# History and implications of IP interconnection regulation in South Korea

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**29 July 2025**

## Contents

# 1   Introduction

South Korea has stood out for a number of years as an outlier due to its regulation of internet protocol (IP) interconnection arrangements between internet service providers (ISPs). In recent years, some stakeholders in other countries have argued for regulation to facilitate the imposition of fees for interconnection between content and application providers (CAPs) and ISPs. For instance, in Europe, the European Commission is exploring bringing some forms of internet interconnection under the purview of telecoms regulation, which could impose obligations to interconnect and mandatory arbitration on parties that have so far been able to freely negotiate their interconnection arrangements. In this context, the case of South Korea has been raised by both proponents and opponents of such regulations.[1] As this discussion has spread to Brazil and other countries, this note provides a summary of the situation in South Korea to date from a regulatory and legal perspective, and the visible outcomes on infrastructure investment and services, and ultimately end users.

**Background:**

The internet is a network of networks. These networks are interconnected directly or indirectly, allowing for what is sometimes called 'any-to-any' communication. For instance, this enables any broadband user to request content from any available online service without technical constraints.

As the internet transitioned from its academic origins to commercial use, two forms of interconnection emerged – peering and transit. Peering agreements allow two networks to exchange traffic directly with each other. These arrangements are usually commercially negotiated, with the majority of them on a settlement-free basis.[2] In a transit agreement, one network pays another to access the rest of the internet through the transit provider's connections.

Some of these connections take place in private points of connection, while others take place at public internet exchange points (IXPs). Regardless of location, these agreements have always been commercially negotiated, which remains the case in countries outside South Korea.

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[1]   See, for instance, Internet Society, 2022, "Sender Pays: What Lessons European Policy Makers Should Take From South Korea" and Telefonica, 2023, "South Koreas approach to the fair share contribution pioneering model".

[2]   In a recent survey of 17 192 networks in 192 countries with more than 15 million agreements between them, only 326 agreements were written, as opposed to handshake, and only 57 were asymmetric (such as with paid peering), with the rest being handshake agreements to exchange customer traffic without settlements. See Packet Clearing House, 2021, "2021 Survey of Internet Carrier Interconnection Agreements".

# 2 A short history of internet interconnection in South Korea

The history of IP interconnection arrangements in South Korea illustrates the complexity of imposing a new regulation, with regulated interconnection fees, on a previously unregulated market, which remains unregulated globally. This regulatory shift triggered a series of reactions, some foreseeable and some perhaps not, leading to new regulations being introduced or proposed, and lengthy disputes and court cases. The resulting regulatory uncertainty affected investment in internet infrastructure and the availability of global services in the country. This in turn reduced the level of choice and competitiveness for South Korean businesses and citizens who use the internet daily. These considerations should be taken into account in any discussions of similar interventions elsewhere.

The history of the regulated internet interconnection regime started in 2012[3]. KT Corporation (KT) blocked internet access to Samsung Smart TVs due to the increased internet [4] A 2014 amendment to the Interconnection Standards for Telecommunication Facilities[5] revised the IP interconnection regime effective from 1 January 2016, leading to years of reactions and counterreactions.

The revision imposed a settlement fee on traffic between ISPs, in particular the largest 'Tier 1'[6] ISPs in South Korea: Korea Telecom (KT), SK Broadband (SKB) and LG Uplus (LG U+), with the 'sending network' responsible for paying the 'receiving network', a regime known as 'sending network party pays' (SPNP). The previously unregulated model of peering relied on commercial negotiations to agree interconnection (often settlement free) between ISPs, and between ISPs and CAPs. The new regulations only directly affected interconnection between ISPs, but those ISPs chose to pass on traffic-related interconnection charges to CAPs, which set off a chain reaction between ISPs, CAPs, and the government of South Korea, the Korean Communications Commission (KCC) and the courts.

In the first instance, KT had been hosting a Facebook cache and sharing the content with SKB and LG U+, a reflection of the co-operation common between networks, even competing ones, on the internet. In this model, all three ISPs benefited from lower costs and latency in delivering Facebook content to their broadband subscribers. With the new SPNP model, however, the traffic from the cache evidently triggered payments from KT to the other two networks, which KT attempted to pass on to Facebook. Instead of paying for making its traffic available to the other two networks, Facebook chose to reroute SKB and LG U+'s network connections to Hong Kong.[7] The impact of this choice was broadly negative for these two ISPs, which had to fund their own network links to collect the traffic outside South Korea, at a much higher cost than doing so through KT.

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3      Internet Society, 2022. "Internet Impact Brief: South Korea's Interconnection Rules".

4      See articles in Korea Herald (link), Korea Times (link) and The Verge (link).

5      See law.go.kr, 전기통신설비의 상호접속기준 – note this has been further updated in 2020.

6      The largest ISPs in Korea are known as Tier 1 providers. The largest global internet backbone providers are also known as Tier 1 providers. The Korean ISPs are not global Tier 1 providers, and in the interest of clarity we will only use the term to designate the large Korean providers.

7      Korea JoongAng Daily, 2019. "Seoul court cancels Facebook fine".

These developments triggered a round of reactions related to CAPs. First, KCC fined Facebook for disrupting the services to the two ISPs. This fine was dismissed by the Seoul Administrative Court in September 2020, but the principle behind it was implemented into law. In 2020, the National Assembly amended the Telecommunications Business Act and the associated Enforcement Decree, to require content providers meeting certain thresholds to ensure 'service stability' in the country, by providing significant server capacity, uninterrupted connections, and notifications to ISPs before changing traffic routes.

