

NORDUnet IPTV Project

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- Background on NORDUnet IPTV Project
- Lessons Learned
- IPTV Solution Models
- Necessary Infrastructure
- DEMO
- Cost
- Outstanding Issues
- Q&A



- Analogue Terrestrial TV being discontinued all over Nordic
- New Digital Services require investment in new infrastructure
- IP Structure already in place
- Additions of additional broadcast Services
- Provide local Branded solutions to local NRENS
- Outsource Customer Administration
- Outsource Customer Support



The NORDUnet IPTV Project was split into 4 phases:

- 1) Initial survey and Alpha trials (Completed)
 - Testing various options
 - Clarifying technical Challenges
- 2) Near Production Beta Trial (Completed)
 - Targeted for boarder technical audience.
 - Sub set of productions channels
- 3) IPTV Broadcast Production (August 2009)
 - Base Must Carry Channels Package
 - Additional Channels on a per user base
- 4) VoD Services: (Q4 2009)
 - Movies on Demand
 - Content / Lectures
 - University / Student TV



- BIG Difference in Vendor Approach
- Mainly Focused on providing multiple services in a vendor controlled environment (RFC 1918)
- Little Vendor knowledge within large scale IP Broadcast in Public IP Addresses.
- Vendor Technical skill set centered around TV Technology more than network technology.
- DRM is complicated by old school TV media thinking.
 - Geographical
 - Packing



IPTV Solution Models

NORDUnet Evaluated two
different approaches



FAST TV

Solution 1



Traditional vendor solution (Cross Nordic):

- Standard Set Top Box Solution provided by the majority of regional vendors like Boxer, FAST TV, Telia, YouSee etc.
- Traditional TV Packages
- Movies on demand
- Traditional Customer Service
- Traditional Commercial Model
- Unbranded service
- RFC 1918 Solution – Being adapted to GLOB address space currently function on trial base

<http://www.fasttv.se>



INUK Networks

Solution 2



- Provides an IPTV service to students in halls of residence in partnership with local RENS:
 - JANET in the UK (live since 2006)
 - CANARIE in Canada (live since 2007)
 - HEAnet in Ireland (trial live)
 - Internet2 in USA (full service Spring 2009)
- Inuk provides full managed IPTV service:
 - Platform including encoding (H.264 & rate adaptive), middleware, conditional access and support for PC/Macs and TV via STB
 - Content rights and packaging negotiations and agreements
 - Selfcare platform, including registration, online payment, package management and support



