IPTV Overview

Presented by Paul Ashun
TV Platforms Group
IPTV Overview

Chapters:

1. What is IPTV (as opposed to internet TV) ?

2. What is VOD (as opposed to IPTV)

3. Middleware and Video

4. Common IPTV Models

5. Other factors

6. Questions
What is IPTV
(and what is internet TV)
1a - What is IPTV

• Still evolving
• Digital TV delivered using technologies used for computer network. Internet Protocols (http, rtsp, igmp)
• A TV like ‘quality of service’ (always on, reliable)
• Can be ‘live’ or pre-recorded (on-demand)
• Usually over a managed/closed network

Eg. Virgin TV, Tiscali TV, BT Vision
1b - What is Internet TV

- Digital TV delivered using technologies used for computer network. Internet Protocols (http, rtsp, igcmp)
- No guaranteed ‘quality of service’
- Usually delivered via open-internet / un-managed network

Eg. YouTube, BBC iPlayer on browser/PC
1c – Managed Networks

Control over

– bandwidth allocation
– contention ratio
– content

Controlled ‘quality of service’
1d – Open Internet (Unmanaged networks)

- Variable bandwidth
- Higher contention ratio (20:1)
- Less control over content

{Little control over ‘quality of service’}
• The BBC is working to ensure quality of service with ISPs. This will possibly change the definition of IPTV through the consensus that the quality of service is good over the open internet.
How to capture/create IPTV

Head end to Capture TV

Compression/Encoding/Encryption

Copper wire / fibre
IPTV over the network cloud

- Mobile Device
- Wifi / wimax
- Cable Set-top Box
- Hybrid fibre coax
- Virgin
- Computer
- ADSL
- Set-top Box
- FreeSat
- Tiscali
- BT Vision
- [Orange TV]

Protocols
- http
- rtsp
- igmp
Why IPTV and not Broadcast

• Two-way data flow (video on demand)
• Greater personalisation / tailored advertising
• Combined features
  – Voice over IP
  – Messaging/Recommendations
  – Chat around content
IPTV- Key Protocols

- **HTTP**
  - (hyper-text-transfer-protocol)
  - Request
  - Response
  - Firefox, Internet Explorer

- **RTSP**
  - (real time streaming protocol)
  - play
  - pause
  - record
  - Real Player, Windows Media Player
  - (streamed video)

- **IGMP**
  - (internet group management protocol)
  - - connecting to multicast stream (TV channel)
  - - changing from one channel to another
What is VOD
2a - What is VOD

• Select and watch video content (usually over a network)
• Either content is streamed or downloaded with/to the application
• Apps have a subset of VCR functionality including RWD, Pause, FFWD etc.
• Push VOD – delivered to set top box from broadcaster
2b - What is VOD

- Not necessarily over IP. Eg. Push VOD
- Push VOD – delivered to set top box from broadcaster

Eg. BBC iPlayer, YouTube, BBC Archive, Rimokon quiz, Tiscali, BT vision
Middleware
And
Video Codecs
3a – Middleware

– Set-top box software that allows us to write applications
– Affect application capabilities
3b – Middleware

- Middleware
  - MHEG – (Freeview / Freesat)
  - Liberate – (Virgin)
  - ICTV/other – (once trialled by Tiscali; used by US web sites)
  - HTML/JavaScript (KIT/Proprietary operators)
  - Mediaroom (BT Vision)
3c – Codecs

• Compression/Decompression
• File extension specifies codec used to compress/decompress
• Lossy/Lossless
3d – Codecs

• Codecs
  – H.264
  – MPEG4
  – MPEG2
  – WMV9
H.264

• 1. Up to 50% in bit rate savings: Compared to H.263v2 (H.263+) or MPEG-4 Simple Profile, H.264 permits a reduction in bit rate by up to 50% for a similar degree of encoder optimization at most bit rates.

• 2. High quality video: H.264 offers consistently good video quality at high and low bit rates.

• 3. Error resilience: H.264 provides the tools necessary to deal with packet loss in packet networks and bit errors in error-prone wireless networks.

• 4. Network friendliness: Through the Network Adaptation Layer, H.264 bit streams can be easily transported over different networks.
### IPTV/Internet TV Platforms/Operators

<table>
<thead>
<tr>
<th>OPERATOR</th>
<th>MIDDLEWARE</th>
<th>CODEC</th>
<th>DELIVERY NETWORK</th>
<th>MANAGED NETWORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tiscali</td>
<td>(client-side Java)</td>
<td>h.264</td>
<td>ADSL</td>
<td>YES</td>
</tr>
<tr>
<td>BT Vision</td>
<td>Mediaroom</td>
<td>h.264</td>
<td>ADSL</td>
<td>YES</td>
</tr>
<tr>
<td>Virgin</td>
<td>Liberate (Seac-change)</td>
<td>Mpeg 2</td>
<td>Hybrid fibre co-ax</td>
<td>YES</td>
</tr>
<tr>
<td>Freesat</td>
<td>MHEG 1.06 turbo</td>
<td>Not implemented</td>
<td>Any – dependent on isp</td>
<td>NO</td>
</tr>
<tr>
<td>Freeview (other than BT vision)</td>
<td>MHEG</td>
<td>Dependant on ISP</td>
<td>Any – dependent on isp</td>
<td>NO</td>
</tr>
</tbody>
</table>
Common IPTV/VOD models
4a – Common models

Server Side Video / Client Side Application

Server
(contains video)

Set Top Box

Streamed Video

Contains:
- application code previously downloaded

Instructions for video (play, ff, rw, pause) are sent to server

Disadvantages
- Slower to load video
- Longer round trip to server battling against bandwidth

Advantages
- Greater capacity for video on servers than set-top/pc

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4b – Common models

Server Side Video / Server Side App

Server
(contains video and app)

Set Top Box

- no storage in the box

Instructions for video (play, ff, rw, pause) AND to navigate the app are sent to server

Streamed Video AND Streamed Application

Disadvantages
- Slower to load video/app
- Longer round trip to server battling against bandwidth/contention ratio

Advantages
- Greater capacity for video
- Larger app size for more functionality

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Client Side App / Client Side Video

Set Top Box/PVR

contains:
- application code previously downloaded
- video previously downloaded

Disadvantages
- Inability to leverage server for capacity.

Advantages
- Quick seamless transitions between video and scenes.
- Store app locally and take box from a to b (i.e. to a friends house)
**4d – Common models**

Peer-to-Peer Video / Client Side Application

contains:
- application code previously downloaded
- video streamed from other pcs/boxes

Disadvantages
- Longer round trip to through network

Advantages
- Leverage other PC/set-tops with the same video for speedy download

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Middlewares on devices

- IPTV
  - PC
  - MOBILE
  - STB
    - MHEG 1.06
    - MHEG Turbo
    - ICTV
    - Liberate
  - MEDIA ROOM
    - Bablegum
    - Joost
    - Windows Media Player
    - Real Player
    - Flash
    - IE
    - Mozilla
    - Windows Media Player
    - Real Player
    - Flash
    - IE
    - Mozilla

Mozilla
IE
Windows Media Player
Liberate
MHEG Turbo
Media Room
Other Factors
5 – Other Factors

- Digital Rights Management (DRM)
- Security (logging in / privacy)
- Messaging
- Mobile Devices
- Authoring
- Video Delivery
- Games consoles
- User experience & design
IPTV Overview

Thanks for your time

Any Questions?