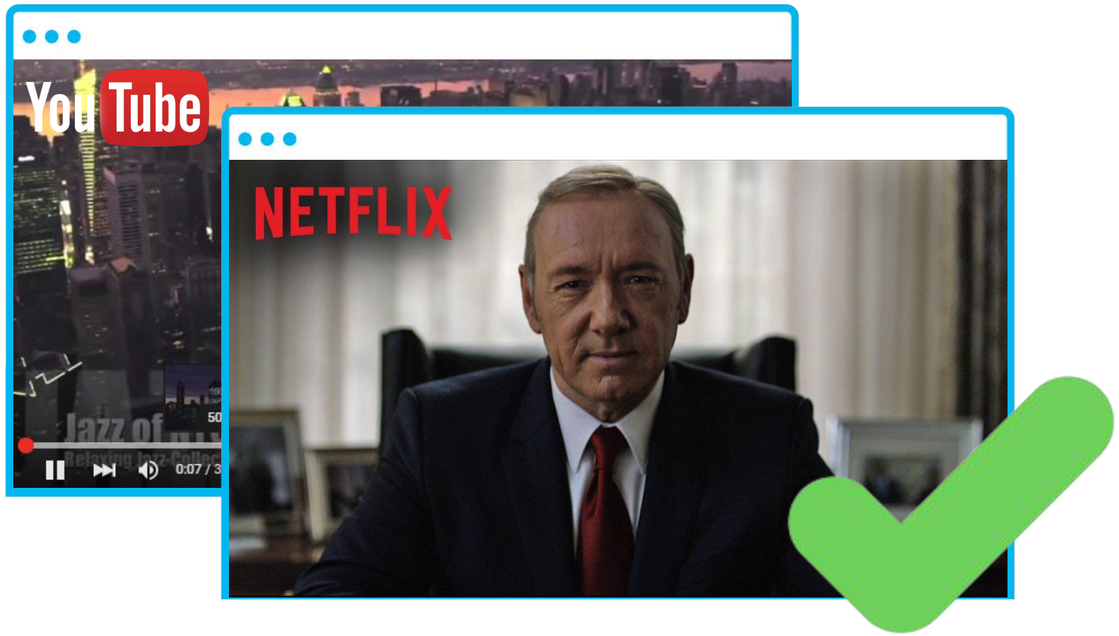
# The Evolution Of Video Delivery

# *All* Video Content is going online

# The State of Video Delivery

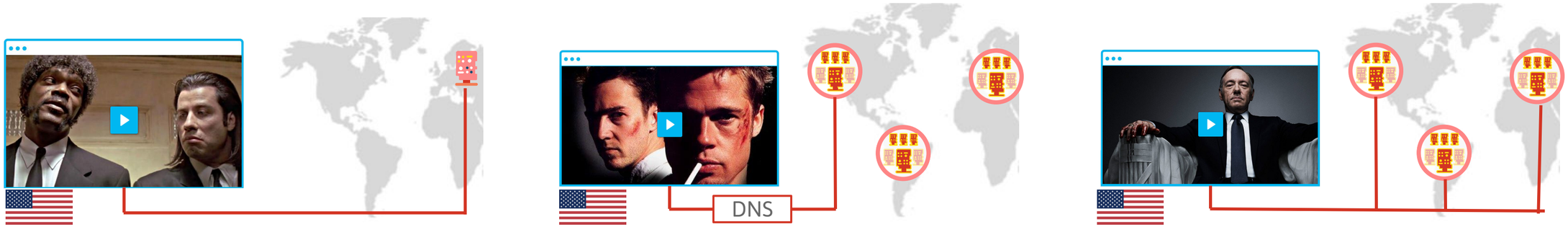



Netflix, YouTube QoE is excellent

The rest is sluggish and expensive

## Why is that?

# Evolution of Video CDN




1995 2000 2016

## 1 gen

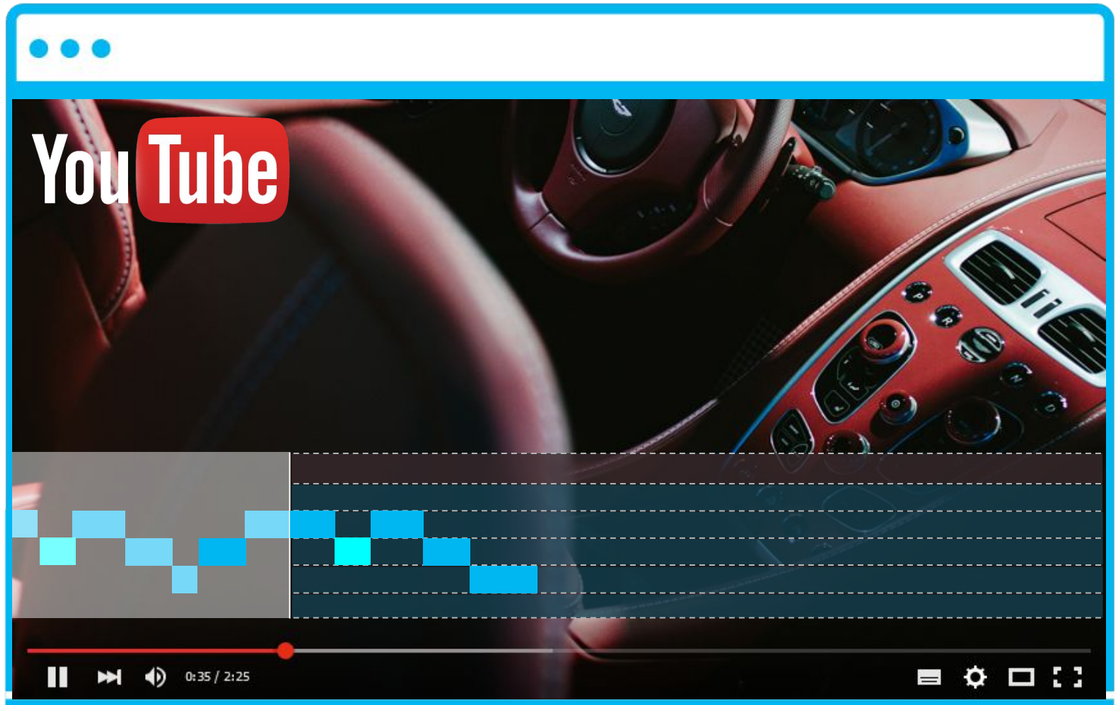
