

Performance Analysis of Node Architecture in WDM Mesh Network

Krit Chaiwong^{*}, Siriphan Wichaidit^{**}, Phaithoon Phromsuphorn^{*} and Paramote Wardkein^{*}

^{*}Telecommunication Engineering Department, Faculty of Engineering, King Mongkut's Institute of Technology Ladkrabang Ladkrabang, Bangkok, THAILAND 10520.

^{**}Information and Communication Engineering Department, Faculty of Industrial Technology, Phetchaburi Rajabhat University 38 Moo 8 Hardjaosumran Rd. Nawong Muang Phetchaburi 76000.

abacus5000@hotmail.com

Abstract- This paper propose the routing and wavelength assignment(RWA) in Wavelength Division Multiplexing (WDM) mesh network architecture which composed of node that has light path assignment (G-node) and none light path assignment (NG-node) and supporting both wavelength conversion and non-wavelength conversion systems. For routing, the shortest main route and the second shortest alternate route are used and wavelength assignment is random to reduce blocking probability. In addition, the proposed analytical models can also predict the blocking probability. The results show that the proposed grooming node is superior to the method with using only none grooming node. Moreover, the results obtained from the analytical model are agreed well with the numerical results.

Keywords- Wavelength Division Multiplexing, Routing and wavelength assignment, Fixed-Alternate Path Routing, Queueing Theory, Grooming node.



Krit Chaiwong received the Telecommunication Engineering from Mahanakorn University of Technology Thailand in 2003 and M.S. degrees from King Mongkut's Institute of Technology Ladkrabang in 2008. He is studying the Ph.D. degree in Telecommunication Engineering at King Mongkut's Institute of Technology Ladkrabang Thailand, where he is currently a lecturer at the Information and Communication Engineering Department, Faculty of Industrial Technology, Phetchaburi Rajabhat University. His active area of research is in Optical networks.



Siriphan Wichaidit received the computer science from Thaksin University Thailand in 2004 and M.S. degrees Prince of Songkla University in 2008. She is currently a lecturer at the Information and Communication Engineering Department, Faculty of Industrial Technology, Phetchaburi Rajabhat University. Her active area of research is in Computer science.



Phaithoon Phromsuphorn received the Telecommunication Engineering and M.S. degrees from Mahanakorn University of Technology Thailand in 1996 and 2004 respectively. He is studying the Ph.D. degree in Telecommunication Engineering at King Mongkut's Institute of Technology Ladkrabang. His active area of research is in soft switch networks, focusing on the design and analysis.



Paramote Wardkein received Ph.D. degree in Telecommunication Engineering at King Mongkut's Institute of Technology Ladkrabang Thailand in 1992. His active area of research is in Telecommunication networks. He is currently a lecturer at the Telecommunication Engineering Department, Faculty of Engineering, King Mongkut's Institute of Technology Ladkrabang.