In parallel, at the end of 2019, the Ministry of Science and ICT announced it would publish a traffic ratio threshold for payment between ISPs. Under this framework, traffic exchange would remain settlement free as long as the ratio of inbound to outbound traffic stayed within 1.8:1. This was intended to address competition issues introduced by the SPNP regime (which were explicitly acknowledged by the Ministry of Science and ICT).[8] In 2022, Parliament also debated directly imposing interconnection fees from CAPs to CAPs, without success.[9]

At the same time, a four-year dispute between Netflix and SKB was taking place, triggered by the popularity of various series, including the South Korean *Squid Game.* SKB wanted Netflix to cover the cost of the increase in traffic caused by *Squid Game* and other popular content, which it estimated at USD23 million. When Netflix refused, a dispute was filed with KCC, followed by countersuits by the two parties in court. This was finally settled in 2023 with the announcement of a strategic partnership between the two companies to improve the experience for SKB subscribers accessing Netflix content. This highlights, yet again, the shared goals of ISPs and CAPs, and the benefits of co-operation over regulation in this space, as well as the unnecessary disruption and inefficiency brought about by the regulatory and legal disputes. Eventually, both parties could and did choose to enter into a strategic partnership on commercially negotiated terms.

While that suit was taking place, in 2022, Twitch, a video-streaming platform and social network often used by video gamers to live-stream their play, also reacted to the increased costs of delivering services to South Korean users because of interconnection charges between ISPs translating into higher costs for CAPs.[10] Twitch took a different approach from Facebook or Netflix, by lowering the video quality that was being offered to users in South Korea in order to reduce its traffic and the corresponding demands for payments. In December 2023 Twitch announced that it would cease operations in South Korea as of February 2024, citing "prohibitively expensive" operational costs.[11] In the same month it exited, Twitch was fined USD327 000 by KCC under 'service stability' regulations, for deliberately degrading the quality of service experienced by end users.

All these developments led to significant regulatory uncertainty for international CAPs, which discouraged investment in internet infrastructure in South Korea, as discussed in the next section.

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8     MSIT, 2019. "인터넷망 상호접속제도 개선방안 마련".

9     Google, 2022. "Netflix under scrutiny in South Korea over network fees".

10    Rest of World, 2024. "South Korean streamers struggle with Twitch's sudden exit".

11    Twitch, 2023. "An Update on Twitch in Korea".

# 3 The impact of South Korea's interconnection regime on internet infrastructure and related sectors

Internet interconnection has adapted over the years to the many changes taking place in content and business models. In particular, as an increasing amount of streaming video content has been made available and consumed, ISPs have raised concerns about the increase in traffic they are delivering to their subscribers through peering agreements. This has led to a small number of high profile peering disputes, the regulatory intervention in South Korea, and calls for network usage fees to be imposed on CAPs in Europe and other countries.

At the same time, CAPs have been making significant investments in network infrastructure, which have enabled the internet to scale in capacity much more rapidly than costs. These investments have typically lowered ISPs' costs and enabled interconnection to continue to be commercially negotiated outside South Korea. In South Korea, however, the interconnection regime has raised costs and reduced incentives for CAPs to deploy their own infrastructure and constrained the corresponding benefits for ISPs and end users, including South Korean businesses.

## 3.1 Impact of the South Korean regulatory and market situation on internet architecture and the costs of interconnecting with domestic ISPs

*Overview of evolving internet architecture*

The current architecture of the internet combines data centres, international networks including submarine cables, interconnection points where traffic is exchanged between networks (including IXPs), and national and local networks that connect end users to the internet.
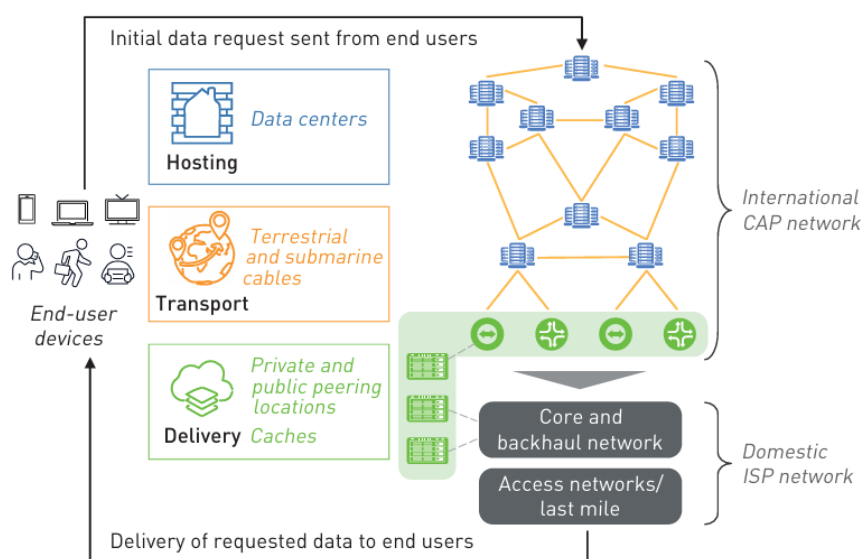


Figure 1: Simplified internet infrastructure value chain [Source: Analysys Mason, 2025]

This infrastructure is built and operated by a vast number of different stakeholders globally, including traditional telecoms operators, large CAPs, cloud service providers, data-centre operators, and a range of technical intermediaries that offer networking, cyber security and other services.

