



Story Delivery Network

Open Connect

Thomas Volmer
Head, Content Delivery Policy

A Quick Agenda

Don't pay twice - ISPs provide internet connections to reach internet content made available by content providers.

1

Global standard - competitive interconnection that does not discourage localized content

2

Netflix solution - Open Connect is the most efficient content delivery network

3

ISPs sell Internet access to reach great Internet content

Korean ISP offering minimum speed guarantee:

구분	광랜 비즈광랜 (라이트/SOH O/스탠다드) Biz인터넷	비즈광랜 200	스피드, 스페셜, 프리미엄(T), 세이버, 샤크프리미엄, 샤크Xpeed, Xcable	스마트, 체크마스터	Giga라이트 Giga라이트+Wi Fi GigaBiz 라이트	Giga Giga프리미엄 Giga+WiFi Giga프리미엄+WiFi Giga프리미엄+WiFi1.7G 기가비즈광랜 GigaBiz / GigaBiz 프리미엄	Giga 프리미엄 X 2.5	Giga 프리미엄 X 5	Giga 프리미엄 X 10
최저속도	50Mbps	70Mbps	5Mbps	500Kbps	250Mbps	500Mbps	1Gbps	1.5Gbps	3Gbps

Netflix Terms of use:

1. Membership

1.1. Your Netflix membership will continue until terminated. **To use the Netflix service you must have Internet access** and a Netflix ready device, and provide us with one or more Payment Methods.

4. Netflix Service

4.6. **The quality of the display of the Netflix content may vary from device to device, and may be affected by a variety of factors, such as your location, the bandwidth available through and/or speed of your Internet connection.** [...] The minimum connection speed for SD quality is 1.0 Mbps; however, we recommend a faster connection for improved video quality. A download speed of at least 3.0 Mbps per stream is recommended to receive HD content (defined as a resolution of 720p or higher). A download speed of at least 15.0 Mbps per stream is recommended to receive Ultra HD (defined as a resolution of 4K or higher). **You are responsible for all Internet access charges. Please check with your Internet provider for information on possible Internet data usage charges.** [...]

Net Neutrality provisions: Article 3 (Rights of Users) states that "Internet users have the right to freely use legitimate content, applications, services, and devices or equipment that do not cause harm to the networks, and have the right to receive information on Internet traffic management from relevant operators."

Broadband connections in Korea can handle Netflix streams: no need to pay twice

Netflix recommends just 5Mb per second to stream  a high definition movie on Netflix on a fixed line. That means a Netflix member with a modern broadband connection has enough bandwidth to stream multiple HD videos at the same time.

How many could you watch at once?



25Mbps

5 films



100Mbps

20 films

1,000Mbps

200 films



Average broadband connection speed in Korea ~200Mbps vs average Netflix Stream : 3.6Mbps

