Internet Impact Brief

Nepal's Proposed National Internet Gateway

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Abstract

Nepal recently approved the National Cyber Security Policy (in Nepali only as no official English translation is available) that has a few new provisions that were absent in previous policy drafts, with one that is particularly worrying: "Strategy 11.25: Government-owned Intranet and National Internet Gateway shall be developed."

While the policy offers no details about the plan, such government-mandated Internet gateways are generally a cause for serious concern for the negative impacts they can bring on users and businesses that rely on the Internet.

This Internet Impact Brief examines how the proposal would move the Internet further from its potential as an open, globally connected, secure, and trustworthy resource for all.

Methodology

The Internet owes a great deal of its strength and success to a series of critical properties that, combined, represent the Internet Way of Networking (IWN): an accessible Infrastructure with a common protocol, a layered architecture of interoperable and reusable building blocks, decentralized management and distributed routing, a common global identifier system, and technology-neutral general-purpose network.

In order to assess whether the proposed actions have an impact on the Internet, this report will examine their impact on the IWN foundation that the Internet needs to thrive as an open, globally connected, secure, and trustworthy resource.

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Context and Analysis

While the policy offers no definition or further information about the plans, the idea of a national Internet gateway is clear: it is typically a government-mandated gateway through which all Internet traffic is routed. It centralizes control over all local and international Internet traffic – both incoming and outgoing. This gives the government considerable power over traffic management and what Nepal's citizens can access online.

One of the qualities that makes the Internet so valuable and successful is that anyone who wants to be part of it can connect and get resources available without needing permission from a central authority. The network is continually extended by the many kinds of organizations – such as technology and telecommunication companies, universities, and governments – that connect to it. These factors are driven mainly by users and the market, not a centralized authority.

This open and accessible infrastructure is fundamental to the Internet and delivers several key benefits. The first is global connectivity – bringing participants from around the world together and allowing them to reach each other. The second is growth: the network continues to grow because participants find value in connecting and, in turn, creating more value for everyone connected.

For Nepal, if the National Internet Gateway plan is implemented, this would mean that networks must connect to government-mandated locations, increasing the technical and financial barriers that network operators face in becoming part of the global Internet.

Since no other networks in the country can access the global Internet directly or independently, this will severely impact a network's global reach and limit collaboration between Nepal and the rest of the world by establishing barriers across the Internet ecosystem.

In the open and global Internet, there would typically be multiple entry and exit points in a country, spreading connectivity across various providers and locations. Under the Internet model of networking, networks in a country directly connect to global networks without passing through a national gateway. Their decisions are largely based on commercial and technical considerations.

But if networks are not allowed to interconnect where it makes the most technical and commercial sense to them, the result is likely to be a significant degradation of network performance, single points of failure, and an increase in costs. In all likelihood, these costs will ultimately be passed on to Internet users.

While the substance and timing of the national gateway's implementation remain unclear, its general purposes and structure present risks that could significantly weaken the ability of anyone in the country to preserve the confidentiality and integrity of their communications, for instance, by weakening or breaking encryption.

Having designated providers run the gateway that funnels all Internet traffic in and out of the country while maintaining a few locations as local exchanges creates a rigid hierarchical network structure that scales less efficiently than the distributed network that is the Internet. The approach severely impacts networks' global reach, limits collaborative internetworking, and thus has a negative effect on the open Internet.

National Internet gateway operators handle traffic records that may contain personal data. With few existing safeguards for data privacy, the collection and storage of the information could reduce users' ability to control how this information is used and shared by whom and for how long, potentially impacting people's freedom of expression.

The operators would often be required to store traffic records for a fixed amount of time and monitor traffic for various purposes, including national security and law enforcement. The added administrative, technical, and financial burdens would fall on the operators.

For end users, it may also mean poorer quality of service in general, as their experience online, such as data-intensive software, collaborative systems, online streaming, video-conferencing, and device-to-device calling, will likely be slower and less stable.

National Internet gateways are typically tasked with interception or inspection of content so that targeted content can be acted on, for instance, by throttling, filtering, or blocking. This would centralize government control over questions of access and online content and create a threat of censorship and self-censorship for fear of government surveillance and potential repercussions.

However, a national Internet gateway would not only affect the people of Nepal. It would also risk restricting the free flow of information between Nepal and the rest of the world, furthering Internet fragmentation.

For instance, given the centralized control, there will be risks of government-controlled gateways being used to facilitate Internet shutdowns during times of political unrest or public protests. [Internet shutdowns](#) harm societies, economies, and the global Internet infrastructure.

On the open, global Internet, networks are free to interconnect with other networks across borders. This is why users can easily use services that are based overseas. But if traffic has to run through government-mandated gateways, this can become difficult, or even impossible, affecting the user experience and undermining the network itself.

Setting up a national gateway in Nepal would undermine critical elements that make the Internet an open, globally connected, secure, and trustworthy resource for everyone.

Cambodia's example as a cautionary tale

In 2021, Cambodia issued a decree that required all Internet traffic in Cambodia to be rerouted through the National Internet Gateway (NIG) by February 2022. The plans remain delayed, but if implemented, it will affect Cambodia and the networks that interconnect with Cambodian networks. This could affect traffic within the region.

The Cambodian decree says that ISPs must retain all traffic data for 12 months and must report activity to the government in a way that's traceable to specific individuals. This could include financial transactions, visiting certain websites deemed a threat to the government, or even location data.