## 2 gen

## 3 gen

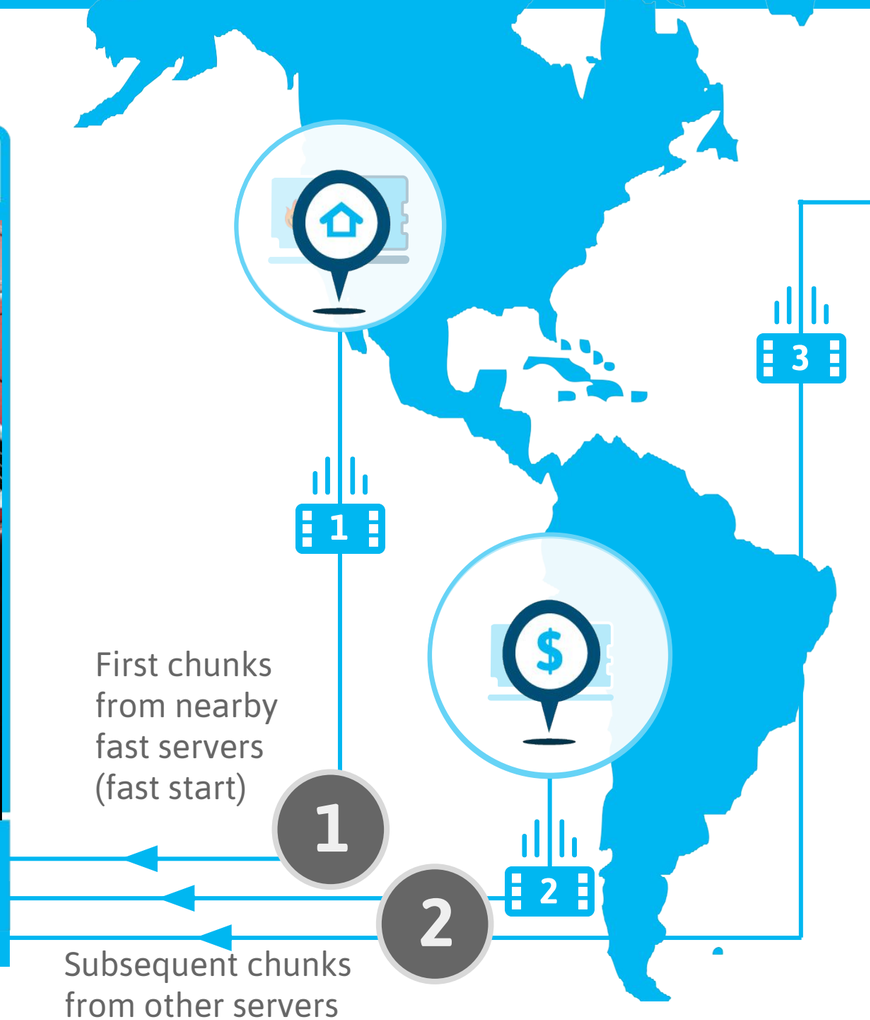
| | | | |
|---|---|---|---|
| **Content served** | Dynamic & static content: HTML/ AJAX/JS/CSS/Images/Flash/Video | Static content: JS/CSS/Images/Flash/Video | Static content: Video |
| **Server software** | Generic HTTP: Apache, nginx, tinyhttpd, proprietary | Generic caching proxy: ATS, nginx / squid optimized for CDN, proprietary | Video only caching proxy |
| **Client side** | NONE | NONE | Mid-Stream switching, CDN aware |
| **Servers per stream** | 1 (global) | 1 (per geo) | Multiple (worldwide) |
| **QoE** | Not measured, Bad | Guesstimate, Mediocre | Granular / Excellent |

# 3rd gen: Mid-Stream Switching

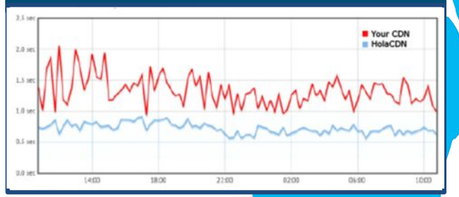
Fast start, less buffering, cheaper costs




[Client side module]




