

Performance Evaluation of Migration Strategies in Mobile AdHoc Network

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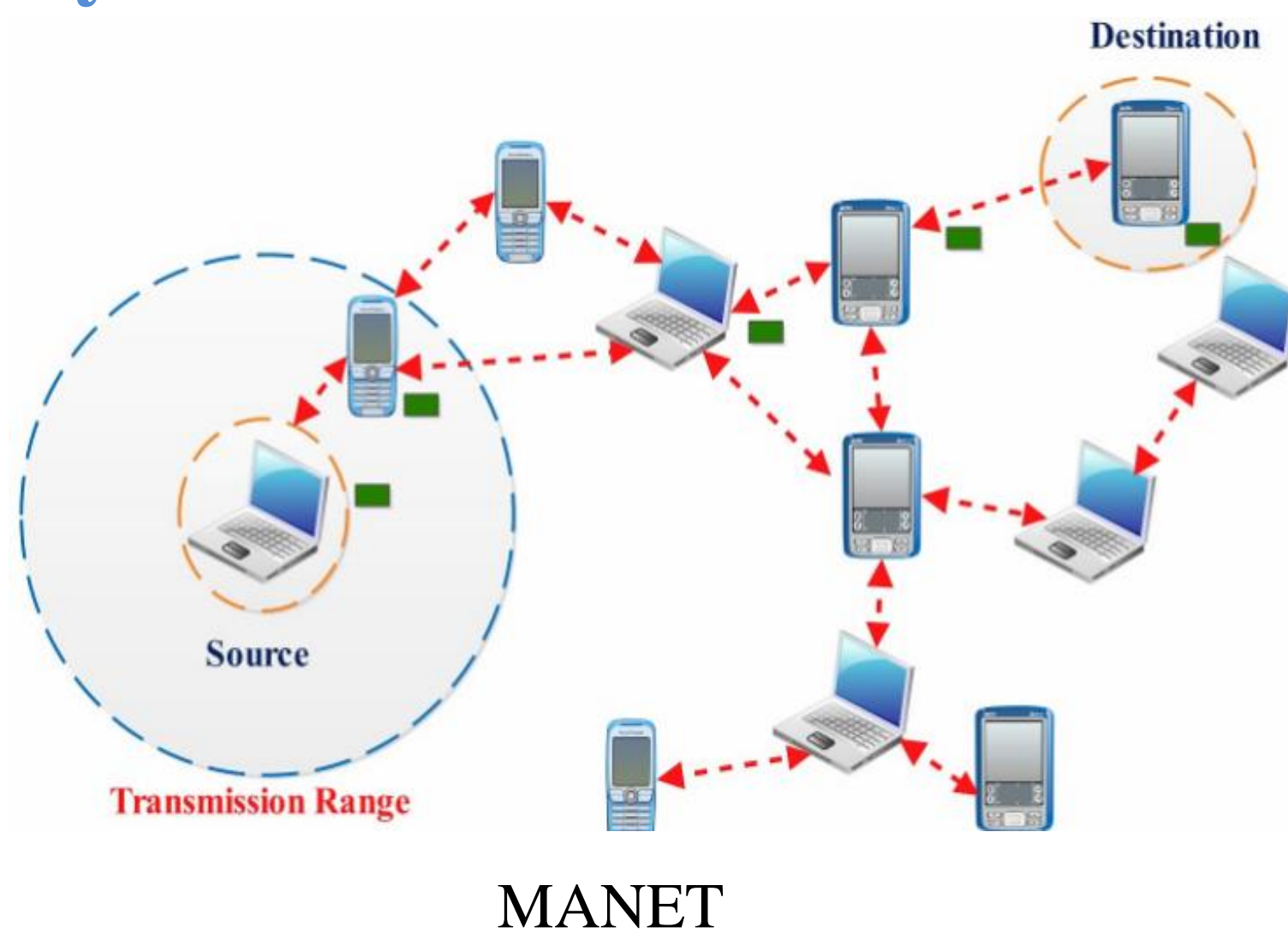
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Abstract

