

Network Function Virtualization Research Group (NFVRG)

July 17, 2017 | 17:40-18:40

17:40-18:40 Monday Afternoon session III Room Congress Hall II IRTF

Remote Participation:

<http://www.ietf.org/meeting/99/index/index.html>

<http://www.ietf.org/meeting/99/remote-participation.html>

Note Taker: Arnaud Taddei

## 1. Agenda

Discussion/remarks from chair (slides):

<https://www.ietf.org/proceedings/99/slides/slides-99-nfvrg-00-welcome-and-admin-matters-01.pdf>

- Call for shorter meetings but more frequently, with potential interim meetings happening as well
- A BoF on Network Slicing happened
- IETF is not a research group
- DLT was discussed
  
- Agenda was presented with the theme: How to achieve refocusing NFVRG
  
- Overall, the goal for this NFVRG meeting at IETF99 is to focus in on fewer presentations, allowing for more time, more discussion, more interaction/Q&A; the rest of these minutes reflect that agenda.

## 2. Network Virtualization Research Challenges

Presenter: Carlos J. Bernardos

Draft: <https://datatracker.ietf.org/doc/draft-irtf-nfvrg-gaps-network-virtualization/>

Slides: <https://www.ietf.org/proceedings/99/slides/slides-99-nfvrg-01-network-virtualization-research-challenges-00.pdf>

- The presentation highlighted the I-D Structure in two parts and received 9 reviews from people
- The gaps were clearly listed slide 7 and the match for potential research in slide 8 with 4 focus points for NFRG
- Q (Arnaud Taddei) regarding the ITU-T connection which is done between DT (Dirk) and SG13 Chairman (Leo)

## 3. Using Flexibility as a Measure to Evaluate Software Networks

Presenter: Wolfgang Kellerer

Slides: <https://www.ietf.org/proceedings/99/slides/slides-99-nfvrg-02-using-flexibility-as-a-measure-to-evaluate-softwarized-networks-00.pdf>

- In essence, Wolfgang came from the perspective that in his past life he had to sell his stakeholders that flexibility is an important criteria to evaluate a solution and an architecture and that it was never tangible enough in the decision making vs pricing and other business aspects.
- In this presentation Wolfgang started by showing the contrast or paradox about:
  - o The impact of digitalization on new requirements
  - o But it was less about flexibility and adoption
- When various designs A and B are proposed, what is the good choice and how to give a tangible evaluation to 'FLEXIBILITY'
- Slide 3 shows the ossification of the network as a result of not looking at flexibility and the contrast of the very slow adaptation to very genuine dynamic changes.
- Whilst that is the promise of SDN/NFV are really going to benefit from it? Not until we truly define flexibility as "ability to support new requests to change design requirements (traffic pattern, latencies,...) in a timely manner via adaptation of resources (topology, capacity, ...) if needed »
- With this definition and its mathematical translation Wolfgang gave a convincing suite of examples with metrics, simulations, design diagrams revealing what normal evaluation do not see behind conventional descriptions of each design and truly showing the tradeoffs that need to happen between performance and ossification (including on SDN/NFV if we do not pay attention!)
- Key takeaways Need for a measure to analyze flexibility as a trade off with performance and cost
- This is a multidimensional space with possible optimizations if relationships are confirmed between flexibility and cost
- Wolfgang got 10 questions (please review recording for full context)

Q (person from AT&T):

- Complex challenge and the person thought about something else: which function we measure and it depends on the implementation.
- Who is the audience: vendors who get the RFPs, people in operations who make choices, Research?
- Reference to CloudFirst, Granularity question? If I have a solution that gives me flexibility, how granular it is?

A: It is a long journey and it mixed many possible scopes. Goal to offer a tool for Vendors and Operators. Big struggle on Flexibility vs Cost

Q (person from DT):

- as an operator DT design to cost per unit and look at parameters to assess and compare vendors.

- Is the aim to deliver standardized functionality?

A: This is a very complex area before going to standardized functionalities

Q (person from DT, part 2): Who is the project sponsor?

A: ERC for 5 years

Q (Arnaud Taddei from Symantec)

- This is indeed a multidimensional design problem with many other criteria
- Is there awareness that aggregating the choice refers to social mathematics and aggregators are influencing the choice?
- Importance from Security criteria alongside Flexibility criteria

A: Fully aware

Q(Unknown person):

- Similar to question 4 flexibility is giving a new dimension
- Have you tried to combine with other dimensions and do a single optimization like criteria as Reliability, etc.?

A: Fully aware but out of scope for the moment

Q (Unknown person): How much time to go in the 5 years term?

A: 3 years and 1/2 to go so still plenty of time

Q (from John?): Question on project management and prioritization

A: Wolfgang answered with a citation: You have flexibility, it has to be fast and cheap ... but you can only have 2!

Q (Unknown):

- Can you place an objective function?
- Have you used fast computing on the study?

A: Not implemented yet but thought about it

Q (Person from University of Munich)

- eNodeB from vendor A and B
- eNodeB in 5G is now different?

A: Need to study across different generation of designs too indeed

End of Minutes/IETF99