



The Essential Guide to Selecting a **Modern CDN**

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Chapter 01

Making sense of your CDN options is no small matter

Content delivery networks (CDNs) are the magic behind websites and apps loading quickly, reliably, and consistently. They help ensure your online presence satisfies the expectations of today's demanding site visitors and users. Businesses get one chance to win—or lose—new customers, and a fast, reliable website makes a great first impression, establishing a connection with your visitors and enabling purchases and inquiries. If your digital presence sees high levels of traffic and you maintain that presence across geographies, a CDN is a must-have to provide a smooth and responsive experience for your customers.

But not all CDNs are created equal. In fact, it can be quite challenging to weed through all the available options and make sense of the many features and configurations offered by different providers. That's where this guide comes in.

If you're responsible for your company's online success, this guide will help you understand and assess the key factors related to CDN performance, features, and pricing. Whether your strategy demands a single CDN provider or a multi-CDN solution, by the time you're done reading, you'll know how to pick the right CDN for your business.



Today's CDNs can absolutely offer all the underlying infrastructure and services on which to build a business. A large network of mini data centers with built-in security, connectivity by design, website hosting, domain name system (DNS) management, scripting, and programming capabilities—CDNs offer all that and more—and that's a solid foundation for an organization's digital infrastructure.

— GigaOm,
"But Aren't CDNs Boring?" No, Not at All.

5 essential considerations when choosing a CDN



Performance

CDNs are designed to solve the pesky last-mile problem. By bridging the distance between your servers and site visitors, they make sure users can access your sites and applications quickly and reliably. The faster your CDN delivers content, the happier your online visitors will be.



Pricing

While it's true that you get what you pay for, price transparency and flexibility are as important as feature comparisons. CDN pricing models can be rigid, with hidden costs that often surface as traffic grows. Carefully reviewing a vendor's pricing against your specific requirements is essential to avoid overpaying or encountering unexpected costs.



Security

Every online business faces a growing number of cyber threats, from distributed denial-of-service (DDoS) attacks to ransomware. With so much on the line, it's a non-negotiable that your website and applications are securely delivered without fail and that sensitive data stays safe. It's important to know that some CDN providers offer robust built-in protection, while others don't address security, leaving you to handle that separately.



Edge computing

Edge computing complements CDN services by addressing the latency gaps in traditional cloud computing deployments. Processing data and applications closer to the end user reduces the load on central servers and enhances performance where it matters most. This distributed approach minimizes latency and improves performance, making it beneficial to choose a CDN provider that offers edge computing.



Futureproofing

Like everything related to your infrastructure, a CDN needs to accommodate ever-changing and diverse requirements. As an extension of your IT environment, it should be able to flexibly and seamlessly handle your current and future needs.

Ready to dive in?

In the following pages, we break down core CDN considerations in plain English, demystifying technical terminology and industry jargon so you can figure out what you really need for your business.

Performance

Performance is the name of the game when it comes to CDNs. Three metrics stand out as worth your attention, giving a good general sense of how a CDN performs.

