

Impressive download speeds; latency can be better

Myanmar, August 2017

There are multiple factors that affect the mobile broadband user experience and this is predominantly due to the nature of the mobile network. It is far more volatile than a fixed-line or wired network with many other factors at play. LIRNEasia (a regional think tank that works on ICT policy) together with the Myanmar ICT for Development Organization (MIDO) conducted a study to test the quality of Internet users were receiving on their mobile devices using the app NetRadar. Over 9,000 tests were conducted, covering all states in Myanmar.

Selected results, analyzed and summarized

In our diagnostics we see the difference in quality between network technologies– from EDGE (2.5 G) to UMTS to HSPA / HSPA+ (3G) and LTE (4G). The latter, which accounts for 4G service, outperformed all other radio technologies (as expected) by a large margin. We also see the handset used, the make, model and version of operating system, all playing a role in the quality received. Other factors that affect QoSE are base station load, distance from the base station and signal strength, inter alia.

It is important to understand that while download speed is often what is cited, there are other factors that affect the service quality. The table below illustrates the importance of some of these other parameters for certain common uses of the Internet. As new services and trends of consumption emerge, other factors that are typically not considered become more crucial to the QoSE. For example, upload speed, as the table below suggests, is relatively irrelevant for most commonly used web service. However, with the increase in online job (freelancing) and the use of the cloud for storage and back up, upload speed will become immensely relevant.

We also look at latency (or round trip time), which is the time taken for a packet to reach a server and come back to the client (in this case the mobile phone).

Figure 1: The importance of selected broadband parameters for selected Internet services (Source: Gonsalves, T.A & Bharadwaj, A., 2009)

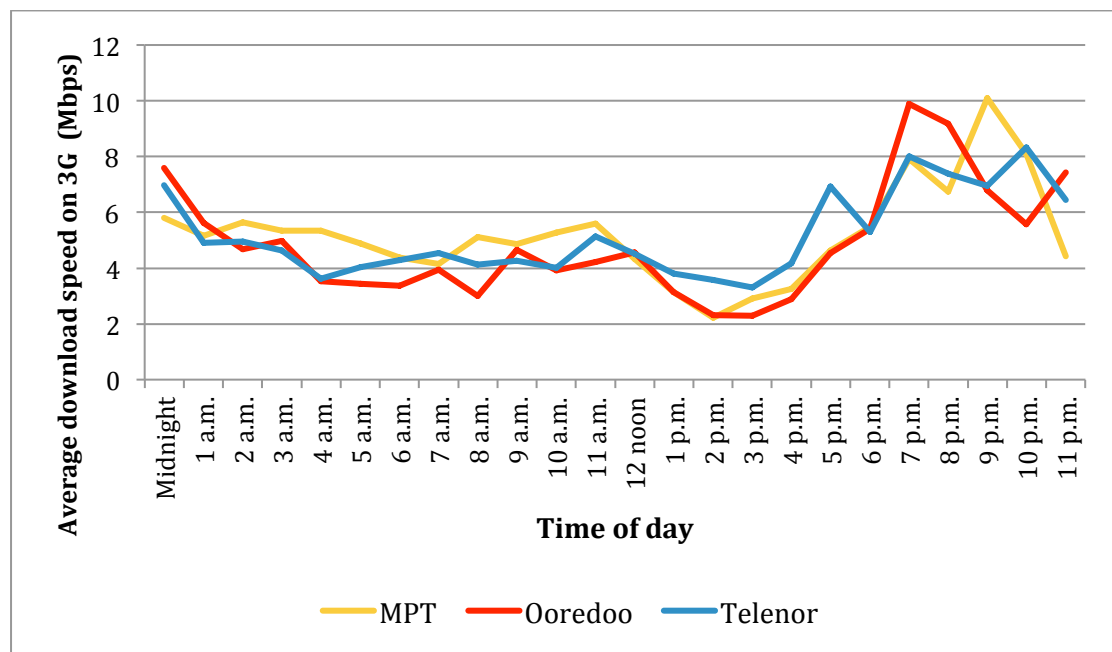
Service	Download (kbps)	Upload (kbps)	Latency (ms)	Packet Loss (%)
Browsing (Text)	++	-	++	-
Browsing (Media)	+++	-	++	+
Downloading	+++	-	-	-
Transactions	-	-	++	-
Streaming media	+++	-	++	++