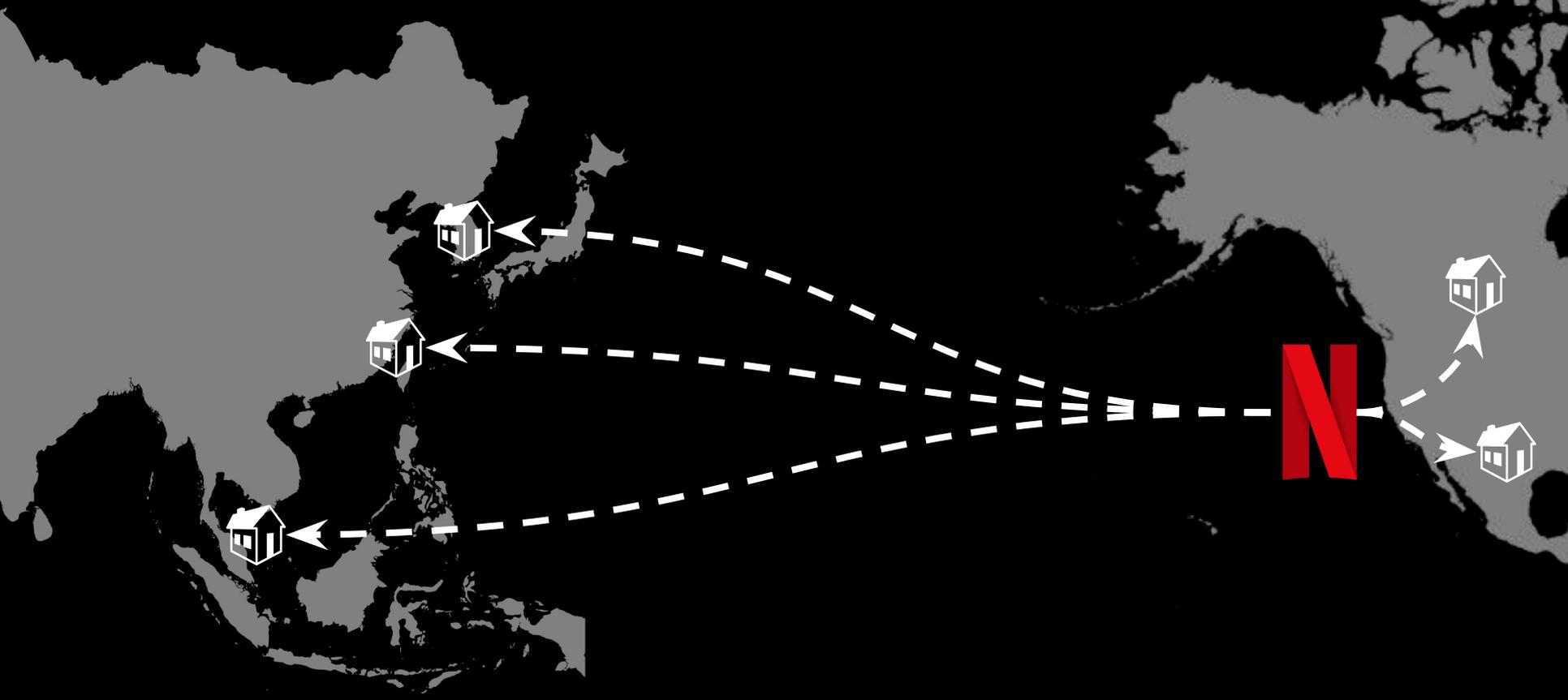
Network use fees are a toll on Internet content that deviate from the global standard



ISPs pay to connect to the Global Internet - not the other way around.

Network fees and “sender party pays” push content offshore requiring more infrastructure.

Serving traffic over Long Distances through Transit creates inefficiencies and costs

