



Streaming



Overview

- Origins of Twitch/Mixer
- Twitch's growth and social implications
- Why should we embrace streamers?
- The cloud gaming world
- How does streaming actually work?



Live Streaming

Origins of Twitch

- Began as a branch off of Justin.tv's gaming platform
- June, 2011: Twitch splits from its parent Justin.tv
- February 10, 2014: Twitch's first stream involving viewer interaction with the streamed game.
- May 18, 2014: Twitch acquired by Google for 1 billion dollars
- Aug 25 2014: Twitch bought by Amazon for 970 million dollars after Google deal fell through
- Currently makes up 1.8% of total US internet traffic during peak periods



Origins of Mixer

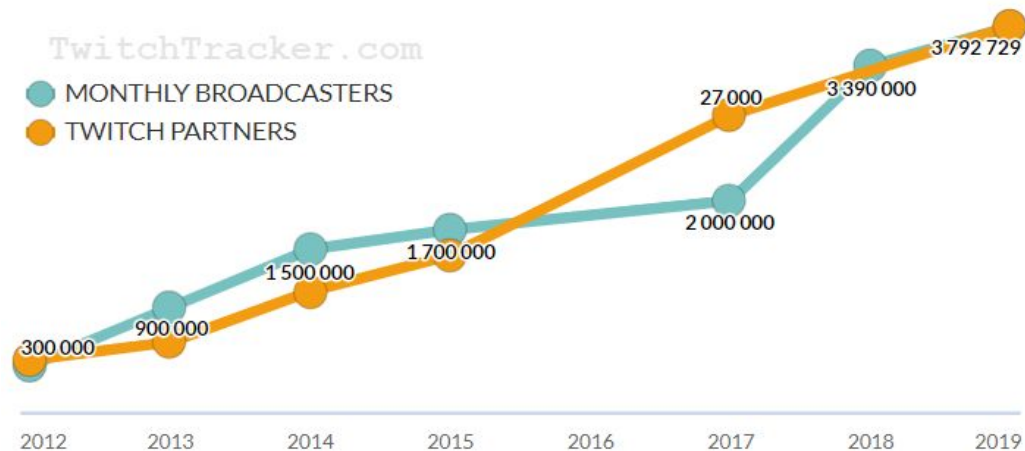
- Jan. 5, 2016: Mixer (known as Beam at the time) officially launched
- Aug. 11, 2016: Beam acquired by Microsoft for undisclosed amount
- May 25, 2017: Beam renamed to Mixer, as the previous name couldn't be used globally
- Aug. 1, 2019: Mixer gains exclusive ownership of Ninja. Referred to by Wikipedia as a “coup”
- Mixer. despite acquiring Ninja, struggles to compete with Twitch



mixer

Streaming Social Implications

- Streaming, gaming, and video production have all been increasing in popularity
 - Streaming in particular is becoming more mainstream



Streaming and Gaming

What's your experience with streaming? If you know nothing about streaming, what have you heard about it? If you're active in the streaming community, how has it impacted you?

Embrace the Live Stream!

- The power of earned media
 - Content about a game produced by independent creators not being employed or influenced by the game developers
 - More genuine than advertisements and sponsorships
 - Free



Big Streamers vs. Small Streamers

- Common difficulties of both
 - Entertaining viewers
 - Exhaustion
- Job vs. Hobby
- Interaction with the viewers?



Discussion on Live Streaming Popularity

- Should it stay a fad?
- Is branching out from gaming good?
- Should we have regulations?
- Do we need it socially?
- Problems with it?
- Should we consider it a career?

Cloud Gaming ☀️



OnLive (2003-2015)

- One of the OG's in cloud gaming
- Streaming box connected to TV
- Patent acquired by Sony in 2015 [9]





Stadia

- Google's next big thing for cloud
- Uses Chromecast Ultra with custom controller
- \$129 at launch (Founders Edition)
- Supports 4k UHD streaming [10]



GeForce Now

Nvidia's cloud gaming... [7]

REQUEST FREE BETA ACCESS

Ad with a ton of *legit* testimonials:

youtube.com/watch?v=rz_dg2sz6ps



Project xCloud



- Custom hardware in datacenters
- Basically gutted Xbox's in the cloud:
[youtube.com/watch?v=s4df_0JjKR0](https://www.youtube.com/watch?v=s4df_0JjKR0)
[5]
- Supposed to launch this month.
- “Play Xbox games on your mobile phone or tablet” [6]



Vortex.gg

- Created by RemoteMyApp [8]
- Monthly subscription
- Play games you own from your Steam library
 - Limited playtime

Demo...is this actually viable?
(given we're on shared university wifi)

How it works 

“Laaaaagggggg!”

- Live streaming: fast upload speed for streamer, fast download for everyone else
- Cloud gaming
 - First make sure you have enough bandwidth
 - Higher pings due to more network hopping
 - Ideally streaming servers are close to you for low ping

Under the hood

- Bit rate
 - # of bits per second we can transmit or receive
 - mbts, megabit/s, mbit/s = 1 million bits per second
- Optimally, client's bit rate is high
 - Often not the case (slow ISPs, bad network card, etc)
 - Can we minimize the number of bits transmitted?

Compression

- MPEG-2
 - Old way to compress audio and video
 - Used process of compression lossy audio and video
 - Still used today but not as efficient as next
- H.264
 - Common now for HD digital video compression since 2014
 - Idea is to compress to require half as much storage space while still using a lower bit-rate than standard
 - Flexible and supports 4k and 8k!

Lots of data

- Data centers
- Are there CDNs?
- Locality (data center closest to your geo IP location)

Would you use them?

- How likely are you to try Stadia?
- Do you like the idea?
- Is it trustworthy?
- Is it even worth?
- What purpose should it serve?
- Conveniency vs. Usability?

Sources

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- 6: www.xbox.com/en-US/xbox-game-streaming
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11. <https://www.youtube.com/watch?v=2To2KA0jPQo>

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13. <https://en.wikipedia.org/wiki/MPEG-2>