# ITS 323 –INTRODUCTION EXAMPLES

1 Traffic on LANs and WANs

We said in the lecture that historically (10-20 years ago), the split of traffic destined within a LAN was 80%, whereas traffic from a LAN to WAN (e.g. Internet) was 20%. Nowadays, that split is no longer, since many organisations make much more use of external services (especially on the Internet). That is, much more traffic travels over the WAN. Lets assume it is 50/50. Lets consider what this means for a SIIT network.

Lets simplify the SIIT Bangkadi network as the following diagram, where we have the SIIT Bangkadi LAN connected via a single WAN link to external networks.
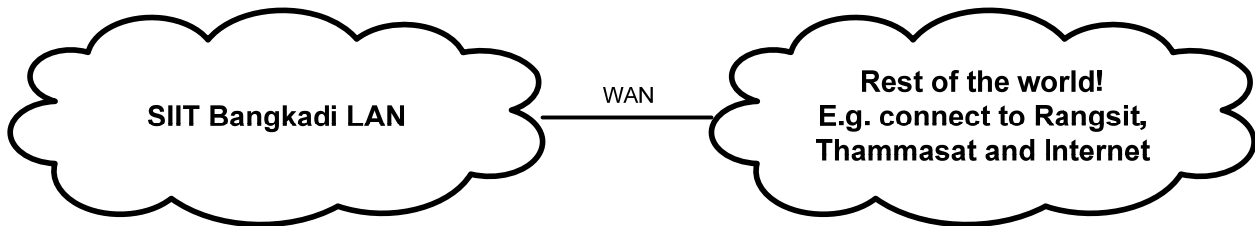
Lets first assume that the capacity (amount of traffic that can be carried) is: LAN 100Mb/s and WAN 2Mb/s.

Now lets assume there are 200 users (on average) on the LAN, each generating traffic at 50kb/s (on average). In other words, every minute (60 seconds) an individual user sends 3000kb (or 3Mbit) of data.

In the past (with the 80/20 split), the traffic sent by the LAN users would be:

80% to other LAN users: 200 users x 50kb/s x 0.8 = 8Mb/s

20% to users outside the LAN (on the WAN link): 200 users x 50kb/s x 0.2 = 2Mb/s

So the amount of traffic the LAN can carry is 100Mb/s, but in fact, only 8Mb/s is sent (we only use 8% of capacity). This is ok (maybe even wasteful). For the WAN, we use the full 2Mb/s of the WAN 2Mb/s link capacity.

Now, if we instead assume a 50/50 split (but the same total amount of traffic), then:

LAN: 200 x 50 x 0.5 = 5Mb/s

WAN: 200 x 50 x 0.5 = 5Mb/s

Now the LAN users send more traffic outside (WAN) than inside (LAN). This now overloads out 2Mb/s WAN link.

What is the point of this simplistic example? The change in the way users communicate, and with who, has lead to a change in requirements for LAN and WAN technologies. WAN technologies must be much faster to cope with the increased amount of traffic.