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Myths and Truths about Korean IP Interconnection System in Overseas Reports

Cases of the distortion of the Korean interconnection system in
overseas documents

1. IP interconnection on the internet: a white paper¹

(Myth ①)

- This report explains that ISPs in South Korea are passing on access fees to CPs, but it is a misrepresentation of the facts

Local content providers (e.g. Naver, Kakao) typically host their content in South Korea itself, and pay for connectivity through an ISP. If that ISP has to pay to deliver the content to other ISPs, it will pass those charges onto the content providers. The effect will be to increase the content providers' costs compared to those of local content providers in unregulated markets. In particular, it will be difficult for smaller content providers or start-ups to enter the market and grow. An alternative solution is for the content provider to provide caches to all the ISPs, but that is not feasible for all content providers, and certainly not start-ups. (p.17~18)

(Truth)

- ✓ Many ISPs, not just Korean ISPs, sell transit and peering services to CPs, and it is common for CPs to pay higher prices for transit because ISPs are responsible for transmitting traffic to other ISPs' users and the cost of transit is usually higher than peering. In other words, ISPs operate different types of Internet access services, and it is incorrect to express that CPs bear costs that they do not have to bear. CPs are just choosing and using the products they want to use, and paying a fair price for them.
- ✓ And Korean ISPs don't charge CPs based on traffic volume, charge based on capacity, like all ISPs abroad. There is no additional volume-based access fee. But, the interconnection fee is measured by exchanged traffic volume between ISPs. Therefore it is impossible for the ISP to pass on the cost of the interconnection fee, which is measured by traffic volume, to the CP.

(Myth ②)

- The report notes that IP interconnection in South Korea is regulated, making it difficult for CPs to enter the market or grow.

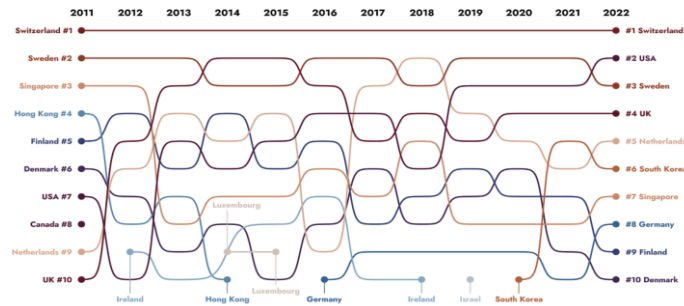
¹ Michael Kende, David Abecassis, IP interconnection on the internet: a white paper, Report for Korea Internet Corporations Association, Analysys Mason Limited, May 21, 2020

Local content providers (e.g. Naver, Kakao) typically host their content in South Korea itself, and pay for connectivity through an ISP. If that ISP has to pay to deliver the content to other ISPs, it will pass those charges onto the content providers. The effect will be to increase the content providers' costs compared to those of local content providers in unregulated markets. In particular, it will be difficult for smaller content providers or start-ups to enter the market and grow. An alternative solution is for the content provider to provide caches to all the ISPs, but that is not feasible for all content providers, and certainly not start-ups. (p.17~15)

(Truth)

- ✓ Korea is a very dynamic market with more local platform providers entering the market than any other country and competing with Big tech. Also, the report does not provide any statistics or data in this regard, only qualitative descriptions.
- ✓ According to UN's World Intellectual Property Organization (WIPO)'s annual Global Innovation Index survey, South Korea is a highly innovative country, ranking 6th in the world and 1st in Asia.
- ✓ Korea ranks first in the world in seven indicators: patent applications to GDP, PCT(Patent Cooperation Treaty, International patent applications) to GDP, design applications to GDP, researchers to population, business researchers to population, government online services, and e-government online participation.