ISPs invest heavily in domestic infrastructure, in particular the fibre and wireless access networks required for end users to connect to the internet. They typically connect to one or more domestic IXPs to peer with smaller content providers, and peer privately with larger ones in data centres. They also traditionally invested in submarine cables to connect their own national networks to international points, first for voice and then for data. When direct peering is unavailable or uneconomic, CAPs can always rely on transit, which gives access to all end points on the internet.

At the same time, given the increase in volume of traffic and spread of internet access, and in response to peering negotiations focused on the increases in traffic, CAPs began investing throughout the value chain and across regions of the world – in data centres, in submarine cables to countries, and in content delivery networks (CDNs) that place caches in countries at exchange points or embedded in ISPs' networks to store content for delivery to end users. We have discussed the economic implications of investments that CAPs have made in internet infrastructure in other papers.[12] As mentioned, these lower costs for ISPs and enable negotiated interconnection arrangements, while lowering latency and improving service quality for end users.

Public CDNs, who facilitate content delivery (and often related services including security) to third parties, are particularly important in the current internet ecosystem. They provide CAPs without their own global network infrastructure, the means to deliver traffic to end users globally with high availability, quality and security. These public CDNs act as technical intermediaries, and are highly focused on high performance operation at low cost.

Due to the interconnection regime in South Korea since 2016, which has raised the cost of local interconnection, the full range of CAPs' investments has not been made, with a corresponding impact on end users. This has had an impact on CAPs, both directly and indirectly by increasing the costs of public CDNs (and to public CDN operators).

*Impact of the South Korean regulatory and market situation on network costs*

The three Tier 1 ISPs in South Korea have a termination monopoly over access to subscribers on their respective networks. They jointly cover 91% of fixed broadband subscribers in South Korea and no other network can deliver traffic to their customers without peering or transit.[13] With the regulation of IP interconnection fees arising from the 2016 amendment, the behaviour of these ISPs changed as they no longer want to negotiate for settlement-free peering and are not competing for the local transit business.

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[12]   Analysys Mason, 2022. "The impact of tech companies' network investment on the economics of broadband ISPs and Economic impact of Google's APAC network infrastructure – 2022 update".

[13]   MSIT, 2025. "Document Viewer".

Based on interviews with global and domestic stakeholders in South Korea, two trends have emerged, which suggest that the three large Tier 1 ISPs are not competing with one another on the domestic internet interconnection market and that, overall, CAPs are faced with significantly higher overall costs to exchange traffic with South Korean users than in comparable countries.

First, ISPs now only offer CAPs paid peering, and not settlement-free peering, at rates that are significantly higher in South Korea than in other markets. While domestic transit may include interconnection to another ISP, and therefore result in a domestic interconnection charge that the transit provider needs to recover, paid peering does not involve interconnection between ISPs: the traffic is delivered solely to the peering ISP's users. Tier 1 ISPs are therefore pricing peering in South Korea at levels that significantly exceed the associated direct costs.

> "There is no difference in direct connection (peering) and transit connection (transit) costs between ISPs."
> *–Local CSP*

Second, Tier 1 ISPs sell domestic transit separately from international transit, and are not competing actively with one another for domestic transit. Under the SPNP model, each of the Tier 1 ISPs now receives a share of the transit fee in proportion to their market share, regardless of which ISP sells the transit, so there is no incentive to compete on price. As a result, Tier 2 ISPs have to purchase interconnection from Tier 1 ISPs at relatively high prices. This furthers competitive imbalances between large and small ISPs, and also disadvantages smaller CAPs and start-ups, which have to pay Tier 1 ISPs directly or indirectly to access South Korean end users.

> "Before 2016, all three Tier 1 ISPs were trying to sell us transit. However, after 2016, the other two Tier 1 ISPs stopped chasing for business once they knew we had established a transit arrangement with another Tier 1 ISP"
> *–Local CAP*

> "It is much cheaper to connect directly to overseas operators than via the three major telcos."
> *–Local Tier 2 ISP*

The combination of reduced competition and regulated interconnection between the large ISPs results in much higher costs than in other countries, where large CAPs are able to blend transit, paid peering and settlement-free peering (which is the most common form of interconnection mechanism). CAPs have calculated that they are required to pay a local access fee ranging between USD1.5 per Mbit/s and USD2.0 per Mbit/s to peer with domestic South Korean ISPs, resulting in overall costs for domestic interconnection that are up to 25 times higher than the equivalent rate in other countries.[14]

> "Bandwidth costs in South Korea that are 30 times the cost of Internet transit in the United States and in Europe"
> *–Cloudflare*

> "Domestic transit rate in Korea is more expensive than international transit"
> *–CDN*

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14    These rates are all commercially sensitive and provided to us by one global provider.

> "Japan's overall transit fees are a third or a quarter of South Korea's. Hong Kong is about a third of South Korea. South Korean fees are quite high"
> –*Local Tier 2 ISP*

> "South Korean prices are 4–5× that of the wider Asia Pacific Region or South America, and nearly 14× that of North America or EMEA (Europe, Middle East, Africa)"
> –*CAP*

As further evidence, an international data-centre provider negotiating on behalf of a CDN noted that in Singapore the blended cost of peering typically ranges from USD0.10 to USD0.50 per Mbit/s. In contrast, despite aggressive negotiation, attempting to route as much traffic as possible through a domestic Tier 2 ISP (at lower costs than offered by the Tier 1 ISPs) and operating with minimal margins, the same provider reported a cost of more than USD1 per Mbit/s in South Korea. This was too expensive for the target CDN client in this instance.

