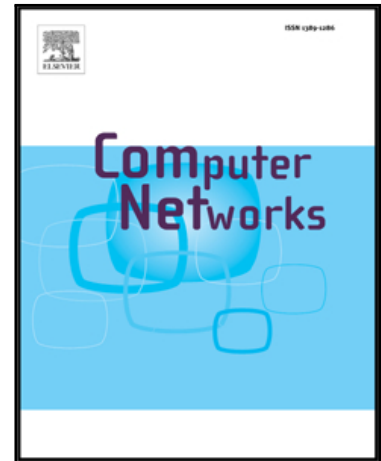


## Accepted Manuscript

A Cluster-based Scalable Router for Information Centric Networks

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PII: S1389-1286(18)30349-9  
DOI: [10.1016/j.comnet.2018.06.003](https://doi.org/10.1016/j.comnet.2018.06.003)  
Reference: COMPNW 6512



To appear in: *Computer Networks*

Received date: 21 November 2017  
Revised date: 17 May 2018  
Accepted date: 4 June 2018

Please cite this article as: Andrea Detti, Lorenzo Bracciale, Pierpaolo Loreti, Giulio Rossi, Nicola Blefari Melazzi, A Cluster-based Scalable Router for Information Centric Networks, *Computer Networks* (2018), doi: [10.1016/j.comnet.2018.06.003](https://doi.org/10.1016/j.comnet.2018.06.003)

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## A Cluster-based Scalable Router for Information Centric Networks

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### Abstract

To support content-oriented services, the routers in Information Centric Networks (ICN) have to provide packet processing functions that are more complex with respect to IP standards, making harder to attain high forwarding rates. The ICN community is working to overcome this issue, designing new software and hardware routers, for setting higher the throughput bar.

In this work, we propose to distribute the workload of a router over several physical machines, resulting in a faster, Cluster-based, Scalable ICN router (CSR), able to operate with any current software/hardware ICN solution. We also present the specific challenges that the ICN paradigm poses to the design of a cluster router, and show how our proposed CSR deals with them.

The overall forwarding rate can be increased or decreased by suitably dimensioning the number of cluster resources (horizontal scaling) or the performance of individual cluster resources (vertical scaling). When deployed in a cloud environment, the amount of cluster resources can follow the traffic demand, so implementing an elastic ICN router. To assess the feasibility of our approach, we developed a real CSR, based on a new kernel-based ICN load-balancer. The paper includes an extensive set of measurements devised to assess the capabilities and performance of the proposed solution.

*Keywords:* Information Centric Networks, Router, Cluster, Cloud, Scalability, Elastic Services

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