Remmen Streaming server: A distributed video over IP system

Introduction:

When Østfold University College designed the new campus buildings at Remmen, as well as the renovation of the old building, it was decided not to use the traditional TV transmission over coaxial cables, but to use TP standandard ethernet cables and IP for everything.

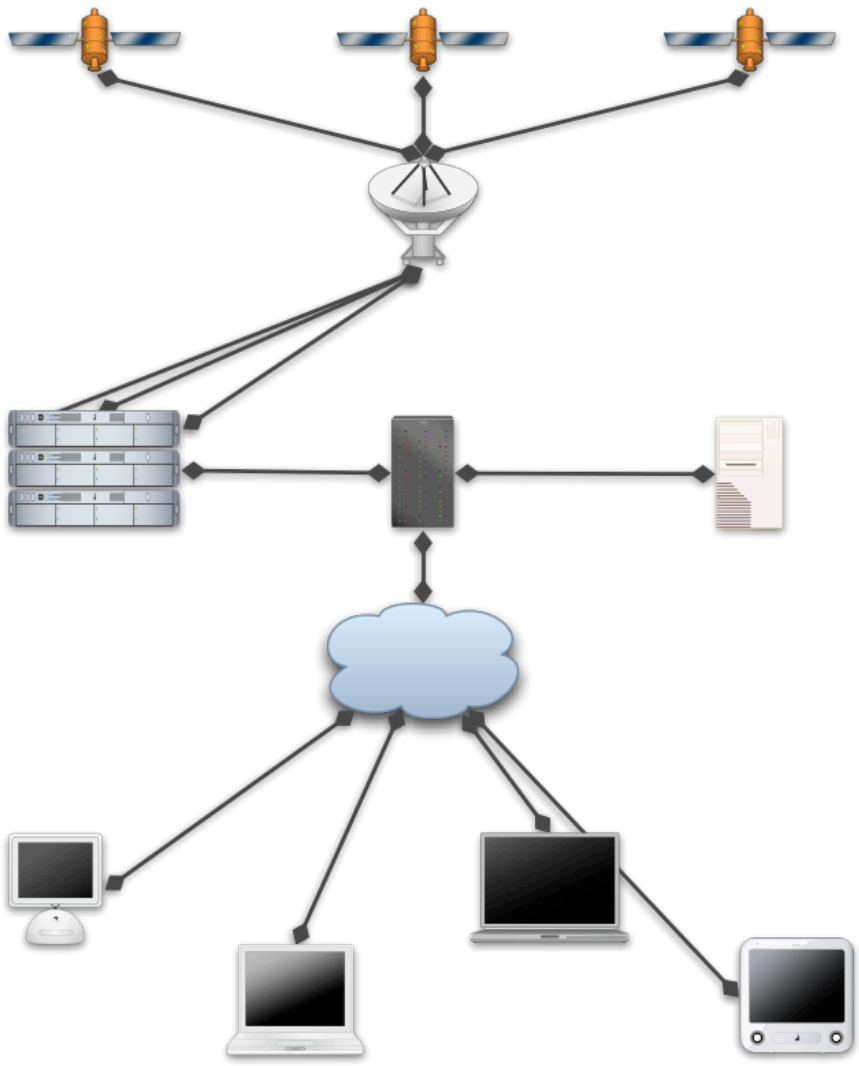
The problem of designing the video over IP streaming system was handled inhouse by a small group at the Department of Computer Sciences.

The design goals were simple:
•Ease of use
•Based on open standards
•Based on open source
•Using scalable technologies
•Forwards compatible with new technology

As shown on the left, the system takes down the TV signals from three satellites (Sirius, Thor and Hotbird), decoded by standard satellite decoders.

Originally ordinary Nokia tuners were used, but an experiment with DreamBox satellite recivers running on a Linux core proved to be more versatile and useable for a distributed TV over IP system.

Due to a problem with the Dreamboxes, the direct MPEG-2 feed taken from the satellites are only stored directly to disk for recordings, while realtime streaming is done by re-digitizing the analogue output to MPEG-2 and then multicasting the resulting stream.



Challenges:

There were several challenges:

•Scalability: With the bandwidth needs for a good TV quality stream, multiple users could easily congest a network using unicast one to one technology.
Multicast, many to many, here used as one to many, on the other hand only requires the bandwidth of one stream opposed to unicast requiring the bandwidth of one stream times the number of recipients.
•Usability: The support for non-Windows Media formats on the Windows familiy of operating system proved to be truly lacking and made automatic starting of streams based on simple web links hard
•Usability: User interface. Constructing a simple user interface capable of handling multiple users with the necessary information required multiple full design iterations before a satisfactory solution could be found.

Project Details:

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