

Missing the stumps? India's live sports streaming experience still has a long way to go

By Chandra Ramamoorthy & Sourabh Chowdhury

The number of people watching live sports online is growing year after year. A record, 25M people watched the India-NZ semi-final on Hotstar. Watching cricket on mobile phones has become such a reality that even the actors in the cola-ads watch the match on their mobile!

While the consumer behaviour is fast changing, is our technology keeping pace to deliver a comparable experience to television?

In order to find the answer, we set out to measure the "Quality of Experience" (QoE) during the knock-out games of the '19 cricket world cup matches. Data was captured across multiple locations in Delhi, Mumbai and Bangalore and later compiled in our analytics engine to come up over the following QoE metrics:

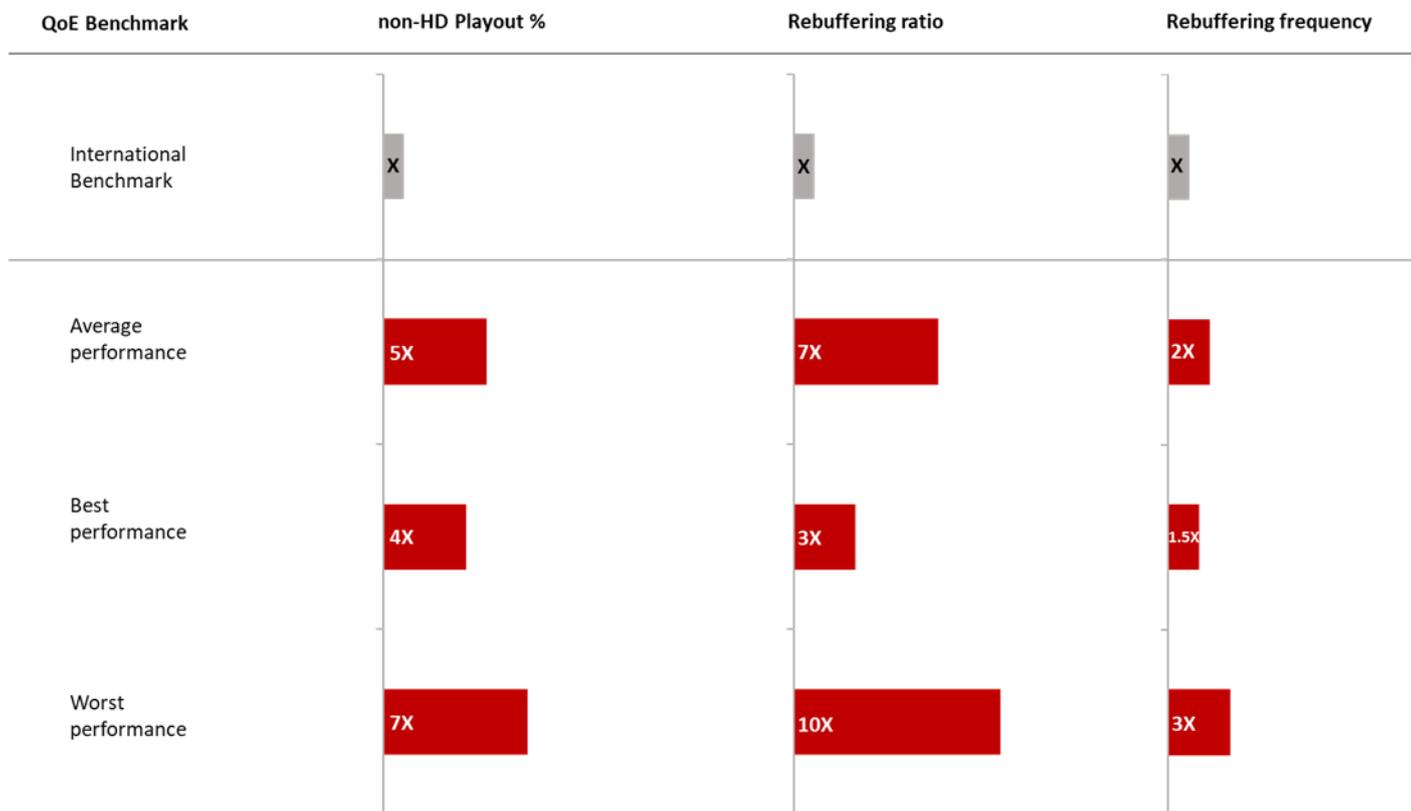
1. **Bitrate % (or picture quality):** % of the time the video played in HD ($\geq 720p$) versus in SD ($< 720p$)
2. **Rebuffering ratio (interruption) :** % of time where video was stuck buffering.
3. **No. of buffer stalls(interruption instances):** This refers to the number of instances of buffering

