

Traffic Oblivious Routing in the Internet

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About the Speaker

Murali Kodialam obtained his Ph.D. from MIT in 1992 and has been in Bell Labs since. He is currently in the network protocols and systems research department. His general research interests are in the areas of resource allocation and performance of wireline and wireless networks. His current research interests are in

1. Algorithms and data structure for high speed deep packet inspection
2. Robust routing in the internet.

About the Talk

Routing is a central topic in networking since it determines the connectivity between users. Recently, with the growing use of the Internet for a wide variety of bandwidth intensive applications, including peer-to-peer and on-demand/real-time multimedia, it has also become important that routing accounts for the quality-of-service needs of applications and users.

An important question in these networks is whether it is possible to provide quality of service guarantees despite uncertain knowledge of the carried traffic. We show that a routing scheme using only pre-determined paths to route between each ingress-egress node in the network (typically an Internet domain) can provide performance guarantees without knowledge of changing traffic patterns. By removing the need to detect changes in traffic in real-time or reconfigure the network in response to it, significant simplification in network management/operations and associated reduction in costs can be achieved. Moreover, this traffic oblivious routing has the potential to make the Internet much more robust and predictable in the face of rapidly varying and unpredictable traffic patterns. Theoretical advances in the area have shown that oblivious routing can provide these benefits without compromising capacity efficiency. We survey recent advances in oblivious routing with a view towards its application in (intra-domain) Internet routing.

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