

# Lab 4 Report

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April 19, 2017

## 1 Purpose

The purpose of this lab was to implement the distance vector algorithm to allow the simulator to dynamically route packets across a network. Our algorithm would have the following features:

- Each node starts out knowing only about itself.
- Nodes communicate with their neighbors using broadcast packets with a TTL of 1, so they send only to their neighbors.
- Nodes periodically send a distance vector to their neighbors using broadcast. The distance vector lists the currently known destinations (starting out with only the node itself), and the shortest distance to each destination. A node stores the latest distance vector from each of its neighbors.
- Upon receiving a distance vector from a neighbor, a node examines each destination and compares its current best distance to the one received from its neighbor, plus one. If the neighbor's distance plus one was less than its current best distance, it records the new best distance and marked this neighbor as the next hop to the destination.
- Whenever the next hop changes for a destination, the node updated its forwarding table entry for that destination.

## 2 Results

We were not able to successfully get the routing algorithm working. We wrote a handler for the `dvrouting` protocol. The plan was to have the nodes periodically broadcast its distance vector table to its neighbors. It was simple enough to take the received distance vector and update the node's own distance vector. It would then update the forwarding tables as needed. Some of the issues we ran into were:

- We couldn't figure out when to start sending packets to test the code. i.e. should the routing algorithm run and get settled before we start sending packets from node to node.
- We also were not able to get the algorithm to handle the loss of a link correctly.