The Worlds Most Innovative Countries



Most Innovative Country Rank by Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Switzerland	1	1	1	1	1	1	1	1	1	1	1	1
Sweden	2	2	2	3	3	2	2	3	2	2	2	3
Singapore	3	3	8	7	7	6	7	5	8	8	8	7
Hong Kong	4	8	7	10	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Finland	5	4	6	4	6	5	8	7	6	7	7	9
Denmark	6	7	9	8	10	8	6	8	7	6	9	10
U.S.	7	10	5	6	5	4	4	6	3	3	3	2
Canada	8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Netherlands	9	6	4	5	4	9	3	2	4	5	6	5
UK	10	5	3	2	2	3	5	4	5	4	4	4
Ireland	n/a	9	10	n/a	8	7	10	10	n/a	n/a	n/a	n/a
Luxembourg	n/a	n/a	n/a	9	9	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Germany	n/a	n/a	n/a	n/a	n/a	10	9	9	9	9	10	8
Israel	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	10	n/a	n/a	n/a
South Korea	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	10	5	6

Source : Visual Capitalist(2022)²

- ✓ Korean ICT companies have quickly adapted to the platform era, and unlike major countries, there are competitive local platforms for search, messaging, e-commerce, etc.

< Market leader in major platform services in each country 2021 >

Main service	Korea	USA	EU
Search	Naver(56%)	Google(88%)	Google(93%)
Mobile messenger	KaKao Talk(92%)	Facebook messenger (87%)	Whatsapp, Facebook messenger (No statistics)
E-commerce	Naver(17%)	Amazon(41%)	Amazon(36%)

Source : (Search, Based on average annual MAU) Korea: Internettrend, USA/EU : Statcounter, (Mobile messenger, Based on utilization) Korea : KISDI, USA: STATISTA (E-commerce, Based on sales) Korea : Meritz Securities, USA : eMarketer, EU: Cross-Border Commerce Europe

- ✓ Korean Platforms are entering the global market by focusing on areas that are not dominated by the existing big techs in Korea.

² <https://www.visualcapitalist.com/cp/12-years-of-worlds-top-10-innovative-countries/>

- (Niche market approach) Major platforms are expanding overseas, focusing on webtoons and content, and specialized platforms such as Gangnam Unni are also expanding into Japan, where the market is similar to Korea.
- (New market) In the metaverse, NAVER ZEPETO(300 million users), Kakao NFT Exchange, and Klipdrops(10 billion in transactions) are also going global.

(Myth ③)

- Large Korean ISPs refuse to install multiple caches at once, forcing content providers who want to send traffic to Korea to bear the cost.

We understand that larger ISPs have resisted installing caches at various points in time, to try to force content providers to pay for their traffic to be delivered in South Korea (as they then suffer from more-constrained or lower-quality bandwidth for their content). The result is a lose-lose situation for South Korean stakeholders: ISPs have to pay to backhaul traffic from abroad, while content providers may see less engagement with their services in South Korea if backhaul capacity is insufficient. (p.16~17)

(Truth)

- ✓ This has been described as a loss for Korean stakeholders. Need to distinguish whether the cache was not installed because the ISPs in Korea refused to install it but because the Global CPs refused to settle.
- ✓ Korean ISPs are willing to install cache servers in their networks. This may be allowed on the condition that CPs pay for the use of the network. Installing cache servers in the network does not mean that there are no costs involved.

2. Competitive conditions on transit and peering markets³

(Myth ④)

- WIK explains that in South Korea, large CAPs are required by law to charge ISPs

Furthermore, in 2020 (large) CAPs were legally obliged to pay network fees to ISPs for terminating traffic on their networks.(p.33~34)

(Truth)

- ✓ The Telecommunications Business Act mandates settlement only between ISPs, not between ISPs and CPs
- ✓ According to the Interconnection Standards for Telecommunications Facilities (hereinafter referred to as the Standards) established pursuant to Article 39(2) of the Telecommunications Business Act, it is not correct to say that large CAPs are legally obligated to pay network usage fee to ISPs.
- ✓ Article 4 of the same standard states that "operators shall promote the convenience of users and the efficiency of telecommunications business by implementing equal access, transparent access, timely access, and reasonable access in interconnection between telecommunications networks." Interconnection is limited to interconnection between telecommunications networks. Therefore, it is assumed that the connecting party has a telecommunications network.
- ✓ Article 5 of the standard states that "the scope of telecommunications networks accessed under this standard is telecommunications networks for the provision of services (including supplementary services, not a value-added service) for which registration has been granted under the Telecommunications Business Act" and limits interconnection to telecommunications networks owned by registered operators.
- ✓ According to Article 5 of the Telecommunications Business Act, telecommunications services are divided into common telecommunications services and value-added telecommunications

³ Dr. Karl-Heinz Neumann Dr. Lukas Wiewiorra Dajan Baischew, Peter Kroon with the collaboration of Philipp Thoste, Competitive conditions on transit and peering markets, Implications for European digital sovereignty, WIK-Consult GmbH, 28, February 2022

services, and common telecommunications services must be registered under Article 6 to conduct business, and value-added telecommunications services should just report to Ministry of Science and ICT under Article 22 to conduct business.

