



Department of Computer Science Seminar Series 2009-2010

Innovative Approaches to Wireless Backhaul for Broadband Access

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Abstract

In rural areas, due to low population density, deployment of very expensive and time-consuming optical backhaul is difficult to justify. Wireless backhaul for broadband connectivity is a viable solution for such scenario. Previous wireless broadband backhaul solutions (also known as Middle Mile Connectivity by NTIA) include microwave, LMDS, and MMDS. These are expensive, maintenance-intensive, and bandwidth-limited. A recent trend in wireless backhaul is the use of unlicensed spectrum. Solutions operating in Wi-Fi spectrum, in particular, 5.1 GHz and 5.8 GHz spectrum (UNII band) has been attempted and successfully deployed at multiple locations.

At SAI Technology, in cooperation with Intel Corporation, we have built a Wi-Fi based backhaul solution, which achieves 30 Mbps connectivity over distance of 10 km and 10 Mbps connectivity over a distance of 40 km. This product is commercially deployed and undergoing many deployments all across United States. The next generation solution is under development, which is expected to provide a throughput of ~150 Mbps over a distance of 10 km. The Broadband Technology Opportunities Program (BTOP) is intrigued by this solution and a fairly large scale rural deployment is expected in the next 2-3 years.

BIO

Dr. Rob Roy is a well-recognized entrepreneur in the fields of wireless and VLSI System Design and has joined SAI Technology from Wi2Wi, where he served as their Chief Strategist. Prior to this, Dr. Roy was a Senior Executive at Avnera, a fabless semiconductor company focusing on high-quality audio amplification and wireless audio connections. He was also a Co-Founder and Chief Technology Strategist of Mobilian Corporation, an advanced wireless connectivity company, which was acquired by Intel Corporation in September 2003. Dr. Roy also held executive positions at Zenasis Technologies, which was acquired by Open-Silicon in May 2007, and also at Redpine Signals where he was the Interim CEO. His previous experience includes Engineering and Management positions at Intel, NEC, GE, and AT&T Bell Labs. Dr. Roy is a Founding Partner at Primary Global Research independent research

firm for investment professionals. He also is a co-founder and Chair of the Compensation Committee of SimBioSys Biowares. Dr. Roy has published over 50 research papers in prestigious journals and international conferences, including three highly-prestigious Best Paper Awards. He has been an adjunct faculty at Princeton University and University of Massachusetts, Amherst. Currently he serves as an Adjunct Professor at Amrita University, Coimbatore, India. He is a Golden Core Member of the IEEE computer Society and has been the Chair of ACM Doctoral Dissertation Award committee. He has been granted ten US and International patents and has several applications pending. Dr. Roy currently serves on the Board of Directors of Wi2Wi, Alumnus Software Limited, and SimBioSys Biowares. He also serves on the Board of Directors of Techno India Group, an educational body with more than 15 campuses all across India. Dr. Roy received his B.Tech (Hons) degree in Electronics & Electrical Communication Engineering from Indian Institute of Technology in 1984. He also earned his M.S. and Ph.D. in Electrical & Computer Engineering from University of Illinois at Urbana-Champaign in 1989 and 1992, respectively.

All are invited.