## 3.2 Impact on investment in internet and digital infrastructure in South Korea

*Impact on submarine cables and South Korea's failure to become an international connectivity hub*

A significant amount of infrastructure investment focuses on a number of international hubs, which are extremely attractive for investors in global infrastructure because they provide 'clusters' of connectivity, data centres and expertise that lead to a virtuous circle of growth; as more invest in data centres, more invest in connectivity to reach the data centres, and so on. This investment is attractive, because of the economies of scale that exist in optical fibre networks once they are built: a tenfold increase in capacity typically translates into only a two- to threefold increase in cost for equipment upgrades.[15] Thus, the networks scale well with the increase in content and usage.

In the Asia–Pacific region, where traditional hubs include Japan, Hong Kong and Singapore, South Korea has not emerged as a comparable interconnection hub in spite of its mature digital market. At the same time, the growth in demand in many other countries with large populations, coupled with the desire of large network operators (including CAPs) to diversify their international routes, has also benefited countries such as Malaysia, Taiwan and the Philippines with new, high-capacity submarine cable connectivity. The map below illustrates the submarine connectivity to various places in the region, and shows the relative paucity of international infrastructure connected to South Korea: this is typical of a country that is not used as a hub, and where international connectivity primarily serves domestic users.

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[15] See for example TeleGeography, 2018, "Three Things Investors Should Know About the Submarine Cable Market". Since this article was written, economies of scale have increased further as more investors focus on gaining access to individual fibre pairs, which offer practically unlimited capacity, the only cost being this of the active equipment in landing points, whereas the physical cost of the submarine cable is fixed.
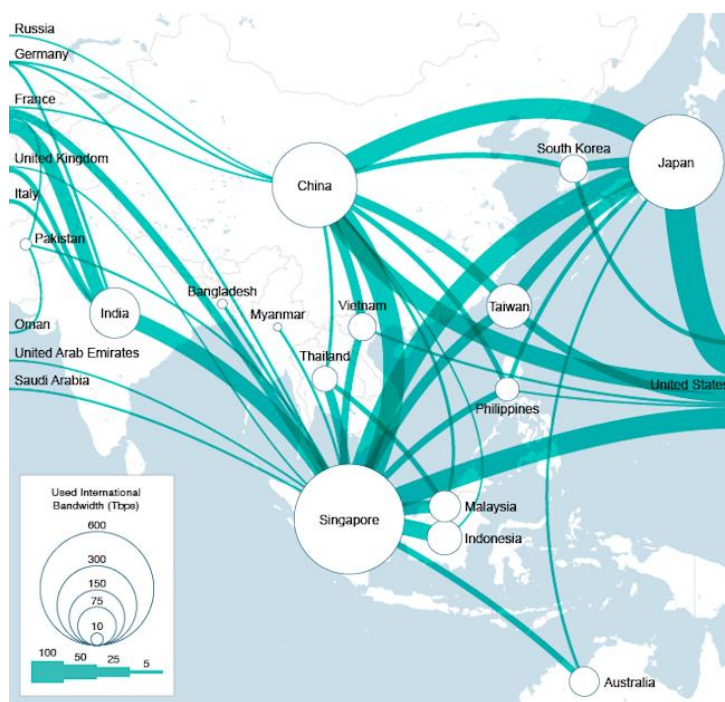
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*Figure 2: Map of international bandwidth of major international routes[16] in Asia [Source: TeleGeography Transport Networks, 2025]*

The difference between hub markets and those where submarine capacity is principally used by inhabitants is apparent when comparing normalised levels of used international capacity: South Korea has 0.84Mbit/s/inhabitant, compared with 1.62Mbit/s/inhabitant in Australia and 3.62Mbit/s/inhabitant in Japan.[17] In the latter two, the international capacity is not just used to serve domestic users, but also for traffic exchange between other countries. As a result, compared to many other countries in the region and indeed globally, South Korea does not benefit from economies of scale associated with connectivity hubs. Furthermore, in order to connect internationally, South Korea relies exclusively on submarine cables, given the lack of any terrestrial cross-border links with friendly neighbouring countries.

South Korean operators rely primarily on their own investment in submarine cables rather than investment by other stakeholders including CAPs, in part because the regulated internet interconnection regime discourages other parties from investing in connectivity infrastructure in South Korea compared with other similar markets where there has been, and continues to be, significant investment from CAPs (see Figure 3).

Where these investments have been made, submarine cables and CAPs' points of presence reduce the need for domestic ISPs to pay to access internet content and services in large overseas hubs. CAPs that invest in submarine cables to a given country, do so in order to bring and collect traffic on their own network in that country. As can be seen in Figure 2 above, South Korea lags significantly behind the other countries in the number of submarine cables, with minimal investment from major CAPs in the cables and no cables owned 100% by CAPs, unlike in the other countries. As a result, Korean ISPs are using their own capacity to access some content.

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[16]    Map includes international routes with at least 2Tbit/s of aggregate capacity. Figures represent used bandwidth connected across international borders. Domestic routes excluded. Data as of year-end 2024.

[17]    TeleGeography, 2025. "Transport Networks Research Service".

