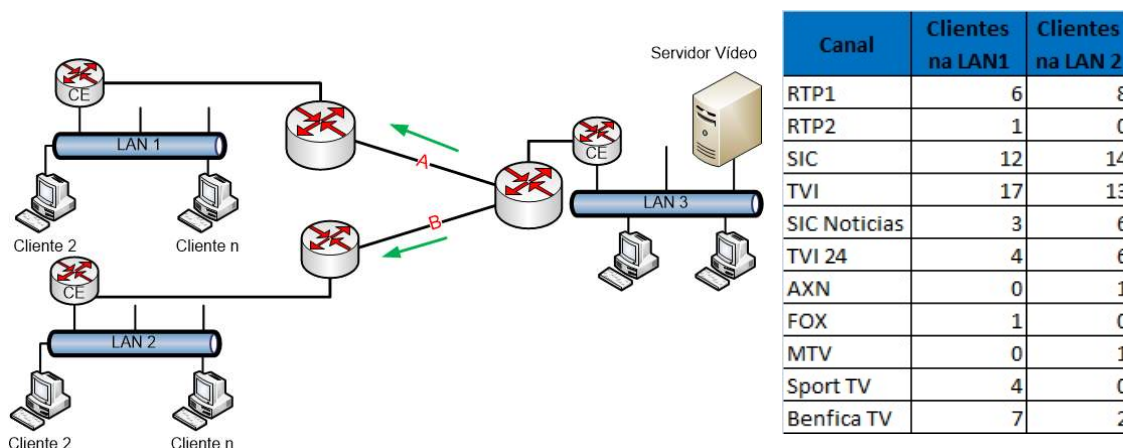


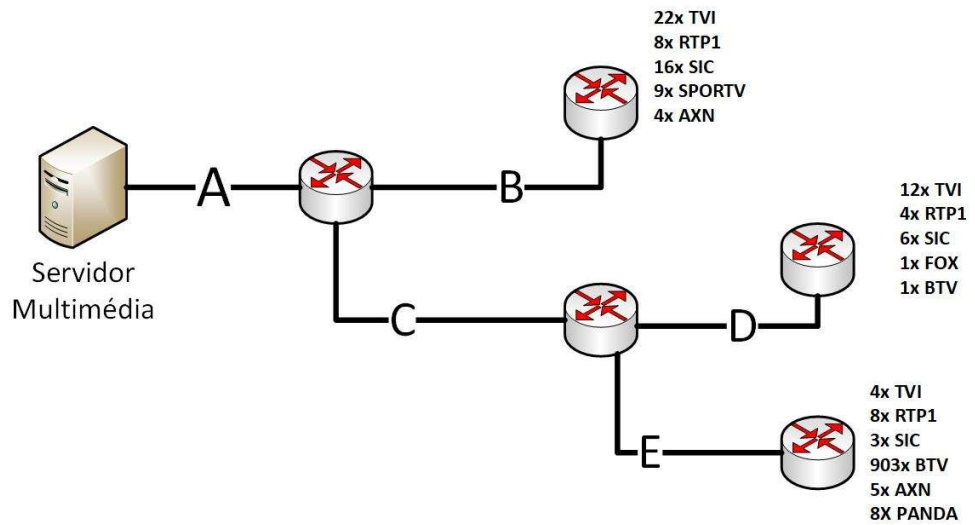
SISTEMAS E REDES MULTISERVIÇO

Practical Exercises nº 4 – Multimédia Architectures

- An IPTV operator has only a 125-channel offer with MPEG4 compression at 2.5Mbps per channel. Considering that each customer can have up to three set-top-box per channel. Calculate the bandwidth required to serve their customers in the following situations:
 - Unicast, with 85 customers served by the same circuit
 - Multicast, with 350 customers served by the same circuit
 - Multicast, with 30 customers served by the same circuit
- Consider the following IPTV distribution network in MPEG4. The table indicates the number of customers connected to each channel at the same time:



- Calculate the bandwidth occupied on circuits A and B considering that Multicast is being used on both circuits;
 - Calculate the bandwidth occupied on circuits A and B considering that it is to be used Multicast in circuit A and Unicast in circuit B.
- Consider the following IPTV distribution network with Multicast MPEG4 (2Mbps per channel). Next to each router are the channels to be viewed by the clients connected to it:



- What circuits is the Panda channel going through?
- Which channels are transported by circuit C?
- Calculate the bandwidth occupied in each circuit?
- If the BTV client connected to circuit D, turns off its box, what are the changes?