

# **1st IEEE Workshop on Below IP Networking (BIPN'09) in conjunction with Globecom 2009**

## **Message from co-chairs:**

Traditionally, below IP networking points to Ethernet (mainly in corporate networks), and to MPLS which becomes the connectivity platform in the backbone networks. Recently, Ethernet is taking major steps forward, resulting in corresponding increases of its potential footprint. The developments include Metro Ethernet, 10Gbit/s Ethernet, work on 100Gbit/s Ethernet, 802.1ad and 802.1ah, 802.1Qay, Carrier Grade Ethernet etc.

As more and more of the traffic in networks is data centric rather than voice, interest to deploy synchronous transmission is waning. Even the traditional SDH is being replaced by OTN, which is not synchronous end-to-end, and supports 10G Ethernet as a primary service. Operators and vendors are also suggesting emulating TDM on top of Ethernet or IP/MPLS. Instead of transmission we start talking about packet transport. However, for packet transport we are still looking for the kind of robustness and resiliency that can be provided by SDH and OTN.

At the same time, there are many that consider IPv4 as insufficient infrastructure. IPv4 address space exhaustion becomes more and more of a critical issue. The lack of global IP addressing and the use of many realms of IP address spaces leads to complex transport networks. Furthermore, users are most often not identifiable on IPv4 networks due to NATs, which is a problem in several applications. The long controversy on NATs versus end-to-end principle has led to complex NAT traversal techniques. The official solution is UNSAF. Unfortunately, the solution is on application layer and scales poorly e.g. to mobile hosts that wish to be reachable for one or more applications.

The Internet we now have is not carrier grade (robust predictable service). The core of the Internet is under scalability pressure. Work on architectures that isolate the core from the changes taking place in the corporate, access and aggregation networks is ongoing. A lot of the ongoing work for the Future Internet concentrates on the application layer. At the same time, there are several attempts to create routing functionality for the Ethernet transport, as well as creating an MPLS platform for transport networks. This makes it clear that the underlying transport architecture is creating the question – what functions will be left to IP. Therefore, for the Future Internet concentrating on application layer will not suffice.

Clearly, the Internet needs a new concise architecture, in particular the below IP networking. We believe that it makes sense to start creating the new concise architecture for the Future Internet from bottom up. We believe that BIPN'09 will be a much needed forum for those who wish to contribute in this area.

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