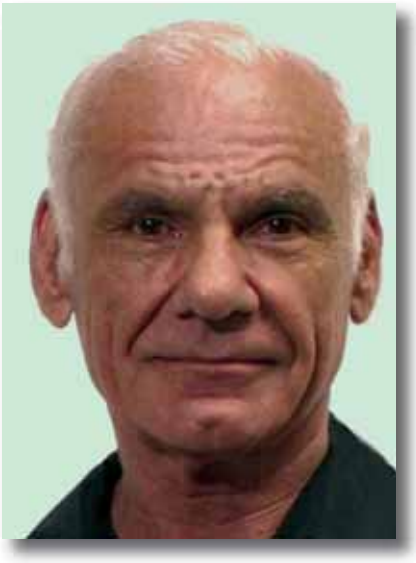
Making Wireless Data Profitable

InterComms talks to Anagran's Dr Larry Roberts



Dr. Lawrence G. Roberts

Dr. Roberts is currently Founder & CEO of Anagran Inc. Anagran is currently manufacturing flow-based traffic management network equipment, the first major improvement in packet network technology in the 40 years since Dr. Roberts designed and managed the first packet network, the ARPANET (now the Internet). At that time, in 1967, Dr. Roberts became the Chief Scientist of ARPA taking on the task of designing, funding, and managing a radically new communications network concept (packet switching) to interconnect computers worldwide. The first four nodes of the ARPANET were installed in 1969 and by 1973 when Dr. Roberts left ARPA to become CEO of Telenet (now part of Sprint), the concept of packet switching had been well proven to the world. Dr. Roberts has BS, MS, and Ph.D. Degrees from MIT and has received numerous awards for his work, including the L.M. Ericsson prize for research in data communications, in 1998 the ACM SIGCOMM Award, in 2000 the IEEE Internet Award, in 2001 the National Academy of Engineering Draper Award, in 2002 the Principe de Asturias Award, and in 2005 the NEC Computer and Communication Award.

Q: What are the issues that Wireless data service creates for the service provider?

A: It's a difficult activity, because the number of subscribers in a particular area, being served by one tower, will vary considerably. It could be a ball game or something else in that particular area, so there is a much different problem than the wireline people have in terms of overloading in a particular location. By its nature, it is always almost 100 percent loaded in the sense that people are trying to use all of the available bandwidth because their TCP activities will keep on trying to get the highest feed they can. With virtually any amount of serious traffic, there will be loads that will be causing congestion. To fix that congestion, there are a number of things you can do, one of which is Deep Packet Inspection (DPI). This is used to try and get of rid of P2P users who consume enormous amounts of bandwidth via multiple flows. Multiple flows are a serious problem in any network because each flow has the same capacity and as they are sharing bandwidth with several people, you may get a hundred flows. A better way than DPI to fix it is to use the technology that we provide and recommend; network traffic management equipment. That ensures that all users get the same bandwidth as everybody else and they get the same capacity in the same price class as everybody else. They don't get 100 times the bandwidth with P2P; they get the same as other users and they won't be wiping out your neighbor. That is a big issue because today, 80 percent of the bandwidth is used by just a few percent of the people.

The next thing you need to do is to solve the problem of delay in voice and video conferencing. That can be solved by managing the traffic so not to exceed capacity. You can in fact do this very effectively so that it will reduce jitter to virtually nothing. We have proven that using our equipment with WiFi and 3g with 4G scheduled in the future.

Q: We see some wireless providers going to byte caps and others keeping it unlimited, which way is this going?

A: Some wireless vendors in the US are moving to a byte cap provision where you get X Gb each month. If you use more than that, you can't get any more and you have to pay a premium for use or you have to ►

stop altogether. That really is something that people hate because they are used to unlimited, where you just slow down if there is too much traffic and you never need to pay more than your fixed bill for your leased line. With the byte cap type of arrangement, people can get uncontrolled billing. They might have a huge bill every month or have to stop and buy more when they run out. People don't like that. There is however an alternative that could be used to provide unlimited services while also straightening out the inequality so that the all the users gets equal capacity. The problems occur since the number of users is undetermined at any one moment, so bandwidth per user can vary a lot. Some people need a lot and some people need a little, depending on their usage pattern. The third approach, which is what we recommend, is to keep it unlimited but put it in bands where you have a different price for the average rate of each band. ISP's should not use peak rate since it is something that they hardly every get and therefore it is not very meaningful. You want to improve the average rate of somebody who has paid more and have them really see it all day long. They get more because they pay more. Those bands can be set up and charged and managed very easily by traffic management equipment like ours so you can in fact set up these different price bands with different average rates.

Q: What can be done to improve the quality and economics of wireless?

A: Quality is particularly harmed by the fact that to send in wireless you have to compete for access slots. We are used to good conventional voice, where the tower assigns each talker a channel. However, IP voice is usually chopped up by delays over wireless. To fix that, what we do is to go in to manage the bandwidth on each node and keep the bandwidth slightly under 100% load, so that sending has low delay and both directions are not heavily congested. We have in many cases shown that is the only way to get VoIP voice to work within a wireless domain and the same is going to be true for any VoIP like Skype.

Q: Is this understood or is the way forward being debated?

A: In this area, there hasn't been a lot of understanding shown by people on what could be done because they don't understand the congestion behaviour very well and don't know that something could be done about it. It will now take a lot of education to show people that this can be quite easily controlled with traffic management. On top of that you can use rate multipliers so you can make the bulk traffic with lower priority, which also helps with the interactive speed of query response, gaming and voice on the network. There is virtually no one in North America who is doing that yet. There is some use in Asia where we have done installations but it is something that is still relatively new in terms of being able to get rid of the delay jitter and the queuing delay.

Q: What could be done to make wireless comply with Net Neutrality and still give the operators their profit?

A: If you are a service provider for wireless you do want to be able to get your video or voice service to work particularly well. You would be tempted to give it the priority and make everything less of a priority. That is one of the things that you are not supposed to be able to do. You have to ensure that your voice and all other voice have the same criteria and quality. The second thing is that you shouldn't be spying on applications and trying to kill particular applications because you don't like their affect on the network. Only Comcast has been caught doing that, but actually most every carrier is doing it. The question is, can you do it a different way? What really works is the use traffic management to ensure equal capacity per subscriber, such that if the person is doing P2P, downloading Google maps or anything else they get the same bandwidth that everyone else gets. That turns out to be fair use.

The wireless market is just starting out in regards to this huge push into using data on and there are all sorts of different approaches that people are trying to get this to be economically effective. Basically what we need is to use traffic management much more effectively in those areas to provide intelligent management of the data that everybody is sending each way. The priority then is to get bulk rate traffic to stay in the background and not hurt the interactive part, allowing users to have different rates if they pay different amounts so, throughout the system there are multiple rates. I believe multiple average rate tiers are much more effective than byte caps for the user. That is why people in Asia have started using intelligent traffic management to greatly improve wireless service because they seem to understand the need much more quickly and are further ahead is using wireless data services and therefore they have started deploying the kind of equipment that we provide.

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