Content distribution in Next Generation Networks

Why is a Challenge?

Amitabh Kumar
Cable has both Channels and Broadband

Regulated Licensed TV Half

Unregulated Unlicensed Broadband Half

QAM Carriers

Net-Neutrality

Broadband

Comcast DOCSIS 3.0
AT&T U-Verse (VDSL2)
Verizon FiOS- ONU
Cord Cutting

- TV Half
- Broadband Half

QAM Carriers

- TV Headend
- Broadband Headend

- TV Channels and VoD

- Licenses: X
- Price Regulation: X
- RIO: X
Issues With Broadband

• Need 300 GB of Data per Month (3GB/ Hour)
• Most Broadband Plans are 10-30 GB/Month
• Zero Rating is not Allowed
• Viewership shifts to Shows (serials rather than channels)
• Advertising Revenues Disappear
• TV Serials need to be priced higher
Peering

External Bandwidth Only for Upload

Broadband Headend

TV Channels and VoD

Broadband Half

TV Half

hulu

NETFLIX

TV Headend
Why Net Neutrality Can be Circumvented

• T-Mobile allows all sites (Netflix, Hulu and 40 others) to stream for free for customers (zero rating) (non-discriminatory)

• Comcast zero-rates its own Stream TV service, which provides online video to Internet-only customers, but the company says it's beyond the reach of net neutrality rules because Stream TV is an IP cable service instead of one delivered over the public Internet.
Video Streaming

Home Networking Solution-1 (FTA+PAY)
Linear Vs. On-Demand

Zee Cafe

Linear Channel

Pretty Little Liars
Switched at Birth
Young & Hungry
The Big Bang Theory
America’s Got Talent
Pretty Little Liars
Pretty Little Liars
Criminal Minds
Criminal Minds

Rs 5 Per Month
On-Demand Zee Cafe

- Criminal Minds: Rs 5
- Pretty Little Liars: Rs 5
- Switched at Birth: Rs 5
- America's got Talent: Rs 5
- The Big Bang Theory: Rs 5
- Young & Hungry: Rs 5
- Desperate Housewives: Rs 5
Netflix Blows Past 60 Million Subscribers

Number of Netflix streaming subscribers (in millions)

**NETFLIX**

<table>
<thead>
<tr>
<th>Year</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Q1</th>
<th>Q2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>26.5</td>
<td>27.6</td>
<td>29.4</td>
<td>33.3</td>
<td>36.3</td>
<td>37.6</td>
<td>40.3</td>
<td>44.4</td>
<td>48.4</td>
<td>50.0</td>
<td>53.1</td>
<td>57.4</td>
<td>62.3</td>
<td>64.8*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Forecast given by Netflix

Source: Netflix
Challenges

• Regulation
• Network Capacity
• Pricing
• Advertising and IPRs
• Diversity & Licensing

To Define Broadband
To Define Net Neutrality
Policy on Advertising