Emulation of GMPLS

Using Virtual Network Experiments & DRAGON

Jeroen van der Ham
vdham@science.uva.nl

Chris Tracy
chris@maxgigapop.net

Virtual Network Experiments

Virtual Network Experiments

XML Document

```
<config>
   <devices>
      <switch name="switch1"/>
      <host name="host1"/>
   </devices>
   <links>
      <link start="switch1"
          end="host1" />
   </link>
</config>
```

Virtual Network Experiments

XML Document

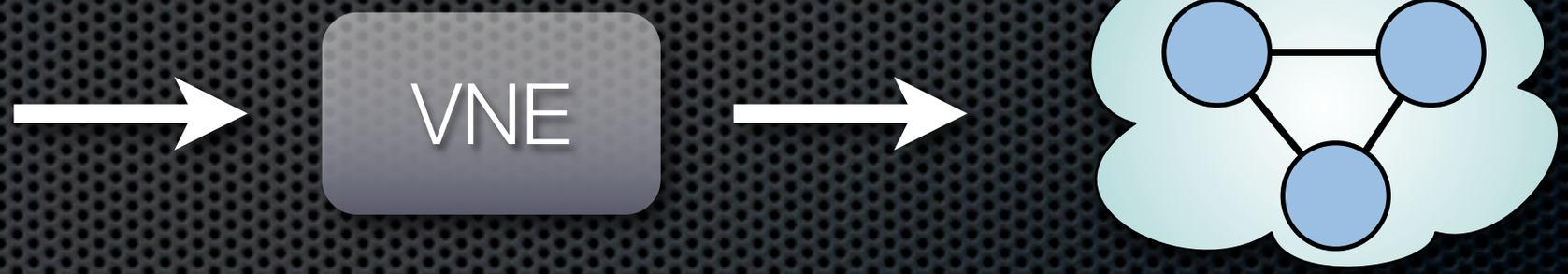
```
<config>
   <devices>
      <switch name="switch1"/>
      <host name="host1"/>
   </devices>
   <links>
      <link start="switch1"
          end="host1" />
   </link>
</config>
```

