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IP-oriented QoS and QoE in the next generation networks and wireless networks

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Emerging Internet Quality of Service (QoS) mechanisms are expected to enable wide spread use of real time services such as VoIP and videoconferencing. The "best effort" Internet delivery cannot be used for the new multimedia applications. New technologies and new standards are necessary to offer Quality of Service (QoS) for these multimedia applications. Therefore new communication architectures integrate mechanisms allowing guaranteed QoS services as well as high rate communications. The service level agreement with a mobile Internet user is hard to satisfy, since there may not be enough resources available in some parts of the network the mobile user is moving into. The emerging Internet QoS architectures, differentiated services and integrated services, do not consider user mobility. QoS mechanisms enforce a differentiated sharing of bandwidth among services and users. Thus, there must be mechanisms available to identify traffic flows with different QoS parameters, and to make it possible to charge the users based on requested quality. The integration of fixed and mobile wireless access into IP networks presents a cost effective and efficient way to provide seamless end-to-end connectivity and ubiquitous access in a market, where the demand for mobile Internet services has grown rapidly and predicted to generate billions of dollars in revenue. It covers the issues of QoS provisioning in heterogeneous networks and Internet access over future wireless networks as well as ATM, MPLS, DiffServ, IntServ frameworks. It discusses the characteristics of the Internet, mobility and QoS provisioning in wireless and mobile IP networks. It also covers routing, security, baseline architecture of the inter-networking protocols and end to end traffic management issues.

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Large-scale video streaming over cloud and fog: From research to deployment trials

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Due to the popularity of both live and interactive streaming contents, video has already occupied the major component in Internet traffic. Such component is expected to continue to rise due to our appetite for better quality and mobile access of video applications. Out of all the mechanisms, over-the-top (OTT) delivery emerges as a promising approach to achieve wide and deep geographical footprints. In order to tame the congestion in the Internet to support large-scale streaming, we have been conducting research and development of a novel OTT streaming network based on cloud and fog optimization. For live broadcasting, the major concern is to achieve low source-to-end delay and bandwidth cost. For video-on-demand, the major concern is where to replicate and access contents to achieve low interactive delay. In this talk, I will first highlight our research results in cloud and fog streaming. Over the past years, we have been working with industries to deploy the technology to large scale. I will share our experience in deployment trials and our technology transfer and commercialization activities in this regard.

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Page 91