Modelling IPTV Services
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Outline

- Introduction: what IPTV is not, and why do we care
- Motivation to model IPTV services
- The IPTV traffic model, in some detail (W.I.P.)
- Conclusions
What IPTV is not

- live TV
- web TV
- p2p TV
- on-demand video service
- cable-like TV service

IPTV is a **cable-like TV service offered on top of an IP network**
Why do we care with IPTV?

- One of the fastest growing television services in the world [1]
  - 2005: 2 million users
  - 2007: 14 million users
  - ...and growing

- High bandwidth and strict QoS requirements
  - Big impact in the IP network

[1] Parks Associates. *Tv services in Europe: Update and Outlook, 2008*
Overview of an IPTV network

Internet

IP Network

TV Head End

DSLAM

Customer Premises

TV
STB
PC
Motivation – Why do we need a realistic IPTV Traffic Model?

- Brand new service on top of an IP network
- User behaviour very different from other IP-based applications
Motivation – Why do we need a realistic IPTV Traffic Model?

- To evaluate different delivery systems for IPTV
- To evaluate different network architectures for IPTV
The dataset

- We have analysed real IPTV data from one of the largest IPTV service providers
  - ~ 6 months worth of data
  - ~ 250,000 customers
  - ~ 620 DSLAMs
  - ~ 150 TV channels

- NB: We consider a user is zapping if he switches between 2 TV channels in less than 1 minute.
IPTV Traffic Model

- **Workload characteristics**
  - Zapping blocks containing a random number of switching events (zapping period)
  - Separated by watching/away periods of random length
IPTV Traffic Model

0. Choose initial channel

1. Find $x = \text{watching time}$
   
   *User starts watching channel for $x$ minutes*

2. Find $y = \text{number of channels to be zapped}$

3. Find $z = \text{next channel in zap block}$
   
   *User zaps to channel $z$*

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**WATCHING MODE**

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**ZAPPING MODE**

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**Will the user zap to another channel?**

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Fernando Ramos, Cosener's Multi-Service Networks
Findings:  
Empirical data fits with 2 gamma and 1 exponential (consistent across regions)  
To do:  
Check consistency for different channels  
Check consistency for period of the day
IPTV Traffic Model - Detailed

Findings:
Empirical data fits with gamma distribution (consistent across regions)

To do:
Check consistency for period of the day
Findings:
Popularity is a) Zipf-like for top channels, b) decays abruptly for non-popular ones.

To do:
Add dependency of previous channel.
Conclusions

- Preliminary results of an IPTV Workload model were presented

- Some of the main findings:
  - Workload characteristics: Burst (zapping) periods separated by watch/way periods
  - Popularity: a) Zipf-like for top channels, b) decays fast for non-popular ones
  - Watching period empirical data fits with 2 gamma and 1 exponential distributions
  - Number of channels in a zap period fits with gamma distribution

- See you at the SIGCOMM Poster Session! 😊
THANK YOU!

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