

Bypass AODV: Improving Performance of Ad hoc On-Demand Distance Vector (AODV) routing protocol in Wireless Ad Hoc Networks

ABSTRACT

In this paper, a Bypass-AODV mechanism is proposed to enhance the performance of standard AODV. With local repair by overcoming several inherited problems such as a newly non-optimal reconstructed route, out-of-order delivery, packet drops, and routing overhead increase. The Bypass-AODV initially follows the route discovery mechanism of AODV. Then, in case of a failure in the primary route, the proposed protocol discovers a temporary bypass to overcome the failure. Bypass is constructed between the broken node and its upstream node and keeping the rest of the primary route the same. Consequently, the in transmission packets can be salvaged by redirecting them over the bypass. The simulation results show that for one-TCP connection Bypass-AODV performs similarly or better than TCP under AODV. In particular, this behavior is rapidly changed with increasing the physical distance between the end nodes beyond 2 hops. For example, when number of hops is equal to 6, goodput is enhanced by more than 100% over basic AODV for a single TCP connection and about 24% for multiple TCP connections. Further, the percentage of packet drops is reduced from 16% to 2%. Moreover, considering the hop count, the Bypass-AODV shows less sensitivity to the ongoing number of TCP connections.