

MakCDN – Next Generation Global CDN

MakCDN is one of the world's smartest, multimedia- and mobile- optimized, next-generation global content distribution network (CDN). Using MakCDN, users can architect next-generation highly-available highly-redundant global-scale services today. MakCDN deploys smart CDN edge servers at some of the most strategic locations around the globe. The MakCDN IPv6-and-SSL enabled global CDN server infrastructure spans three continents today with the potential to scale the CDN server infrastructure to virtually anywhere – any continent – any country – any region – that is, scale the CDN to virtually unlimited points of presence around the globe. MakCDN derives its “intelligence” from MakDNS – an IPv6-enabled highly-scalable highly-redundant authoritative global DNS infrastructure enabling state-of-the-art DNS features including geographical load balancing, geo-directional Internet Protocol traffic control and transparent traffic mobility, industry's fastest name-based auto-failover and auto-recovery, industry's first name-based 'stealth' hot-standby services, IP-based remote service monitoring and email/SMS alert and notification services, plus an IPv6-enabled and DNSSEC compliant Distributed DNS infrastructure. All of these technically advanced next-generation features are already available and built into MakCDN.



Makani MakCDN - World's smartest next-generation Global CDN

Global Content Distribution Network (CDN) with unlimited scale potential

MakCDN deploys smart CDN servers at some of the most strategic locations around the globe. The MakCDN global CDN server infrastructure spans three continents today with the potential to instantly scale the CDN server infrastructure to virtually anywhere – any continent – any country – any region – that is, scale the CDN to virtually unlimited points of presence around the globe. MakCDN offers a geographically distributed CDN with the potential of enabling the fastest web object downloads and serving tens or even hundreds of billions of WWW requests per day.

MakCDN Builds on MakDNS – World's smartest distributed DNS service

MakCDN is backed up by MakDNS – the world's smartest distributed DNS service. Using MakDNS enables state-of-the-art next generation DNS features including geographical load balancing, geo-directional Internet Protocol traffic control and transparent traffic redirection and management services, industry's fastest name-based server auto-failover and auto-recovery, industry's first name-based 'stealth' hot-standby services, IP-based remote server and service monitoring and email/SMS alert and notification, plus an IPv6-enabled and DNSSEC compliant Distributed DNS infrastructure. MakCDN today is already backed up by these highly advanced next-generation DNS services.

Highest Quality CDN Service with Lowest Total Cost of Operation and Ownership

MakCDN implements a unique architecture whereby tens or or even hundreds of thousands of CDN servers can be deployed in a short span of time. These servers can be remotely monitored and managed with relative ease through a centralized web-based administration panel. Additionally, MakCDN architecture completely decouples the underlying infrastructure vendors from on-the-top cloud services providers. Such decoupling of services from the infrastructure vendors enables MakCDN to leverage the highest quality hardware at the lowest operational cost and at the lowest total cost of ownership without ever compromising on the overall service quality. Finally, MakCDN leverages the highest quality and the most well-trained professionals from the most cost-efficient locations to manage its global infrastructure. This translates into significant cost benefits that are then continually passed on to the MakCDN users.

High Performance Edge Caching slashes bandwidth usage by 40-70%

MakDNS enables high performance edge caching CDN servers to copiously cache web content. The MakCDN consists of high performance well-provisioned CDN edge servers often hosted in either Tier-I or Tier-II data-centers offering highly-redundant multi-gigabit network connectivity. As soon as MakCDN users enable web object caching for their domain through a centralized web-based administration panel, MakCDN edge servers immediately begin caching static web objects such as videos, images, static scripts, documents, text, etc. for that domain. The MakCDN edge servers then source the requested domain content from its edge server caches directly to end-users. In case a static object cached in the edge server expires, the object is automatically re-validated on-demand from the origin servers on users' request. Intelligent caching performed by MakCDN edge servers cuts bandwidth consumption by 40%-70%, dramatically reduces the web-page download time, improves the end-user experience by optimizing bandwidth and by reducing latency, and significantly reduces the load on the origin servers.

Global CDN with no single point of failure

MakCDN implements a highly-redundant highly-available architecture for its global content delivery network. The MakCDN system is such designed that it can withstand multiple server or data center failures using multiple levels of failover modes made possible by its highly intelligent MakDNS distributed DNS service. In the first level, MakCDN enables "active" DNS records whereby end-users of a given region are provided with multiple IP addresses (often from MakCDN edge servers hosted in different data-centers of that region) corresponding to an active or primary DNS record. If the primary server (i.e., its IP address) fails or malfunctions, then DNS records using the failed IP address are immediately deactivated by MakDNS. In the second level, IP addresses of the standby DNS records take over for the IP addresses of any failed active DNS records. Dynamic IP address mapping implemented within MakCDN ensures that IP addresses of "standby" records will belong to the same region or a region close by as those of the IP addresses of the failed primary/active DNS records. The final level of auto-failover is triggered only if the first and second level of auto-failover does not work. Therefore, in the final level, standby DNS records with IP addresses from an entirely different region (that is, a different country or a different continent) take over for IP addresses of the failed DNS primary/active records. While any number of "standby" records can be defined for each active DNS record, the total number of standby records for each active DNS record is limited only by the sum total of CDN servers used in MakCDN. The MakCDN infrastructure and its auto-failover mechanism is designed to be fully automated and requires minimal human intervention.