The Cambodian government claims this will bolster national security and help crack down on tax fraud. However, the impact on Cambodian network connections will affect anyone who connects to these networks, which could have serious consequences for social and economic life and endanger privacy and security.

The Internet Society analyzed the proposal and developed an Internet Impact Brief on Cambodia's proposal at the time, and we found that its impacts on the Internet were overwhelmingly negative, as they impacted the Critical Properties of the Internet Way of Networking as described by the Internet Society. The plan would also impact numerous enablers of the open, global Internet and prevent people from benefitting from the Internet's full potential.

With all eyes on Cambodia, Nepal has an opportunity to review the opposition voiced in the Cambodian context to better understand the implications if it were to develop its own national gateway.

How Does Nepal's National Internet Gateway Affect the Realization of the Full Potential of the Internet?

Internet goal	Enabler	Effect	Reason
Open	Easy and Unrestricted Access	Negative	New admin, financial barriers for networks
	Collaborative Development, Management, and Governance	Negative	Collaboration between networks in and outside of country will be limited
	Unrestricted Use and Deployment of Internet Technologies	Negative	Will affect end-to-end technologies (like encryption) & connectivity via LEOs

Globally Connected	Unrestricted Reachability	Negative	New restrictions for users on some resources, such as content categorized as illegal
	Available Capacity	Negative	Degradation of network performance
Secure	Data Confidentiality of Information, Services, and Applications	Negative	The interest in targeted content is at odds with confidentiality
	Integrity of Information, applications, and Services	Negative	It creates a centralized node that could be used to break or weaken encryption
Trustworthy	Reliability, Resilience, and Availability	Negative	Single point of control leads to sub-optimal network structure, lowers resilience
	Accountability	Negative	Lack of transparency & details of definitions & implementation
	Privacy	Negative	Abilities to track user behaviour is introduced, increasing risks of personal information misuse

The Internet has brought substantial social and economic benefits to the world, including better access to information, healthcare, education, better public services, and improved economic growth and productivity.

Internet access also increased economic and social resilience during adverse shocks such as COVID-19 by enabling remote work and providing alternative channels to access knowledge, markets, and services.

It should then be imperative that Internet access be available to everyone, but a report by the International Telecommunication Union (ITU) has shown that people in Nepal currently already pay more for Internet access than other South Asians. In 2020, a Nepali citizen had to spend 2.6 percent of their gross annual income to pay for Internet service, which puts Nepal behind India, Sri Lanka, and Pakistan in affordability.

Most countries connect to the global Internet via an intercontinental network of submarine cables. However, landlocked countries like Nepal rely on coastal countries for cross-border links to global network infrastructure.

As a result, Nepal pays higher prices, has lower bandwidth capacity, and experiences poorer service quality compared to its coastal neighbors, according to a World Bank report.

As a landlocked country, Nepal already faces additional costs in connecting to the global Internet, as Nepal's Internet service providers and mobile network operators have to import bandwidth from Indian and, to a much lesser extent, Chinese companies, according to reports.

With a national Internet gateway, it is likely that Nepal will only increase the costs of connectivity, putting additional financial strain on residents and businesses in Nepal and dampening economic development.

Recommendations

The need for practical solutions to improve Internet connectivity in Nepal is clear, and one way to achieve that is to formulate concrete policies to ensure adequate and cost-efficient international network redundancy. This is critical in the context of the increased risk of natural disasters and socio-political instability in neighboring regions.

The government, in particular the Ministry of Communication and Information Technology and the Nepal Telecommunications Authority, should implement measures to support digital inclusion targeting mountainous areas by supporting infrastructure sharing and ensuring the effective use of universal service and access funds to boost adoption.

Advanced technologies such as artificial intelligence and machine learning increasingly use cloud computing and rely on the ease of cross-border data flows. Regulation of these cross-border data flows lies at the heart of ongoing discussions of international trade governance, owing to its knock-on effects on digital trade. A legal and regulatory framework that upholds privacy, security, and consumer protection is critical to supporting digital transactions, especially across borders.

Instead of setting up a national Internet gateway and other policies that threaten the Internet's global nature and openness, the government of Nepal should seize the opportunities brought about by the Internet by aligning with international regulatory and legislative good practices and responding to emerging technology and business trends.

For instance, the government could actively encourage networks in the country to be freely connected to the global Internet and network operators to collaborate to provide optimal quality of service to users to unleash the country's massive potential in our digital age.

The Internet is the people's medium. It works well because no single person or entity controls it. Anyone can choose to connect with it, and the network grows and adapts to fit our needs as more and more people are connected. The Internet offers us all virtually infinite opportunities.

The government of Nepal must guard against policies and decisions that could splinter or fragment the Internet. Or we could end up with an unrecognizable, splintered version of the Internet—fragments of what it originally was—one where we cannot create, share, and connect freely.

In summary, our recommendations are as follows:

- Formulate concrete policies to ensure adequate and cost-efficient international network redundancy.

- Open access to private sector-owned and operated terrestrial fiber links and create an open and fair access regime for decentralized international gateways.

- Implement measures to support digital inclusion targeting mountainous areas by supporting infrastructure sharing and ensuring the effective use of universal service and access funds to boost adoption.

- Create legal and regulatory frameworks that uphold privacy, security, and consumer protection.

- Align with international regulatory and legislative good practices in line with emerging technology and business trends.