QoE *as felt by user* is measured

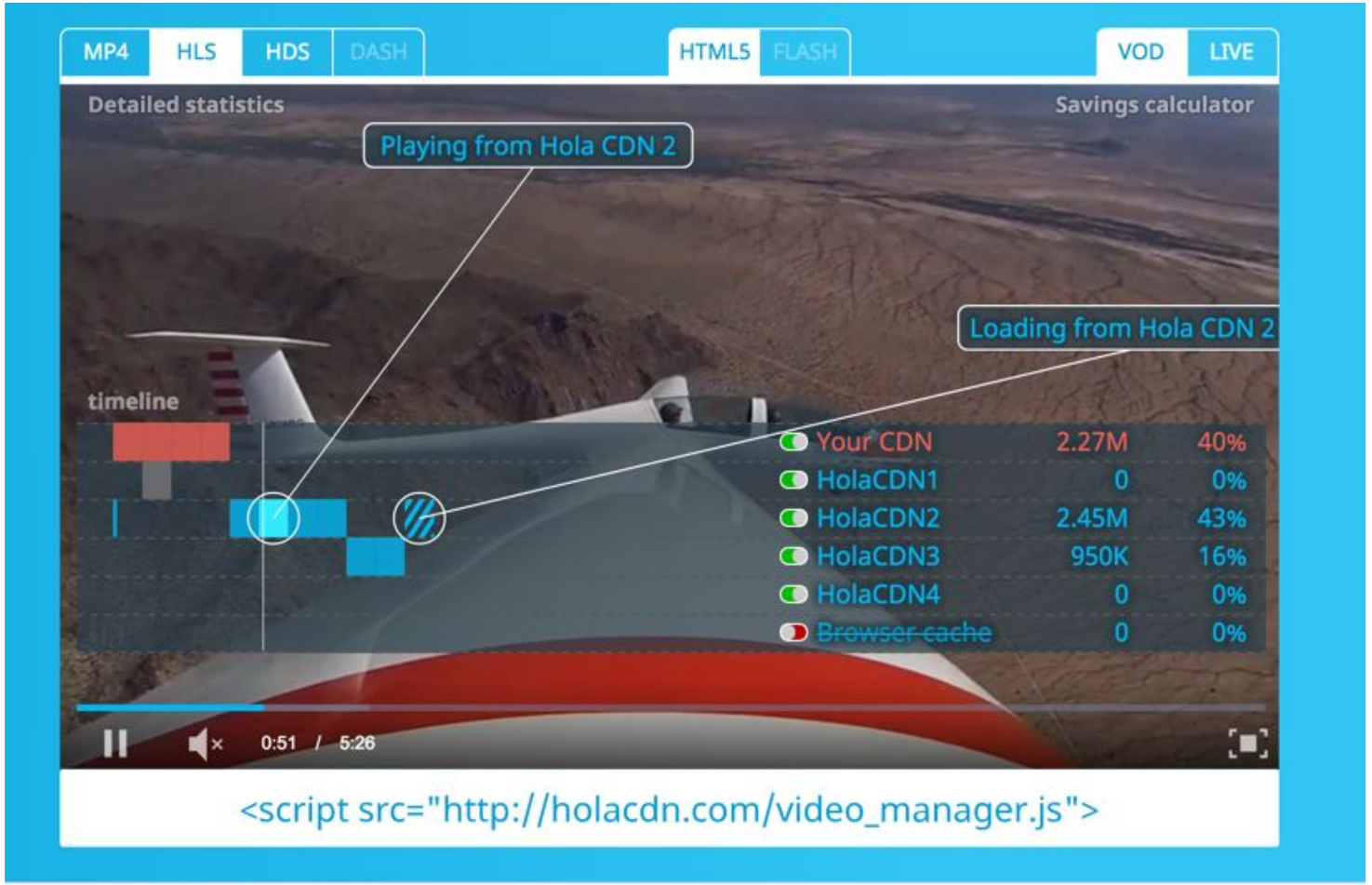



Fetch segments from multiple IPs

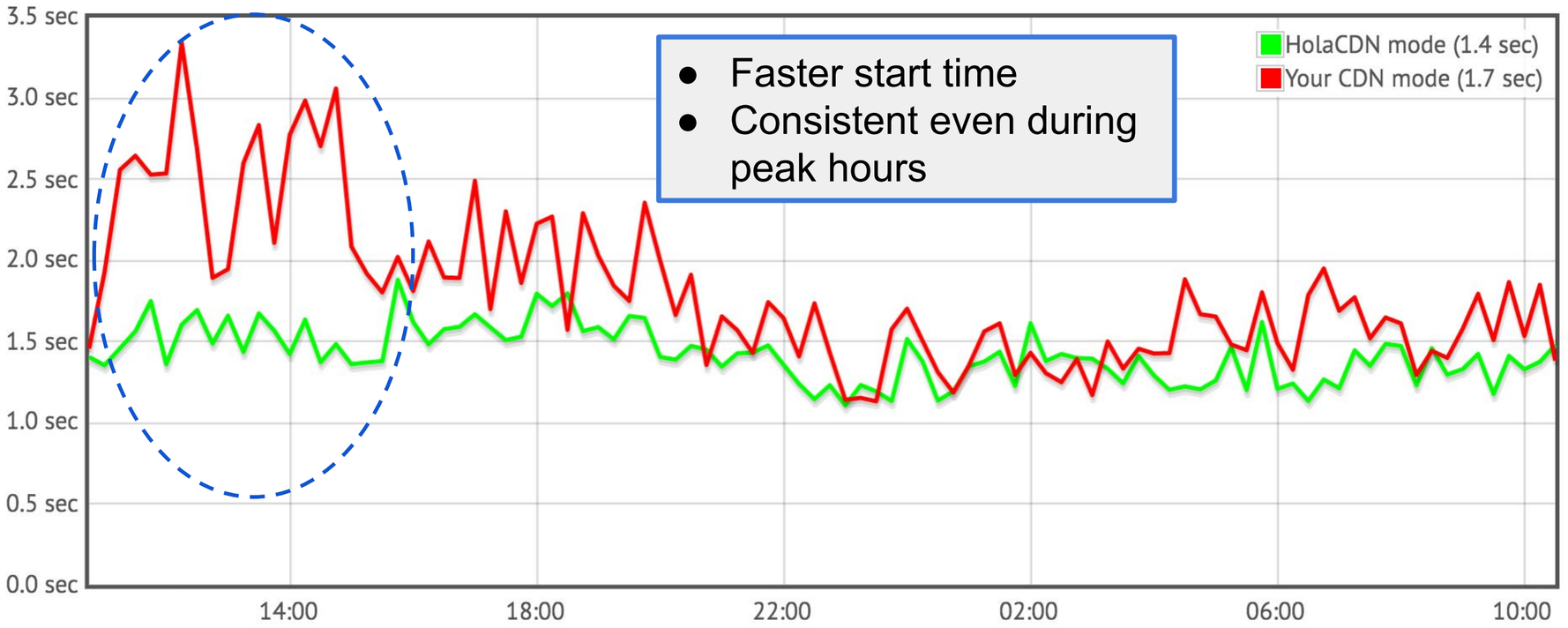
"RAID for CDNs" analogy

