

draft-ietf-l3vpn-ppvpn-mcast-reqts-02

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Agenda

- Multicast VPN Survey conclusions
- Changes made to the document
- Open items
- Document status

Multicast VPN Survey [1/9]

Survey

- ~30 questions
- Launched in July 27th
- Results gathered until late September

Responses

- 13 Responses
 - → Not bad !
- Anonymized responses published:
 - www.dnni.com/I3vpn/survey/results.html
 - www.dnni.com/l3vpn/survey/summary.html
- Many thanks to Daniel King

Multicast VPN Survey [2/9]

Responses...

- Some disparity
- Some answers should be taken with a grain of salt
- Drawing conclusion was sometimes an interpretation work
- Still, we can draw high level conclusions
 - That was the goal !
 - Expose target deployments orders of magnitude
 Number of PEs, VPNs, VPNs/PEs, multicast groups, etc.
 - Identify use cases expected to impact the most solution design
 - Spot priority features expected by providers
- Let's go through the results...

Multicast VPN Survey [3/9]

Orders of magnitude

- Number of VPNs
 - → Min: 5 / Max: 10k (one answer)
 - → Typical: split between tens(7) and hundreds/thousands(6)
 - <u>* "A solution SHOULD scale up to thousands VPNs"</u>
- Number of VPNs per PE
 - → Min: 5 / Max: 1k (one answer)
 - → Typical: tens(8) / hundreds(3)
 - * <u>"A solution SHOULD support a number of multicast VPNs per PE of several hundreds,</u> and may have to scale up to thousands VPNs per PE"
- Number of CEs per VPN per PE
 - → Min: 1 / Max: 2k (one answer)
 - → Typical: tens (6) hundreds (4)
 - <u>"A solution SHOULD thus support a number of CEs per multicast VPN per PE going up</u> to several hundreds (and may target the support of thousands of CEs)"
- Number of PEs per Multicast VPN
 - → Min: 10 / Max: 10k (1), thousands (1)
 - → Typical: hundreds (6) tens (4)
 - <u>* "A multicast VPN solution SHOULD support several hundreds of PEs per multicast VPN, and MAY usefully scale up to thousands"</u>
- Number of PEs with multicast service enabled
 - → Min: 50 / Max: 10k (one answer), thousands
 - → Typical: hundreds
 - "A solution SHOULD scale up to thousands of PEs having multicast service enabled"

(missing in current revision of the draft, will be fixed in next revision)



Orders of magnitude (c't)

- Number of PEs connected to multicast receivers
 - Not very informative
 - → Same answers than number of PEs w/ multicast
 - This was expected: few multicast applications have many source-only participants
- Number of PEs connected to multicast sources
 - → Question was a not clear enough: total or per VPN ?
 - → Min: 1,2,5,10 / Max: hundreds (1k)
 - → Typical: split between "few, tens" and 'thousands"
 - * <u>"A solution SHOULD support hundreds of source-connected-PEs per VPN, and some deployment scenarios involving many-to-many applications, may require supporting a number of source-connected-PEs equal to the number of PEs</u>"
- Number of multicast (*/S,G) sourced, per VPN
 - Min: 10 / Max: 1k (many answers)
 - → Typical: hundreds, up to 1k
 - <u>"A solution SHOULD support hundreds or thousands of streams per VPN"</u>
- Number of multicast (*/S,G) sourced, per PE
 - → Question was unclear: per PÉ ? per PE per VPN ?
 - → Considering answers to previous questions...
 - * "A solution SHOULD support as much as hundreds of streams on a PE, per VPN"

Multicast VPN Survey [5/9]