Throughput

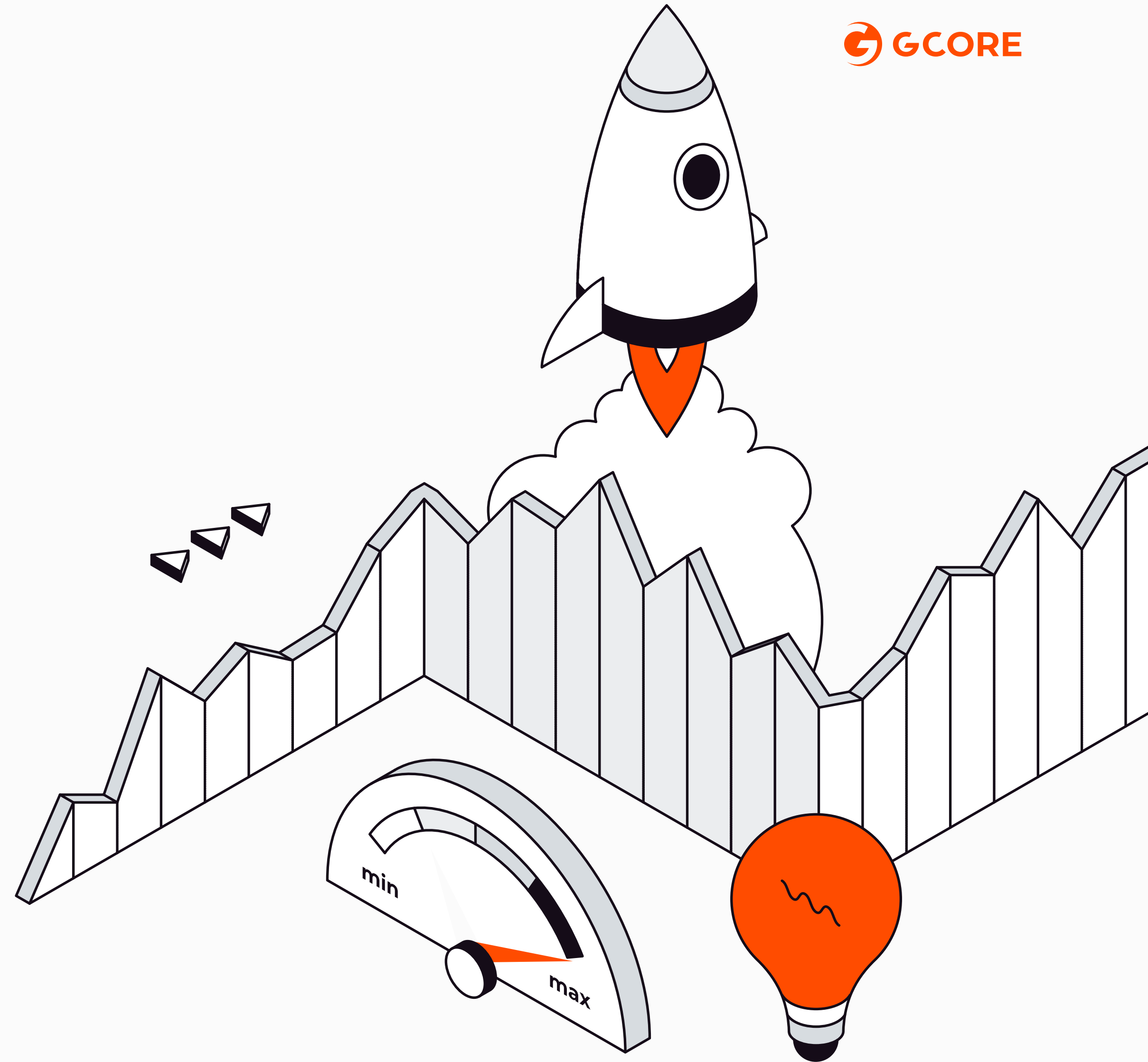
Throughput measures the amount of data successfully transmitted from a CDN to a user over a specific period. It's measured in gigabits per second (Gbps). High throughput is indicative of a CDN's efficiency in handling large files or high-volume traffic.

Latency

This is the time it takes a CDN to fulfill a user's initial request for your content, measured by time to first byte (TTFB) or round-trip time (RTT). Latency is affected by user and CDN location, and even by what's happening on the internet. Lower latency is better, and it's most important when delays can jeopardize the user experience—think online gaming and video streaming.

Cache hit ratio

This is a crucial metric for evaluating CDN performance, as it directly impacts both user experience and the volume of traffic hitting the origin server. A higher cache hit ratio reduces latency and decreases origin egress traffic costs.



3 things to look for

Here are the factors that will determine how well a CDN can perform.

