

Your local machine IP address, and Mask:

IP address: 10.12.106.47

Subnet Mask: 255.255.0.0

Alternative representation: inet6 address: fe80::150f:8bfd:7548:5a11/64

Using tracepath, what is your estimate on the “border” between the SUTD network and the Internet?

The estimate on the border will either be at 172.16.1.210 and 202.94.70.1. That is because the two IP addresses may be referring to the same device, but just that one is within the internal network and the other is within the external network (that is facing the Internet). It is also possible that network address translation (NAT) is used to translate one to the other.

Can you give an example for a link through an underwater cable?

One of the links through an underwater cable will be at 4.69.163.106, which is indicated by the change in domain as well as the spike in the round-trip time (in ms, from 161 to 233) compared to the timings before that. With a further IP tracker on this IP address, this IP is owned by a company in US and it's organization is a LEVEL 3 CONNECTION.

Do you experience link loss? Why/why not?

No for the first 10 hops or so (using tracepath). The connection to the SUTD Student wireless network was stable without network congestion, which might be one of the causes of link/packet loss.

However, after the first 10 hops, my local machine starts to get no responses from the ICMP packet being sent out. This indicates that there is a possibility that the subsequent routers after the first 13 are limiting/blocking the responses it sends to ICMP packets to mitigate DoS attacks, or to save on processing power to make way for 'real' traffic by giving lower priority to ICMP packets.

A brief summary of your experience with the LAN setup using the switch. What worked, what did not work?

To be able to ping other hosts, we have to be connected to the same network. This applies when multiple machines are connected to the same switch, and also by connecting your switch to other switches (in turn connected to other users of that switch). This is tested by running the ping IP\_Address command where IP\_Address is the IP address chosen by another machine connected to the same network, and the ping command returns a valid response with replies and an average of 0.444 ms from the machine at the IP address pinged.

When the same static IP address is used by two machines, A and B. An IP conflict occurs, and on a Windows machine one will get the error message 'There is an IP address conflict with another system on the network.' On the LEET Lab Xbuntu machine, I tried a simple ping test from another (non-conflicted) Xbuntu machine to that IP address and it returned a valid response, but I am unable to determine the person who provided that response (A and B being the same IP address). This shows that it is difficult to identify affected systems using ping utility. What is likely to happen is that the switch is self-learning, and learns to associate machine A with this IP address and may choose to learn to associate B once it assumes the same IP address. We found that whoever who sends the last ping will get a response.

If A and B are connected to the Internet with an IP conflict, they will not be able to access the Internet or have intermittent connections, which is undesired. The most common way now to prevent this is to automatically assign dynamic IP addresses to machines connecting to the network.