Document details

‹ Back to results | 1 of 1

Export Download Print E-mail Save to PDF Add to List More... ›

Full Text View at Publisher

Mobile Networks and Applications
Volume 24, Issue 4, 15 August 2019, Pages 1255-1264

SCCN : A Time-Effective Hierarchical Interconnection Network for Network -On-Chip (Article)

Ali, M.N.M.[a], Rahman, M.M.H.[b], Nor, R.M.[a], Behera, D.K.[c], Sembok, T.M.T.[d], Miura, Y.[e], Inoguchi, Y.[f]

[a]Department of Computer Science, KICT, IIUM, Kuala Lumpur, Malaysia
[b]College of Computer Science and Information Technology (CCSIT), King Faisal University, Al Hofuf, Saudi Arabia
[c]Indira Gandhi Institute of Technology, Sarang, Odisha, India

View additional affiliations

Abstract

View references (21)

The needed time to send and receive a message among two nodes in an interconnection network has a fundamental role in determining the performance of this network . Therefore, taking a short period of time to send a packet between a source and destination nodes indicates a good performance network with less congestion and latency. Besides, processing data in short-term help in providing fast solutions for many complex problems. Thus, various designs of hierarchical interconnection networks (HINs) for the massively parallel computer (MPC) systems have been presented recently; the main goal of these networks is to replace the conventional ones which showed poor performance in scaling the network size. A Shifted Completely Connected Network (SCCN) proposed as a new HIN topology. Several basic modules (BMs) interconnected hierarchically to create advanced levels networks based on this topology. The structural design and a proposed routing protocol of SCCN discussed in this paper. However, the foremost focus of this work is to evaluate the time cost-effectiveness factor (TCEF) of SCCN in different levels in order to examine the effect of expanding the size of the network on the TCEF. Therefore, the TCEF for the higher levels of SCCN from level (1) to level (3) will be assessed to examine whether SCCN is an effective network in term of time. In addition, the obtained results from each level will be compared to other networks to prove the preeminence of the proposed topology. © 2019, Springer Science+Business Media, LLC, part of Springer Nature.

SciVal Topic Prominence

Topic: Interconnection networks | Mesh generation | Network performance

Prominence percentile: 11.810

Author keywords

Cost-Effective Factor (CEF) | Hierarchical Interconnection Networks (HINs) | Interconnection Networks | Massively Parallel Computer (MPC) Systems | Network -on-Chip (NOC) | Shifted Completely Connected Network (SCCN) | Static Network Performance | Time Cost-Effectiveness Factor (TCEF)

Indexed keywords

Engineering controlled terms: Cost effectiveness | Data handling | Distributed computer systems | Hierarchical systems | Integrated circuit interconnects | Interconnection networks (circuit switching) | Network -on-chip | Servers | Structural design | Topology

Engineering uncontrolled terms: Connected networks | Cost effective | Hierarchical Interconnection Networks (HINs) | Massively parallel computers | Network -on-chip(NoC) | Static network performance | Time Cost-Effectiveness Factor (TCEF)

Engineering main heading: Computer network performance evaluation

A new static cost-effective parameter for interconnection networks of massively parallel computer systems

Hafizur Rahman, M.M. , Ali, M.N.M. , Ibrahim, A.A.
(2018) Advances in Intelligent Systems and Computing

View all related documents based on references

Find more related documents in Scopus based on:

Authors > Keywords >

Funding details

Funding sponsor	Funding number	Acronym
Department of Sport and Recreation, Government of Western Australia See opportunities by DSR↗		DSR
Deanship of Scientific Research, King Saud University		
Deanship of Scientific Research, King Faisal University	186138	DSR, KFU

Funding text

The authors would like to thank the Deanship of Scientific Research (DSR) at the King Faisal University for the financial support of this paper under the grant No. 186138. The authors are also grateful to the reviewers for their constructive com-ments and suggestions to improve the quality of this paper. Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

ISSN: 1383469X
Source Type: Journal
Original language: English
DOI: 10.1007/s11036-019-01262-2
Document Type: Article
Publisher: Springer New York LLC

References (21)

View in search results format >

1 Al Faisal, F., Rahman, M.M.H., Inoguchi, Y.
Topological Analysis of Low-Powered 3D-TESH Network
(2016) *Proceeding of IEICE Tech*, 115, pp. 143-148. Cited 3 times.

2 Rahman, M.M.H., Inoguchi, Y., Faisal, F.A., Kundu, M.K.
Symmetric and folded tori connected torus network
(2011) *Journal of Networks*, 6 (1), pp. 26-35. Cited 12 times.
http://ojs.academypublisher.com/index.php/jnw/article/view/06012635/2545
doi: 10.4304/jnw.6.1.26-35

View at Publisher