Network coverage

More CDN points of presence (PoPs) means less distance between end users and servers, leading to lower latency. Plus, more PoPs usually equals a higher total number of servers, which increases throughput. Look for strategically located PoPs in your key geographic areas. For example, if your business is focused on a European audience, look for a CDN with a high density of PoPs in Europe.

Connectivity

The more connections between your CDN and other networks, the more routes it can explore to find the fastest one for delivery. Peering with internet service providers (ISPs) and internet exchange points (IXPs) is the key to this connectivity, leading to less wait time and fewer data traffic jams. The end result: low, stable, and predictable latency.

Infrastructure

A CDN's performance is heavily influenced by the quality of its hardware. Look for providers that use high-performance edge servers, as these can process requests more efficiently and deliver the lowest latency. Additionally, robust network capabilities can significantly increase throughput, ensuring faster content delivery.

Most CDNs offer a tool called [Looking Glass](#) so you can run commands like BGP, ping, and trace right on the CDN's routers. It's great for [assessing server connectivity](#). But that's only a piece of the performance puzzle. If you want to check performance in a specific location, try the following tools to see which CDN offers the best performance for your users' locations: [CDNPerf](#) and [RIPE Atlas](#).

Considerations for core CDN use cases

When talking about performance, what's critical for one business might not matter for another. Here's how performance shakes out across different industries and content types.



Web performance (e-commerce, SaaS)

Fast load times and consistent uptime are critical for ensuring a smooth user experience. In e-commerce, latency directly impacts customer satisfaction and sales conversions, as delays can lead to cart abandonment. For SaaS platforms, high availability and responsiveness are essential to maintaining productivity and user trust, with downtime or slow performance potentially causing significant disruption to business operations.



Video streaming (media and entertainment, e-learning)

Throughput matters most here because smooth playback and high-quality streaming depend on delivering large amounts of data efficiently. While latency is less critical for on-demand content, it becomes significant for live streaming and interactive e-learning, where real-time engagement is key.



Software downloads (mobile apps, gaming)

When it comes to mobile apps and online gaming, it's all about throughput. Heavy data loads need to move efficiently to keep users happy. While latency primarily affects how quickly the download starts, it can also influence the overall experience in gaming, particularly in terms of responsiveness during gameplay.

Pricing

If you see huge price differences between one CDN provider and another, don't jump to conclusions. A higher price doesn't always mean better service; it might reflect extra charges for content delivery or specialized features. On the other hand, a lower price might mean the provider is cutting corners and offering less value to its customers. The key is to consider whether you're getting good value for your business needs; you don't want to overpay for unnecessary features or pick a cheaper option but be stuck without technical support.



3 things to look for

Keep an eye out for these important pricing factors.

Pricing model

Some CDN providers charge extra for add-on features or separately for bandwidth and HTTP requests, which can make pricing complex, confusing, and higher than expected. Find out what the provider includes in its pricing—and what it doesn't.

Traffic price in your regions

If your business is focused on specific regions, check the provider's traffic pricing in those areas. Local peering partners, ISPs, and IXPs can have highly varying traffic costs, which CDN vendors will pass on to you. Providers with strong agreements and good connectivity in certain regions may offer favorable pricing. However, be aware that a provider that is well-connected in one region might not have the same advantages in another, leading to potentially higher traffic costs in their less-connected regions.

Other parameters

Vendor reputation, SLAs, and technical support can all contribute to the final price tag. For example, a highly regarded vendor can afford to charge more for its services, knowing some customers are willing to pay a premium for a brand name. Lower prices might seem like a good deal, but they could mean the vendor is skimping on technical support or service guarantees. If sophisticated support is important, make sure the provider offers this and consider it in your budget.

Considerations for core CDN use cases

When assessing a CDN provider's pricing model, here's what to expect across three common scenarios.



