
The brief

5 messages

Etienne-Victor Depasquale <edepa@ieee.org>
To: dk@danielking.net

Fri, May 19, 2023 at 3:58 PM

Hello Dan,

Thank you for reverting.

Here's the brief I referred to in our LinkedIn chat.

This brief contains three sections:

1. a preamble, that sets the background for
2. a description of what I'm seeking your expert advice upon, and
3. format of the article (the article is referred to in section 2)

1. PREAMBLE

I am writing a journal paper that describes the physical (as opposed to the logical) metro area networks. The paper will assist academic and industrial analysts of energy consumption in metro area networks, by a harmonized description of the various networking technologies used in access, aggregation and core. A questionnaire was crafted last year to identify those technologies of most relevance.

The survey gathers data on access and aggregation technologies at layers 0, 1 and 2 (and 2.5). It also considers points in the metro area where multi-access edge compute hardware might be installed.

The results which I shall share with you through access to my Jupyterhub research, are (part of) the quantitative analysis.

I am in the process of carrying out a qualitative survey, consisting of interviews that address the credibility of the results. However, the means of the interview has proven to be short for the breadth and depth of commentary that I am seeking.

2. WHERE I NEED EXPERT ADVICE

I need a review, in the medium of a written article, in which I would like to know:

- (a) how well the results of the quantitative analysis match your perception of trends
- (b) about any justification that you might think of that explains the results (e.g., why seamless MPLS dominates L2, L2.5 aggregation)
- (c) about limitations and ambiguities of the questions in the questionnaire

Please limit your review to those sections that regard technology on which you can manifest experience and knowledge.

Please excuse this latter explicit statement; I do know that it's a bit blunt, but since this is a scientific study, I have to state the ground rules.

3 FORMAT OF THE ARTICLE

The format of the article is not important.

However, the three aspects (2(a), (b) and (c), referred to above) should emerge clearly without the need for extensive parsing.

I am very happy to pay for your time, but please do let me know what your fee would be and please wait for me to confirm that I can afford it before you start.

Best regards,

Etienne

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Ing. Etienne-Victor Depasquale
Assistant Lecturer

Etienne-Victor Depasquale <edepa@ieee.org>
To: dk@danielking.net

Fri, May 19, 2023 at 4:18 PM

One important point I missed ... the link to the survey referred to in my previous email !

Here goes: <https://forms.gle/27aXxkw7ME77m7wd6>

[Quoted text hidden]

Etienne-Victor Depasquale <edepa@ieee.org>
To: dk@danielking.net

Mon, May 22, 2023 at 12:22 AM

Actually, I missed more than just one important point ...
I realize that I did not explain the results I've sent you !!

The cells of the Jupyter notebook plot charts
that summarize the data collected from
the questionnaire shown at <https://forms.gle/gWUiusoU4nmy3MLo6>.

Two versions of the questionnaire were distributed.

- (1) one was distributed to various network operator group (NOG) mailing lists around the world;
 - (2) the other was distributed to respondents sourced by SG Analytics.
- SGA claims that their respondents (case (2)) represent Tier 1 and regional operators.

Each cell plots either 2 or 3 charts.

Where there are 2 charts:

- (a) the chart on the left (or on top) represents data collected from NOGs.
- (b) the chart on the right (or at the bottom) represents data collected on my behalf by SGA.

Where there are 3 charts,

the third chart will have fewest respondents (e.g., 28).

This chart will represent the SGA data set, with only a single response from any one company.

This reduction to one response per company is useful when
it comes to weighting responses by the size of the company's subscriber base size.

Please let me know whether this requires further clarification.

Cheers,

Etienne

[Quoted text hidden]

dk@danielking.net <dk@danielking.net>
To: Etienne-Victor Depasquale <edepa@ieee.org>

Thu, May 25, 2023 at 10:34 PM

Hi Etienne,

That's for sharing your data. I spent some time this evening scanning the data; a few quick thoughts in response to your questions.

a. how well the results of the quantitative analysis match your perception of trends

The service distribution of the existing customer base and current/predicted service growth meets my expectation. Although, I have not discussed specific customer service demand with an operator for several years. However, the

results match the recent trend of standardisation activity, including discussion in the ETSI Fifth Generation Fixed Network (F5G).

b. about any justification that you might think of that explains the results (e.g., why seamless MPLS dominates L2, L2.5 aggregation)

Service evolution for residential customers has recently transitioned from a “Broadband Era” (XG PON), to “Ultra Fast Broadband” (NG-PON), and we are now in a “Gigaband Era” (50G EPON). It is worth noting that the operators not only wanted to increase the number of users supported and provided more bandwidth, but an operator must also be able to dedicate bandwidth for 5G fronthaul and provide backward compatibility with EPON/10G-EPON and GPON/XG PON, whilst reducing operation costs (especially reducing overall system power consumption and cooling costs).

Why is seamless MPLS so popular with your respondents? Transceivers now support a higher power budget, reach, flexible grid transmission, and system power cost. Still, they can also be used in multi-layer packet routers that already have MPLS fast-path forwarding ASIC/FPGA's. In addition, these GPON/EPON transceivers provide a server layer for seamless MPLS architectures – which can be managed using a single control plane to simplify operations and reduce costs - supporting ultra-fast end-to-end Internet services across a range of residential, business and vertical user and application requirements (BW, protection and latency).

Importantly, to reduce operational costs, setting up fine-grained services across multiple domains (end-to-end) whilst collapsing control plane architecture is a huge advantage. Ultimately, I think energy efficiency constitutes an increasingly significant challenge for network operators; not only does it directly reduce the operational expenditures of operators, but it also lowers both carbon emissions and environmental impact.

c. about limitations and ambiguities of the questions in the questionnaire

Nothing obvious. I suppose a few questions on planned network evolution might have been interesting; for instance... Juniper is proposing Seamless Segment Routing; they are keen to continue the end-to-end inter-domain/AS principle of seamless MPLS with lightweight traffic engineering features of SR. I know at least two mobile operators working with Juniper on this architecture – although several standards gaps exist, such as BGP-CT maturity.

BR, Dan.

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Etienne-Victor Depasquale <edepa@ieee.org>
To: dk@danielking.net

Fri, May 26, 2023 at 5:35 PM

Excellent observations Dan, thank you. Much obliged.

Best regards,

Etienne
[Quoted text hidden]