Type of applications, expected customer use cases

- A lot of variety in the responses, e.g.:
 - "Video multicast for broadcast: real-time / few and known / many in unknown locations / 2-8 Mbps / loss sensitive / about ten streams"
 - → "[...] The uses of the data are situational awareness and prevention of fratricide -shooting at your own. [...] Loss sensitivity. Losing a unit is far more important than losing a packet! [...] Unknown locations? yes; that's the whole point! [...]"
 - → "real-time / multiple one-to-many / 512-1024 kbps"
 - → ...
- Rough summary:
 - A lot of one-to-many audio video distribution applications
 - Typical videoconferencing: many to many
 - → Also some other applications, less typical, sometimes quite high profile
- Conclusions
 - No solution should restrict the scope of multicast applications and deployments that can be one over a multicast VPN (no surprise)
 - → We identified some points in use cases that may impact solution design
 - These are proposed in Section 4.1 (revamped)

Multicast VPN Survey [6/9]

Questions on deployment contexts

- Customer applications that are sensitive to multicast join/latency?
 - → Yes !
 - → More than 80%
- What kind of frequency do you expect for multicast routing changes at the PE level ?
 - → Disparate responses, e.g.:
 - "I don't know"
 - "Depends on application"
 - → No easy conclusion (up to 1k/min ?)
- Do you expect good predictability of the location of customer sources and/or receivers ?
 - → Yes (~50%)
 - Some (maybe many) deployment may benefit from some predictability
 - Predictable source location is typical of content distribution applications
- Do you expect some PEs to have less good connectivity than others ?
 - → Yes (> 50%)
 - → No: 30%
 - → This issue should not be neglected
- Do expect some VPNs to have same or close sets of PEs, and might thus use the same core trees ?
 - → Yes (~60%)
 - → No/Unknown: 40%

Multicast VPN Survey [7/9]

Questions on deployment contexts (c'd)

- Multi-AS deployments ?
 - → "Yes" (62%), "Yes, later" (23%): <u>85%</u>
- Multi-providers deployments ?
 - → "Yes" (30%), "Yes later" (15%): <u>45%</u>
 - → Maybe: 25%
 - → No/Unknown: 30%
- Carrier's carrier support ?
 - → Yes, Yes later: > 50%
- Hence
 - Those features are certainly needed
 - Make Inter-AS support a MUST ? (currently a SHOULD)

Multicast VPN Survey [8/9]

Questions on deployment contexts (c'd)

Requirements for protocols at the PE-CE interface:



We updated requirements:

- → PIM-SM, -SSM, and IGMP as MUSTs
- → MLD a MUST for implementation that would support IPv6
- → Bidir-PIM support RECOMMENDED
- → PIM-DM as OPTIONNAL

[9/9] **Multicast VPN Survey**



Expected:

- Secure as unicast service
- Seamless operation with unicast service
- No additional requirements on CEs

Interesting: ٠

- Extranet wanted: hence, we reformulated requirement as a MUST (was a SHOULD)
- Global internet multicast connectivity: low interest from responders
- TE features considered important
- Reuse of existing protocols for core trees: so-so





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We integrated conclusions from the survey:

- Revamped Section 4.1 "Scenarios"
- Completed Section 4.2 "Scalability orders of magnitude"
- Detail requirements for protocols at the PE-CE level
- Add considerations about PEs with scarce connectivity to *"Traffic Engineering" section*
- Step up requirement level for Extranet (now MUST)

Plus:

- Editorial changes
- Capitalized some wording (MAY, SHOULD, MUST, etc.)
- Fill in requirements summary, in Annex B.1
- Updated changes summary in Annex B.2

Open questions

Inter-AS: Make it a MUST ? Multi-homed sources and Inter-AS



 Shouldn't it be possible, for a provider, to prefer intra-{AS,provider} path to inter-{AS,provider} path, for the MDTunnels ?

Inter provider security

- Authentication
 - Shouldn't we require the authentication of PE-PE exchanges, in an inter-provider context ?
- Information leaking
 - May detailed information about customers multicast subscriptions leak across providers ?

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Document Status / Conclusion

- The draft is mature
- Next revision should include only few additions
- To be posted in next weeks
- Working group last call soon ? (It means: read it now, if you didn't already!)