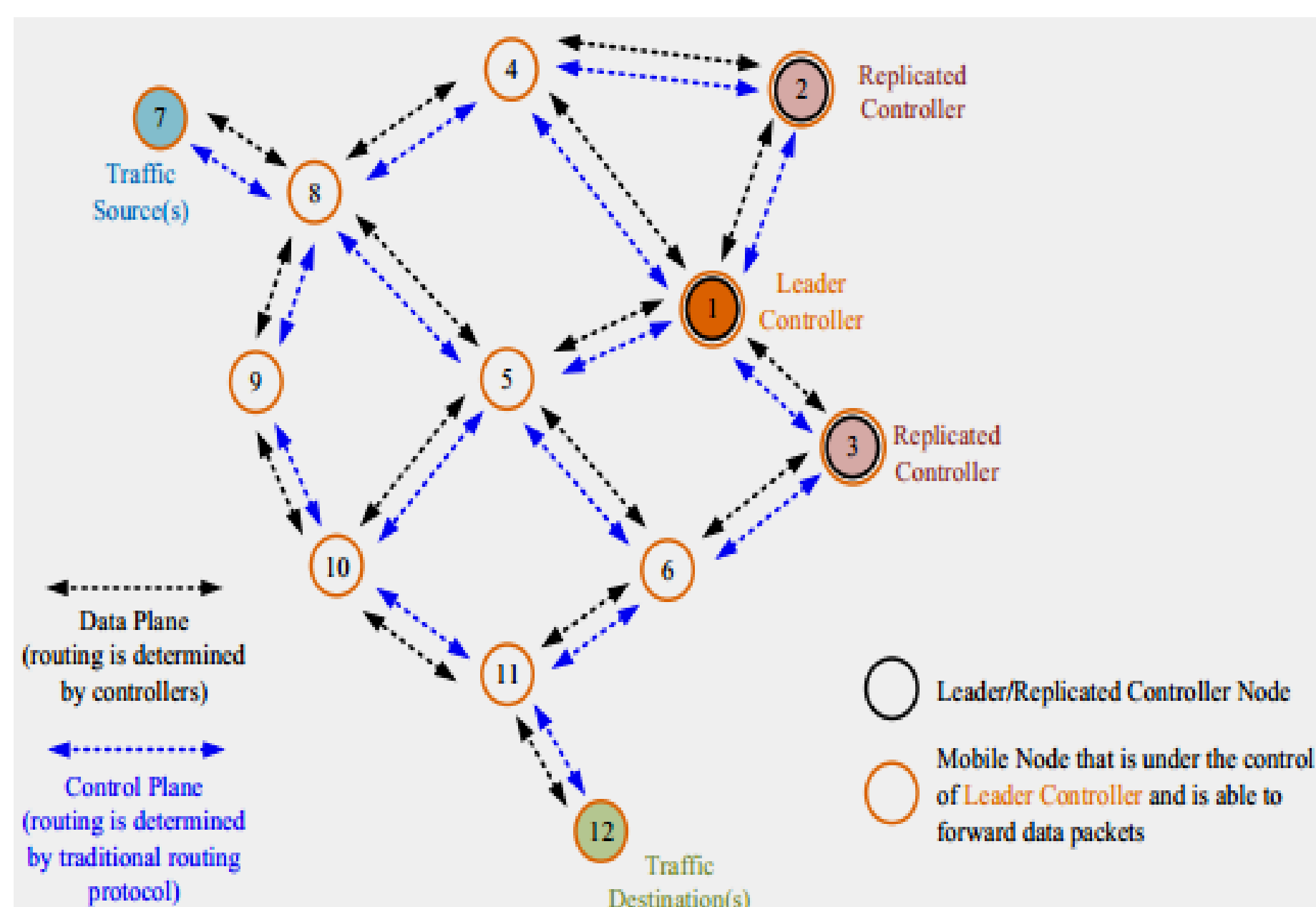
- Mobile Ad hoc Network is a self-configuring, infrastructure-less and wirelessly connected network.
- The major issue is of Network Instability and Data loss due to the independent movement of node.
- Performance Evaluation is performed using AODV and Software Defined Networking based routing Techniques.
- Simulation and Analysis are done on different evaluation criterias like throughput, migration time and others.

