# The Multicast Survey and Mboned Rechartering

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# MBONED Rechartering

- The MBONED Charter is now getting pretty out of date
  - Our AD (David Kessens) has made it clear that the WG needs a new one.

- The Core of the Charter is still sound (IMO) :
  - The MBONE Deployment Working Group is a forum for coordinating the deployment, engineering, and operation of multicast routing protocols and procedures in the global Internet.

- But practice has changed
  - And new operators don't look to the IETF
  - So we decided to do a survey to see if we could find out what the Industry practice actually is.

# Survey Motivation

- Large scale IP-Multicast deployment rarely at ISPs during the last years **BUT**:

- IPTV (TriplePlay) is one of the main drivers for upcoming IP-Multicast deployment scenarios

- Special requirements
  - (End-to-End) QoS
  - Accounting
  - Service Availability, etc

# Goal

- Identify and collect requirements for Internet Multicast from service providers
  - Based on a survey (similar to L3VPN multicast requirements survey)
  - Mainly focused (but not limited) on TiplePlay (LiveTV) requirements
- Identify open issues for further standardization
- Output going to be used to write a requirements draft for internet Multicast

# Survey Overview (Requirements)

- General Requirements
  - E.g. Number of sources, number of receivers, number of streams, total bandwidth, bandwidth per stream, etc.
  - Dynamic or static multicast, channel changing times, channels/customer
  - External multicast required (peering, etc.)
- Multicast and QoS
- Multicast Service Model
  - ASM, SSM, BiDir (or combination)?
  - IPv4/IPv6?
  - MLDv2, Embedded RP, SSM (v6)?
- Backbone Requirements
  - What kind of transport?
    - Native IP, MPLS based backbone transport, etc.
  - Additional services on top of IP-Multicast enabled backbone?
    - L2VPN, L3VPN, RMC
  - Interdomain Multicast (with QoS)

# Multicast Survey

- We prepared a draft based on Thomas Narten's Multicast and (after considerable discussion) distributed it to a wide variety of lists
  - MBONED
  - I2 Multicast WG
  - Video Services Forum
  - NANOG
  - Various private lists and industry contacts
- Lucy Lynch offered to anonymize the results.
- We received a total of 9 responses
  - Thank you, whoever you are !!!

# General IPTV/Multicast requirements

- How many content source do you expect ?
  - Varied from 2 to 30,000 : Median was 1000's,
- Outside your domain ?
  - Varied from 0 to 30,000 : Strongly BiModal
    - Either none or a lot
- What proportion of the receivers of your multicasts will be (in %)
  - Servers, such as content servers      Near 0 or near 100%
  - Middleware devices, such as caches      Near 0 or 100%
  - Home or office computers      Either 0s or 99%+
  - Set top boxes      0 to 100%
  - Other devices      0 to 50% (TVs)

# General IPTV/Multicast requirements

- # of Internal Multicast channels
  - 10's to 30,000 (typically 1000)
- Max bandwidth / channel
  - 3 Mbps to 3 Gbps
- Typical bandwidth / channel
  - 100 kbps to 1.2 Gbps
- Total Multicast bandwidth
  - 10 Mbps to 10s of Gbps
- Static or dynamic
  - Most are Static
- Duration of channel
  - Days or longer

# Multicast channel change requirements

- How often do you estimate that your users will change their multicast channels per hour ?
  - Most are "lots"
- What is the desired time for a user of your services to change the channel ?
  - 2-5 seconds to 130msec
- How many channel change events do you expect per second/per network device?
  - Not many to 1000s of times / second

# Multicast and QOS

- Do you plan to offer QOS as part of your multicast service ?
  - 50 % Yes
- If yes, please specify the type
  - Strict priority , unspecified, RSVP, Diffserve
- Will your QOS solutions be different for your backbone and edge networks ?
  - 100 % No
- Do you plan to offer Forward Error Correction (FEC) as part of your multicast service ?
  - 50 % Yes
- If yes, please specify the type
  - FLUTE, TBD, Reed-Solomon block code

# Multicast Service Model

- What proportion of your multicast service will be in the various service models.
  - ASM                          : 2 @ zero %
  - SSM                          : 3 @ zero %
  - BiDir                        : 100% (for 2); the rest @ 0%
  - Other (please specify)   : None

- Would you use an IGMPv2 / ASM edge and an SSM Core if it was available ?
  - 4 No, 2 Yes

# Multicast and IPv6

- What proportion of your multicast service will be
    - IPv4                Most at or near 100%
    - IPv6                One 30%, One 100%, 2 Do not Support (3 were IPv6 only!)


- If you are offering IPv6 support, will you offer support for IPv6
    - MLDv2            4 Yes
    - Embedded RP    3 Yes, 1 No
    - SSM              5 Yes, 1 No

# Other Multicast Services

- L2VPN                2 of 9 yes
- L3VPN                3 of 9 yes
- MBMS                None ("what ?")
- BCMCS               None
- Reliable Multicast   2 of 9 yes
- Other (please specify) 1 : "SMART protocol (secure multicast for advanced repeating of television)"

# Multicast Tools

- What multicast tools do you use, for monitoring and debugging ?
- mtrace                         5 yes, 1 no ("unreliable")
- mping                          5 yes , 1 no ("unreliable")
- the multicast beacon    4 yes

  > "dbeacon only - NLANR version is too painful"

- rtpdump / rtpqual        2 yes
- Other (please specify) : internal tools based on netflow, ssmping, iperf, router proxies, SDP monitoring with various tools

# Interdomain Multicast

- Do you support MSDP, for
  - interdomain peering                4 / 9 Yes
  - Anycast RP            3 / 9 Yes
    - + 1 more in testing
  - Both                    2 / 9
- Do you support Anycast PIM
  - 1 Yes
  - 1 "we have had interest from sites"
  - 1 "In testing"

# Multicast Sourcing

- Do you plan to source your internal multicasts to external users (i.e., to users that are not on your network) ?
  - immediately : 3 yes, 5 no
  - eventually  : All but 1 yes
- Do you plan to allow external multicast sources to reach your users (i.e., from sources that are not on your network) ?
  - immediately : 3 yes, 5 no
  - eventually  : All but 1 yes

# Next Steps

- Prepare detailed evaluation of survey results
    - Clean up received results
    - Available at 68th IETF
- Prepare first draft version

# Implication for Survey

- Multicast Deployment is actually accelerating
- Number of service models is expanding, not shrinking
- But is MBONED needed ?
  - Many new providers are not "IETF types"
  - Either wind the WG down or expand its reach
- Possible areas
  - Multicast AAA
  - Multicast tools
  - Multicast Cookbooks / BCP