Realtime client-side calculations

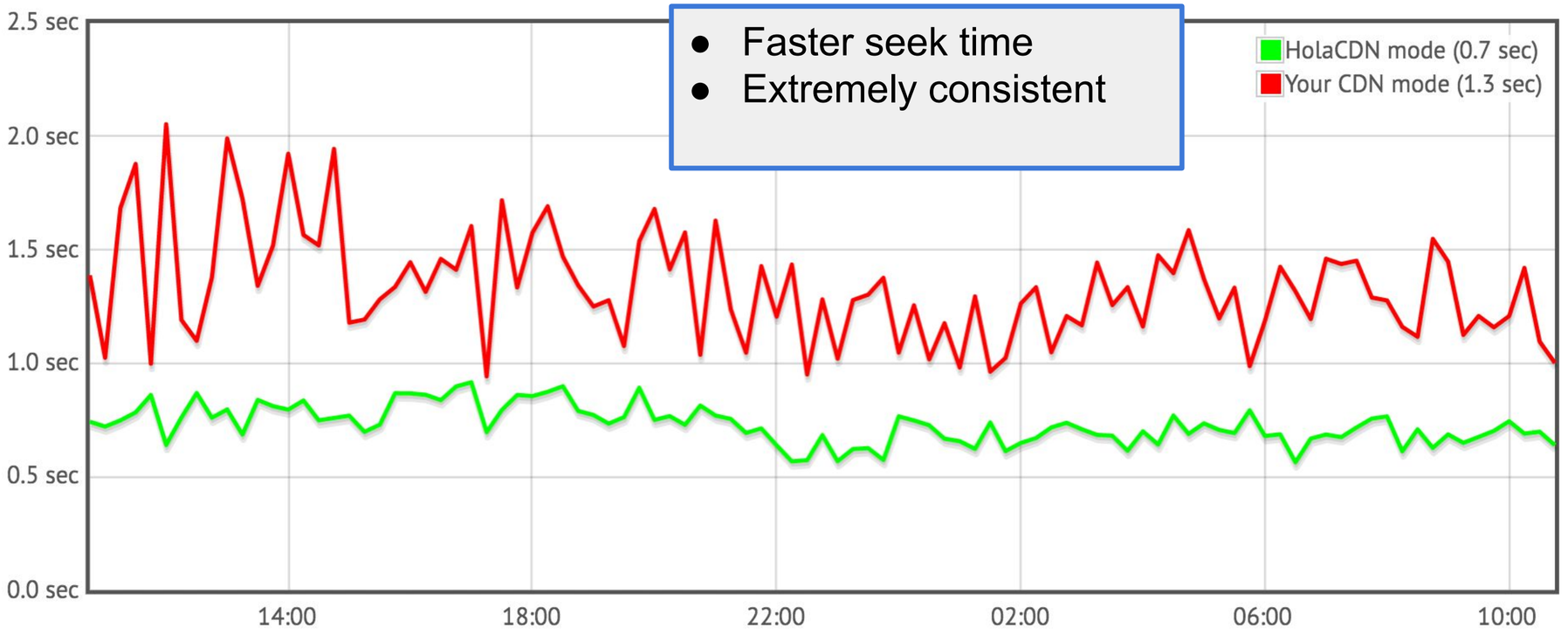
# Live Demo


MP4
HLS
HDS
DASH
HTML5
FLASH
VOD
LIVE
Detailed statistics
Savings calculator
Playing from Hola CDN 2
Loading from Hola CDN 2
timeline
Your CDN 2.27M 40%
HolaCDN1 0 0%
HolaCDN2 2.45M 43%
HolaCDN3 950K 16%
HolaCDN4 0 0%
Browser cache 0 0%
0:51 / 5:26
<script src="http://holacdn.com/video_manager.js">

