The Multicast Survey and Mboned Recharterering

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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• The MBONED Charter is now getting pretty out of date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, Diffserv

• 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)"

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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