Web performance

Ensuring fast and reliable delivery of websites and applications involves many CDN features. The pricing for this use case is typically based on a high volume of HTTP(S) requests and moderate levels of traffic.



Video streaming

For video streaming, pricing is primarily driven by a high volume of traffic and fewer HTTP(S) requests. You will also need features that help ensure availability, like origin shielding, and possibly additional video-specific features such as transcoding or storage. Check if these features are included in the standard pricing or if they come at an additional cost.



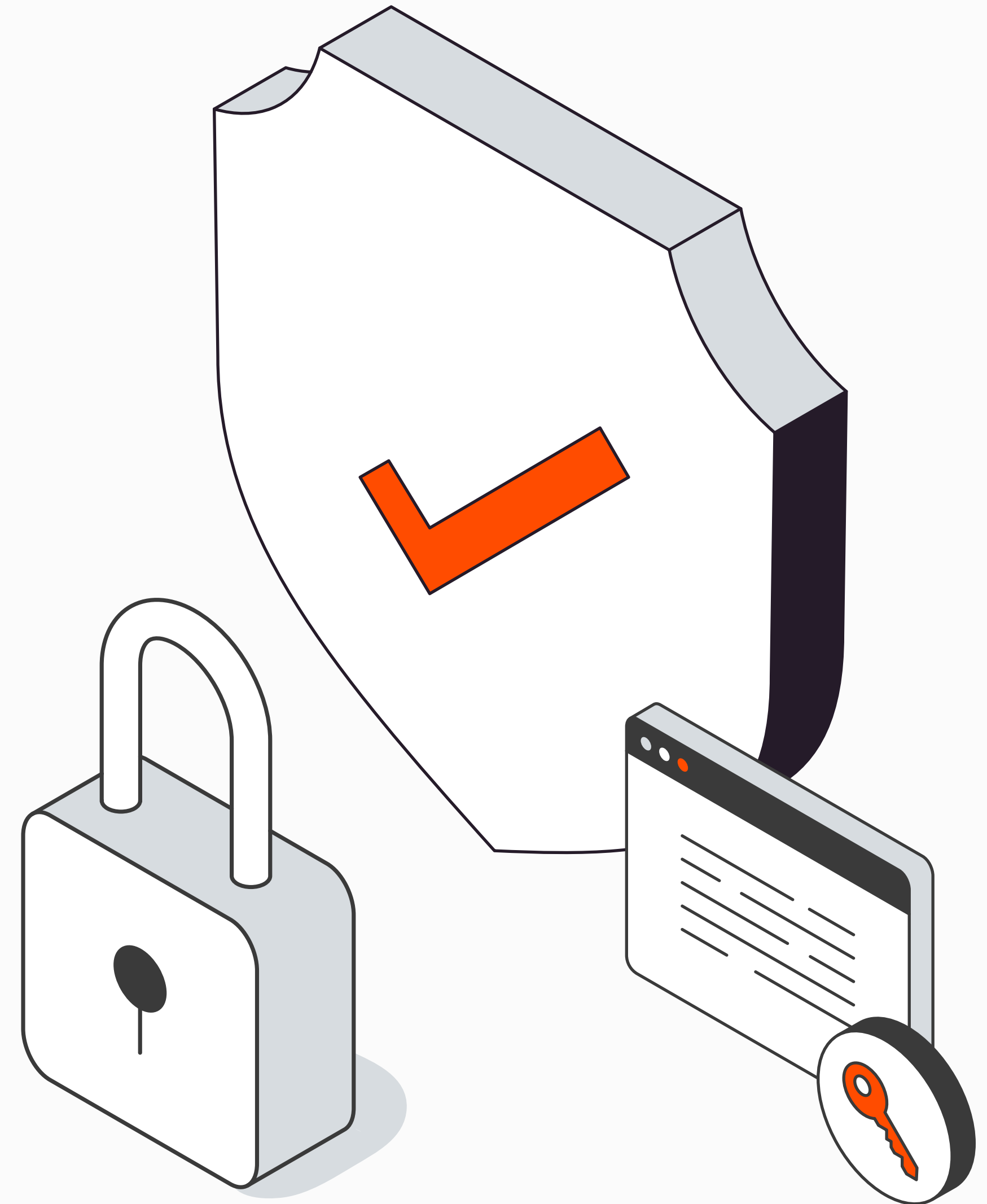
Software downloads

Delivering large files, such as software updates or game downloads, involves serving a high amount of traffic with fewer HTTP(S) requests. You'll also need features that ensure site availability, such as origin shielding.

Gcore offers four CDN plans with transparent pricing, no hidden fees, and global rates. Whether you're a new business looking for a free-forever plan or an established enterprise with heavy, global content distribution needs, you can [check which plan meets your requirements](#) at the click of a button.

Security

Not all CDN providers offer security, but many do. Unless you decide to handle security yourself, your CDN provider should be able to protect your online presence from attacks, safeguard sensitive data, and ensure that only authorized users can access your content. While CDNs aren't solely security solutions, modern providers offer sophisticated protection against a wide range of evolving threats.



3 things to look for

The following security factors are particularly important to look out for when selecting a CDN provider.

Service availability

Since CDNs distribute traffic, if one server is attacked, your traffic is simply rerouted to other servers so your customers don't feel an impact. A CDN offers a vast backup capacity with redundancy as standard. Plus, CDNs manage traffic checks like TLS/SSL. Edge security solutions, like web application and API protection (WAAP) and DDoS protection, can provide additional layers of protection.

Data integrity

TLS or SSL encryption stops eavesdroppers and hackers from seeing and accessing data moving between CDN servers and your end users. At the same time, a web application firewall (WAF)—often part of a WAAP service—can identify and block malicious traffic, ensuring data integrity and protection.

Content access control

Access controls mean that only authenticated and authorized users can access the content served over the CDN. When used effectively, these controls can prevent unauthorized access and data breaches.