Global Load Balancing for Web Services with MakCDN

MakCDN enables intelligent distribution of compute-intensive, bandwidth-intensive, and latency-intensive workload functions across a number of data-centers located around the globe. This helps MakCDN users to scale their domain name-based web services to unprecedented levels. In addition, by geographically scaling web services around the globe, MakCDN also ensures that cascaded data-center failures and outages or even routing anomalies in a few data-centers potentially emanating due to competing national, economical, technical, political or even environmental factors will have no significant adverse impact on MakCDN users' global-scale domain name-based web services.

Fine-grained Traffic Control and Transparent Traffic Redirection

MakCDN exploits network-wide intelligence using MakDNS – the world's smartest distributed DNS service. MakDNS continuously collects and disseminates application-level, session-level, transport-level, and network-level intelligence, in real-time, from a number of monitor nodes located around the globe. These nodes continuously monitor MakCDN edge servers thereby enabling MakDNS to collect fine-grained network-wide intelligence from CDN edge servers located around the globe. By using this intelligence, MakDNS enables MakCDN to dynamically control, customize, or even transparently redirect Internet Protocol traffic for highly optimized access to global-scale CDN services. In contrast to other CDN solutions that are dependent on the often unpredictable and sluggish nature of routing-level (i.e., anycast) updates, MakCDN exploits network-wide intelligence available from multiple protocol layers from its CDN servers to make highly informed decisions on the state of its own content network. This translates into highly-optimized global-scale CDN services.

Mobile and Multimedia Optimized CDN

The MakCDN infrastructure has been designed from the ground-up to be able to scale to hundreds or even thousands of terabits per second of aggregate bandwidth capacity and unprecedented levels of compute capacity necessary for next-generation compute-intensive and data-intensive wide-area services. The existing infrastructure consists of high performance well-provisioned edge servers hosted in either Tier-I or Tier-II data-centers offering highly-redundant multi-gigabit network connectivity. The strategic locations of these edge servers dramatically help improve the end-user experience by optimizing on wide-area bandwidth and by reducing latency. MakCDN edge servers are designed to cache as well as stream all types of static content including FLV and MP4 videos. The expiry time of the cached web objects in MakCDN edge servers is controlled by the web caching level selected by the MakCDN user; in case the web object expires in the edge server cache then the object is automatically re-validated on-demand from the origin servers based on users' request. Such intelligent caching dramatically improves end-user experience, reduces unnecessary round-trips, eliminates wasteful bandwidth usage, and most importantly, frees up resources at the origin servers.

Latency and Congestion Optimization using Location-aware Georecords

Georecords are DNS records that enable location-aware access to domain name-based services. MakCDN makes use of hierarchical, custom DNS Georecords that operate depending on the location of the source IP address available from the DNS query. For instance, Continent-level records, called Geo-continent records, operate at the continent level. Geo-country DNS records operate at the country level whereas Geo-region records operate at the region level of a country. By utilizing fine-grained, location-aware abstraction of DNS records using Georecords, MakCDN creates highly-optimized highly-redundant highly-available location-aware CDN services.

DDoS-attack Avoidance using Dynamic Server Rotation and Obfuscation

Because MakCDN enables CDN edge servers to be deployed at virtually unlimited points of presence, these CDN edge servers are randomly rotated at specific intervals for domains hosted with MakCDN. Such periodic and automatic renewal of servers from a large numbers of available edge servers obfuscates the server IP address and the location of the IP address and therefore makes it very difficult for an adversary to launch a full-blown DDoS attack on domains hosted with MakCDN. The effects of such DDoS attacks are only highly localized because MakCDN hosts a large number of edge servers around the globe. The domains hosted with MakCDN and under attack are continually monitored and domain traffic migrated immediately to edge servers located in a different region, country, or continent in order to alleviate the effects of such attacks.

Secure Socket Layer (SSL) Offload and IPv6-enabled Global CDN Servers

The MakCDN infrastructure consists of high performance well-provisioned edge servers that enable hardware-assisted SSL (Secure Socket Layer) acceleration and many of these edge servers also support IPv6 through a mix of tunneled-brokered and native-IPv6 connectivity. MakCDN offers users the ability to offload SSL connections for their domains to MakCDN edge servers, and thus free up precious system resources (both bandwidth and computation) at the origin servers. Users upload valid domain name server certificate and private key using the centralized administration panel (MakAdmin). This domain specific SSL information is immediately disseminated across all the MakCDN edge servers located around the globe, and this effectively enables SSL for the users' hosted domains with MakCDN.

24x7 Remote Infrastructure Monitoring and Instant E-mail/SMS Alerts

Each MakCDN edge server is continuously remotely monitored by monitor nodes with MakDNS. For each remotely monitored CDN edge server, E-mail/SMS alert notification is also enabled to quickly notify of any service failure or recovery. In addition to standard services that are remotely monitored such as HTTP and HTTPS, non-standard services and custom TCP ports and UDP ports also monitored in MakCDN to derive detailed network-wide intelligence for MakCDN. The intelligence available from multiple protocol layers from its CDN edge servers is then used to make highly informed decisions on the state of its own content network.



Makani offers high-performance, easy-to-use and technically innovative solutions for next-generation wide-area networked data services. Makani Enhancers™ are deployed for wide-area data acceleration and optimization. Makani Mobilizer™ appliances are deployed in the customer's network for blazing-speed data access over a wide-range of access networks. Makani MakDNS™ is a technically-advanced next-generation Distributed DNS service. Makani MakCDN™ is one the world's smartest, multimedia- and mobile- optimized, next-generation global content distribution network. Founded in 2006, Makani is headquartered in San Francisco with regional offices all over the world.