



For VPN Providers

2023 VPN Infrastructure Buyer's Guide

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Introduction

Virtual private networks (VPNs) are in high demand today, with businesses and end users needing to protect sensitive information and access global content. According to a recent study, [one-third](#) of all internet users now use a VPN to protect their personal data — a figure that's bound to increase with the VPN market on pace to exceed \$107.5 billion by 2027.

For VPN providers, the race is on to win market share and maximize profits. However, this is proving to be exceedingly difficult due to rising competition, and an abundance of new market entrants. VPN providers are finding it harder than ever to attract, convert, and retain customers.

To capitalize on demand and stand out in the saturated VPN market, providers need to have the right foundational infrastructure in place — meaning high-quality network and compute services that are reliable, secure, and instantly scalable. This is critical for offering modern VPN services that align with the growing needs of global businesses and end-users.

This guide explores:

- The top VPN industry trends to be aware of in 2023
- Common infrastructure challenges facing VPN providers
- VPN market spotlight: Indonesia
- How Zenlayer helps VPN providers overcome challenges and scale their services.

VPN industry trends to follow in 2023

VPN usage skyrocketed during the global pandemic, with companies across all verticals rolling out deployments to enable secure and reliable remote work. However, the sudden shift to remote work also exposed many glaring weaknesses for VPNs — like poor end-user experiences, difficult management and configuration challenges, and inefficient data flows. As many companies learned the hard way, VPNs are critical for success — but they aren't perfect.

Fast forward to today, and the VPN industry is rapidly evolving with companies upgrading their services to address shortcomings and meet changing user demands. VPN providers that cling to traditional technologies and architectures risk being displaced by agile competitors that can better serve customers, enable better user experiences, and tap into global markets more quickly.

With this in mind, here are some key VPN trends to follow in 2023.

- **Continued demand for client VPNs**

In recent years, there has been an uptick in companies moving from traditional thick client VPNs to thin client VPNs. However, many businesses today are using hybrid cloud environments, with on premises services and applications. Because of this, traditional thick client VPN architectures aren't going away.

Looking forward, VPN providers will increase their usage of AI and automation to make client VPN technologies more flexible and user-friendly.

- **Cost efficiency**

Cost remains a major factor for end users today, with about [one-third of users](#) leveraging free VPNs. VPN providers are being challenged to keep operating costs low to offer reasonable pricing that aligns with budget-conscious end users and organizations.

Who Pays for VPNs?	
Free	36%
User	26%
User's organization	13%
Combination of user and their organization	25%

- **Heightened focus on privacy and security**

Due to the rise of online surveillance and data breaches, VPN providers are putting more emphasis on privacy and security features.

Technologies like multi-factor authentication, no-logs policies, and advanced encryption protocols are becoming increasingly common in VPN services. Many providers are now also leveraging private lines to improve security and bypass the public internet.

- **Improved streaming capabilities**

VPN services have traditionally struggled to support streaming services, due to heavy latency and a lack of quality of service.

Now, a growing number of providers are starting to offer services that are specially designed for streaming content, with optimized global networks, QoS, real-time performance monitoring, and redundant network architectures.

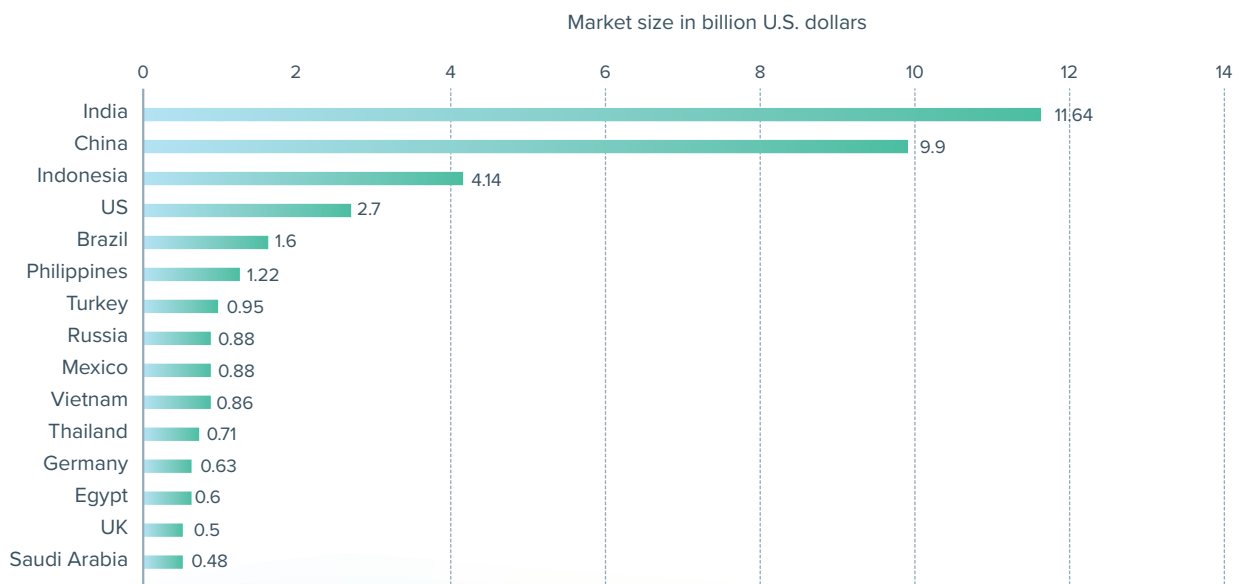
- **Global expansion into high-growth markets**