- ✓ However, Article 5 of the same standard refers to a telecommunications network for providing services that have been registered, etc., which is not applicable to operators providing value-added telecommunications services(In Korea, CAPs is an Value-added telecommunications service operator under the Telecommunications Business Act) considering the wording of Article 6 of the Telecommunications Business Act.
- ✓ According to a press release by the Ministry of Science and ICT, IP interconnection refers to the connection of IP networks to exchange Internet traffic **between ISPs, which are common telecommunications operators** under the Telecommunications Business Act.⁴
- ✓ According to another press release, CP enters into a network use contract with ISP, and the details of the contract are **determined by autonomous agreement between the parties**.⁵
- ✓ In conclusion, the WIK's representation that large ISPs have forced CAPs to pay for their networks is incorrect. Interconnection fee payments are only between ISPs that are registered by the law and have telecommunications networks.
- ✓ On the other hand, large CAPs pay ISPs for Internet-leased line services. This is a transaction in which end-users, enterprise users, and CAPs of all sizes pay ISPs for connectivity to the public Internet network. The rate level is negotiated autonomously between the CAP and the ISP.
- ✓ If WIK's claim is correct, Netflix's refusal to pay for network usage fee would be a violation of the Telecommunications Business Act and Netflix should have been punished. But Netflix is still doing its business well without any punishment in South Korea.

⁴ Ministry of Science and ICT, Implementation of the '22~' 23 IP Interconnection System (2022. 1. 10), <https://www.msit.go.kr/bbs/view.do?sCode=user&mId=113&mPid=238&pageIndex=1&bbsSeqNo=94&nttSeqNo=3181263&searchOpt=ALL&searchTxt=%EC%83%81%ED%98%B8%EC%A0%91%EC%86%8D>

⁵ Ministry of Science and ICT, Improvement of IP Interconnection System(2019. 12. 23), <https://www.msit.go.kr/bbs/view.do?sCode=user&mId=113&mPid=238&pageIndex=1&bbsSeqNo=94&nttSeqNo=2429175&searchOpt=ALL&searchTxt=%EC%83%81%ED%98%B8%EC%A0%91%EC%86%8D>

(Myth ⑤)

- WIK claims that the obligation for CPs to pay for network usage arises from Korea's SPNP-style interconnection system.

South Korea is the only country so far that has responded to the concerns of telcos and introduced the Sending Party Network Pays (SPNP) billing principle on a legal basis. Initially, only ISPs were obliged to exchange traffic with each other as transit for a fee. Subsequently, CAPs were also obliged to pay network charges to ISPs. The implementation of the new rules was and is highly controversial in Korea and is still being fought out in court. Initially, it was mainly national CAPs that were affected. Large CAPs evade this regulation or pay. Market observers report a decline in diversity of online content and expect rising prices for end users for content, as well as lower network infrastructure investments. Quality for end users is declining. (p.11)

(Truth)

- ✓ The fact that CAPs have to pay ISPs for the use of their networks does not arise because of the interconnection system, but because CAPs are receiving paid services.
- ✓ In 2016, the SPNP interconnection system was introduced, and before that, CPs were paying for network usage and have to pay for using network

(Myth ⑥)

- The WIK report claims that large CAPs in Korea are avoiding or paying for the mandatory consideration payments under the SPNP. As a result, it states that the diversity of online content is decreasing, and that end-users can expect higher prices for the content they pay and lower investments in network infrastructure, resulting in lower quality for end-users.

