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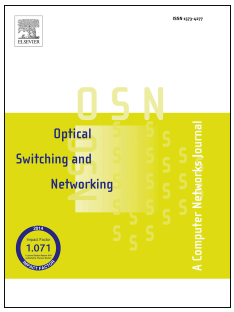

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Overlapping Shared Segment Protection in Store-and-Transfer WDM Networks under Sliding Scheduled Traffic Model

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Abstract

The so called Store-and-Transfer WDM Network (STWN) can store data in embedded storage nodes and provision segmented lightpaths under sliding scheduled traffic model at an optimal time when wavelengths are clear of conflicts. The embedded storage nodes can also be used to segment protection paths, but those nodes must also be protected. In this work, we extend overlapping shared segment protection to provision resources under sliding scheduled traffic model. Traditionally, shared path protection is used under sliding scheduled traffic model and with link-disjoint or node-disjoint protection paths, fibre links or optical nodes including fibre links connecting them, can be protected. We compare performance of overlapping shared segment protection with shared path protection. Simulations show the following: With link-disjoint or node-disjoint protection path, overlapping shared segment protection has 30% lower blocking rate than shared path protection. On the other hand, if number of requests is large, overlapping shared segment protection requires 25% more storage than shared path protection. But if only 6 nodes of a network of 24 nodes are willing to share storage, the performance is 25% lower, while monte carlo method shows 18 nodes are required to share storage to reach stable performance. Also, if maximum number of segments increases, the blocking rate decreases and required storage size increases. In a network with diameter of

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