

**Design of Dar es Salaam metro ethernet network the case study of Tanzania
Telecommunications Company Limited (TTCL)**

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The introduction of Broadband services in Tanzania over the last decades has produced a number of problems; there is bandwidth mismatch issue of accommodating Ethernet service rates into SDH transmission rates. Due to the fast increase of the bandwidth demand driven by the massive increase of Ethernet traffic and the availability of Ethernet Equipment at lower prices; now it is possible to incorporate Ethernet technology to carrier grade networks.

The main aim was to design the Carrier grade Metro Ethernet Network for the city of Dar es salaam; providing a truly end-to-end Broadband Services. The study was based on detailed literature review on MEN: development, standardization, concepts, technologies, protocol architecture, traffic forecast, network interfacing and link and equipment capacity dimensioning. The analysis was supported by focus user group discussions in order to accommodate commercial and technical requirements. Scientific modeling and a pilot project was used to evaluate the design performance in terms of delay, jitter and loss based on MEF standards and link capability to handle MEN traffic under worst case conditions.

The results conclude that, without appropriate mechanisms QoS requirements cannot be met. Thus, mechanisms for periodization are highly needed. The findings also confirms that, Ethernet based MAN is cost effective than SDH based MAN. Further research is required to ascertain the better business model and lastly the dissertation recommend a phased implementation approach.