South Korea is the only country so far that has responded to the concerns of telcos and introduced the Sending Party Network Pays (SPNP) billing principle on a legal basis. Initially, only ISPs were obliged to exchange traffic with each other as transit for a fee. Subsequently, CAPs were also obliged to pay network charges to ISPs. The implementation of the new rules was and is highly controversial in Korea and is still being fought out in court. Initially, it was

mainly national CAPs that were affected. Large CAPs evade this regulation or pay. Market observers report a decline in diversity of online content and expect rising prices for end users for content, as well as lower network infrastructure investments. Quality for end users is declining. (p.11)

(Truth)

- ✓ The WIK report claims that the new interconnection rules have reduced content diversity, increased content prices, reduced network investment, and reduced service quality, but does not provide any evidence for this claim.
- ✓ Korea's content diversity is currently at an all-time high. Unique stories and videos like Parasite and Squid Games are highly rated by both Korean and international audiences.
- ✓ If online content diversity could be measured by the number of CAP operators, Korea has more diversity than any other country in the world, with both local and foreign operators competing.
- ✓ This content competitiveness stems from the webtoon service, Korea's leading online content service. Webtoon service is filled with various genres and innovative and creative stories, and dramas and movies are being produced based on them⁶.
- ✓ It is a well-known fact that South Korea has the highest percentage of fiber subscribers among OECD countries⁷. This is due to the facilities-based competition policy. There is a well-developed system for telecom operators to use essential facilities such as ducts and poles. Based on this, various operators are competing to build fiber.
- ✓ The South Korean government measures and publishes the quality of high-speed internet every year, and the speed of broadband is increasing every year⁸.

⁶ Hellbound, Deserter Pursuit, Sweet home, Kingdom, All of Us Are Dead(Netflix), Itaewon class(JTBC), The Uncanny Counter(OCN), True beauty, Incomplete Life(tvN), Taxi Driver(SBS), Along with The Gods : The Two World(Lotte ent.), etc

⁷ According to OECD broadband statistics update South Korea's fiber penetration rate of 87% ranks first among OECD countries. <https://www.oecd.org/digital/broadband/broadband-statistics-update.htm>

⁸ MIST, Announcing the results of the 2022 Telecommunications Service Coverage Inspection and Quality Assessment.

(Myth ⑦)

- Referred to SKB as having filed the lawsuit

After Netflix continued to refuse to negotiate network fees, SKB filed a lawsuit in the District Court to explicitly require Netflix to pay network fees.(p.37)

(Truth)

- ✓ The lawsuit started with Netflix.
- ✓ SKB repeatedly requested Netflix to negotiate on network usage fees, but Netflix refused to continue, and on November 12, 2019, SKB applied for adjudication to the KCC.
- ※ The adjudication system is a system for requesting arbitration from the KCC when there is a conflict between stakeholders (Article 45 of the Telecommunications Business Act).
If one of the parties files a lawsuit in court during the adjudication, the adjudication proceedings will be terminated.
- ✓ In April 2020, Netflix filed a lawsuit against SKB for terminating the adjudication proceedings.

(Myth ⑧)

- There is speculation that SPNP is causing delays or that Korean CAPs will move overseas.

Abecassis and Kende argue and infer that the introduction of network charges through the SPNP billing principle will result in higher costs and more latency for Korean end-users when consuming content and services. National CAPs typically host their content in Korea and previously only had to pay their ISP for connectivity. Now that these ISPs have to make payments to other ISPs for the delivery of the CAPs' content, these fees could be passed on to the CAPs. This would increase their costs compared to CAPs hosting in non-regulated markets. Abecassis and Kende therefore suspect that national CAPs may decide to make their content accessible from outside the country. This could further weaken their market position. (p.37)

(Truth)

- ✓ South Korea's internet leased line service rates have continued to drop despite changes to the interconnection system in 2016

<The trend of network usage fee of Domestic CPs and Global CPs>⁹

year	2016	2017	2018	2019	2020	2021
Domestic CPs	100	99.3	97.3	92.3	89.3	85.3
Global CPs	105.3	96.3	95.3	84.3	75.3	71

<Source> Ministry of Science and ICT

* Assuming an average unit price of 100 for domestic CP network usage in 2016

- ✓ As explained in Myth 7, high-speed internet quality is the best in the world.
- ✓ Some people claim that Korean transit fees are very high compared to Europe, Singapore, and Hong Kong, but there is no evidence that Korea's transit prices are high because of the change in the interconnection system.
- ✓ If it is true that Seoul's transit fee is higher than that of other Asian hub cities like Singapore, Hongkong, Tokyo, it would have been the same before the change of the interconnection system. In other words, it does not mean that the price of transit fees in Seoul is higher due to the interconnection system.