VNE

Virtual Network Experiments

XML Document

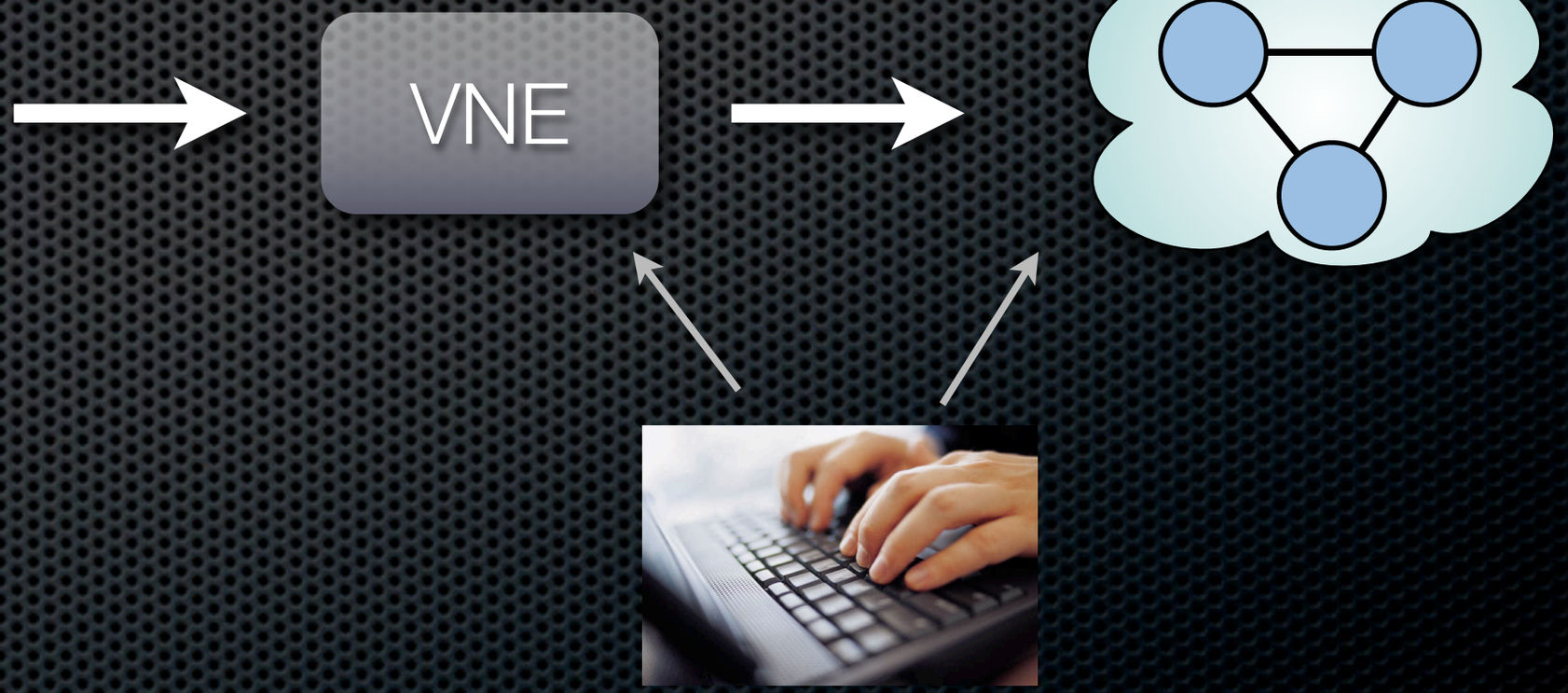
```
<config>
   <devices>
      <switch name="switch1"/>
      <host name="host1"/>
   </devices>
   <links>
      <link start="switch1"
            end="host1" />
   </link>
</config>
```