*Figure 3: Number of international submarine cables categorised by investment from major CAPs and local ISPs,[18] including future announced cables [Source: TeleGeography Submarine Cable Map, 2025]*
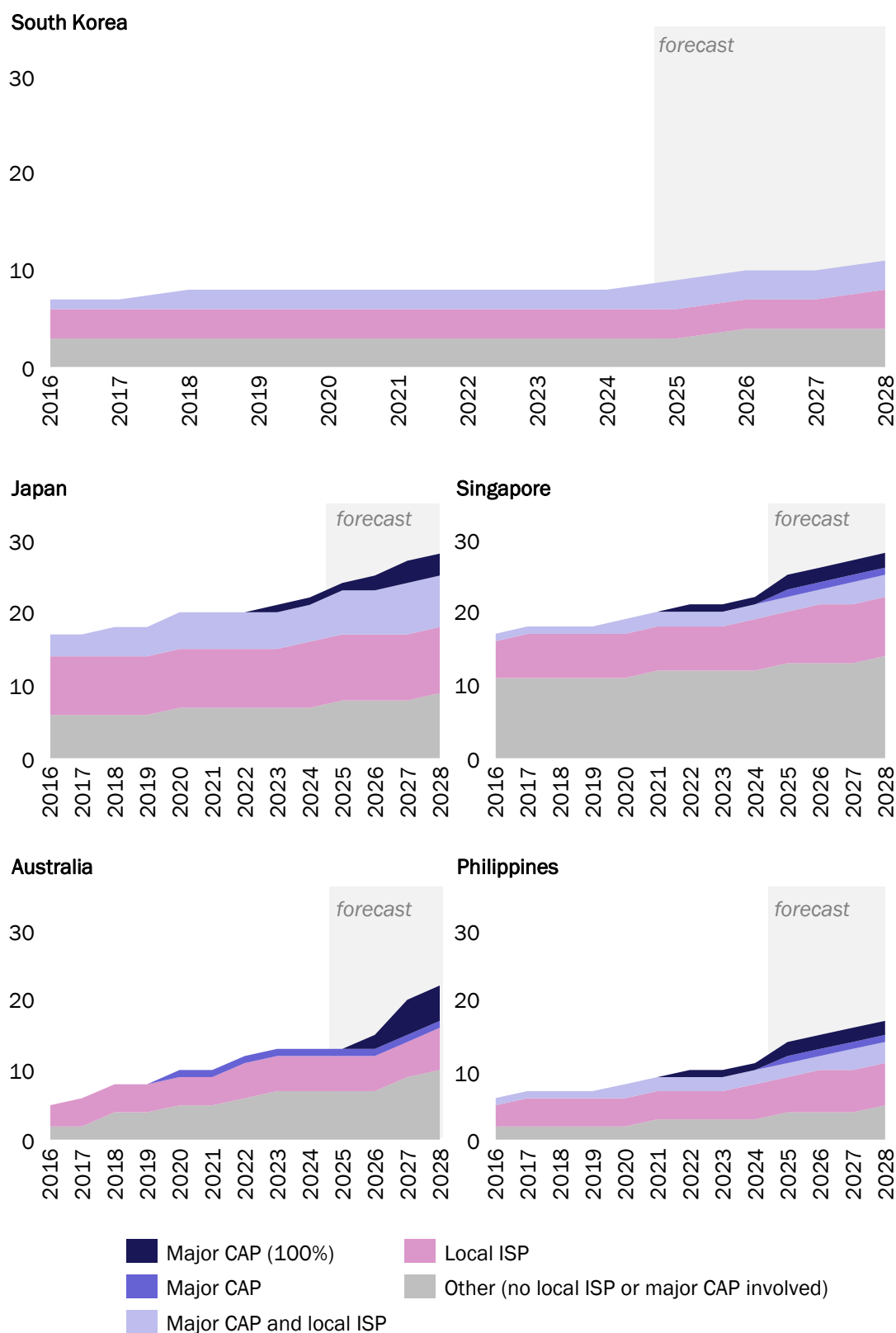
*Impact on CDNs and data centres*

CDNs may be owned by CAPs for their own traffic, and independent ones handle interconnection and traffic delivery on behalf of smaller content providers, routeing traffic efficiently over the internet and storing popular content in caches distributed close (and sometimes inside) ISPs' networks. Most cloud providers operate a CDN for their cloud customers. In South Korea, however, putting a cache or point of presence in a country could result in network access charges from the ISPs, and thus there is less incentive to invest in caches.

> "Investment in cache servers and points of presence (PoPs) is a technical measure to improve user experience and increase network efficiency, but in the current structure, it instead acts as a cost burden for companies. This weakens the incentive for investment and ultimately can have negative effects on domestic users, such as reduced Internet quality and speed. [...] the attractiveness of investment in domestic infrastructure has decreased, and instead, attempts to provide content to domestic users through overseas PoPs or CDN infrastructure have increased."
> *–Local industry representative*

For instance, Meta's CDN currently has no caches in any of the major ISP networks in South Korea, while it has caches within every major ISP network in Australia, Japan, Singapore and the Philippines.[19] Google Cloud's Media CDN (which handles video streaming for Google Cloud customers, leveraging Google's own streaming infrastructure) has no points of presence in South Korea, compared with more a significant presence in nearby Japan (see Figure 4).

*Figure 4: Points of presence for Google Cloud's Media CDN [Source: Google Cloud, 2025]*



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not local ISPs; 'Major CAP and local ISP': cable investment includes investment from major. CAPs and local ISPs; 'Local ISP': cable investment includes investment from local ISPs, but not major CAPs; 'Other': cable investment from non-CAP, non-local ISP sources.

