

Lazaros K. Gallos  
Academic Editor  
PLOS ONE

9 January, 2019

Dear Dr. Gallos,

We thank you for your invitation to submit a revised manuscript. We would also like to express thanks to you and the reviewer for your comments, which have guided us in strengthening and clarifying our paper. We have revised the manuscript to address all the raised issues, and hope that these revisions have satisfactorily resolved the reviewer's and your concerns. It is with great pleasure that we submit a revised manuscript for your consideration. We have also revised the manuscript to comply with formatting requirements suggested by the editor. Comments from the editor and reviewer and descriptions our revisions and responses follow.

Sincerely,

Edward L. Platt  
PhD Candidate, University of Michigan School of Information

Daniel M. Romero  
Assistant Professor, University of Michigan School of Information

Editor Comments:

> Please ensure that your manuscript meets PLOS ONE's style requirements, including those  
> for file naming.

We have reviewed the style requirements and submission filenames.

> Please ensure that you refer to Figure 2 in your text as, if accepted, production will need this  
> reference to link the reader to the figure.

We have added a reference to Figure 2 and moved the figure to appear directly after the referencing paragraph to comply with the submission guidelines.

Reviewer #1 Comments:

> Reviewer #1: This paper presented a novel concurrent multipath routing (CMR) algorithm for  
> the wraparound butterfly network topology, as well as a highly attack-tolerant Structured  
> Multipath Fault Tolerance (SMFT) architecture which incorporates the butterfly CMR  
algorithm,

We agree with this summary, and thank the reviewer for their attention.

> 1. What is the upper bound of the multipath in concurrent multipath routing fault tolerance  
> mentioned in your manuscript?

We thank the reviewer for noting that only the lower bound was specified for the number of paths produced by the butterfly routing algorithm. We have revised the manuscript to indicate that the upper bound is also  $2^h$ , stemming from the regular degree of the directed wraparound butterfly network. This feedback has helped us realize that the algorithm achieves the best possible redundancy for this particular topology, strengthening the paper.

> The convergence speed of the algorithm is not clearly indicated in the article.

We thank the reviewer for drawing our attention to this oversight. A “Running Time” subsection has been added after the routing algorithm specification describing the  $O(k \log N)$  time complexity for calculating  $k$  redundant paths in an  $N$ -node network.

> Attack tolerance is different in different network topologies. How to define the attack tolerance  
> in this article?

We have addressed this concern by adding the definition of attack-tolerance as used in this paper. We thank the reviewer for pointing out this opportunity to clarify the paper.

> Please note the consistency of the article format, for example line 97, line 112, line 113 etc.

We have removed italics from these lines and thank the reviewer for drawing our attention to this formatting consideration.