

## “ Network Diversification - Enabling Innovation in Network Architecture and Services”

by Prof. Jonathan S. Turner



### Abstract:

The rise and growth of the Internet is one of the great technology success stories of the twentieth century. Unfortunately, the size and scope of the public Internet now makes the introduction and deployment of new network innovations very difficult, leading many to observe that the core technology at the heart of the internet has become ossified. While solutions to many of the IP protocol's limitations are well-understood, there has been remarkably little progress towards deployment of new capabilities. New network technologies face insurmountable barriers to entry, stifling the competitive forces that allow progress in other technology domains.

At the same time, advances in electronics now make it both feasible and practical to deploy high performance network components with unprecedented flexibility and programmability. These capabilities can be used to enable a diverse collection of meta-networks to co-exist within a common physical infrastructure. Diversified networking can enable new network technologies to be developed and deployed on a large scale, stimulating innovation in both core network protocols and advanced services that combine computing and communication in creative new ways. It makes it possible for new network innovations to compete on an equal footing with legacy technologies, stimulating innovation and leading to a broad range of new services.

### Bio:

Jonathan S. Turner received his MS and PhD degrees in computer science from Northwestern University in 1979 and 1981. He holds the Henry Edwin Sever Chair of Engineering at Washington University, and is Director of the Applied Research Laboratory. The Applied Research Laboratory creates experimental networking technology to validate and demonstrate new research innovations. The Lab's current projects center on extensible networking technology with a particular focus on high performance diversified routers.

Professor Turner served as Chief Scientist for Growth Networks, a startup company that developed scalable switching components for Internet routers and ATM switches, before being acquired by Cisco Systems in early 2000.

His primary research interests revolve around the design and analysis of switching systems, with special interest in systems supporting multicast communication. His research interests also include the study of algorithms and computational complexity, with particular interest in the probable performance of heuristic

algorithms for NP-complete problems.

Turner is a fellow of ACM and a fellow of the IEEE. He received the Koji Kobayashi Computers and Communications Award from the IEEE in 1994 and the IEEE Millenium Medal in 2000. He has been awarded more than 25 patents for his work on switching systems and has many widely cited publications.