19    Netify, 2025. "Meta CDN".

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In many countries, once traffic reaches the country, networks interconnect in many different locations, sometimes through 'public' shared infrastructure such as IXPs, and sometimes privately through one-to-one arrangements. In South Korea, there are relatively few such exchange points, and they gather a relatively small number of networks.

Domestic IXP capacity is lower in South Korea than in similar advanced countries such as Japan and Australia, even per inhabitant, and domestic public IXPs account for a very small share of local network peering in South Korea.[20]

*Figure 5: Comparison of public IXPs in Korea and benchmark countries [Source: Internet Society Pulse IXP Tracker, 2025]*

| Country | Active IXPs | IXP members | IXP capacity (Mbit/s/inhabitant) | % of local networks peering at domestic IXPs |
|---|---|---|---|---|
| South Korea | 6 | 109 | 0.11 | 2.99% |
| Japan | 22 | 589 | 0.97 | 24.61% |
| Philippines | 13 | 148 | 0.09 | 16.75% |
| Australia | 40 | 535 | 2.18 | 11.30% |

Notably, the largest three ISPs in South Korea have a very limited presence at domestic exchange points: only one is connected to a public IXP in South Korea, and only one is present at a private interconnection facility operated by a third party.[21] Instead, these ISPs interconnect abroad, with each maintaining a presence at a dozen IXPs at least around the world, and at interconnection points outside South Korea.[22] This indicates that they are accessing a significant amount of content abroad, using their own transit capacity. In comparison, major ISPs in benchmark countries have a greater presence at domestic exchange points and interconnection facilities where they can access a significant amount of content and services for their subscribers, while also retaining a presence at foreign interconnection points.

Finally, given their limited presence in South Korea,[23] cloud service providers (CSPs) and CAPs are not investing in domestic data centres in the same way as they have done in other countries. South Korea's largest data centres are all owned and operated by local ISPs, and the total data-centre supply in Seoul is falling behind that of other developed APAC markets (see Figure 6). Countries

> *"If the debate over network usage fees continues, PoP construction and edge infrastructure installation may be discouraged, which may lead to network bottlenecks for initial AI workloads. There is a possibility that the actual perceived delay (lag), response speed (latency), and reliability of AI services may lag behind overseas competitors."*
> *–Local industry representative*

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[20]   Private peering outside of IXPs is not captured by these numbers.

[21]   Digital Realty ICN10 – Seoul, based on information from PeeringDB.

[22]   See peeringdb.com for the connections of KT (AS 4766), LG U+ (AS 3786), and SK Broadband (AS 9318). LG U+ connects at Equinix Seoul, but only with a 10G connection, and SK Broadband connects at Digital Realty Seoul.

[23]   See for example Figure 4.

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with established, reliable data-centre infrastructure are likely to attract investment for innovative services such as training artificial intelligence (AI) models; without the relevant infrastructure, particularly submarine cables, South Korea could miss out on the benefits of such investment.

*Figure 6: Average data-centre supply by facility and by city inhabitants for a selection of APAC cities[24]*
*[Source: DC Byte, World Population Review, 2025]*
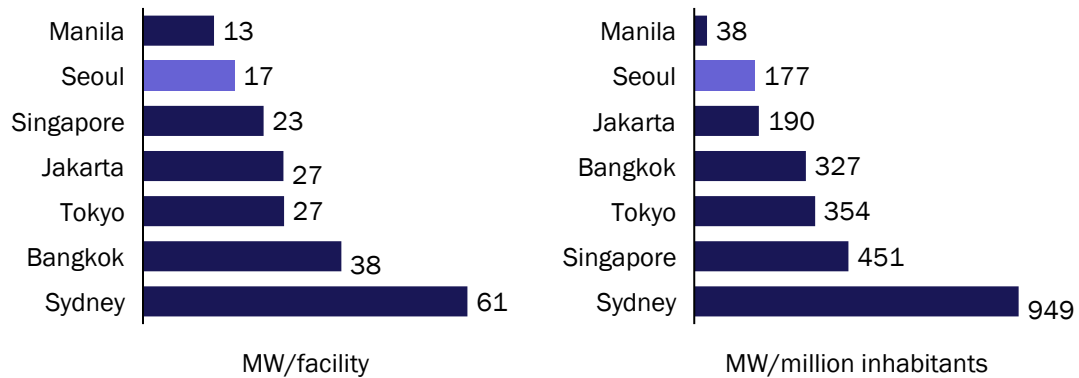


## 3.3 Impact on businesses and consumers relying on digital infrastructure and the internet in South Korea

*Impact on cloud services and users*

The impact on businesses and enterprise users of online services, including cloud services and third-party CDNs, has not been well documented in previous papers about the South Korean situation. We understand that CSPs and CDNs are currently treated in the same way as other content providers from the perspective of interconnection regulation, and they bear significantly higher local access costs associated with interconnection charges in South Korea due to the regulatory regime, as noted above.

As mentioned above, public CDNs invest in global network infrastructure to facilitate high-quality, low-cost content delivery on behalf of thousands of CAPs. The interconnection situation in South Korea has driven CDN costs up materially, and reduced their incentives to invest in network facilities in South Korea. Ultimately, this is detrimental to end users, who do not get the full benefit of modern internet architecture in terms of service quality, and for CAPs and CDN providers, who can only operate in South Korea at higher costs than in the rest of the world.[25]

One global CDN serving many CAPs, Cloudflare, also notes that the high rates to peer with the large ISPs in South Korea affect the ability to deliver traffic efficiently. Cloudflare has millions of customers using its free service, but given the costs of delivering their content and services from Cloudflare's infrastructure in South Korea, much of that traffic must be accessed in Japan or even Los Angeles, where Cloudflare can deliver it to ISPs with inexpensive transit or free peering. The

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24      Total supply is the sum of live, under construction, committed and early stage.

