

Lumen[®] Content Delivery Network

Global CDN with an edge

As one of the largest CDNs in the world, the Lumen Content Delivery Network enables fast and reliable media, downloads, video streaming, and full-site delivery to internet users around the globe. That's why many leading media companies, gaming companies and ecommerce sites rely on our vast capacity, programmable edge and proven customer service to grow their businesses.

Lumen CDN features software-defined networking, automated healing, and optimized network routing. We help reduce reliance on third-party infrastructure for high performance and low latency.

With a complete portfolio of technologies and strong ecosystem partners, Lumen offers solutions across the glass-to-glass media workflow, thus helping to ensure low latency throughout the delivery chain.

Benefits

High performance

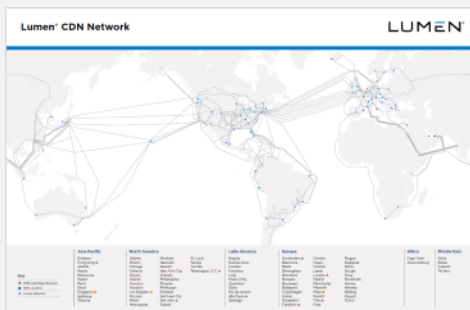
Optimize your delivery from the network core to the user device. Architected into our vast IP backbone, the Lumen CDN leverages strong ISP peering relationships and advanced edge caching to deliver exceptional user experiences.

Global reach

Bring content closer to users with 170 Tbps of server capacity in 40 countries and an ever-expanding global footprint to power your current and future delivery needs.

Personalized service

Satisfy your business' unique needs with do-it-yourself configurations and APIs or enlist white-glove support from our dedicated solutions architects to execute your high-profile events.



Lumen CDN Network map:

[Click here to view in browser.](#)

Features and capabilities

Low latency live streaming

Lumen supports low latency video delivery in HLS and MPEG-DASH for OTT providers seeking to offer broadcast-quality live streaming to their end users. and is further enhanced by the Lumen CDN services being architected directly into our core IP backbone.

Flexible software-based origin shield

For customers who have their own origin, Lumen origin shield protects your digital properties and reduces your origin egress costs by funneling requests through a select set of highly secure Lumen servers. These servers can handle the brunt of any attack or traffic peak without affecting performance. Meanwhile, your properties can be configured to only accept traffic from Lumen servers, effectively dropping all attack traffic directed at the origin.

New modern API and UI

Configuration Management v3 is Lumen CDN's latest API and UI. This new era for the Lumen CDN brings a brand new UX built on a modern stack, simplified RESTful API endpoints, and expanded configuration capabilities. Improvements include:

- **Speed and autonomy:** 100% autonomy to manage the configuration lifecycle.
- **Modern UX:** An entirely redesigned user interface replaces the Media Portal.
- **Improved API experience:** endpoints designed for ease of use, easily discoverable via documentation, OpenAPI specification and UI.
- **Go live easily:** staged activation to safely deploy configurations on a small percentage of your traffic.

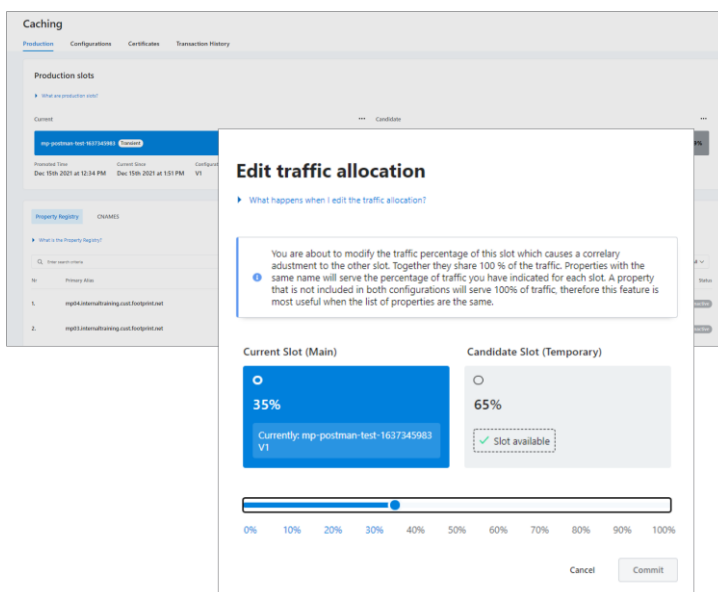
Resiliency & investment

Lumen is always adding new points of presence to our global footprint. POPs in key growth regions such as the Middle East and Oceania have solidified our global network. TCP protocol optimization and localisation techniques promote optimized routing.

Meanwhile, our network architects constantly reinforce the resiliency of our infrastructure through staged code deployment, staged configuration deployment, filtered data changes, and fast cancel/undo.

HTTP 3 / QUIC support

Lumen CDN supports HTTP/3 over QUIC for end-user connections on supported devices and platforms. Use cases include most CDN applications including delivery of manifests and media fragments for HTTP-based live and VOD streaming, as well as large and small object delivery (software and game downloads, static and dynamic web content, images, CSS, JavaScript, etc.).



