Report

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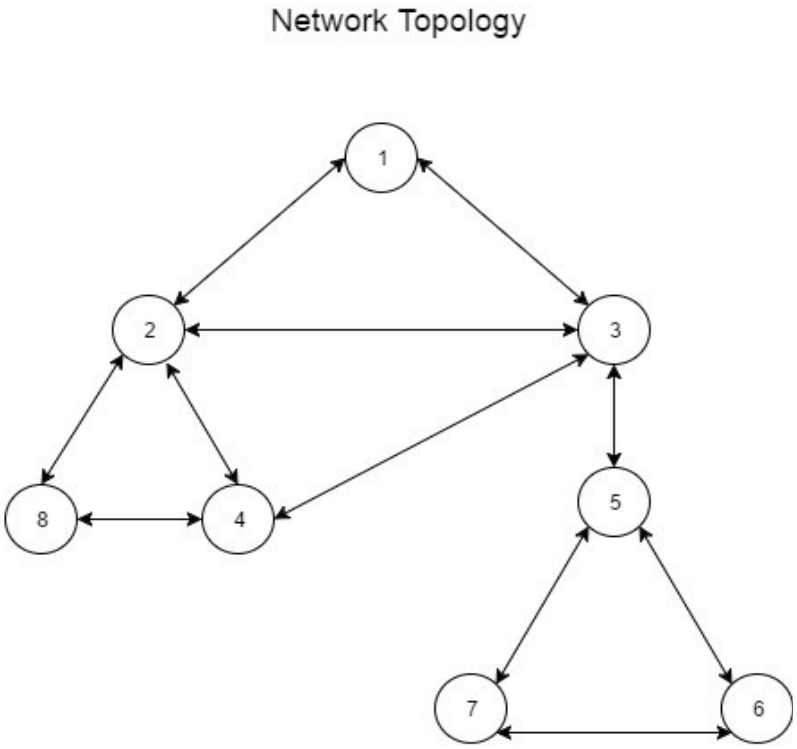
Points to be noted:

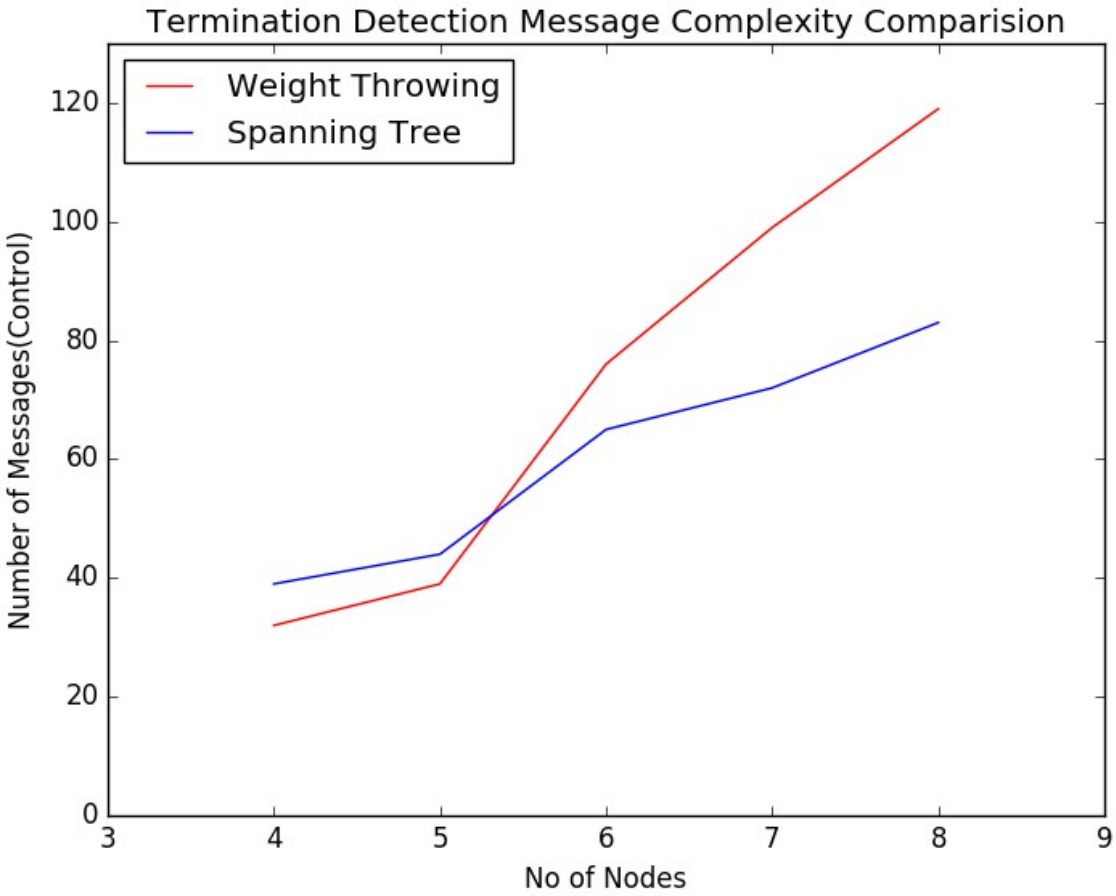
1. Support for Multiple active processes with single Root/Coordinator node.

2. In Weight Throwing algorithm for termination detection, the network topology need not be complete. (Resolved using routing control messages by graph search algorithm during initialization)

Network Topology:



Message complexity of both the algorithms:



Analysis:

Weight throwing algorithm:

As the number of nodes increases in the network, it has higher message complexity as each node sends its final weight (after termination) to the coordinator node, independently. The control messages are merely forwarded by the intermediate nodes.

(Note: The constraint that the network topology is a complete graph is relaxed in the problem statement, hence control messages are being routed towards the coordinator node).

Spanning Tree algorithm:

Each nodes sends its termination information/token only to its parent. The parent on accumulating tokens from its children, sends its own token to its parent. Thus, less messages are in transit.

Anomalies:

For lesser number of nodes, the message complexities are comparable possibly due to the randomness or specific nature of the graph/network topology.