25      See Analysys Mason, 2024, "The impact of network usage fees on the Brazil cloud market"

result is that latency for end users accessing the content in South Korea is higher due to the longer distances of delivery, impacting the business of the Cloudflare customers, many, if not most of which, are small businesses.[26]

> "By not peering with Cloudflare (and others) inside South Korea without payment, the three largest South Korean ISPs subject their customers to a "performance penalty" that in some of those cases is extreme, i.e., their customers experience 187 percent slower service as a result of content having to be delivered over longer distances, from offshore network interconnection points."
> – *Cloudflare*

Further, some cloud products/features are not made available for enterprises in South Korea, because of the costs that CSPs would have to incur to offer such services. Cloud users in South Korea still have access to these services, but only from availability zones outside South Korea (e.g. Japan). For example, 20% of Google Cloud services are not available in Seoul compared to only 13% in Tokyo and 11% in Sydney. Google Cloud services such as the API Gateway (Integration services) or the Live Stream API (Media and Gaming) are not available in South Korea. A similar trend is seen with Microsoft Azure services where there are 52 more services offered in Japan than in South Korea. These include the Azure Remote Rendering and several AI services such as the AI Content Safety or AI Custom Vision services, which are readily available in Japan.

While we are not able to quantify the effect this may have on the take-up and usage of these services, accessing these services from outside South Korea means local ISPs forgo the revenue associated with delivering these services, and must bear the cost of increased traffic on their international interconnection links. This suggests that the benefits from the higher local access fees that the large ISPs can charge in South Korea outweigh the increased costs of having to use their own international capacity to deliver content to their users that would otherwise be available locally.

*Impact on start-ups*

The interconnection regime may have a particularly strong impact on domestic start-up CAPs, which must purchase transit from at least one of the large ISPs in the market.

In addition, given that the large ISPs effectively do not participate in the domestic IXPs, including notably KINX, CAPs face relatively high costs to access domestic transit. This poses a challenge for start-ups that transmit large volumes of data, potentially exceeding the traffic ratios that trigger interconnection fees between ISPs. This could include streaming, gaming and content delivery start-ups, as well as start-ups offering AI services with high volumes of data.

> "From the startup ecosystem's perspective, this [the cost of interconnection] raises entry barriers for innovative firms and undermines global competitiveness. Higher initial infrastructure investments, operational complexity, and regulatory compliance burdens all obstruct market entry.[...] Such costs have become a critical factor in discouraging global startups from entering the Korean market and driving domestic startups to consider hosting services abroad."
> – *Local start-up representative*

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[26]  Cloudflare, 2025. "Cloudflare's Experience in South Korea: Regulatory intervention has increased bandwidth costs and latency for users".

Finally, the international transit fees tend to be high as well, leaving some domestic start-ups to consider hosting services abroad, similar to how the global CAPs provide at least some of their services. These costs may be passed on to end users, challenging the business model of the start-ups.

> "AI startups face significant network costs due to large data volumes generated during model training and inference. [...]While some cloud startups shift to platform-based models to distribute costs, rapid scaling still creates steep financial barriers to innovation."
> *–Local start-up representative*

*Impact on end users*

Last, but certainly not least, the lack of investment in South Korea affects end users. Some of the impacts have already been discussed, for instance the rerouting of Facebook data that led to new service quality requirements, and the lower quality video and eventual withdrawal of Twitch from the South Korean market.[27] Other similar examples may exist, but did not receive the same level of public attention. On an ongoing basis, one would expect the lack of investment to increase costs for providers in South Korea that could be passed on to users and increase the latency of accessing content that is abroad and not in local caches.

At one level, according to OECD data, South Korea is at, or near, the top of a number of broadband rankings. For instance, in 2024 South Korea had the highest household broadband penetration rate among OECD countries. Mobile broadband penetration, however, ranked 16th, having dropped over time. These rankings reflect the significant investment that South Korean operators have made in access networks.

However, other aspects of user experience are negatively affected by the limited infrastructure investments from CAPs in South Korea. Subscription prices are relatively high for the highest data users, with the price of fixed broadband ranked 9th among OECD countries, and mobile voice and data both ranked 10th in 2023.[28] Likewise, average broadband speeds are high, but not at the top of the table, with average internet download speeds in South Korea in the 12 months to 30 June 2024 ranking 11th out of 229 countries.[29]

Latency measurements available for South Korea suggest that users accessing content abroad, e.g. in the USA, have a similar experience to users in other countries in the region. However, it is likely that the limited infrastructure deployment by international CAPs in South Korea results in a larger share of traffic to and from those international CAPs having to go through international links. This has an impact on latency, as can be seen in the figure below, which shows the latency over a day for users of the internet measurement platform RIPE Atlas in South Korea accessing facebook.com. As the RIPE Atlas probes do not specify where to access facebook.com, this suggests that it is often accessed abroad with higher latency. Not only is latency generally higher than in the other countries,

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[27]  Services such as Twitch, video conferencing and other similar services, which benefit less from local caching because live streaming must go end to end, may be even more prone to the impacts of such network charges.

