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**Restricted routing and wide diameter of the cycle prefix network.** (English) Hsu, Frank (ed.) et al., Interconnection networks and mapping scheduling parallel computations. Proceedings of a DIMACS workshop held Feb. 7-9, 1994 at Rutgers University, New Brunswick, NJ, USA. Providence, RI: American Mathematical Society. DIMACS, Ser. Discrete Math. Theor. Comput. Sci. 21, 31-46 (1995). [ISBN 0-8218-0238-0/hbk]

The cycle prefix network is a Cayley coset digraph based on sequences over an alphabet, which has been proposed as a vertex symmetric communication network. This network has been shown to have many remarkable communication properties such as a large number of vertices given degree and diameter, simple shortest path routing. Hamiltonicity, optimal connectivity, and others. The considerations for designing symmetric and directed interconnection networks are well justified in practice.

Among the properties of a good network, efficient routing is probably one of the most important. In this paper, we further study routing algorithms for the cycle prefix network. We confirm an observation first made based on computer experiment regarding the diameter change when certain links are removed in the original network, and we completely determine the wide diameter of the network. The wide diameter of a network is now perceived to be even more important than the diameter. We show by construction that the wide diameter of the cycle prefix network is very close to the ordinary diameter. This means that routing in parallel in this network costs little extra time compared to the ordinary single path routing.

Keywords: cycle prefix network; Cayley coset digraph; path routing Classification:

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