

IPTV: An end users' perspective

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Overview

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Introduction

The IPTV network

The end users'
experience

Areas of improvement

- **Introduction**
- **The IPTV network**
- **The end users' perspective**
- **Areas of improvement**

IPTV and VoD

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Areas of improvement

- **IPTV: Is television over IP networks. IPTV should ideally offer complete broadcast channels (just like our existing cable TV)**
 - Two way capability in IP networks allows IPTV interactions among service providers and subscribers.
- **Video on Demand (VoD) enables a user to join and start any program at their convenience (somewhat similar to Pay per View)**
 - Unicast stream of programming with controls like play, pause and rewind

Major IPTV providers in Canada

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Areas of improvement

- **Major players in Canada:**
 - Telus
 - Bell Canada

- **Telus provides service in areas that are within approx. 1 Km of its central office**
 - Currently service is available in some parts of Vancouver, Calgary and Edmonton

Four main components of IPTV network

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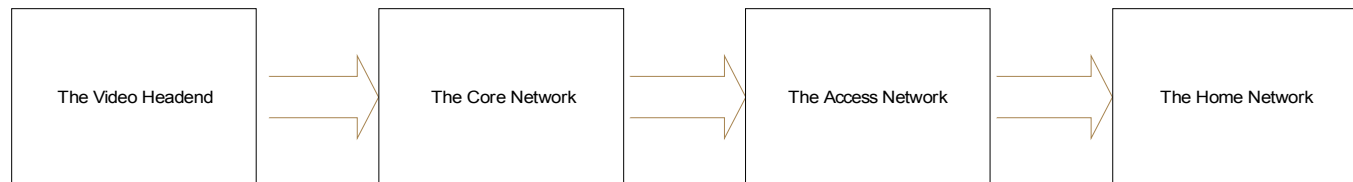
Areas of improvement

■ The Video Headend

- The video head end is the point in the network where the programming content is captured, encoded and broken into IP packets

■ The Core network

- The grouping of encoded video streams, representing the channel line up, is transported over the service provider's IP network



Four main components of IPTV network cont'd

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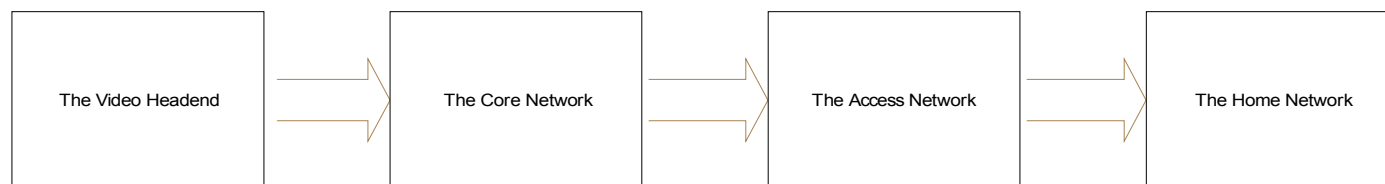
■ The Access network

- The link from the service provider to the individual household. It contains the:

I. The Broadband Remote Access Server (BRAS)

II. The Digital Subscriber Line Access Multiplexer (DSLAM)

III. The subscriber's home through Digital Subscriber Line (DSL)



Four main components of IPTV network cont'd

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Areas of improvement

■ The Home network

- Mesh type architecture using a combination of wired and wireless technologies to distribute signals

■ Wired

- Ethernet
- Power line
- Phone line

■ Wireless

- UWB
- 802.11x
- Millimeter Wave (MMW) 57-64 GHz

The currently deployed IPTV system

- **Uses existing ADSL connection**
 - Approx. data rate 6-10 Mbps

- **In the home network:**
 - a hybrid wired and wireless approach is used for distribution
 - IEEE 802.11g is being used to deliver data
 - Ethernet is being used to distribute the multimedia signal
 - Currently, the service provider is fully taking care of the cost of setting up the home network

The currently deployed IPTV system cont'd

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Current IPTV system

Areas of improvement

■ Installation

- Service provider spends 8 hours to rewire home
- A new residential gateway is provided by the service provider
- Currently, can only support 2 set-top boxes
- Users cannot move set-top boxes
- Wireless cards are provided by service provider for PCs

■ Cost

- End user can sign 0-3 year contracts.
- Packages starting at \$22

The currently deployed IPTV system cont'd

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Current IPTV system

Areas of improvement

■ End users' experience

- Currently IPTV service offers 200+ channels including:
 - Music, movies, sports, etc
 - Currently, only SDTV channels available
 - Picture and sound quality comparable to cable TV
 - Channel switch time approx. 1-2 seconds

■ Special features

- Call display on TV
- Time shift
- VoD
- Interactive browser
- Programming guide

A short video...

- **An example illustrating channel switching delay**



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Current IPTV system

Areas of improvement

A short video...

■ Video on Demand

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Current IPTV system

Areas of improvement



Areas of improvement: The core and access network

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- Problem 1: Channel switching delay
 - Possible solutions:
 - Provide higher BW.
 - Move servers closer to end user
 - Better grouping of adjacent channels
 - Better admission control
 - Separate video traffic from other traffic at core network
 - Predictive channel sorting

Areas of improvement: The home network

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Areas of improvement

- Problem 2: Cost to the service provider
 - Possible solutions:
 - A more efficient home network architecture

- Problem 3: Scalability (cannot support more than two set-top boxes)
 - Possible solutions:
 - Update the physical link
 - Use multicast

- Problem 4: Channel selection (IPTV has the capability of supporting thousands of channels. The current channel guide is not sufficient)
 - Possible solutions:
 - Efficient searching of video content

Questions or ideas?

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 Ideas...suggestions.
..comments? 