[28]  Very high mobile voice and data user defined as 900 calls+10 GB, data for August 2023. High fixed broadband user defined as 900 GB per month / 1000 Mbps and above. OECD, 2023. "Broadband Statistics".

[29]  Best broadband deals, 2025. "Worldwide broadband speed league 2024".

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but it also rises during the evening, when one provider told us that the international links tend to be congested and increase latency further.

*Figure 12: Latency measurements to Facebook.com for South Korea (KR), Japan (JP), Singapore (SG), Philippines (PH) and Australia (AU) [Source: RIPE, retrieved 2 July 2025]*
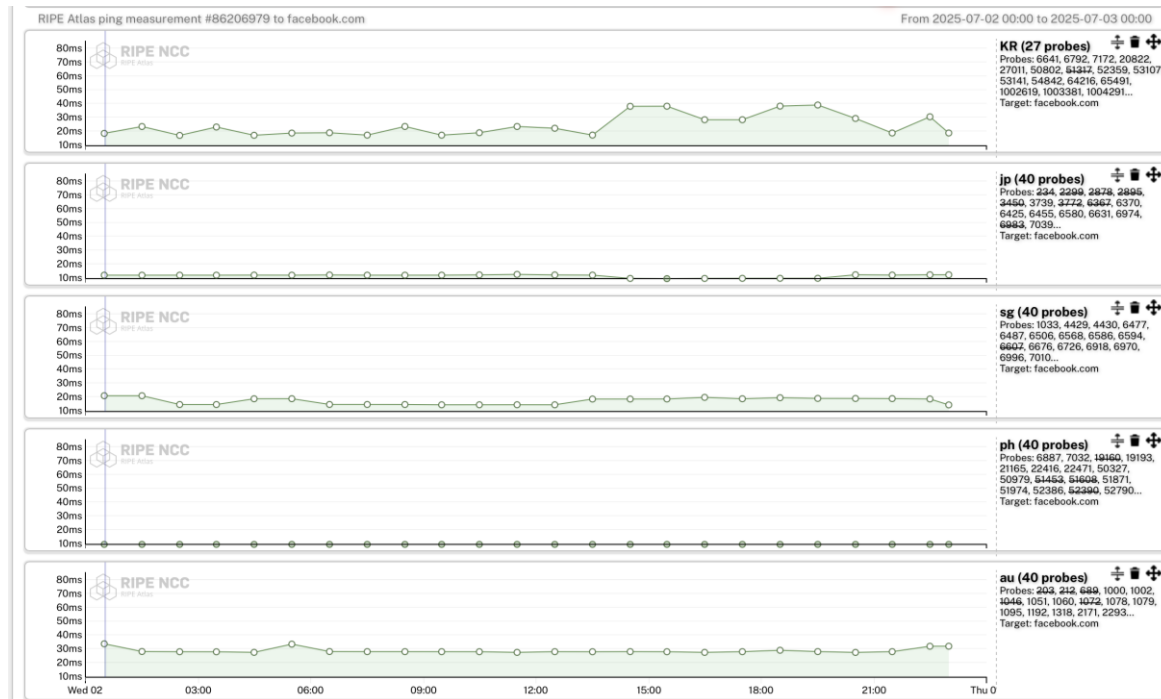


In addition to higher latency higher, ISPs also have to contend with the rising costs of maintaining and expanding submarine cable links to facilitate international interconnection. Overall, higher latency results in less responsive services, particularly for interactive services such as online games, and could potentially negatively affect emerging services such as AI inferences.

# 4 Conclusion

The interconnection arrangements that have emerged and continue to evolve on the internet, in nearly every country in the world other than South Korea, are delivering a broad set of benefits for users outside South Korea. In order to deliver high-bandwidth content, CAPs and their CDNs have been investing significantly in the value chain of content delivery, including submarine cables, points of presence and caches, which has lowered the costs for local ISPs and delivered better service to their subscribers.

Conversely, regulatory intervention in South Korea has led to a series of protracted legal and regulatory disputes, and has deterred ongoing investment in the country's digital infrastructure. As a result, the industry has been deprived of the benefits from investments that were already underway, and would have likely continued, had ISPs not imposed higher interconnection costs on CAPs for delivering content.

Although South Korea still benefits from a dynamic economy, strong focus on technology and proactive government intervention that has ensured early and widespread deployment of networks domestically, it has become an outlier in terms of its connectivity to the rest of the world, and the investment of stakeholders other than its domestic ISPs in internet infrastructure.

This situation has led to a relatively limited supply of international connectivity, with some prices appearing higher than in nearby countries, with a reliance on the three largest ISPs rather than a diverse, decentralised infrastructure landscape. As a consequence, South Korean users have experienced limitations in accessing specific online and cloud services.

In the future, the rise of cloud-intensive applications, including those powered by AI, will generate significant needs to connectivity to and between AI data centres. For South Korea to be successful as a regional or global leader in AI, investment in further submarine and DC infrastructure is not optional. The costs and uncertainty associated with the SPNP interconnection regime deterred such investment in the last decade, and could continue to hamper South Korea's ambitions if the regime is not materially overhauled. If interconnection regulations remain in place in their current form, they may evolve to become a systemic weakness for the South Korean economy, in a world where access to state-of-the-art digital infrastructure and services, including AI data centres, becomes ever more important.

From a global policy perspective, South Korea's fibre and 5G connectivity achievements are significant. However, they must be balanced against the risk of some digital isolation if increased interconnection barriers hinder integration with the rest of the world's infrastructure and content and services.