In addition to the above QoE metrics, we also captured the quality of the network based on a simple speed and latency check and also the number of concurrent users as displayed by Hotstar.

The results were a sobering revelation:

Insight 1: QoE varies widely even across our top metros and our best is not as good as international standards

We compared the results of our tests in India against some of the results we see in tests that we routinely conduct internationally. Figure 1 shows the summary, where the length of the bar is relative to the international benchmark. So the larger the bar, that much worse off the performance is versus the international benchmark.



Length of the bars are relative to the international benchmark. Larger the bar worse is the experience

Figure 1: Comparison of India QoE performance against international benchmarks

1. Average number of non HD payouts = 5X higher than corresponding tests internationally
2. Average Time lost due to buffering = 7X worse than average international benchmarks
3. Time lost due to buffering in best city = 3.5X higher worse than average international benchmarks
4. # of instances of stalls dur to buffering = 2X international averages

Thus, in terms of the end user experience, mobile users in India were among the lowest decile in global benchmarks

Insight 2: Quality of the mobile network was not the only determining factor

Number of concurrent users were a higher determinant of QoE than the Quality of mobile networks, though both were the main drivers.

We analysed the variation in the QoE against the quality of the network defined by a speedtest and latency check, the operator and the level of concurrent users watching the match at that instant. Concurrent users less than 5M were classified as low, 5-10M as medium and more than 10M as high. As can be seen in Figure 2, whenever the quality of the network was high, the quality of experience was invariably good. However, as the quality of the network deteriorated, the impact of high concurrent load started to become more visible. In poorer quality networks, as concurrency increased, the QoE deteriorated faster. Thus, while it is true that the quality of the operator network is a dominating factor in the quality of the experience, how the publisher, Content Delivery Networks (CDNs) and the myriad networks connecting them behave also impacts the sensitivity of the experience. As such, one should not wait for the operator to improve their networks which is a long lead time but there are several optimizations that can be done by the other players as described in the next insight.

