RIOT GAMES vs the Internet
Or...
Fixing the Internet for Real Time Applications (Games)
OUR MISSION

WE ASPIRE TO BE THE MOST PLAYER-FOCUSED GAME COMPANY IN THE WORLD
THE RIOT MANIFESTO

PLAYER EXPERIENCE FIRST

CHALLENGE CONVENTION

FOCUS ON TALENT AND TEAM

TAKE PLAY SERIOUSLY

STAY HUNGRY, STAY HUMBLE
What is the Problem?
For players it’s all about:

Consistency and Fairness
Internet Treatment of Game Traffic

Standard Web Packet - 1500 bytes

Standard Game Packets - 50 bytes (approx)
Latency matters, Jitter matters

- In real time **latency** is key, buffering is not an option
  - Higher latency (up to a point) is manageable
  - Break points at 60/80/100ms (for example)

- **Jitter** is a huge problem
  - Varying latency is unplayable
  - Always seems to happen at worst time possible
The Real Problem?

The Rest of the Internet
Riot versus the Internet?

- Internet traffic is dominated by:
  - Netflix, YouTube
  - Facebook, Instagram
  - Google, etc.
- Throughput and bandwidth is key rather than latency
- ISPs and network providers optimize appropriately

**Conclusion:** Key needs of real time applications are almost incidental
What’s a Riot Engineer to do?
Riot Direct Objectives for Players

- Reduce **Latency**
- Minimize **Jitter**
- Minimize **Packet Loss**
- Mitigate **DDoS attacks**
**Riot Direct Approach**

- Server location (EUW and NA moves)
- Build out physical infrastructure (backbone)
- Optimize Traffic Routing
- Peer with ISPs and Transit Providers directly
How does all that happen?

Lots of:

- Phone calls
- Analysis
- Negotiation
- Configuration
- Tuning
The Impact in Europe
EUW Circa 2014
DTAG and Telefonica

Deutsche Telekom
(ASN:3320)

Network performance for ASN 3320

Telefonica Espana
(ASN:3352)

Network performance for ASN 3352
Really Local - My ISP

UPC Ireland
(ASN:6830)

Network performance for ASN 6830

Latency (ms)
The Future
MOAR!

- More interconnect
- More analysis
- More peering
- More tuning
Innovation

- Software Defined Networking (SDN)
- Better equipment, better data insights
- More games
- Open platform?
We’re Hiring!