Technical specifications

Capability	Details
Delivery protocols	<ul style="list-style-type: none">• TCP optimizations for small and large object transfer• HTTP/2, HTTP/3 and QUIC (technical preview); IPv6• Optimized traffic localization and routing
Network resiliency & performance	<p>Architecture</p> <ul style="list-style-type: none">• 2400+ edge servers in 95 POPs for 170 Tbps total delivery capacity• Strategic server placement within IP backbone at key peering points; deep edge caching within ISPs• Advanced peering control as Tier 1 provider to help ISPs correct routing issues• Tiered architecture reduces load and cost of edge server caching• Edge clustering, popularity-based caching, and request collapsing for enhanced cache efficiency• Rate limiting options to help ISPs better manage large software download events <p>Reliability & redundancy</p> <ul style="list-style-type: none">• Staged code deployment: network updates are rolled out in progressive network rings for early detection of anomalies while reducing overall risk.• Configurations stored locally on edge nodes in the event of control plane failure• 24/7 regional and global NOCs; local language support
Caching	<p>Standard caching</p> <ul style="list-style-type: none">• Origin: native origin service or bring your own• Origin failover: balance traffic between multiple origins• Robust connectivity into public cloud origins• Security: SSL certificate management, standard TLS 1.3, TLS shared cert, Let's Encrypt• Access control: geo-blocking, token authentication, cloud authentication, proxy and VPN detection• Purge control: self-service UI and API for invalidations; less than 60 second global propagation delay• Support for modern HTTP features (e.g. chunked transfer encoding (CTE), range requests)• Image optimization• Object pre-fetch to reduce stream rebuffering and improve video QOS <p>Advanced caching</p> <ul style="list-style-type: none">• Flexible, software-based origin shield• Configuration features and Lumen expression language to control cache rules and expiration• Lua edge scripting engine to support custom logic (e.g. custom token schemes)
Origin	<ul style="list-style-type: none">• Rapid time to first byte with high-speed egress to the Lumen CDN via wholly owned IP network• Resiliency across three storage devices or facilities, backed by 99.999 percent uptime SLA• Built-in data integrity mechanisms and self-repair• Secure data with redundant network paths, direct connection to Lumen CDN, and encrypted data transfer• Dynamic origin failover: Custom configuration on the Lumen CDN to ingest content from multiple origin locations for failover or from multiple origin redirects
Media-specific features	<ul style="list-style-type: none">• Support for industry-standard HTTP-based streaming protocols for live and VOD• Native support for low latency MPEG-DASH and HLS• End-to-end video workflow support with acquisition via Vyvx[®] Broadcast Solutions and Media Transformation (including encoding, packaging, DRM, closed captioning, ad insertion, etc.)

Technical specifications

Capability	Details
Security	<ul style="list-style-type: none">• Defense in depth through layer 3 and 4 DDoS combined with layer 7 application security• Deeply peered global backbone as the first line of defense to mitigate attacks directly at the network level• Volumetric DDoS protection leveraging 15 global scrubbing centers, 9 SOCs and the Lumen threat intelligence arm, Black Lotus Labs®• Next-generation WAF, API protection and bot risk management (BRM) orchestrated across the Lumen CDN• Ecosystem approach leverages best-of-breed partners – ThreatX, Wallarm, Radware – so businesses can choose the solution that corresponds to their security challenges today and tomorrow
Self-service / usability	<ul style="list-style-type: none">• New self-service configuration via API and UI• Staged activation: introduce live configurations to an incrementally increasing percentage of traffic (based on the Canary method)• SRE processes and integration of our support teams into your DevOps systems
Access control	<ul style="list-style-type: none">• Geographic: prevent deliveries to specific geographies around the globe; standard geographic filters can be specified for country code• Token authentication: verify that requests to access or obtain content are coming from an authenticated source<ul style="list-style-type: none">• Standard implementation based on HMAC-SHA1; custom token implementation upon request• Proxy authentication: process cookie, HTTP, and query-string validation requests with authentication servers external to the Lumen CDN (custom)• Header authentication: allow, block or redirect requests based on any header value• Referrer blocking: allow, block or redirect requests from specific referring URL addresses (upon request)• IP/CIDR: allow, block or redirect requests from specific IP addresses or Classless Inter-Domain Routing Blocks• Response code redirects: allow, block or redirect requests based on the value of HTTP response codes
Service optimization & management	<p>Dynamic cache optimization</p> <ul style="list-style-type: none">• Customize query string parameters to improve site speed and performance.• Control content cached at edge and enhance content availability via various TTL options, serving stale content based on custom conditions and cache policy optimization.• Save bandwidth costs and realize origin offload attributes including MIME, path, path extension, Cache-Control header override and Vary header. <p>Request manipulation</p> <ul style="list-style-type: none">• Create auto-generated response template to be used instead of the one provided by the cached resource or the origin• Return the full resource instead of an HTTP error when a client range request is out of range• Override request or response headers• Change the URI for further processing <p>Log file collection: CDN request logs delivered to the origin storage platform</p> <ul style="list-style-type: none">• Format: W3C, compressed in GNU zipped• Archive frequency: processed and delivered within two hours• Populate custom fields in the log with specific data• Report some requests separately within a single property

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