VPN providers have a unique opportunity at hand in global emerging markets, which offer billions of potential internet users. For example, China opened its [VPN sector](#) to foreign investments in 2021, and is on pace to have the highest growth through 2026 at 17.4%.

Some additional high growth emerging [VPN markets](#) include India, Indonesia, Brazil, and the Philippines.

Virtual private network (VPN) market worldwide in 2022, by country (in billion U.S. dollars)

Global virtual private network market size 2022, by country



VPN Market Spotlight: Indonesia

Looking for a high-growth destination for your VPN service in Southeast Asia? Indonesia is worth a look. The need for [VPN services](#) has been surging in recent years in Indonesia, which now ranks the highest in VPN use globally with [55%](#) of its residents using some type of VPN service to access the internet.

Security is chief among the reasons that many in the country are turning to VPN services. This comes as little surprise given Indonesia is facing mounting cybercrime activities and suffered almost [1 billion cyberattacks](#) in 2022.

Compounded by increasing governmental restrictions on social media and web content at large, more and more Indonesians are starting to realize the importance of personal privacy and security when going online.

With the third largest VPN market in the world – behind China and India – and a growing digital economy whose revenue is projected to reach [\\$94.3 billion](#) by 2025, Indonesia is filled with opportunities for [VPN providers](#) who can move quickly to capitalize on its potential.

Top Challenges for VPN Providers in 2023

Despite the clear opportunity at hand with VPNs, providers today face several challenges in offering services to users.

Here are a few of the top challenges for VPN providers in 2023.

- **Security and privacy concerns**

A universal pain point for VPN providers right now is ensuring the security and privacy of user data.

Between the growing trends of cyberattacks, hacking attempts, and government surveillance, it can be difficult to ensure that user connections are truly protected from malicious acts and prying eyes.

According to one study, just [54% of VPN users](#) feel safe online. The same research also indicates that only half of respondents use a VPN on public Wi-Fi.

- **Performance issues**

VPNs can negatively impact the speed and stability of internet connections. The extra step of routing traffic to VPN servers introduces additional latency that can negatively impact digital experiences.

The fact is, most users today expect lightning-fast digital services, and anything but a fast and seamless VPN experience is likely to lead to abandonment. This is especially true for customers using VPNs for gaming and streaming video.

- **Infrastructure maintenance**

VPN services rely on a complex ecosystem of servers, networks, and software. It can be challenging to consistently monitor, update, and patch servers to ensure that they're kept secure and functioning.

In addition, the personnel and hardware required to carry out these processes can put a serious strain on a company's resources. Adding to the challenge, many VPNs are currently dealing with limited budgets and staffing shortages.

- **Scaling difficulties**

The traditional approach to expanding a VPN service requires scaling either vertically, by upgrading and replacing servers to the latest specs, or scaling out horizontally by adding more servers to your current infrastructure. Both options are expensive, time-consuming, and difficult to execute.

VPN providers may also run into challenges when scaling into emerging markets throughout high-growth areas like China, Southeast Asia, and Latin America. These markets offer massive growth potential, but also come with heavy regulatory barriers, connectivity gaps, a lack of infrastructure, and higher operating costs.

- **High operating costs**

As a VPN provider, ensuring that your servers have enough bandwidth to handle all the traffic that flows through them from your users can be extremely costly.