Considerations for core CDN use cases

Below, we've mapped essential security measures relevant to core CDN scenarios to help you determine how well your potential provider will protect your online presence.



Web performance

Service availability, data integrity, and content protection are key here, so ensure you have robust DDoS protection at layers 3, 4, and 7, TLS encryption, WAF and/or WAAP, and content access controls.



Video streaming

In this scenario, service availability and content protection matter most, so look for DDoS protection at layers 3 and 4, TLS encryption, and access controls.



Software downloads

Check the provider has strong content access controls and harnesses TLS encryption to secure data transmission between the user and CDN server.

Not all CDNs provide robust security features; some may offer minimal or no protection at all. However, certain CDN providers—like Gcore—deliver comprehensive security services like [WAAP](#) and [DDoS protection](#) that integrate seamlessly with their content delivery solutions, providing enhanced security and simplified management for your online presence.

Edge computing

Edge computing is a service that runs on a CDN's network edge to further reduce latency and improve performance. It does so by distributing workloads, moving them closer to end users. Often, edge computing is used to modify HTTP requests, manage complex logic between endpoints, and launch modern frontend frameworks.



3 things to look for

Execution environment

The provider's ability to ensure low latency hinges on its runtime environment. A WebAssembly (Wasm) environment boasts an ultra-fast startup time, enabling it to process requests and launch applications multiple times faster than traditional container-based solutions.

Programming languages supported

For the utmost flexibility, look for an open-source approach that supports the use of multiple programming languages—such as Rust, Javascript, C/C++, Go, and Zig—both in the browser and at the edge.

Integration with other services

To extend the power of edge computing, CDN providers can support third-party endpoints, like KV Store and edge databases, which enable global, durable storage of compute functions at the edge.

Edge computing enhances CDN performance by processing data closer to end users, reducing latency, and speeding up response times. Gcore's advanced Wasm runtime environment, available via [FastEdge](#), delivers ultra-fast startup times, enabling more efficient performance compared to traditional methods.

