In this era of network virtualization, many functions are moving towards virtualized and more centralized versions. For networking it would mean spinning up the virtualized versions of traditional network functions allowing for more efficient routing, programmable networks and easier network configuration changes.

Software-Defined Networking (SDN) is an approach to networking that uses software -based controllers or application programming interfaces (APIs) to communicate with underlying hardware infrastructure and to direct traffic on a network. This method is different from that of traditional networks, which use dedicated hardware devices like Routers and Switches to control network traffic. SDN can create and control a virtual network or also control a traditional hardware via software. Because the control plane is software-based, SDN is much more flexible than traditional networking. It allows administrators to control and manage the network from a centralized user interface, without adding more hardware. Below figure shows the tentative network architecture with SDN controller.

The drawing:

* What do the litte red triangles mean?
* The “lightning” connection was used for telephone/modem connections. What does this mean here?
* The writing is extremely small and comparably difficult to read
* This is a tree-structure. You can not show resiliency, failover features here

Problem Definition

Due to advances in the Internet and Information-Centric Technology, the configuration and management of mobile, social networking, multimedia becomes highly complex and time - consuming. SDN is a new technology that is used to manage the network configuration and its services. To overcome the limitations of current networking and to improve competence to provide significant business value to many enterprises and campus Networks for their network management. SDN may be preferable over current network and also SDN introduces new possibilities for network management and configuration methods.

Possible Tasks

* Creating a network with different network devices in the emulation software.
* Using SDN controller to manage the network configurations and different services.
* The used SDN controller must be able to run on a separate machine.
* Creating and distributing the network configurations for network devices.
* Creating different paths through the network based on QoS requirements.
* Creating Security aspects for the customer networks.
* Providing services and user groups that have different requirements.
* Evaluating advantages of network with SDN controller over traditional network.
* Analyzing the possible limitations of the network.

Associated Research Questions

* Literature review.
* Best possible method to configure and manage the network through Network Controller?
* How to provide different paths in the network with different QoS properties?
* Algorithms that are responsible for the optimisation of the paths.