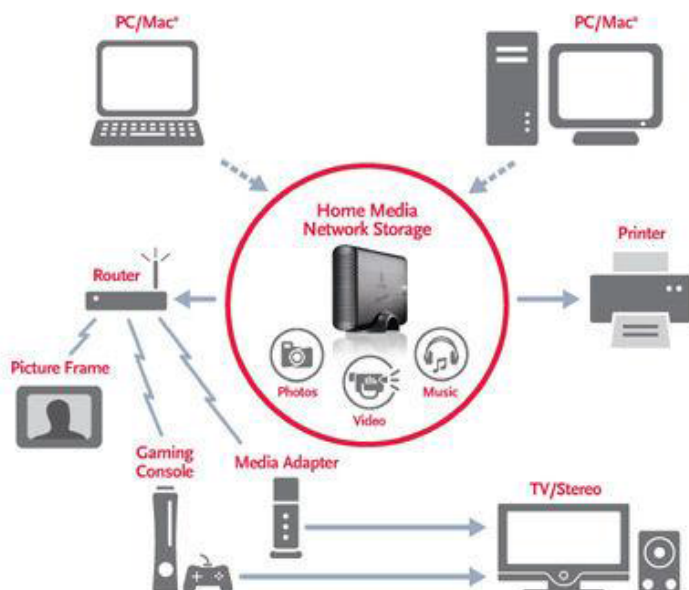
The "Distributed DLNA Media Streaming" would need to run at application level but utilizing the hardware, co-processing Engines and central software stack in ways of offload and balancing the overall system performance and guarantee the content delivery based on traffic classes. In addition the system would require supporting on-the-fly media transcoding depending on connected client capabilities to improve user experience of content sharing among devices.

The new approaches are:

- Media stream session detection capability algorithm at lower levels involving hardware/co-processing Engines
- Session based streaming offload in conjunction with standard DLNA stack
- Distributed software stacks processing on Multi-Processor CPU subsystem with capability of "Virtual CPU" and 'Dual Issue Pipelines" for optimized processing
- Runtime learning of session parameter and transcoding of formats during streaming
- Multiple client streaming algorithms to allow low-level queuing for optimized distribution of same content over different interfaces (Ethernet, WLAN, G.hn, etc.)
- Parser should allow MIMO (Multiple Input Multiple Output) paths in the SOC, which should allow to involve multi Processor systems for the processing of parsed flows

At the end of the project, upon submission of his/her PhD thesis and successful defence of his/her thesis, the candidate will be conferred his/her post-doctorate by TUM.

Interested applicants, kindly submit your latest resume to gary.ong@tum-asia.edu.sg