SWEDEN

DENMARK

FREE TV
Free to students

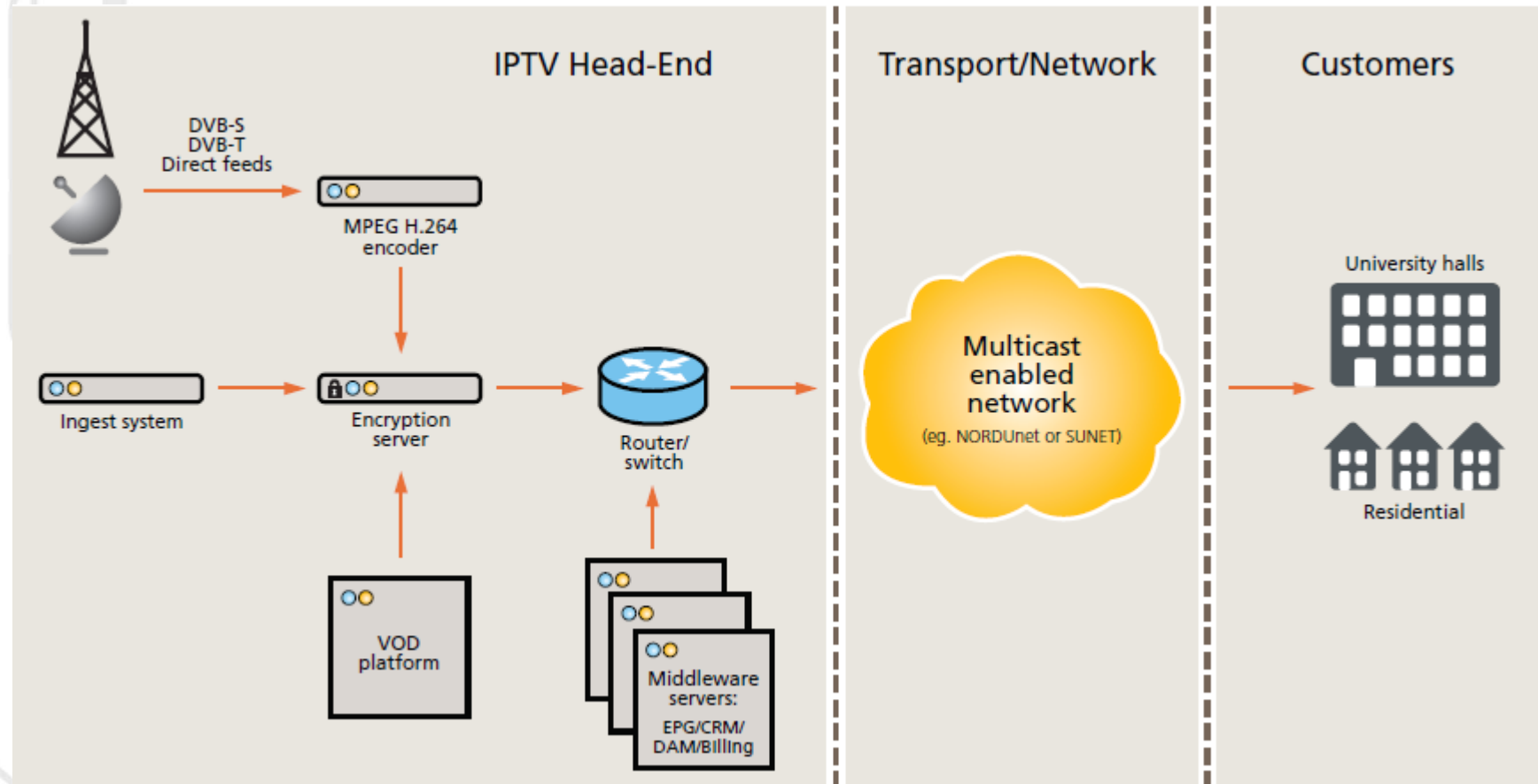


PAY TV
Student/youth
focussed pay pack
charged directly to
students



ON DEMAND
Movies charged
directly to students





VoD

- Freewire provides an platform for students and universities to deliver both linear and on-demand content
- Universities or students with existing play-out or streaming services can be presented easily in Freewire EPG:
 - Student radio using VLC to create MPEG2 transport stream
 - MPEG2 or 4 TV streams supported
- Inuk has also produced free VLC-based scheduling and play-out guide or can provide professional Exterity amediaServer solution for students/universities wanting to create a “channel” from existing video assets
- VOD servers used for entertainment content can also be used to host student / university content
- Content can be restricted to a University’s own network, across a Regional MAN or the entire NORDUnet community

