Mobile Gaming: how to give customers the optimum online experience
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Are you losing gaming customers through sub-optimal realtime delivery?

Online gamers want to experience the action in real time — whether they’re on their mobile, their PC or gaming via their browser. If they don’t perceive their moves, turns, messages and updates as instantaneous, you’re in real danger of losing them to a competitor.

In fact, according to research by ecommerce consultancy Salmon, 88% of customers rate speed of delivery as more important than the brand when they’re choosing who to buy from.

And with mobile gaming now the largest sector, accounting for 42% of a $109 billion marketplace, it’s increasingly vital that game developers offer a level of mobile performance that will deliver the optimum realtime experience for every user.

This white paper highlights some of the UX issues that can undermine your company’s ability to do this effectively.
Problem 1: Latency is too high

For gamers to perceive the gaming experience as live or instantaneous you need to deliver latencies in the range of 5-200ms; less than 100ms should be your target.

The practical way to achieve this is to establish a realtime connection with your service so that realtime updates are pushed to devices, instead of pulled from the servers.

As devices do not have public IP addresses, it is impractical for servers to communicate directly with devices, and as such, devices instead communicate with the servers and keep that bi-directional connection open.

To achieve low latency updates, you need to consider the many stacks in your layer. In particular, you need to have servers close to your customers when you have lots of subscribers listening at the same time for the same data. You then need scale in your cluster to distribute the work of fanning out these updates to all subscribers.

When you have 1,000 gamers this is easier. When you have a million and you want all of them to receive the update in under 100ms this represents a considerable engineering challenge.

Other things that can affect performance include the total bandwidth required to deliver each update, as well as the encoding and decoding times in the publisher and client.

Using efficient encodings like binary MsgPack help reduce bandwidth and reduce encoding and decoding times. Depending on the types of updates, it may be more efficient to send the changes (deltas) as opposed to the entire state each time.

70% of gamers would look for an alternative game if response times were slow.
(OnePulse, 2018)
The Ably Realtime SDK establishes a persistent connection to the Ably Realtime platform enabling low latency communication. This ensures that clients can wait efficiently for data and the platform can broadcast data with little overhead and low latencies.

Data published to our platform is intelligently replicated to the edge of the network where clients exist. This approach is akin to how CDNs solve similar latency issues by bringing data physically close to clients.

The Ably Realtime platform has 14 datacenters and is constantly expanding. With our latency-based routing, we ensure gamers connect to the closest datacenter. This means they experience consistently better latencies; our average global round-trip latency is just 66.2ms (Jan 2018).

Latency compared across four platforms

- Africa: 2.41x lower latency than competition
- Americas: 2.00x lower latency than Pusher
- Asia: 3.33x lower latency than Realtime.com
- Europe: 2.62x lower latency than Pusher
- Oceania: 8.56x lower latency than PubNub
- South America: 1.73x lower latency than Pusher
- China: 2.00x lower latency than Pusher
- Total: 2.41x lower latency than competition

Source: Uptrends Real browser monitoring
Choosing Ably over the other vendors was an easy decision. Their technology platform offered scalability and performance we know we can rely on as we grow.

Sam Jones, CEO – Ballr
Problem 2:
Loss of connectivity across changing network conditions

On-the-move gamers often switch continuously between 3G, 4G and Wi-Fi, and regularly lose their connection altogether. These changes cause disruptions to data delivery as connections open and close. Gamers who have lost connectivity may well refresh their app, rebuilding the game and event state from scratch. Not ideal.

Whilst you can’t guarantee a continuous connection, it’s important that you make sure their devices can reconnect rapidly, resuming the data stream from where they left off.

This significantly reduces work for your engineering team as they don’t have to handle failed connection states.

85% of gamers play online or mobile games while on the move.
(OnePulse, 2018)

Ably's Solution:

Ably’s stateful design ensures that, when a gamer connects to our platform and becomes disconnected for a brief period (less than 2 minutes), on reconnection the Ably platform automatically, and seamlessly, resumes from where they left off.

This reduces engineering complexity for gaming companies and for typically short disconnections on mobile devices, provides a more seamless experience.
PeopleFun is a mobile game publisher and maker of top grossing word games Wordscapes, Word Chums and, more recently, Word Mocha and Word Vistas. The team were also behind the award-winning Age of Empires, one of the best-selling games of all time.

Whilst all PeopleFun’s games can be played using a traditional turn based approach reloading the state periodically, a persistent connection to a realtime service enhances game play significantly.

