

# Torii-HLMAC: Distributed, Fault-tolerant Data Center Architecture with Multiple Tree-based Addressing and Forwarding

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## ABSTRACT

Data center networks are increasingly relying on Ethernet and flat layer two networks due to its excellent price and performance ratio and configuration convenience. Different approaches to implement a data center fabric have been recently proposed to overcome the limitations of Spanning Tree protocol (ST) and the configuration complexity of Multiple Spanning Tree Protocol.

PortLand [1] is a recent protocol proposal for data centers that uses centralized control, location based pseudo MAC addresses and Up/Down turn prohibition to prevent loops. Positional addresses are assigned to hosts and switches by a discovery protocol and replace universal MAC addresses at edge switches.

The Torii-HLMAC protocol [2] aims to improve Portland (and routing in fat trees in general) with alternative, simpler and distributed mechanisms. It uses topological pseudo MAC addresses, but multiple simple addresses (inspired in TRE [3]), in order to facilitate multipath forwarding, direct frame routing without tables and on the fly alternate path selection after link failure.

## BODY

*Just a few messages exchanged once the architecture is built and done! Have a high-bandwidth, load-balanced data center network forever*

## REFERENCES

- [1] R. Mysore et al. PortLand: A Scalable Fault-Tolerant Layer 2 Data Center Network Fabric. ACM SIGCOMM 2009.
- [2] E. Rojas and G. Ibanez. Torii HLMAC: Distributed, Fault-tolerant, Zero Configuration Data Center Architecture with Multiple Treebased Addressing and Forwarding. ACM CoNEXT 2011.
- [3] G. Ibanez et al. Evaluation of Tree-based routing Ethernet. IEEE Communication Letters, IEEE June 2009 Vol. 13 No 6 pp. 444-446. DOI: 10.1109/ LCOMM.2009.090469.

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