# DOGE SAS

## Definitions

1. Path/Route - A collection of nodes and edges through which a single packet reaches its destination.
2. Single path routing– A single path exists in a routing table between a source and destination node.
3. Multipath routing – Multiple paths may exist in a routing table between a source and destination node.
4. Routing processor - Edison

# Web Interface/Routing Processor Requirements

1. By default, the Web UI shall display all nodes, neighbor edges, and any routes present in the network.
2. The Web UI shall present the user with GUI element(s) to hide nodes, neighbor edges, or routes in the network graph.
3. The Web UI shall present the user with GUI element(s) to remove nodes, neighbor edges, or routes in the network graph.
4. The Web UI shall present the user with GUI element(s) to add nodes, neighbor edges, or routes in the network graph.
5. When the Web UI is initialized, the routing processor shall:
   1. Calculate single-path routing tables for every source, destination pair in the network.
   2. Update the routing table for every node in the network.
   3. Send the updated network state (nodes, neighbor edges, routes) to the Web UI.
6. The routing processor shall check every network element removal request to prevent creation of orphan nodes.
7. When a user deletes a neighbor edge in the Web UI, the routing processor shall:
   1. Check the routing impact of deleting this edge by calculating the number of affected of routes.
      1. If there are no routes using this neighbor edge, then the routing processor shall proceed with edge deletion.
      2. If there are 1 or more routes using this neighbor edge, the routing processor shall attempt to recalculate replacement routes which do not include the deleted neighbor edge.
         1. If there are no routes that can replace the affected routes, the routing processor shall halt the edge deletion process, request that the Web UI prompt the user for confirmation, and then continue with edge deletion once the operation is confirmed by the user.
         2. If there are routes that can replace the affected routes, the routing processor shall update the relevant node routing tables and then proceed with edge deletion.
   2. Remove the nodes connected by the edge from node neighbor tables.
   3. Remove any routes present in all routing tables that uses this edge for multi-hop communication.