Delay Tolerant Network

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# Introduction

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# Experiment 1: Node Density

This tests the protocol against increasing amounts of nodes in the network. Every node added has the capability of generating messages and will increase traffic but also provides another route to each message's destination, increasing its chances of being send meaning that it tests the network layer's ability to cope with differing topologies. It also tests how well the link layer can avoid collisions and still provide a sufficient throughput.

## Parameters

|  |  |
| --- | --- |
| Duration | 5m |
| Nodes | 2-9 |
| minmessagesize | 500 bytes |
| maxmessagesize | 6000 bytes |
| messagerate | 10,000,000 usec |
| fixed buffer size | 1 MB |
| error rate | default |
| Testing script | density\_test.sh |

## Results Overleaf

# Experiment 2: Maximum Message Size

This tests the protocol against increasing average message size at each node. Increasing the maximum size of each message increases the number of messages that need to be fragmented, increasing the traffic in the network. This tests the transport layer's ability to process and fragment incoming messages and well as reassemble them at their destination. It also tests the link layer's ability to handle high traffic.

## Parameters

|  |  |
| --- | --- |
| Duration | 5m |
| Nodes | 10 |
| minmessagesize | 500 bytes |
| maxmessagesize | 1,000-10,000 bytes |
| messagerate | 10,000,000 usec |
| fixed buffer size | 1 MB |
| error rate | default |
| Testing script | maxmessagesize\_test.sh |

## Results Overleaf

# Experiment 3: Node Mobility

This tests the protocol against nodes with increasing mobility; they move further per step. Increased node mobility cause the topology of the network to change more frequently, testing the network layer's ability to cope with the constant change.

## Parameters

|  |  |
| --- | --- |
| Duration | 5m |
| Nodes | 10 |
| minmessagesize | 500 bytes |
| maxmessagesize | 10,000 bytes |
| messagerate | 10,000,000 usec |
| fixed buffer size | 1 MB |
| error rate | default |
| Testing script | mobility\_test.sh |

## Results Overleaf

# Experiment 4: Message Frequency

This test the protocol against nodes that generate high volumes of messages but with a fixed maximum size. This tests all layer's ability to cope with high traffic and specifically tests the transport layer's memory limits, seeing if I can make good decisions when its buffers become full.

## Parameters

|  |  |
| --- | --- |
| Duration | 5m |
| Nodes | 10 |
| minmessagesize | 500 bytes |
| maxmessagesize | 10,000 bytes |
| messagerate | 1,000,000 – 10,000,000 usec |
| fixed buffer size | 1 MB |
| error rate | default |
| Testing script | freq\_test.sh |

## Results Overleaf

# Conclusion

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