⁹ <http://www.sisajournal-e.com/news/articleView.html?idxno=292765>

- ✓ It is presumed that the quality of transit service in South Korea is superior or that it is due to the geographical characteristics of South Korea, i.e., the north is blocked by North Korea, and the southeast is blocked by Japan, which has twice the population of South Korea, making it difficult to realize economies of scale.

(Myth ⑨)

- The report states that Korean ISPs charge domestic CPs a delivery fee in addition to the connectivity fee due to the interconnection system.

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(Truth)

- ✓ Domestic CPs are not required to pay a delivery fee once they have paid the access fee.
- ✓ There are two types of Internet leased line products: Peering and Transit. Peering, which delivers traffic only to the users of the ISP that CAPs are accessing, is relatively cheaper than Transit, which provides global connectivity. This situation was same even before the 2016 interconnection changes.
- ✓ Therefore, there have been no incidents of domestic CPs moving their servers overseas due to the burden of network usage fees since the change in the interconnection system. Rather,

there is only evidence that services from overseas OTT operators such as Disney and Apple TV have rushed to South Korea.^{10 11}

¹⁰ Edaily, Disney "We Are Good Corporate Citizens"...answered the issue of network usage fees(2021. 10. 14), <https://www.edaily.co.kr/news/read?newsId=02997926629212920&mediaCodeNo=257>

¹¹ Money Today, Network usage fees paid by Disney and Apple, only Netflix has the guts...a matter of negotiation after all(2021. 11. 8), <https://news.mt.co.kr/mtview.php?no=2021110713303327827>

3. IP interconnection on the Internet: a European perspective for 2022¹²

(Myth ⑩)

- The ETNO's attempt to introduce a regulation to charge big tech for network usage is borrowing from the Korean case, where ISPs do not require termination fees from CPs and are limited to inter-ISP transactions.

As part of this debate, a number of large telecoms operators in Europe, under the banner of European Telecommunications Networks Operators (ETNO) have re-introduced the idea that as Internet service providers (ISPs), they should receive payments from large Internet companies, in the form of network usage fees for terminating traffic to their end users. These proposals further argue that regulation is needed, mirroring developments in South Korea.(reports p.6)

The above is taken from the following site :

Internet Society (2022), Internet Impact Brief: South Korea's Interconnection Rules and Old Rules in New Regulations – Why "Sender Pays" Is a Direct Threat to the Internet. Available at <https://www.internetsociety.org/resources/doc/2022/internet-impact-brief-south-koreas-interconnectionrules/> and <https://www.internetsociety.org/blog/2022/05/old-rules-in-new-regulations-why-sender-pays-isa-direct-threat-to-the-internet/>

(Truth)

- ✓ What the Korean ISPs are asking for from the CAPs is an internet access fee, not a termination fee. An access fee is typically specifically expressed as an Internet leased line service fee.
- ✓ CAPs have the same status under the Telecommunications Business Act as end-users. What the ISP receives from the users is an access fee. Access fee paid by end users means the fee for broadband service. It is not a termination fee. Therefore, if the ETNO demands a termination fee additionally from the CAPs, it is different in nature from the fee demanded by an ISP in Korea.
- ✓ For example, Netflix directly accesses to Korean ISPs to deliver its content to Korean users, not through U.S. ISPs. It means Netflix is using access service from Korean ISPs. In other words, Netflix is using a peering type of internet leased line service from Korean ISPs. This fee is not called a termination fee. It is an access fee.

¹² David Abecassis, Michael Kende, Guniz Kama, IP interconnection on the Internet: a European perspective for 2022, Analysys Mason Limited, 22, September 2022

- ✓ In the SKB vs. Netflix 2nd lawsuit, Netflix is no longer claiming that SKB is demanding termination fees from it. Instead, it claims that the two companies already had a tacit agreement that allows Netflix to use paid services for free. In other words, Netflix is acknowledging that they are using paid service from SKB.