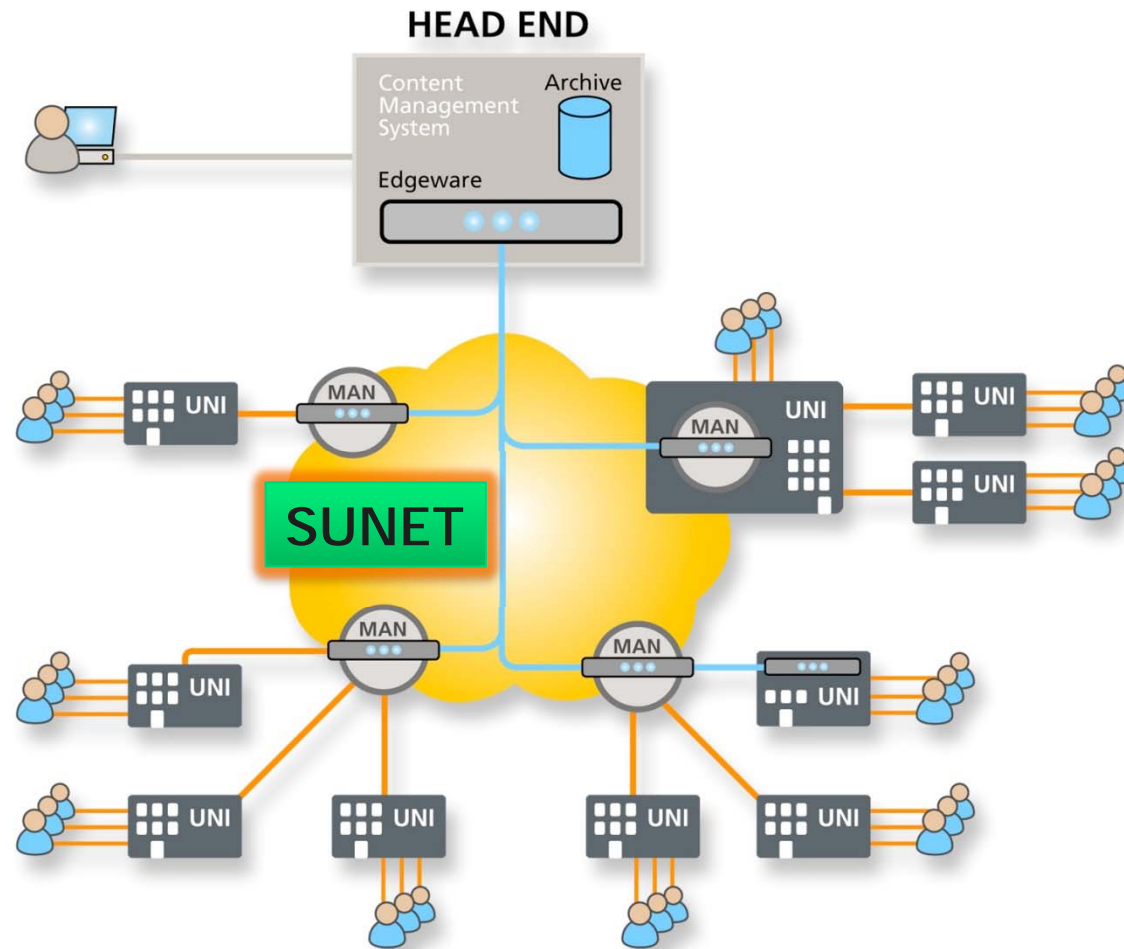


- Inuk Networks currently delivers Freewire services (IPTV and IP Telephony) to over 150,000 student rooms at 43 universities around the UK
- Inuk has extended it's existing linear TV service to incorporate an 'On-Demand' platform
- This VoD platform is used by Freewire to offer (pre-DVD release) blockbuster movies, music events and student produced content to it's user base
- The same platform can also be utilised by universities who wish to add academic and student content ranging from induction videos to archived lectures
- The services can be locally branded by NREN (SUNETTV) or University



- Whilst Freewire's linear TV channels are delivered from Inuk Network's centralised head-end, it is not felt that this would be a suitable model for 'On-Demand' content
- The centralised model works for linear TV which benefits from the efficiencies gained from multicast – VoD, on the other hand is unicast by nature, raising the question of bandwidth usage
- NORDUnet believes the VoD server and content should reside at either the university, the NREN or NORDUnet
- 'Peak Concurrent Usage' will determine which of the above models is most suitable on a university by university basis