Considerations for core CDN use cases

Here's how edge computing via CDN can positively affect your online presence and business activity.



Web performance

Edge computing can fuel a range of use cases, whether efficiently conducting and implementing A/B testing, personalizing content based on user location or device type, or enabling advanced image editing via custom algorithms. Setting up edge logic for diverse use cases can become complex, so check that your provider offers expertise and guidance to maximize its potential.



Video streaming

Video streaming can be combined with content access control to block user access from specific locations based on IP addresses by using edge computing. It can also modify HTTP requests to optimize video delivery, ensuring high-quality streaming experiences. Evaluating edge server placement is important to ensure your chosen CDN provides enough global coverage to avoid latency issues for geographically dispersed viewers.



Software downloads

Edge computing improves the distribution of software updates by modifying HTTP requests to streamline the download process and manage the complex logic involved in delivering large files. This provides fast and reliable delivery of mobile app updates, game patches, and other software updates by processing requests closer to users, reducing latency, and improving download speeds. The consideration here is balancing caching efficiency and real-time update propagation across edge points of presence to avoid potential delays or version mismatches.



Futureproofing

CDN selection isn't just about choosing a provider to serve your website and applications today; it's about partnering with a vendor that anticipates and responds adeptly to technological shifts. To keep pace with evolving market needs and preferences, your provider must have the flexibility and technical expertise to deliver next-generation experiences by adding features based on the newest developments. They should also offer the scalability to handle a growing appetite for sophisticated online experiences—and your growing customer base.



Forward-thinking CDN providers continually expand their local and global presence by enhancing their peering partnerships and network infrastructure. They also call upon emerging technologies and modern standards to address real-world use cases. Here are a few examples of next-gen capabilities that indicate a CDN provider is innovative and modern:

- [Offering serverless computing](#), allowing you to run applications without managing infrastructure
- Enabling low-latency AI experiences globally via [edge inference](#)
- Supporting open caching to serve content from third-party CDNs
- Providing tools for granular visibility and management of CDN-related costs

By capitalizing on these trends, your company can deliver cutting-edge user experiences cost-effectively. Imagine powering chatbots and creating user-specific images and copy with generative AI. Or using 5G to enable frictionless virtual connectivity worldwide without relying on VPN or Wi-Fi. Or training machine learning models without worrying about deployment costs, technical expertise, or infrastructure limitations.

Though much of this is uncharted territory, one thing is certain: The landscape is already shifting. With so many changes and emerging technologies on the horizon, you need a CDN provider that's flexible and forward-thinking enough to adapt and evolve.



Customers that choose the Gcore CDN can also tap into a wider portfolio of distributed IaaS products, which includes GPU servers, managed Kubernetes, and function as a service. This means that customers are buying into a wider cloud-like ecosystem that can support application development and hosting at the edge.

— GigaOm,
[GigaOm Radar for Content Delivery Networks.](#)

Gcore recently [ran an ML model on FastEdge](#), a low-latency, high-performance serverless solution. Companies that run experiments like this to push their CDN to its limits are likely to be innovative and futureproof since they're actively developing the next generation of CDN technology.

Signs you're on the right—or wrong—track

As you evaluate CDN providers, watch for these telltale signs of what makes for a successful partnership ... and what signals a losing proposition.