(Myth ②)

- Paid Peering is rare outside of South Korea.

In addition, in a few cases, interconnection partners negotiated paid peering, where the content provider would pay the ISP for delivering the increased ratio of downstream traffic to their subscribers; these arrangements are rare, and remain entirely voluntary (outside of South Korea).

(Truth)

- ✓ Large ISPs stipulate in their peering policies that free peering will be converted to paid peering if there is an imbalance in the traffic exchanged.
- ✓ According to data from French regulator ARCEP, paid peering traffic accounts for about half of all peering traffic.
- ✓ In South Korea, CPs are not subject to the Internet interconnection regime. It is one of the users of the Internet access service. Therefore, it is wrong to apply interconnection practices to the ISP-CP relationship.

4. The Impact of Tech Companies' Network Investment on the Economics of Broadband ISPs¹³

- Korea is the only country with regulations requiring CAPs to make mandatory payments to ISPs, making it costly for CAPs to accept content, affecting quality and reducing competition. In other words, the report states that users experience the highest delays of any OECD country, affecting quality across the board.

South Korea is currently the only country where the regulator have mandated payments from domestic CAPs and ISPs. The added costs imposed by network usage fees have led to higher transit costs, diverging from other countries in the region. As a result, Korean CAPs have found it challenging to host content domestically due to higher costs and have either moved overseas or have become less competitive. Likewise, service quality is affected as the overall average latency experienced by users in South Korea is the highest among Organization for Economic Co-operation and Development countries. (p.9)

In South Korea, network usage fees are disrupting interconnection and traffic delivery, and have led to higher-than-expected transit costs and greater average latency, ultimately resulting in higher costs and lower quality of experience for end users.(p.53)

See what we discussed earlier

¹³ David Abecassis, Michael Kende, Shahan Osman, Ryan Spence, Natalie Choi, The Impact of Tech Companies' Network Investment on the Economics of Broadband ISPs, Analysys Mason Limited, October 2022

(Myth ②)

- Korea's well-established broadband network is cited as a justification for the introduction of network usage fees, but this was before the introduction of network fees.

The situation in South Korea has been used to support arguments in favor of network usage fees, with the country often characterized as being a global leader in broadband, in order to justify following its example. While South Korea has made broadband widely available, this had largely taken place before the introduction of new fees for domestic ISPs and CAPs.

Further, more recent developments in the evolution of connectivity in South Korea, since the introduction of network usage fees, would suggest that the introduction of these fees could result in undesirable outcomes for other countries as well. (p.56)

Pointing to South Korea as an example of a country with high broadband availability that has implemented network usage fees is also misleading. Network usage fees were introduced in South Korea after deployment had largely occurred, and the introduction of these fees has more recently led to other detrimental effects on connectivity in that country that are a clear warning sign. (p.59)

(Truth)

- ✓ IP Interconnection refers to the interconnection of Internet networks for the exchange of Internet traffic between ISPs.
- ✓ The Korean government introduced the Internet network interconnection (IP Interconnection) system in response to the rapid expansion of the wholesale Internet interconnection market as high-speed Internet traffic increased in 2005.
- ✓ As a result, competition between operators in the retail market has intensified, resulting in a number of cases of unfair behavior by a large ISP. By denying requests for interconnection or denying or delaying the expansion of interconnection lines, the company has engaged in unfair practices, including degrading the quality of high-speed Internet for competing ISPs.
- ✓ The government believed that the market could not resolve these issues autonomously, and market intervention was necessary.
- ✓ On December 22, 2004, the government announced the introduction of IP interconnection system through a press release, explaining that "despite various self-correction efforts by operators, the loss of the autonomous problem-solving function of the market function led the

government to establish a direct regulatory measure through the introduction of the system to improve the distorted market situation."

- ✓ The introduction of IP interconnection has leveled the playing field in the high-speed Internet market.
- ✓ In South Korea, the price of high-speed Internet is very low and the speed of broadband Internet is one of the highest in the world. This is because the Internet is a two-sided market, and a healthy Internet ecosystem has been established in which end users and CPs fairly share the costs of network investment. The interconnection system is considered the minimum necessary to maintain a healthy internet ecosystem in South Korea.