VOIP	+	+	+++	+++
Games	+	+	+++	++

+++ Highly relevant; ++ Very relevant; + Relevant; - Irrelevant

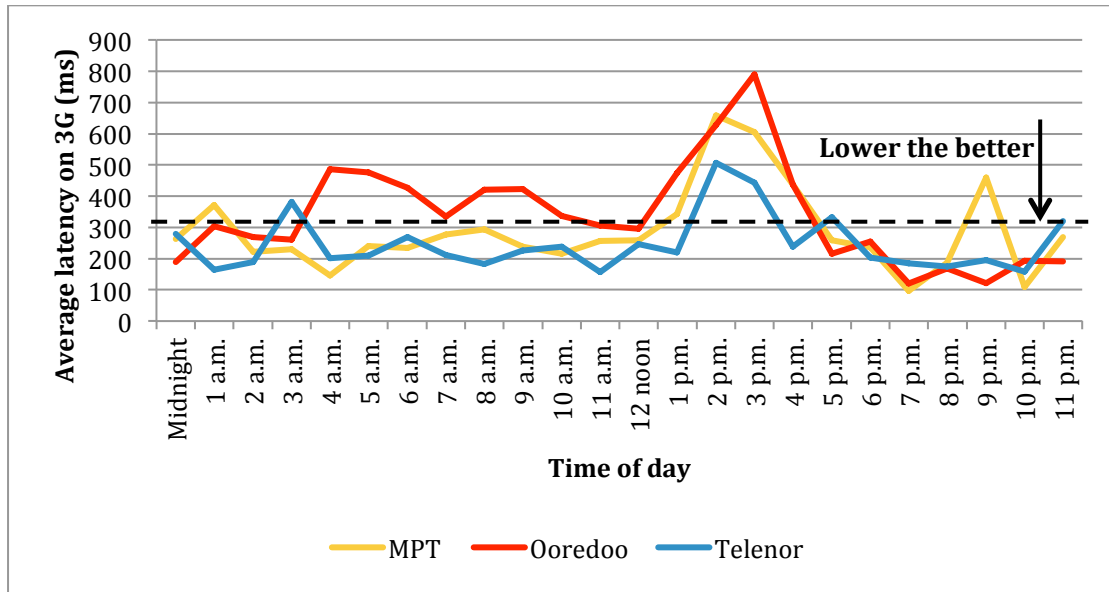
The results from our 9000+ sample study in Myanmar show that while on average the download and upload speeds are high on 3G (Technologies such as HSPA, HSPA+ which is approximately 66% of our sample), latency is far less impressive. In analyzing the hourly trend we also see the worst performance during 13:00 – 16:00 hours, on average.

Figure 2: Average broadband speeds (Mbps) from a server based in Singapore on 3G networks of MPT, Ooredoo and Telenor, August 2017 (Source: LIRNEasia, 2017)



The implications of high latency are linked with network delays thus creating bottlenecks. In practical terms a user may find images on websites taking long to load, out of sync conversations on Internet calls such as Skype, WhatsApp, Viber, Facebook Messenger or delayed movements when playing networked games. According to the Infocomm Media Development Authority (IMDA) of Singapore, the benchmark for latency while accessing an International server is 300ms. However, mobile operators in Singapore achieved much better results according to reports by IMDA with an average of 127ms on 3G networks at the end of 2016.

Figure 3: Average latency (ms) to a server based in Singapore on 3G networks of MPT, Ooredoo and Telenor, August 2017 (Source: LIRNEasia, 2017)

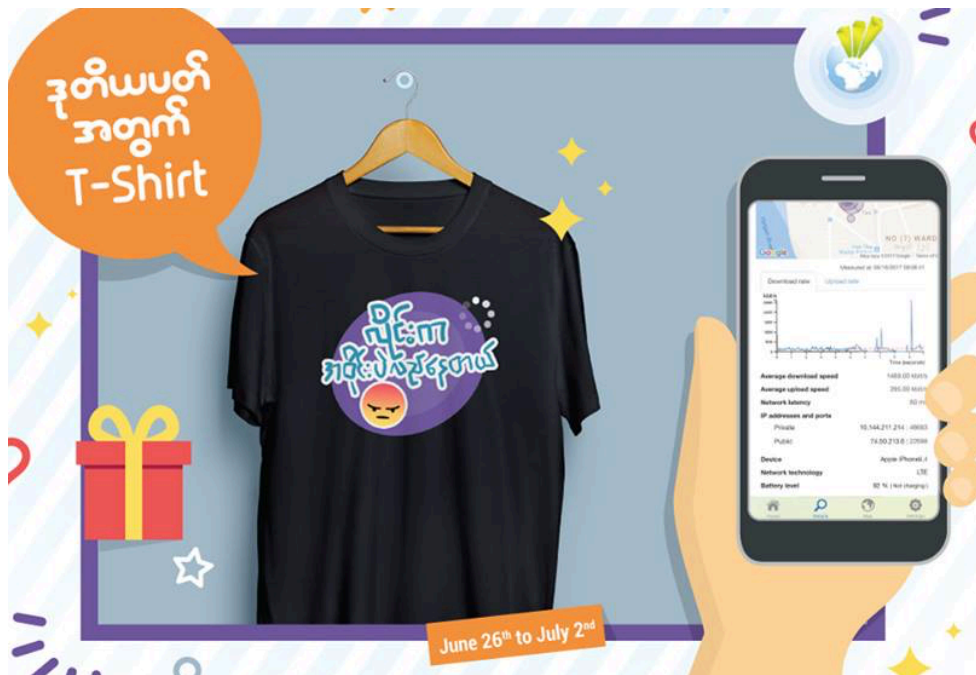


Conclusions

Following our preliminary analysis, it seems that all operators MPT, Ooredoo and Telenor networks do provide good download and upload speeds in most states within Myanmar, but latency ought to improve.

The campaign

The quality of Internet user experience was assessed by crowdsourcing results— incentives were provided for the users in Myanmar to conduct these diagnostics themselves. The incentives came in the form of knowing they would contribute to the #BetterInternet campaign, gaining experience of using a tool that would measure their quality of service (and having access to their results), and in the form of lucky draws. The latter was two-fold— those who conducted tests for four consecutive days each week stood a chance to win a trendy t-shirt and those who carried on for four consecutive days each week for four weeks stood a chance to win a red iPhone 7 Plus. MIDO’s idea to design t-shirts based on commonly used Internet slang in Myanmar was a popular one, resulting in high demand for the t-shirts.



The selection of winners was based on an automated number checker and was streamed live at the end of each week via the MIDO Facebook profile for transparency.

Diagnostics obtained via NetRadar (www.netradar.org). For further information please contact shazna@lirneasia.net | LIRNEasia is a regional pro poor-pro market think tank, based in Colombo Sri Lanka.