Abstract

The development of telecommunication systems during the past two decades has been from the circuit switched towards the packet switched paradigm. Initially a distinction was made between telecommunications and computer networks which is hardly applicable in today's reality. Incumbent network operators are running legacy circuit-switched telephony networks which inhibit them from enjoying the benefits of packet switching. Many operators have now started the paradigm shift in the telephony network by moving to packet based technologies. This new approach is often called Next Generation Networks (NGN). NGN enables the network operators to run all services on one network, i.e. voice, data and video.

In this project the transformation to NGN in Iceland Telecom's network will be examined. A cost model of the telecommunications system will be developed and the cost and benefits of transforming the network to NGN will be assessed. Methods of optimisation will be applied on the cost model to find the optimal number of nodes and their positions. The optimisation will yield the network structure that results in the lowest possible operational cost and the model can show how deviations from the optimum will affect the cost. Feasibility of NGN is then assessed by comparing the cost of NGN migration to that of the current telephone network. The results are finally presented to users through an easy to use graphical decision support system.

Keywords

Next Generation Networks, ENGINE, Spreadsheet modelling, Optimisation, heuristic, solver, feasibility