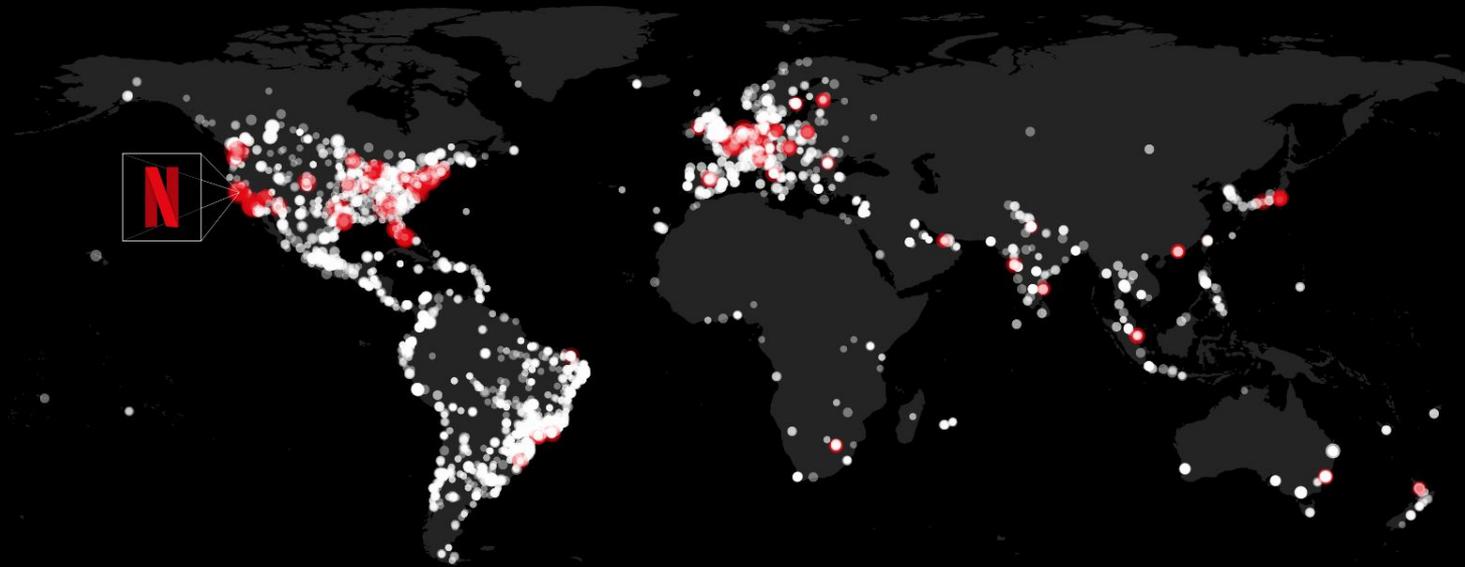


Netflix' solution is to operate its own global network

OPEN CONNECT

Netflix now stores its content close to every member - no matter where in the world they are.

Open Connect is Netflix's content delivery network. It's made of more than **14,000 Open Connect Appliances (OCAs)** spread across **142 countries**.



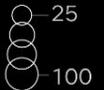
KEY

N Netflix headquarters
in California, USA

● Netflix OCAs
Located within public
internet exchange points

● OCAs gifted to ISPs
(Internet Service
Providers)