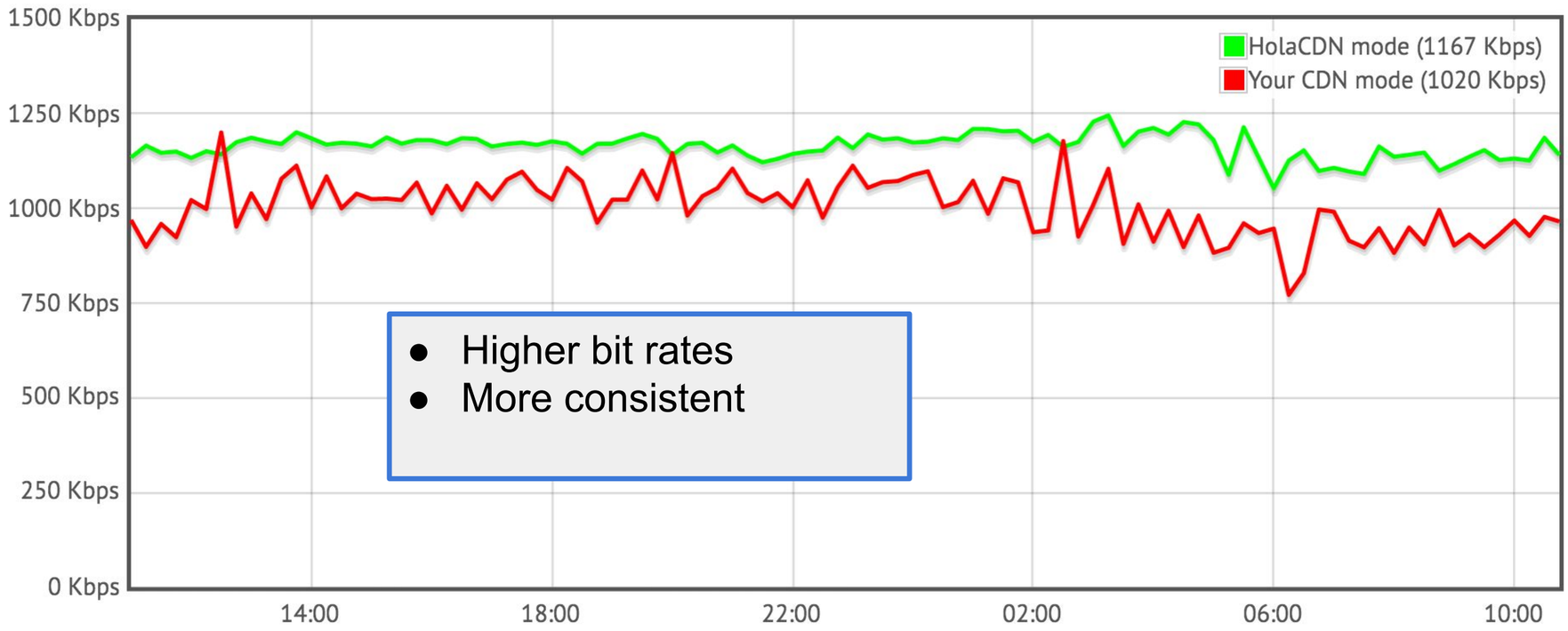
# Impact on start time

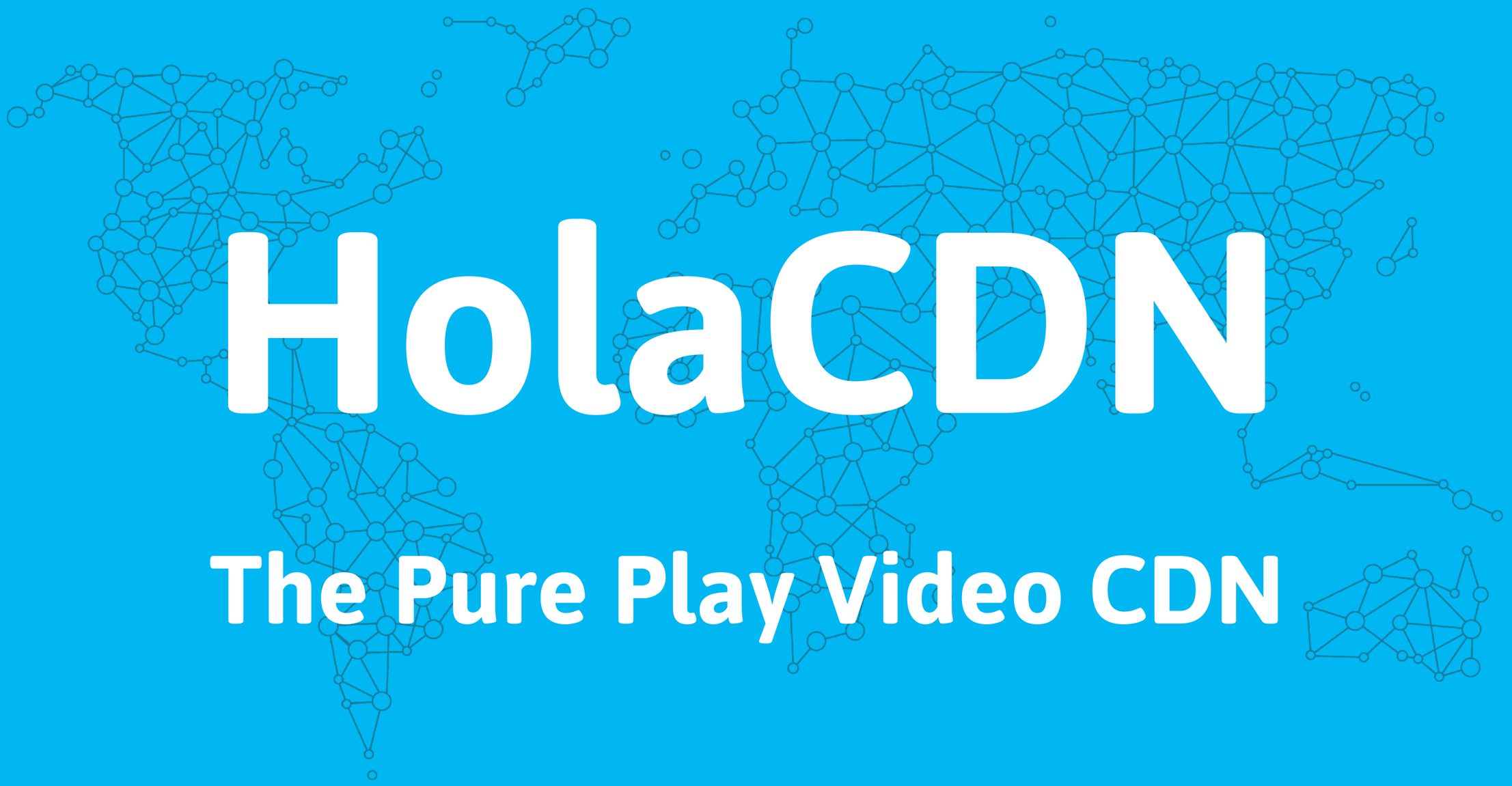


# Impact on seek time



# Impact on bitrates





# HolaCDN

## The Pure Play Video CDN

# Video QoE dashboard

| Browser | Country | Desktop/Mobile | OS | Zone | Video source |
|---|---|---|---|---|---|
| all | all | all | all | all | all |

| | | All your CDNs | HolaCDN | Comments |
|---|---|---|---|---|
| ▶ User experience | Successful start | 56.1% | 62.6% | 12% better |
| ▶ Start | Start time | 4.6 sec | 2.9 sec | 37% better |
| ▶ Seek | Seek time | 2.5 sec | 1.2 sec | 52% better |
| ▶ Buffering | Mid-video buffering | 5.2% | 5.1% | ~ same |
| ▶ Video quality | Bitrate | – | – | |
| ▶ General | Clicked play | 63% | 68.5% | |
| ▶ Multi-CDN | Traffic served | 40.7% | 59.2% | |
| ▶ Cost savings | HolaCDN cost saving | N/A | $223 | 71.9% savings |

It’s free and on GitHub!
[github.com/hola/cdn](github.com/hola/cdn)

# Multi-CDN client

- Specify cost per source
  - E.g. Akamai $0.05/GB, Cloudfront $0.04/GB, HolaCDN $0.01/GB
- Dynamic switching for best cost/performance
- Choose between:
  - Your own mix of origin and CDN(s)
  - Your CDN(s) + HolaCDN servers

It’s free and on GitHub!
github.com/hola/cdn

# Traffic: Simple Pricing

Pay only for the bandwidth you actually use. Fixed price of 1¢ per GB from the first GB to everywhere in the world, 100% availability. No setup fee, no minimum spend.

| | USA & CA | EU | Asia-Pacific | & NZ | South America |
|---|---|---|---|---|---|
| 1-50TB | $0.06 | | | 95 | $0.095 |
| 51-150TB | $0.0 | | | 7 | $0.07 |
| 151-400TB | $0.03 | | | | $0.06 |
| 401-1000TB | $0.03 | | | | $0.05 |
| 1-2PB | $0.02 | | | | $0.05 |
| 3-5PB | $0.01 | | | | $0.05 |
| Over 5PB | | | | presentitive sales@old-cdn.com | |

# HolaCDN

Start now on [holacdn.com](holacdn.com)