Most of the time, high VPN operating costs can be attributed to poor server placement. The farther users are from your servers, the more likely this cost will increase due to the additional data centers and other network resources needed to carry their data across long distances – especially in emerging markets with suboptimal infrastructure.

How Zenlayer empowers VPN providers

One of the best ways to overcome VPN challenges is to work with a third-party infrastructure provider like Zenlayer — the leader for edge computing in emerging markets.

Zenlayer offers VPN providers the following advantages.

- **Give users more choices and global freedom**

Zenlayer maintains a presence in over 40 countries throughout North America, Latin America, Europe, Africa, the Middle East, Asia, and Australia.

Zenlayer also provides direct access into important markets in Southeast Asia. For example, of the 280+ edge PoPs that make up Zenlayer’s global network, more than 20 are in Indonesia covering some of largest cities like Jakarta, Medan, Surabaya, and Pekanbaru. In these cities, Zenlayer offers a total of six availability zones — five for Bare Metal and one for Virtual Machine — that feature a wide range of compute capabilities from 1 core, 2 GB RAM all the way up to dual Intel Xeon Gold 6226R Processors with a total of 32 cores and 192 GB RAM. VPN providers can use Zenlayer’s vast global backbone network to instantly expand and reach customers in overseas markets.



- **Access flexible compute services**

Customers can also enhance VPN security using [Zenlayer Bare metal](#) and [virtual machines \(VM\)](#).

Intel's AES-NI-based hardware accelerates secure data encryption and decryption, meaning servers and network connections can be encrypted at rest and in transit to keep user traffic private end-to-end.

Additionally, deploying compute at the edge drastically shortens the distance between where user traffic originates and your VPN server, minimizing the chances of interceptions, intrusions, and other malicious acts.

Furthermore, Zenlayer safeguards highly sensitive user data with identity and financial information, login credentials, and online activity history. Zenlayer's private networking solutions can shield that data from unauthorized access and prying eyes by providing a secure and isolated environment for your VPN traffic.

- **Bolster VPN performance and stability**

Expanding internationally can be a daunting experience, as it requires forming new relationships.

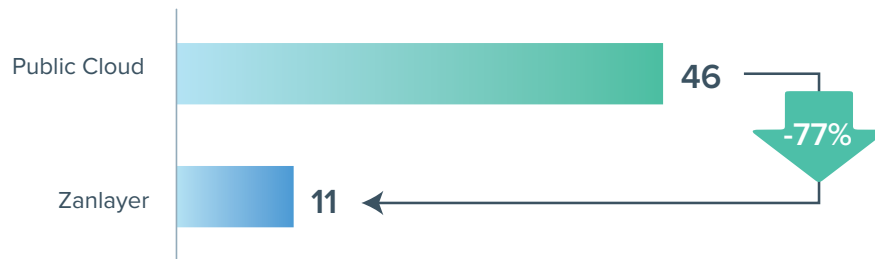
Zenlayer offers local expertise and partnerships in various regions around the world – both developed and emerging – which results in a high-performance global network with a blend of the best local carriers.

To illustrate, Zenlayer provides roughly 3 Tbps of transit to the largest ISPs in Indonesia, including Telin and Indosat. This lets users reach VPN servers faster and more reliably with less hops. In addition, VPN traffic out from Indonesia for content like live videos and sports streaming can be routed through Zenlayer's ultra-low latency global private backbone to the company's edge PoP in Singapore, the international traffic exchange center of Asia, where it would be routed directly to various tier-1 carriers for seamless viewing.

Further, customers have the option of using Zenlayer's cloud networking services to establish dedicated lines between Indonesia and 60+ of the top cities in the world like Los Angeles, Washington DC, São Paulo, Frankfurt, Tokyo, Hong Kong, and more. This enables premium users to bypass public networks for accelerated access to their favorite websites and content worldwide.

Customers gain full access to a 50+ Tbps global network with over 45 high-performance transit carriers, more than 5,500 direct peers, and dynamic routing. Zenlayer's network offers significantly lower latency than major public clouds in emerging markets.

Sample latency comparison (in milliseconds):



Average latency to Saudi top five telecom carriers from nearest node

Zenlayer also makes it possible to shield networks from threat actors with cloud distributed denial of service (DDoS) protection. Zenlayer provides over 30+ global scrubbing centers, for low-latency DDoS protection that runs 24/7.

