# An Anthology of Applied Computer Technologies

Zulkefli Muhammed Yusof
M.M Hafizur Rahman

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**Editors**

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# 20. AN EVALUATION OF PHOTONIC SWITCHING NETWORK

Al-Sakib Khan Pathan, M. M. Hafizur Rahman
Department of Computer Science, Faculty of Information and Communication Technology, International Islamic University Malaysia, Malaysia

**ABSTRACT**

For a good switching architecture from system considerations, for a given switch size, $N$, the number of switching elements (SEs) should be as small as possible. When the number is large, implementation is expensive and the optical path is subject to large power loss and crosstalk. When designed to reduce the SE in total and in each path, a switch can have a large internal blocking probability. The internal blocking should be avoided or reduced. It can be reduced to zero by using a good switching control or by rearranging the current switching configurations. These cases are called wide-sense non-blocking and rearrangeably non-blocking, respectively. If a blocking condition never arises in a switch it is said to be strictly non-blocking. In this paper, a new optical multistage interconnection network for photonic switching is proposed. A routing algorithm has also been proposed to show the proposed network to be wide-sense non-blocking.

## 20.1 INTRODUCTION

Wide-sense non-blocking capability can be considered as a compromise between strictly non-blocking and rearrangeable non-blocking. For a wide-sense non-blocking network, an intelligent routing algorithm must be employed to govern the process of path routing. Through carefully selecting the paths used to satisfy the current connection request, the non-blocking