Green flags

- ✓ Transparent pricing model
- ✓ Free plan, trial period, and demo
- ✓ HTTP/3 and IPv6 support
- ✓ Advanced API and DevOps tooling integrations
- ✓ Readiness to work in a multi-CDN environment
- ✓ Established reputation with a proven track record of delivering innovative solutions



Red flags

- ✗ Relying on third-party infrastructure
- ✗ Unclear SLAs
- ✗ Disproportionately high network capacity relative to PoP deployment
- ✗ 100% cache hit rate
- ✗ Low prices in traditionally expensive regions
- ✗ Lack of 24/7 technical support

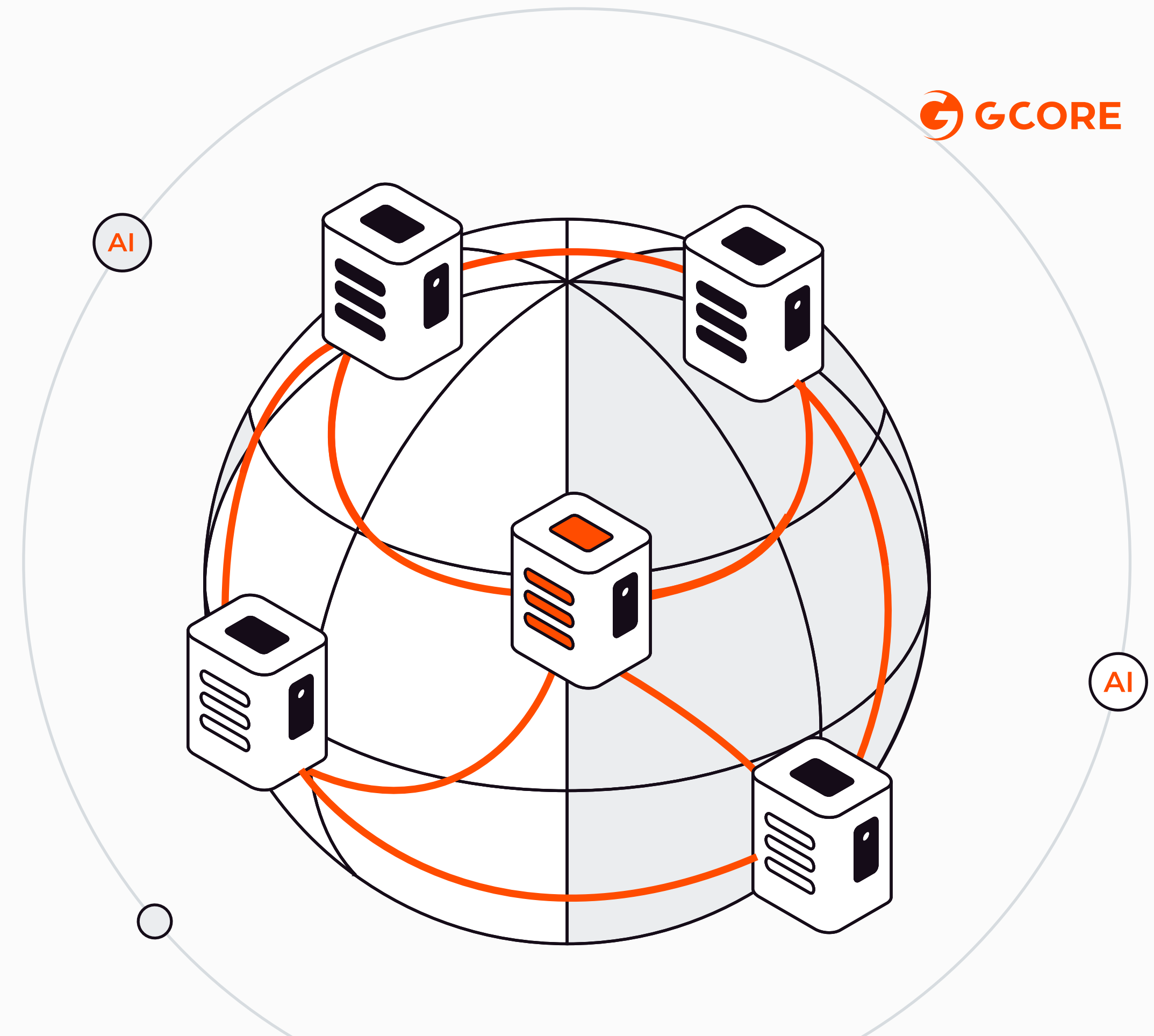
Chapter 04

Multi-CDN: a modern solution for enterprises

In many areas, your business likely calls upon multiple vendors to address one specific need. This strategy helps avoid vendor lock-in, enhances bargaining power, and ensures continuity if issues arise with any single provider.

