Routy: a small routing protocol

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1 Introduction

In this seminar the task was to implement a link-state protocol in Erlang. After I have completed the task, I should be able to:

- Describe the structure of a link-state routing protocol
- Describe how a consistent view is maintained
- Reflect on the problems related to network failures

2 Main problems and solutions

The hardest part with this assignment was to understand the instruction and combine all the components, such as the Map, table and a Sorted list. The map consisted of Nodes and their direct linked neighbors. An example of a map is demonstrated below:

```
[{sundsvall,[koping]},{lund,[koping,stockholm]},{stockholm,[lund]}]
```

The table is represented by a list with one entry per node where the entry describes which gateway, city, should be used to reach the node. Ex:

```
[{stockholm,lund},{koping,sundsvall},{lund,lund},{sundsvall,sundsvall}]
```

In order to create the table, Dijkstra's algorithm is used. Dijkstra's algorithm uses a sorted list with entrys. Each entry in the list will hold the name of a node, the length of the path to the node and the gateway that we should use to reach the node. An example of an entry showing that koping can be reached via the gateway lund in 2 hops i displayed below:

```
{koping, 2 , lund}
```

3 Evaluation

For the evaluation a constructed a connection between 4 routers as illustrated below:

I sent a message from Stockholm to Sundsvall, the algorithm chose the direct linked between the two cities. Then I removed the link between Stockholm and Sundsvall

I sent a new message from Stockholm to Sundsvall. Know the algorithm choose to take the path Stockholm - Lund - Koping - Sundsvall.

4 Conclusions

I think the biggest challenge with this assignment was to get everything to work properly. I spent a lot of time debugging, but it also developed my knowledge in Erlang. It was interesting to see how messages is sent through a network and how a network handled a router disappearing from the network.