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## National broad band network design based on optimization of quality of experience (QoE)

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Delivering world-class broadband services is a prerequisite for ICT businesses and their occupation growth in any countries. The new services such as video on demand (VoD) and Internet of things (IOT) need a broadband IP based networks. User applications could be categorized in four major services: browsing, streaming, VOIP and interactive video. These applications need higher level of broadband and quality indexes. Service quality is measured by some indexes like HTTP response time, delay, jitter, packet loss and availability. Quality of service is important from end-user's view, and defines as quality of experience (QoE). Each major service has its own performance targets to be acceptable from QoE's point of view, but network must be designed based on tightest indexes, to be able to support all service types. An overall design of a national broadband network is presented in this paper. Design scope is end-to-end users and the role of each layer-provider (core provider, aggregation layer provider and fix/mobile access providers) is determined. With this design, each operator is owner of its ETE network and responsible of its SLA/QoE. The areas that are covered in this proposed design are core, aggregation and access layers, Wi-Fi offload, IXP, iCDN, IPTV, IMS and disaster recovery. The regulatory organization can monitor the performance of the overall network by some developed management dashboards which are presented in this panel.

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