If you regularly deal with heavy site and app traffic, you might consider adopting a multi-CDN approach. This strategy offers distinct advantages:

- **Supercharge your website and application performance** by combining strong regional network coverage from different CDN vendors. Say CDN A is lightning-fast in Africa and LATAM regions, while CDN B shines in Europe. Together, they cover all the bases so you can deliver stellar experiences in those regions.
- **Easily enhance your content delivery capabilities** by integrating a new provider into your multi-CDN setup.
- **Expand your audience and enter new markets risk-free** by connecting to an additional CDN that covers those local areas, without disrupting your existing setup.
- **Score a pricing bonus** by mixing and matching the most cost-effective network regions from different CDN providers. Strike the perfect balance between price and performance.



Security and regional challenges can impact online experiences, especially in emerging markets where DDoS attacks and unstable internet connections are more common. To navigate these issues effectively, [consider a multi-CDN approach](#) that leverages the strengths of different providers. Look for CDNs with robust connectivity and PoPs where your customers are located for optimal performance and reliability.

CDN vendor comparison chart

A CDN will essentially become an extension of your infrastructure, so it's crucial that the solution you choose is best suited to your business needs and strategy. The matrix below features the most important considerations for each core area, allowing you to build a checklist to compare top vendors and identify the best option for your requirements.

		Gcore	Vendor #2	Vendor #3
Performance	Number and location of PoPs	✓ 180+ PoPs across 6 continents		
	Number of peering partnerships	✓ 14,000+ peering partners		
	Edge servers optimized for high throughput and low latency	✓		
Pricing	Favorable peering agreements for cost savings	✓		
	What's included	✓ 100+ PB traffic, 1 billion requests, 24/7 expert support, basic L3 and L4 DDoS protection, 100,000 image optimizations,		
	Competitive pricing without a brand premium or cutting corners	✓		
Security	DDoS protection to mitigate attacks that lead to downtime	✓		
	WAF and TLS encryption to ensure data integrity	✓		
	Access limited to authenticated and authorized users	✓		
Edge computing	High-performance runtime environment	✓ Wasm		
	Support for multiple programming languages	✓ Rust, JavaScript, and Go		
	Compatibility with third-party endpoints	✓ Including KV Store and edge databases		
Futureproofing	Continuous PoPs expansion	✓ 10 new PoPs in H1 2024		
	Regular addition of new peering partnerships	✓ 2,000+ new peering partners in 2023		
	Adoption of innovative technologies	✓ Including serverless computing, AI inference, and managed Kubernetes		

About Gcore CDN



Gcore offers next-generation CDN and edge solutions to meet your static and dynamic content delivery needs at any scale. With 180+ points of presence strategically distributed across six continents, your customers can experience fast, powerful content delivery no matter where in the world they're located. Gcore CDN comes optimized for video streaming, image delivery, and security, delivering exceptional online experiences for all content types.

[Discover Gcore CDN](#)

[Talk to an expert](#)

About Gcore

Gcore is a global edge AI, cloud, network, and security solutions provider. Headquartered in Luxembourg, with a team of 600 operating from ten offices worldwide, Gcore provides solutions to global leaders in numerous industries. Gcore manages its global IT infrastructure across six continents, with one of the best network performances in Europe, Africa, and LATAM due to the average response time of 30 ms worldwide. Gcore's network consists of 180 points of presence worldwide in reliable Tier IV and Tier III data centers, with a total network capacity exceeding 200 Tbps.

gcore.com