Review letter

**Authors**: We would like to thank the reviewers for the fruitful feedback as well as their time to carry out the review.

**Review 1 (Reviewer A)**

The motivation of the paper and its connection with SDN is not clear. It seems forced, and it lacks of a discussion of SDN as mechanism for configuration management rather than dataplane management.

**Authors**: The main problem faced in this paper is a related to the service model’s abstraction provided by a SDN network controller. The service abstraction can be used to handle the complexity related to the dailly service provision tasks in a service provider network. The authors have complemented the problem statement definition with the following sentences under the introductory section:

“”

The paper lacks of strong literature support and therefore it is not presenting a relevant related work section.

**Authors**: New references as well as similar work as been included in the problem definition with the following sentences:

“”

“”

Finally, the paper has many wording and grammar issues, which makes difficult its reading and understanding.

**Authors**: Typos were corrected, and a prof reading were added to improve the English.

First, the motivation is unclear. Despite the relevance of the topic and the addressed problem can be agreed, it is not clear why this problem is related to SDN.

This is an aspect which authors present in forced way, since they are not presenting evidence supporting this scenario as a use case for SDN.

There are many ambiguities related to the discussed data models.

The architectural proposal presented by authors is not actually an architecture. It is just a shallow discussion of phases to execute the specified task.

Authors are not presenting a detailed definition of the role of the SDN controller in this scenario.

The experiments are very ad-hoc and they do not seem to follow a clear methodology. Therefore, the conclusions achieved can not be adequately assessed.

**Authors**:.

This reviewer suggests the authors to review the following references in order to provide a better support for the ideas included in the paper:

* Kreutz, D., Ramos, F. M., Verissimo, P. E., Rothenberg, C. E., Azodolmolky, S., & Uhlig, S. (2014). Software-defined networking: A comprehensive survey. Proceedings of the IEEE, 103(1), 14-76.
* Bahnasse, A., Talea, M., Badri, A., Louhab, F. E., & Laafar, S. (2020). Smart hybrid SDN approach for MPLS VPN management on digital environment. Telecommunication Systems, 73(2), 155-169. van der
* Pol, R., Gijsen, B., Zuraniewski, P., Romão, D. F. C., & Kaat, M. (2016). Assessment of SDN technology for an easy-to-use VPN service. Future Generation Computer Systems, 56, 295-302. Noghani, K. A.,
* Benet, C. H., Kassler, A., Marotta, A., Jestin, P., & Srivastava, V. V. (2017, May). Automating ethernet VPN deployment in SDN-based data centers. In 2017 Fourth International Conference on Software Defined Systems (SDS) (pp. 61-66). IEEE.
* Mirkhanzadeh, B., Taheri, N., & Khorsandi, S. (2016, April). SDxVPN: A software-defined solution for VPN service providers. In NOMS 2016-2016 IEEE/IFIP Network Operations and Management Symposium (pp. 180-188). IEEE.

Finally, the paper has many wording and grammar issues. There are sections which are presented in a very disordered way. According to this reviewer, the paper should be proofread before retrying any submission.

**Authors**: Typos were corrected, and a prof reading were added to improve the English.

**Review 2 (Reviewer D)**

The paper is intended to be a short paper, which is fair; although some non-obvious abbreviations should be extracted to ease the reading.

**Authors**:.

Similarly, the text n the Figures should be readable, meaning the font size is similar to the normal text of the paper. Figure 5 is bearly visible.

**Authors**: The figure 5 compare the mean time consumed during the execution of the CREATE and DELETE calls on the SDN controller. The figure has been updated to make it more readable.



Figures should be referenced as Figure 1 or Fig. 1 rather than just the number 1 - throughout the paper.

**Authors**: The figure labeling were corrected to increase the paper readability.

There are some erroneous sentences that should be corrected, such as "Secondly, the work implements for the first the very first time the L3NM." (moreover, this sentence may not factually true: the paper may be the first publicly available report on the implementation....

**Authors**: We have reviewed and corrected the typos errors, we have added a prof reading to improve the English and increase the readability.

**Review 3 (Reviewer E)**

The paper aims to conduct experimentation with standard interfaces to manage heterogeneous devices to provision L3VPNs, which is a notable effort, but the experimentation is quite short. As an experimentation paper, I expected more results from the evaluation scenario than those that were presented.

**Authors**:.

The main shortcoming of the paper is the experimentation conducted. As an experimentation paper, the evaluation should provide more results leveraging the real components deployed. I respectfully make a few comments that may be used to improve the paper. Perhaps, the title could be about a broader aspect of your work. For instance, it could point to the bigger problem:

* The management of heterogeneous devices that use heterogeneous management interfaces. In such a case, L3VPNs could be just a case study, and the paper could include other case studies. Section III could be shortened to open space for further evaluation results.

**Authors**:.

The discussion in Section III is rich in detail. However, a significant part of the discussion is about well-known issues that could be presented briefly.

**Authors**:.

With the emergence of 5G, a lot has been discussed about Network Orchestrators, such as ONAP, OSM, and OpenBaton. Their main focus is in NFV, but their frameworks also tackle the management of physical devices. How these efforts relate to your work? Is it possible to have Hybrid SDNs managed by such orchestrators? Indeed, the OSS/BSS interfaces problem pointed in your work are also addressed by such frameworks.

**Authors**:.

About the evaluation, the total time to create/delete an L3VPN in the management system is a simple measure that could be improved. How much time is related to the sending of a command? How much time is spent by the controller in the processing? It is not clear what was implemented to experiment. Only the registration of the L3NM YANG module within the controller made it ready to receive RESTCONF operations regarding the model?

**Authors**:.

The authors had to develop additional parts? The experimentation could explore multiple SB interfaces to investigate how the controller interfaces with each one. Do they perform the same? Even without the real devices, the authors could explore CLIs/management interfaces simpler to deploy (SSH, SNMP). These are just examples of possible improvements to the evaluation.

**Authors**:.

Typos:

Introduction, Paragraph 4: higest → highest

Figure 1: “Service Orchestation” → “Service Orchestration”

Subsection III-A (title): Desing → Design

**Authors**: We have reviewed and corrected the typos errors, we have added a prof reading to improve the English and increase the readability.

**Review 4 (Reviewer F)**

**Majors**: The results are not well presented. The testing is very minimum and the only result figure is unreadable.

**Authors**: The figure 5 compare the mean time consumed during the execution of the CREATE and DELETE calls on the SDN controller.



The authors claim that the L3NM implementation is introduced for the first time, in fact, there is implementation already available on Github. The literature review is incomplete. In particular, only one recent reference was used.

**Authors**: The implementation available on Github (<https://github.com/IETF-OPSAWG-WG/l3nm>) is maintained by the authors of the current paper. The repository includes the L3VPN network data model and the IETF draft document referenced on the proposal on [12].

We claim this work as the first implementation of the L3NM mainly because the draft is on track for standardization in the IETF and is not supported on any commercial SDN network controller. There are other set of implementations reported using a similar service model (L3SM).

Add ref

**Minor**: Many typos in the paper, the manuscript needs a careful proofreading

**Authors**: We have reviewed and corrected the typos errors, we have added a prof reading to improve the English and increase the readability.

This is a promising work, however, it needs more results and analyzes these results. Literature review and state-of-the-art references are required. Please refer to the shortcomings section for more comments.