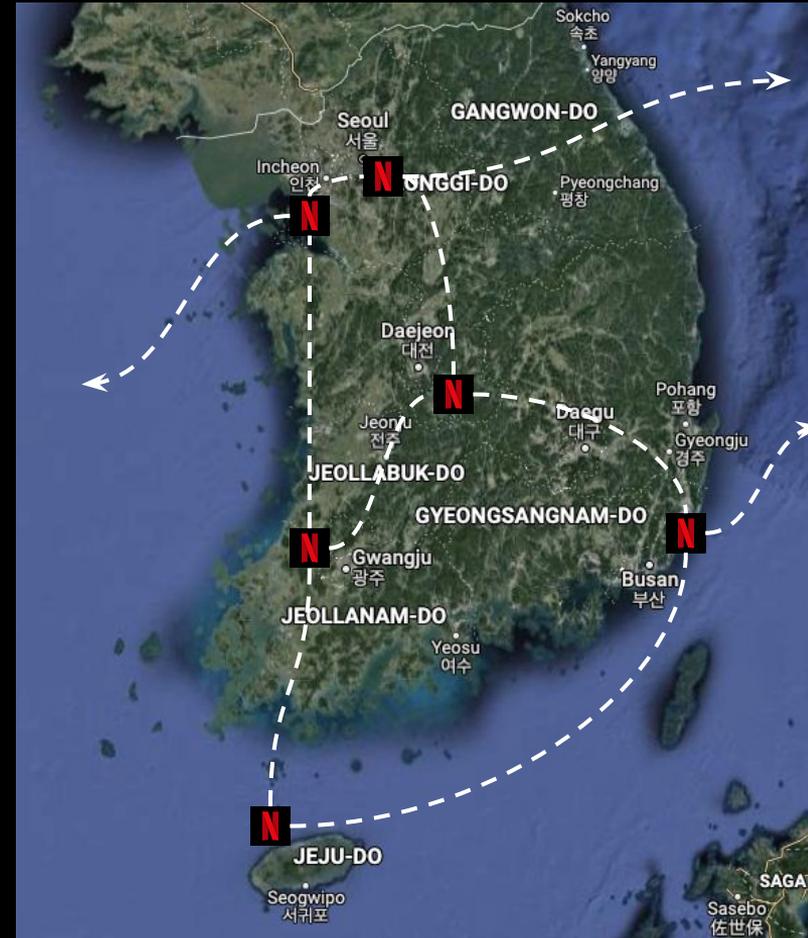
Number of content
caches per server



Note: Data as of 2020

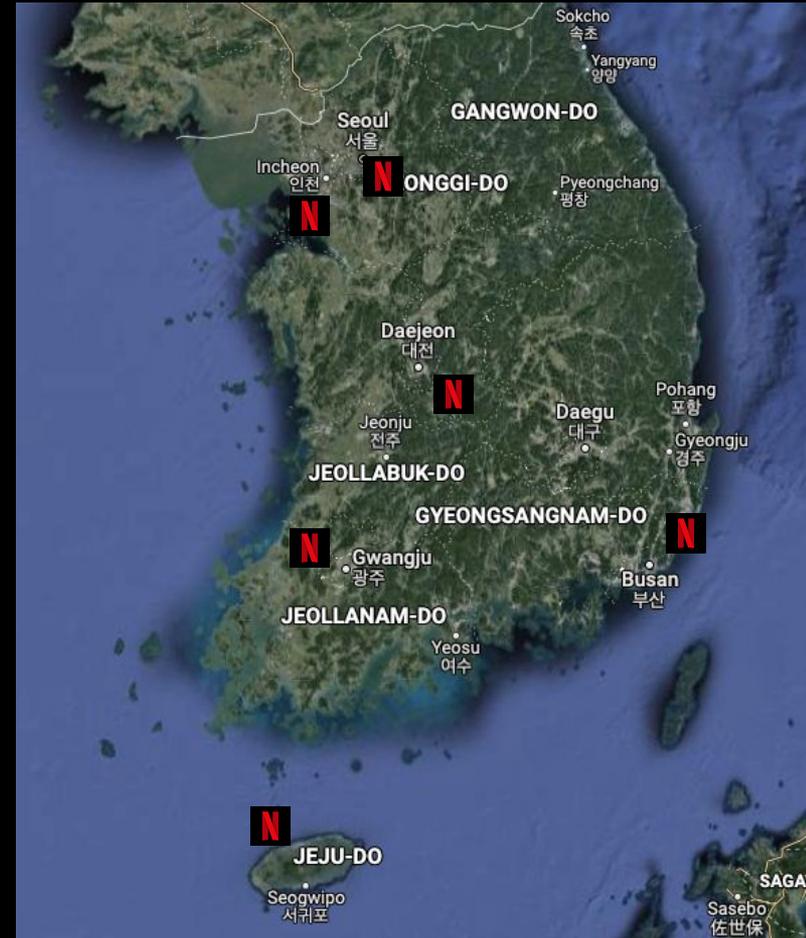
~100% of traffic local - no costs

- Netflix will bring content 9,000 km so that traffic in Jeju-Do can be served locally.
- Open Connect cache servers (OCA) can localize 100% of Netflix traffic: **no congestion**
- We refresh content during off-peak hours: **zero cost** upstream of the caches
- Small and predictable content library very efficient servers (entire library in one rack)
- Over one thousand ISPs globally have installed OCAs from Netflix to place in their networks and received these benefits.



Conclusions

- Connections from users to caches are what customers pay their ISP for. Consumers should get what they pay for.
- No costs upstream of the Netflix servers -> the cheapest infrastructure is the one that does not need to be built.
- Network fees don't work with the global Internet standard. Cooperation on Open Connect to stream locally is the most efficient solution.



Thank you

Questions?