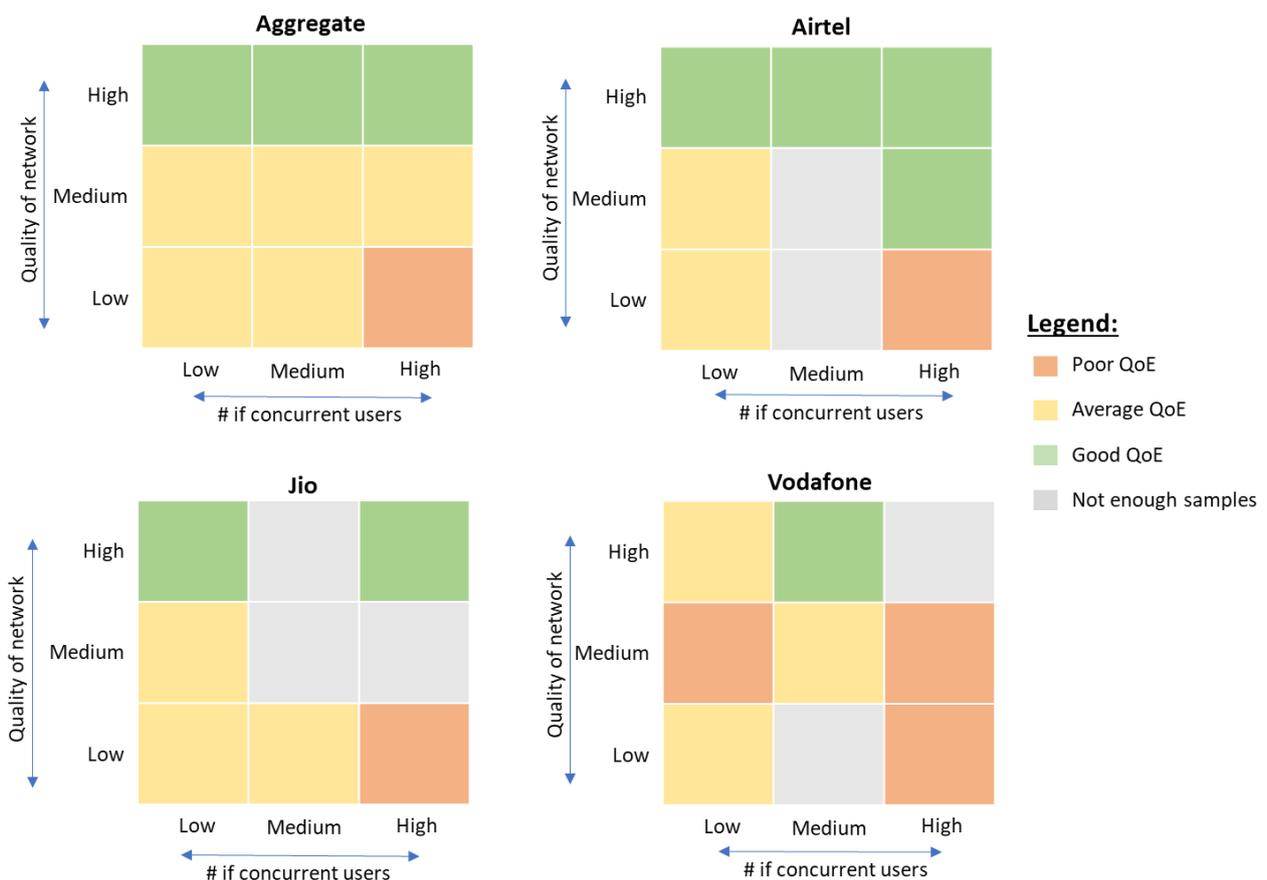


Figure 2: Variation in QoE by operator, network quality and concurrent load

Insight 3: Its not just telecom operators but even content delivery networks and application publishers have to up their game

Delivering content to the mobile is like an orchestra of players who all must sing from the same QoE hymn sheet. There is the telecom operator who must deliver a high-quality last mile access network, then there is the content delivery network that provides a number of media services and finally there is the publisher. Connecting all of them is a complex web of interconnected networks all of which must work at their best to deliver a great experience to

the user. Today, each player measures the quality in their own silo and tries to optimize the performance for themselves. As a result, the view of the end to end experience is often lost.

This is where the first change needs to happen. Each spoke in the wheel must have a view of the end to end experience measured from the user's handset thus ensuring thus providing them a view of the impact on the overall experience for every action taken.

Second, there is a need for greater collaboration between stakeholders. Operators must invest in peering their networks to popular CDN locations while publishers must invest in a multi-CDN strategy such that they are able to choose the best CDN at the right time for the right locations.

Third, every stakeholder must test every change to their product for its impact on the end to end QoE before launching it into the market. The app publisher must test their app continuously for such end to end QoE so that any change they make on the app be it a UI/UX change or a feature addition, its impact is known. Similarly, CDNs must test how the changes they are performing to their data centers is impact the QoE as seen from the user terminal.

Conclusion: Thus, even as we marvel at the number of people starting to get hooked onto streaming content and apps, we must also reflect on the sub-optimal nature of our digital experience. All the players involved in our digital ecosystem must reflect on the actions that they need to take on improving the QoE in the country, else, it is only a matter of time that this massive growth in digital adoption comes to a screeching halt.