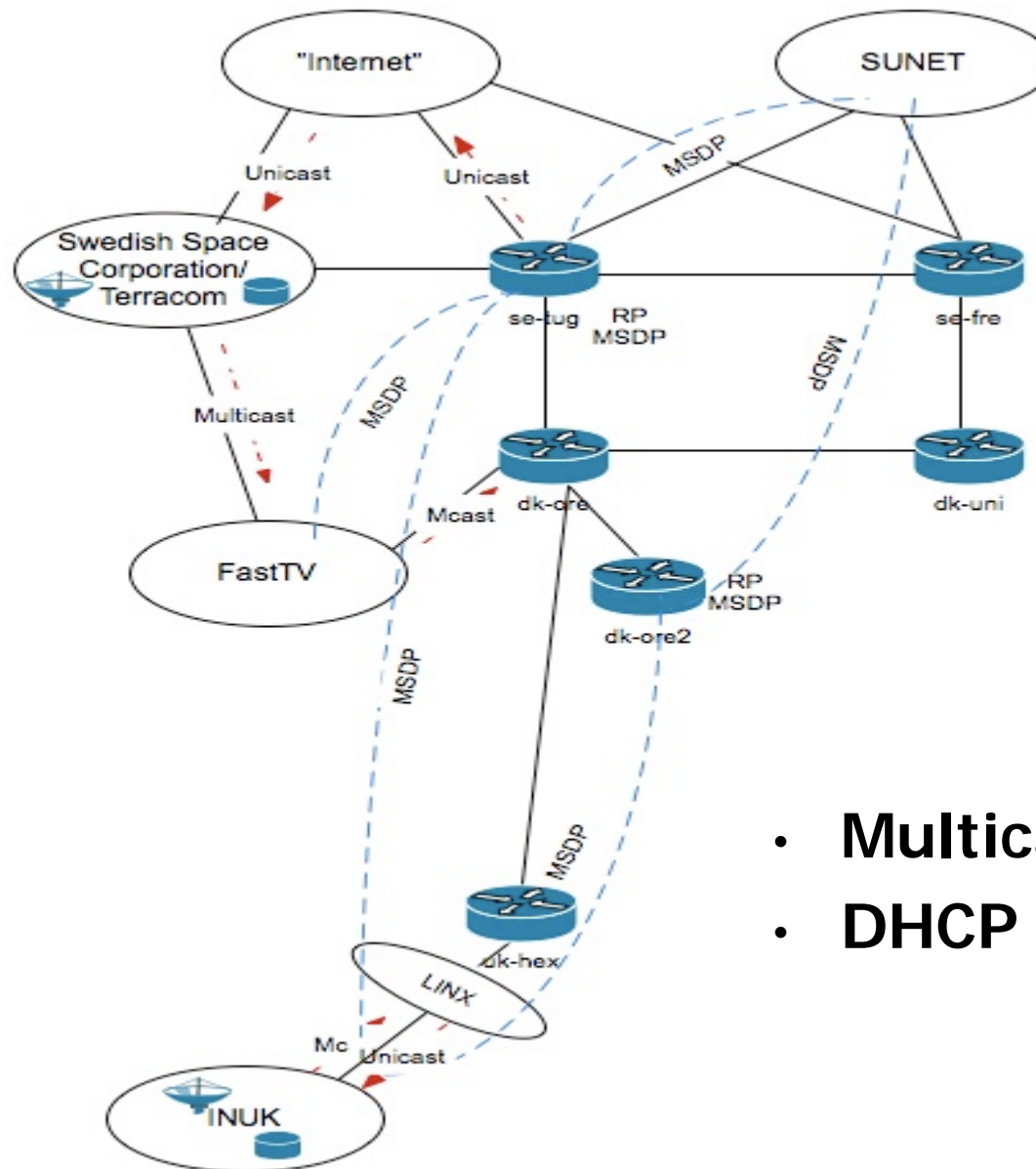




- Media Formats
 - MPEG-2
 - MPEG-4 (h.264)
- Concurrent Streams
 - Maximum 8,192 fully concurrent, e.g.
 - up to 2,500 HDTV streams @ 8.0 Mbps
 - up to 5,400 SDTV streams @ 3.7 Mbps
 - All stream processing in optimized hardware
- Content Storage
 - 128 GBytes – 3 TBytes NAND Flash
 - up to 1,850 hours of video @ 3.7 Mbps (SDTV)
 - up to 850 hours of video @ 8.0 Mbps (HDTV)
- Streaming Interfaces
 - 10GbE – Two XFP MSA slots
 - 10 GBASE-X (Optics)
- Control Ports
 - 10/100/1000BASE-T, RJ45
 - RS-232, 9-pin D-Sub
- Physical Dimensions
 - 1RU/19"
 - H: 4.3 cm; W: 43.3 cm; D: 24.5 cm
 - Weight: 3.0 Kg (6.6 lbs)



Infrastructure Implications



- Multicast enabled
- DHCP for STB

DEMO Time

- 1) Solution 1
 - 1) FAST TV STB
 - 2) [FAST TV Customer Support](#)
- 2) Solution2
 - 1) SUNET TV STB
 - 2) SUNET TV MAC/PC Client
 - 3) [SUNET TV Self Care](#)

FAST TV

- Base Package: SEK 79 kr /month



- FastTVPaketet +199 kr/month:



- FastTVNordic: +30 kr/month



- Etc etc ...

SUNET TV

Initial commercial model as follows:

- Universities offering the service to students / staff at 1,200 Euros per month for basic/must-carry channel package
- Universities can also use platform for own (and/or) student content
- Students can upgrade to premium/pay channels and watch VOD by purchasing online directly from SUNET TV Self Care Page

Alternative commercial models:

- Cost for universities only offering service to staff & departments (i.e. not dorms) would be 800 Euros per month
- Cost for SUNET to provide service to all of its (approx) 50 universities would be 16,000 Euros per month
- Cost for SUNET to provide service to all of its (approx) 80 member community would be 18,500 Euros per month
- Cost for NORDUnet to provide service to its whole community would be 24,000 Euros a month



SWEDEN

DENMARK

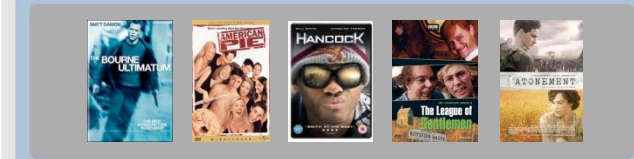
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	Staff/Students	SUNET
Total Cost / Month		SEK 180.000,00
To Server ALL	445000	SEK 0,40
To server Staff	45000	SEK 4,00
To Server Staff & Dormitories	145000	SEK 1,24

This do not include royalty rebate from staff / student purchases !!

If Another Nordic NREN Joins the price will decline further

- Clarify Interest from SUNET Community.
- Negotiate Final Deal with Vendors pushing prices down by NORDUnet wholesale agreements.
- Assists in tuning network infrastructure to the new service.
- Finalize agreement with SUNET, Universities and vendors

- Want to be a SUNET TV Beta Tester ?

Sign up at:

<http://www.sunettv.se>

- For Support and Info use the WIKI:

<http://wiki.nordu.net>

Click at SUNET TV

Here you will find Information, Contacts, etc.

If you don't have an account register at:

<https://register.nordu.net/register.php>

Q & A