Virtual Network Experiments

XML Document

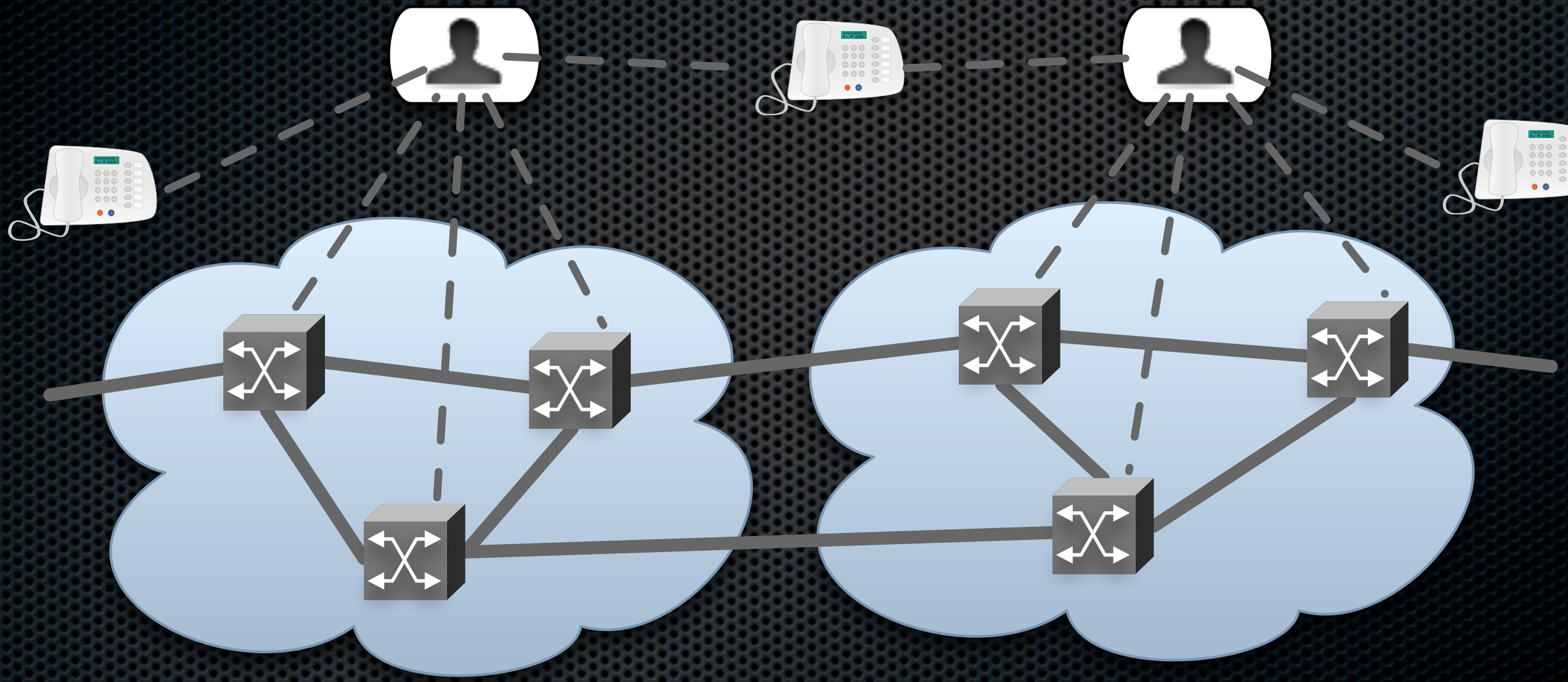
```
<config>
   <devices>
      <switch name="switch1"/>
      <host name="host1"/>
   </devices>
   <links>
      <link start="switch1"
            end="host1" />
   </link>
</config>
```