After evaluating the leading realtime platform vendors in 2017, PeopleFun moved to Ably. Among their key reasons to switch were a pricing model that supported PeopleFun’s growth (volume discounts and no arbitrary tiered pricing), a migration plan that required practically no development work thanks to our protocol adapters, and technical onboarding support provided by our engineering team at no cost.

“Ably’s realtime platform offers rock-solid performance and their team has proven to be a true partner. I strongly feel they have a similar philosophy to creating a win-win relationship with their customers as we do.”

Leon Campise, Co-founder – PeopleFun
Problem 3: You’re not delivering 100% uptime

If a mobile gamer’s game is interrupted by less than optimal uptime, they’re going to blame the app and look elsewhere. That’s why the latest data shows that 80% of app users churn within 90 days.

Even 99.99% uptime means a gamer could be unable to use your service for almost an hour a year, based on typical usage.

In other words, for the mobile gamer, only 100% uptime is good enough.

Only 6.7% of gamers claim a slow or non-working game is not important to them. (OnePulse, 2018)

Ably's Solution:

Ably provides a unique 100% uptime guarantee, accredited by an SLA. In addition to 100% service availability, our SDKs include proprietary technology to detect degraded performance and reroute traffic automatically to an alternative data center.

This ensures your gamers typically experience issues for no more than 15s. Compare this with the extended periods of up to an hour common amongst other suppliers.
Problem 4: The game’s message ordering is unreliable

It can be incredibly frustrating for gamers when they make a playing decision based on the wrong information — or delayed information — being served to them.

Data ordering becomes a greater concern when the events you’re streaming to your clients are partial updates (data deltas or patches) as opposed to full updates. To reduce bandwidth and latency, it can make sense for businesses to send only the updates of a dataset to a device, as opposed to the whole dataset.

In most cases, this will work fine on any realtime transport. However, when updates arrive in the incorrect order, the data deltas/patches can result in corrupted data. Then there’s no guarantee that all devices have the same view of the same data, even when they all received the updates.

39.33% of gamers would switch to a more reliable and fair game if another player got a piece of information before them. (OnePulse, 2018)

Ably's Solution:

Every message published on the Ably platform has a unique incrementing message serial. Unlike other pub/sub systems, Ably guarantees that the order of messages from any single publisher are delivered in that order to all subscribers globally. In peer to peer gaming, this allows the underlying transports between devices to be used reliably.
Problem 5:
Your game can’t handle spikes in demand

Most online games experience surges in usage during weekends and evenings, and especially when you launch an update or add new content. To ensure you don’t let down your gamers at these key moments, you must be able to seamlessly handle these spikes in demand.

When choosing your realtime data platform you need to know that, regardless of the number of active gamers who are online, the amount of work required from your servers remains constant.

All the work required to keep potentially millions of connections alive should be deferred to the realtime platform. This greatly simplifies your technical architecture and reduces associated engineering costs.

Over 90% of gamers want a reliable and responsive gaming experience.
(OnePulse, 2018)

Ably's Solution:

The Ably Realtime platform is able to deal with unexpected spikes in traffic in two ways. Through automated redistribution of work between our 14 datacenters, even spikes of up to 100 times the usual amount of traffic from a single customer can be dealt with easily. In addition to this, we have autoscaling systems to automatically ensure that capacity is always available by predicting activity and provisioning capacity in advance.

Ably Realtime is continuously investing in the platform to optimize for very large workloads, and has a 24/7 infrastructure engineering team actively monitoring the platform and manually overprovisioning when necessary.
Ably’s global realtime platform enables Internet enabled devices, such as a browser, phone, server or IoT sensor to stream data in real time to any other internet connected device in milliseconds. Our platform brings enterprise scale messaging to developers by delivering 100% service availability, message delivery guarantees and low latencies globally.

At its core, Ably Realtime is a cloud-based pub/sub Platform-as-a-Service ensuring any device publishing messages to Ably Realtime will be received in real time by any number of subscribing devices. But it is more than that. Our platform makes it possible for developers to build apps and infrastructure that can communicate in realtime without the worries of: managing scale, latency, data durability, integrity and storage, seamless connection recovery, device interoperability, network outages, encryption, security and authentication, throttling, and denial of service attacks.

Ably Realtime’s client libraries have been developed to offer a consistent yet idiomatic API across every language. Regardless of your development environment our platform keeps things simple for you by being consistent. The platform also supports a number of other protocols to provide interoperability with a huge array of third party client libraries across every imaginable platform.

Find out more: www.ably.io

Contact: www.ably.io/contact