Methodology

System Architecture



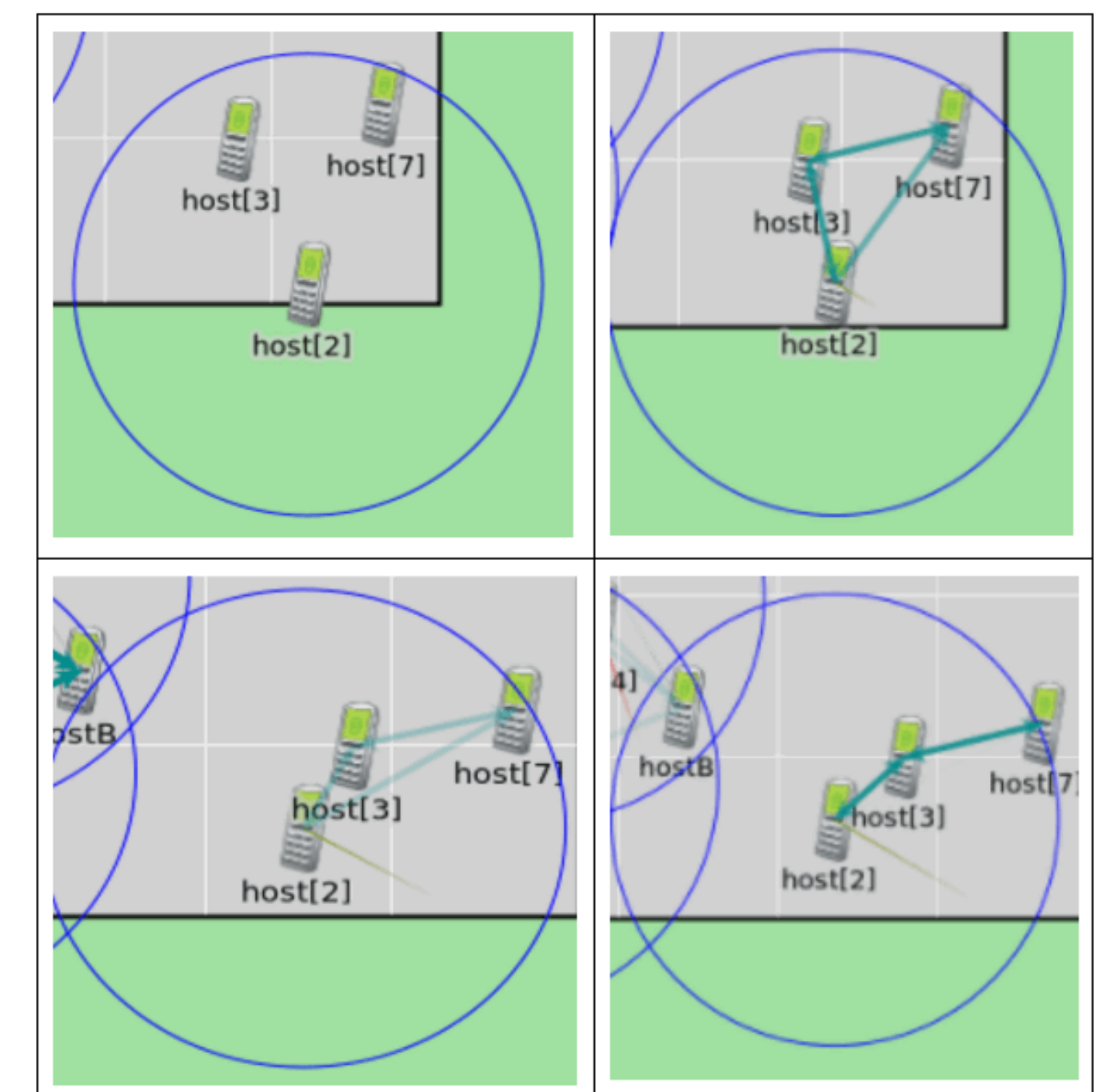
SDN Architecture



Characteristics

- A mobile host in a MANET is an autonomous node which functions as both a host as well as a router.
- The control and management of the network are distributed among the nodes.
- When delivering data from a source to its destination out of the communication range, the packets are forwarded to the intermediate nodes where multi-hop routing occurs.
- Due to the dynamic topology, transmission errors, link failures, node failures and packets congestion of links are common in MANETs.
- SDN is the separation between the control plane and the data plane.
- The Data Plane is used for data forwarding.
- The Control Plane is exploited for the network traffic control.
- The two planes use the same wireless channel/medium to transmit messages.
- In the control plane, the routing decision is made by a traditional routing protocol AODV.
- In the data plane, the routing decision is made by the Leader Controller based on Dijkstra's Shortest Path Routing Algorithm.

Migration Process Flow



- Source : host[2] Destination : host[7]
- host[2], host[3] and host[7] are in communication range of each other. Hence connection is formed.
- host[7] starts leaving the communication range due to mobility.
- The network goes in a reconfiguration.
- With new position of host[7], the links reconfigures again.

