

1 of 1

[Export](#) [Download](#) [Print](#) [E-mail](#) [Save to PDF](#) [Add to List](#) [More... >](#)
[Full Text](#) [View at Publisher](#)

 Indonesian Journal of Electrical Engineering and Computer Science [Open Access](#)
 Volume 17, Issue 2, November 2018, Pages 852-864

Radio Access Technology (RAT) Selection Mechanism using TOPSIS Method in Heterogeneous Wireless Networks (HWN) (Article) [\(Open Access\)](#)

 Anwar, F., Masud, M.H., Ul Islam Khan, B., [✉](#) Olanrewaju, R.F., Latif, S.A. [👤](#)

Department of Electrical and Computer Engineering, Kulliyah of Engineering, International Islamic University Malaysia, Kuala Lumpur, Malaysia

Abstract

[View references \(20\)](#)

In next-generation wireless networks, a Multi-Mode Device (MMD) can be connected with available Radio Access Technology (RAT) in a Heterogeneous Wireless Network (HWN). The appropriate RAT selection is essential to achieve expected Quality of Service (QoS) in HWN. There are many factors to select an appropriate RAT in HWN including Data rate, Power consumption, Security, Network delay, Service price, etc. Nowadays, the MMDs are capable to handle with multiple types of services like voice, file downloading, video streaming. Considering numerous factors and multiple types of services, it is a great challenge for MMDs to select the appropriate RAT. A Multi-Attribute Decision Making (MADM) method to deal with numerous attributes to achieve the expected goal is Technique for Order Preference by Similarity to Ideal Solution (TOPSIS). This research utilized TOPSIS method to evaluate its proposed algorithm to choose the proper RAT for single and dual call services. The algorithm applies users' preference of a specific RAT that varies for diverse categories of calls. It also aggregates the assigned call weight and call priority to choose the RAT for group call admission for different scenarios. The highest closeness coefficient has been considered the appropriate networks among other networks. 100 call admission into three networks has been simulated and has been observed. © 2018 Institute of Advanced Engineering and Science.

SciVal Topic Prominence [📄](#)

Topic: Heterogeneous networks | Wireless networks | Vertical handoff

 Prominence percentile: 92.052 [📄](#)

Author keywords

[Heterogeneous wireless Networks \(HWN\)](#) [Multi-attribute decision making \(MADM\)](#) [Radio access technology \(RAT\)](#) [TOPSIS method](#)

Funding details

Funding sponsor	Funding number	Acronym
Ministry of Higher Education, Malaysia	FRGS13-081-0322	

Funding text

This work was partially supported by Ministry of Higher Education Malaysia (Kementerian Pendidikan Tinggi) under Fundamental Research Grant Scheme (FRGS) number FRGS13-081-0322

Metrics [📄](#)

0 Citations in Scopus
 0 Field-Weighted Citation Impact



PlumX Metrics [▼](#)

Usage, Captures, Mentions, Social Media and Citations beyond Scopus.

Cited by 0 documents

Inform me when this document is cited in Scopus:

[Set citation alert >](#)
[Set citation feed >](#)

Related documents

Game theory for resource allocation in heterogeneous wireless networks - a review

 Anwar, F., Masud, M.H., Ul Islam Khan, B. (2018) *Indonesian Journal of Electrical Engineering and Computer Science*

Performance evaluation of MADM-based methods for network selection in a multimedia wireless environment

 Trestian, R., Ormond, O., Muntean, G.-M. (2015) *Wireless Networks*

Network selection in heterogeneous environment: A step toward always best connected and served

 Rao, K.R., Bojkovic, Z.S., Bakmaz, B.M. (2013) *2013 11th International Conference on Telecommunications in Modern Satellite, Cable and Broadcasting Services, TELSIKS 2013*

References (20)

[View in search results format >](#)

All [Export](#) [Print](#) [E-mail](#) [Save to PDF](#) [Create bibliography](#)

- 1 Gustafsson, E., Jonsson, A.
Always best connected

(2003) *IEEE Wireless Communications*, 10 (1), pp. 49-55. Cited 627 times.
doi: 10.1109/MWC.2003.1182111

[View at Publisher](#)

- 2 Masud, M.H., Latif, S.A., Alam, F.A.M.K.
A scheduling algorithm for bandwidth aggregation in Heterogeneous Wireless Network

(2014) *2014 International Conference on Informatics, Electronics and Vision, ICIEV 2014*, art. no. 6850789. Cited 2 times.
ISBN: 978-147995179-6
doi: 10.1109/ICIEV.2014.6850789

[View at Publisher](#)

- 3 Latif, S.A., Masud, M.H., Anwar, F., Alam, M.K.
An investigation of scheduling and packet reordering algorithms for bandwidth aggregation in heterogeneous wireless networks

(2013) *Middle East Journal of Scientific Research*, 16 (12), pp. 1613-1623. Cited 6 times.
[http://www.idosi.org/mejsr/mejsr16\(12\)13/1.pdf](http://www.idosi.org/mejsr/mejsr16(12)13/1.pdf)
doi: 10.5829/idosi.mejsr.2013.16.12.12055

[View at Publisher](#)

- 4 Trestian, R., Ormond, O., Muntean, G.-M.
Game theory-based network selection: Solutions and challenges

(2012) *IEEE Communications Surveys and Tutorials*, 14 (4), art. no. 6144681, pp. 1212-1231. Cited 122 times.
<http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=9739>
doi: 10.1109/SURV.2012.010912.00081

[View at Publisher](#)

- 5 Song, Q., Jamalipour, A.
A network selection mechanism for next generation networks

(2005) *IEEE International Conference on Communications*, 2, pp. 1418-1422. Cited 189 times.

- 6 Fux, V., Maillé, P.
A rating-based network selection game in heterogeneous systems

(2012) *8th EURO-NF Conference on Next Generation Internet, NGI 2012 - Proceedings*, art. no. 6252144, pp. 125-132. Cited 4 times.
ISBN: 978-146731634-7
doi: 10.1109/NGI.2012.6252144

[View at Publisher](#)