OSPF Lab
OSPF and shared mediums

KTHNOC/SUNET

February 13, 2004

This lab covers routing between four routers connected in a full mesh topology using a hub. You will see how OSPF sends packets in different directions depending on accessibility and cost. It is assumed that you have completed the lab "OSPF with redundant paths".

You will be introduced to a new LSA type in this lab- the Network LSA (type 2).

Besides the serial lines for the square topology, you are meant to connect the ethernet ports to a hub, linking the nodes into a full mesh.

> Save the commands you commit in the router in your favourite text-editor (e.g. emacs, vi). By saving the configuration you can run the same commands several times with small modifications using the famous copy and paste technique between windows. Make sure you save your buffer regularly so you can recover from "disasters".

1 Designated routers

Place a hub in the middle of the square topology completed in the previous lab. Connect all of the routers' ethernet 1 port to the hub (creating a cross). Configure OSPF so that it routes packets through the hub.

Checklist:

- In which way do the packets traverse between end systems and why?
- Study the link state database. What are the differences when compared to the previous lab?
- What is a Designated Router (DR) and why is it needed?
- Which router is the DR?

- What is a Backup Designated Router (BDR)? Why is it needed?
- Which router decides who becomes the BDR?

Disconnect the cable connecting the DR to the 192.168.15.0 net.

Checklist:

- Which machine becomes the next DR?
- How long does it take for the new DR to be assigned?

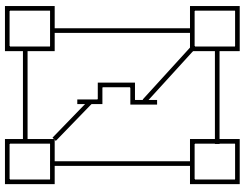
Reconnect the old DR to the net.

Checklist:

- Does the old DR become DR again? If **yes**, How long does it take? Otherwise, why doesn't it become DR again?

2 Alternate paths

Remove RTX1 and RTX3 from the hub. See the image below:



Checklist:

- In which way do the packets traverse between end systems?
- Check the metrics in the routing table.
- What do they say about the diagonal net you just removed?

Reconnect the diagonal net.

3 Metrics

Raise the ethernet line's cost to something higher than the serial line.

Checklist:

- In which way do the packets traverse between end systems?

- Check the metrics (costs).
- Verify that each net's metric is correct.

Revert to the old metric, save your configuration and call the lab assistant!