Results

Downtime and Migration Time For AODV



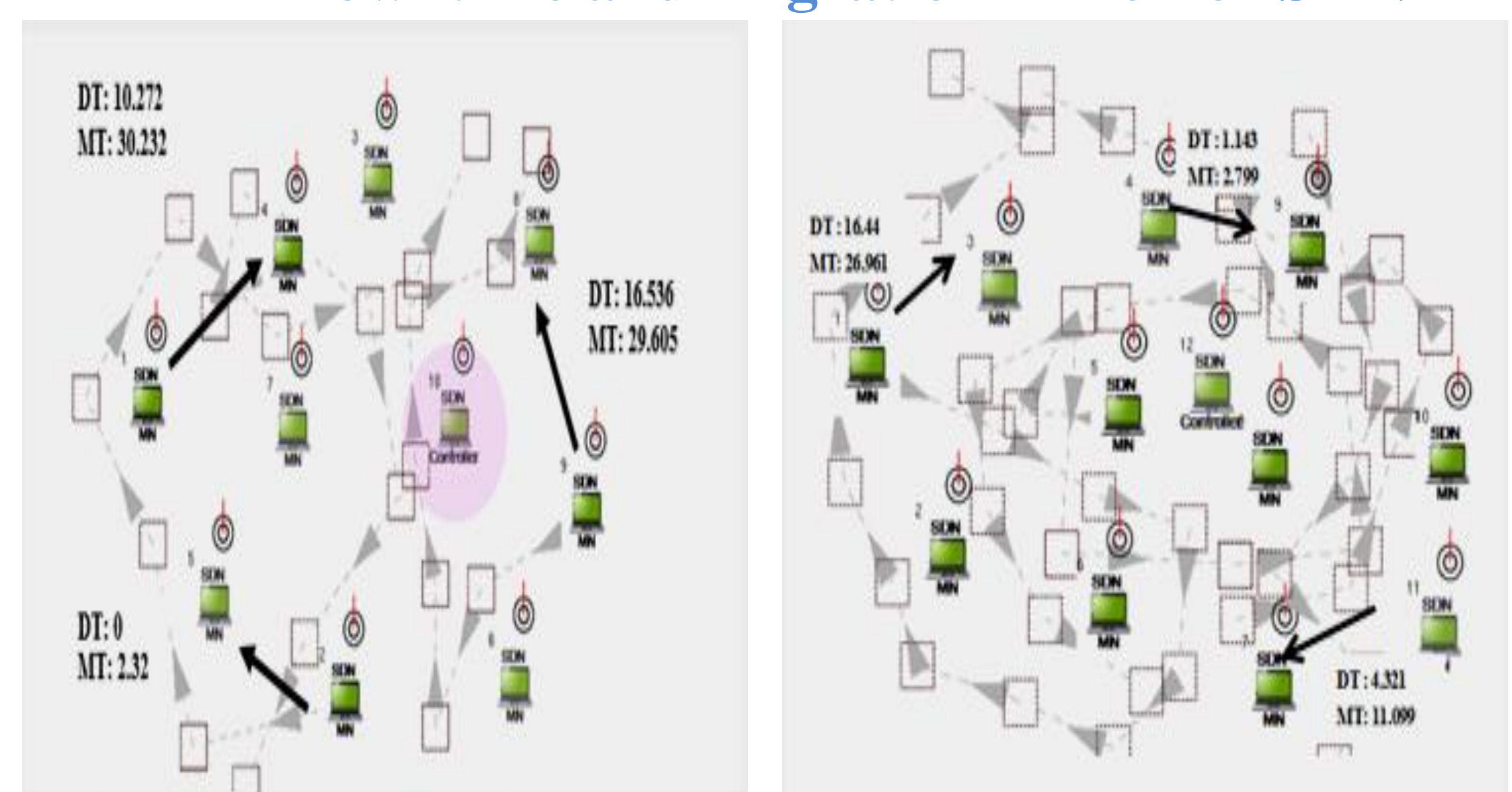
10 nodes in a MANET

12 nodes in a MANET

Results proved that migration with *SDN in comparison to AODV* routing yields

- Better Throughput
- Lower Downtime
- Lower Control Packets
- Lower Migration Time
- Better Packet Delivery Ratio

Downtime and Migration Time For SDN



10 nodes

12 nodes

Future Scope

- Algorithms for alternate Controller selection in case of link failure between the controller and the mobile node
- Routing algorithms for Data plane to improve throughput.

References

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