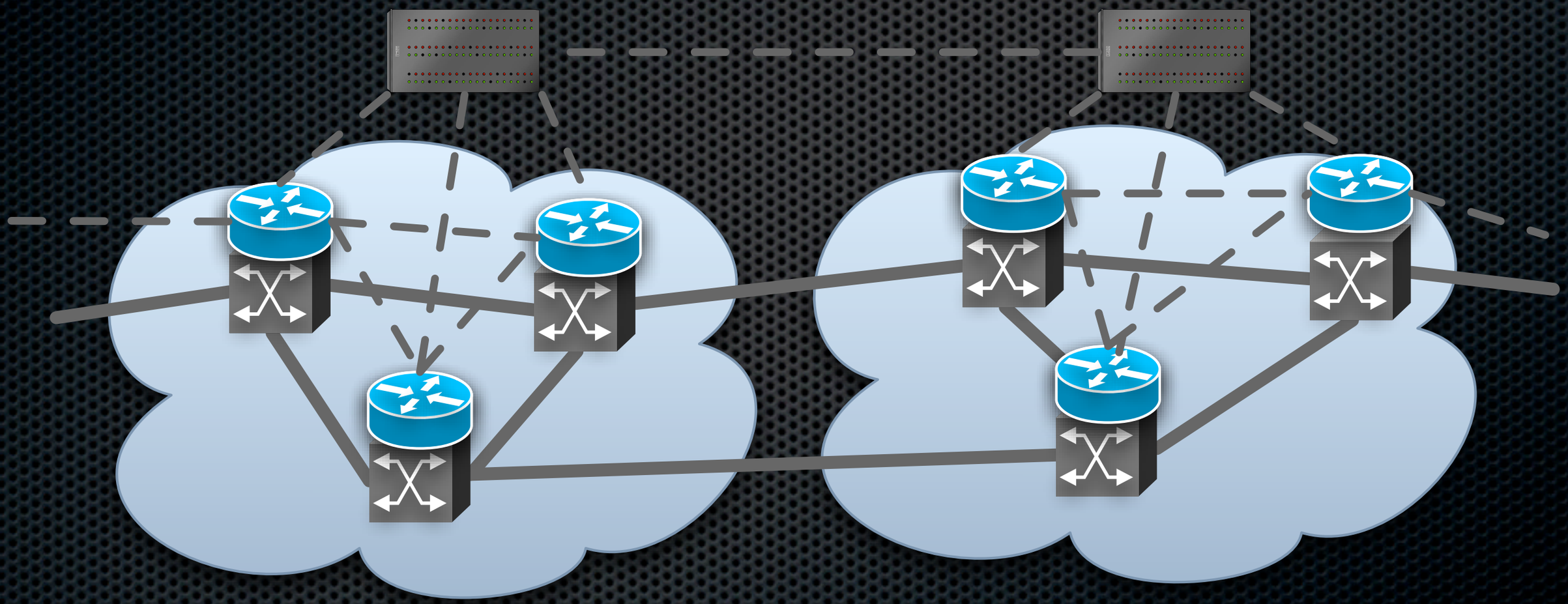
User-Mode Linux

- Simple Virtualisation using Linux
- Different or shared filesystems
- Completely configurable network

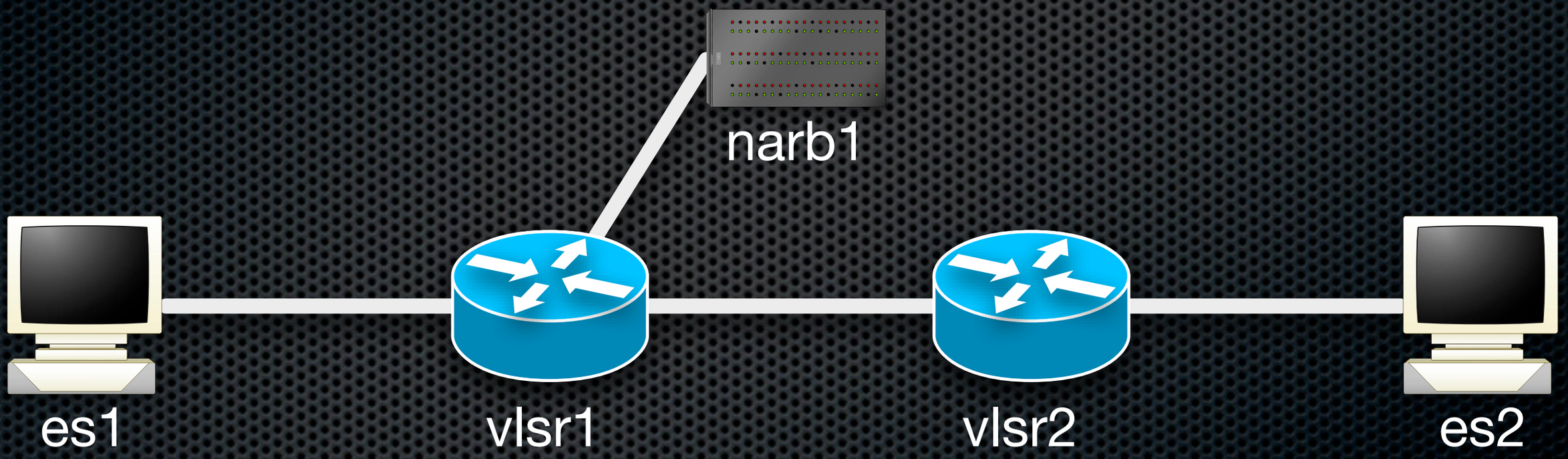
Traditional Control Plane



DRAGON Control Plane



Demonstration Network



Future Work

- Emulated Data Plane
- From OSPF (TE) to NDL (to emulation)
- Experimental results on abstractions
- Multi-Layer NDL & Pathfinding

Conclusion

- Virtual Network Experiments & Dragon allows you to instantly create a GMPLS testbed!

- More information and download: http://ndl.uva.netherlight.nl/trac/vne