- **Reduce maintenance**

Maintaining business infrastructure can be costly and time-consuming, especially if your VPN service employs many servers spread out across multiple locations.

By leveraging Zenlayer's edge compute products, you can quickly deploy a highly distributed network that is both easy to monitor and painless to manage. Plus, when your infrastructure is hosted in edge bare metal or VMs on Zenlayer's massive global network, you won't need to worry about fixing, updating, or replacing physical hardware.

This also helps free up resources in funds and personnel that would otherwise go into on-site maintenance and repairs.

- **Scale quickly and painlessly**

The user-friendly [zenConsole](#) makes it possible to provision edge compute and networking solutions within minutes, enabling you to instantly allocate resources and add capacity wherever you need it.

Rather than shuffling a large amount of capital and waiting months to build out additional infrastructure, zenConsole can help you get it done in a fraction of the costs and time.

- **Improve operating cost-efficiency**

Bandwidth is expensive, but Zenlayer's flexible pricing models can help you trim the fat and use your budget as effectively as possible.

Although you have the option to pay a flat fee for bandwidth, Zenlayer also offers monthly aggregate bandwidth and data transfer pricing.

- If you go with aggregate bandwidth, we group together your servers and bill you for all their combined bandwidth caps.
- If you prefer data transfer, we bill you for the total amount of bandwidth used across all your servers.

Aggregate bandwidth pricing helps you balance between underutilized and overutilized servers to eliminate bandwidth waste and make the most of your bandwidth spend. Data transfer, on the other hand, lets you pay for what you use.

In addition, Zenlayer's 95% burstable billing model for aggregate bandwidth gives you the flexibility to not overcommit to more expensive bandwidth caps. By sampling your bandwidth usage over the month and trimming the top 5%, or peak bandwidth use, you can rest easy knowing that momentary, unexpected traffic spikes that burst through your bandwidth cap are less likely to incur overage fees.

Success story: Global VPN service provider expands to APAC with Zenlayer

The client is an established, global VPN service provider that offers services to protect user privacy online and provide secure access to geo-restricted sites and content around the world.

In addition to standard VPN services, the client also offers other privacy and security products geared towards individuals and businesses.

- **The challenge**

As the company started to look for partners to help facilitate their expansion into APAC, they found that sourcing the right provider whose network had the performance they needed, the coverage they wanted, and prices within their budget was incredibly difficult. What's more, many parts of China and the regions in Southeast Asia are not equipped with modernized network infrastructure, leading to spotty performance and availability issues. The client also needed geolocated servers across multiple countries.,

- **The solution**

The company selected Zenlayer for its strong portfolio of local partnerships in APAC, thousands of global peers, and proven track record of helping businesses expand into emerging markets.

Zenlayer deployed two VPN PoPs using Zenlayer Bare Metal. T followed by additional VPN PoPs in Beijing, Hong Kong, Tokyo, Seoul, Singapore, and other locations.

- **Results**

Before finding Zenlayer, the client tested servers from other providers in the region for network performance with mixed results. Few were able to meet their performance and affordability requirements. However, Zenlayer's geolocated servers passed their tests with flying colors with 15% lower latency on average compared to other providers in the area.

- **Additional benefits:**

- The company switched from unpredictable data transfer pricing to a more stable aggregate bandwidth model, which helped them cut costs with unmetered bandwidth billing.
- The client can now shift traffic between underutilized and overloaded servers to minimize downtime and wasted bandwidth.
- Zenlayer's pay-as-you-go model — with 95% burstable bandwidth — gives the company more agility to scale their operations and prevents them from overcommitting to higher bandwidth tiers.
- Zenlayer's network blend of the best local carriers in APAC ensures stable performance that keeps the client's VPN service at maximum availability for their users worldwide.

Zenlayer makes it easy to expand your VPN service

The game has changed for global VPN providers in the post-pandemic landscape. Demand for security is accelerating, new security technologies are appearing, and fast-growing emerging markets are becoming more accessible — presenting a unique opportunity for providers to drive profits.

To thrive in this competitive landscape, VPN providers need to remain agile and offer superior services at competitive price points. And the best way to achieve this is to work with a dedicated infrastructure provider like Zenlayer, offering a vast global backbone network of edge computing services in both established and developing markets.

With Zenlayer, VPN providers can slash operating costs, instantly scale, and avoid infrastructure management headaches. To learn more, [contact sales today](#).