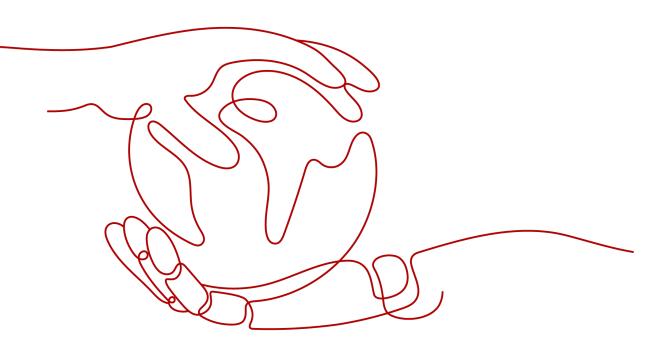
CDN

Service Overview

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What Is Huawei Cloud CDN?

Content Delivery Network (CDN) is a smart virtual network on the Internet infrastructure. CDN caches origin content on points of presence (PoPs) closer to users, so content can load faster. CDN speeds up site response and improves site availability. It breaks through the bottlenecks caused by low bandwidth, heavy access traffic, and uneven distribution of PoPs.

Huawei Cloud CDN caches origin content on PoPs across the globe. Users can get content from the nearest PoPs instead of from the origin server far away from them. This reduces latency and improves user experience. Using preset policies (including content types, geological locations, and network loads), CDN provides users with the IP address of a PoP that responds the fastest. Users get the requested content faster than would have otherwise been possible. For details about how to connect to Huawei Cloud CDN, see Getting Started.

Huawei Cloud CDN has over 2,000 PoPs in the Chinese mainland and over 800 PoPs outside the Chinese mainland. The network-wide bandwidth reaches 180 Tbit/s. The PoPs are connected to the networks of top carriers in China such as China Telecom, China Unicom, China Mobile, and China Education and Research Network (CERNET), as well as many small- and medium-sized carriers. CDN covers more than 130 countries and regions. It deploys PoPs on networks of over 1,600 carriers. CDN schedules user requests to the most appropriate PoPs, accelerating content delivery.

Things You Need to Learn About CDN

Reference	Description
Basic Concepts	Common concepts you need to know when using CDN
Progressive Knowledge	CDN knowledge for both beginners and experts
API Reference	APIs that you can call to perform operations like you do on the CDN console

See the following documents to learn how to use CDN.

Reference	Description
Getting Started	Quick guide to accessing a domain name to CDN for acceleration
Domain Name Management	Instructions to domain name management in CDN
Domain Name Settings	Instructions to domain name settings in CDN
Cache Purge and Prefetch	Instructions to cache purge and prefetch in CDN

CDN Pricing

You can choose to be billed by traffic or bandwidth. For details, see **Pricing Details**.

By Traffic

- You can be billed by the traffic used per hour.
- You can buy a CDN traffic package to get more savings.

By Bandwidth

You can choose to be billed by peak bandwidth, 95th percentile bandwidth, or daily average peak bandwidth.

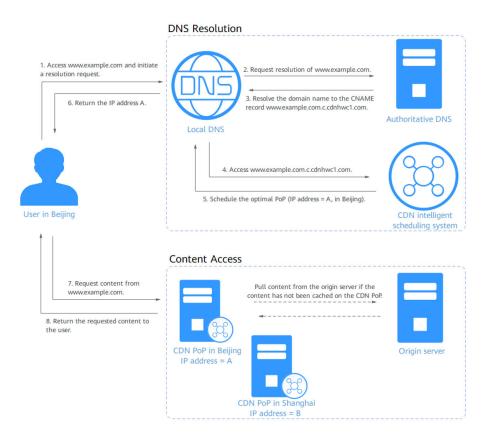
NOTE

Billing by 95th percentile bandwidth and by daily average peak bandwidth are only available for customers who have a budget of more than \$15,000 USD for CDN each month. If you are this type of customers, **submit a service ticket** or contact customer service to apply for it.

For details, see **Billing Items**.

2 How CDN Works

When a user accesses a website that uses CDN, the local DNS server redirects the request to CDN using a CNAME record. Then, CDN calculates the PoP that responds the fast based on preset rules (including content types, geological locations, and network loads), and sends the PoP IP address to the user. With CDN, the user gets the requested content faster. The HTTP request process varies based on whether the CDN PoP has the desired content.



The HTTP request processes are as follows:

- 1. A user enters the domain name of a website (for example, www.example.com) in the browser. The browser sends a DNS request to the local DNS server.
- 2. The local DNS checks whether its cache includes the IP address of www.example.com. If yes, the local DNS returns the cached information to the user. If no, the local DNS sends a resolution request to the authoritative DNS.
- 3. The authoritative DNS resolves the domain name. The domain name points to www.example.com.c.cdnhwc1.com (CNAME record of the domain name).
- 4. The local DNS redirects the request to the CDN service.
- 5. CDN performs intelligent domain resolution. It provides the user with the IP address of the CDN PoP which responds the fastest.
- 6. The user's browser obtains the IP address of this CDN PoP.
- 7. The user's browser sends the access request to this CDN PoP.
 - If this CDN PoP has cached the content, it sends the desired resource to the user and ends the request.
 - If this CDN PoP has not cached the content, it sends a request to the origin server to pull the content. CDN caches the origin content on this CDN PoP based on custom cache policies. Then, the PoP sends the desired content to the user and ends the request. For details about how to configure a cache policy, see Cache Rules.

3 PoP Distribution

Huawei Cloud CDN has over 2,000 PoPs in the Chinese mainland and over 800 PoPs outside the Chinese mainland. The network-wide bandwidth reaches 180 Tbit/s. It covers more than 130 countries and regions, connecting to over 1,600 carrier networks. CDN schedules user requests to the most appropriate PoPs, accelerating content delivery.

PoP Distribution in the Chinese Mainland



Geographic Region	PoP Distribution
North China	Beijing, Tianjin, Shanxi, Hebei, and Inner Mongolia Autonomous Region
East China	Shanghai, Jiangsu, Zhejiang, Anhui, Jiangxi, Shandong, and Fujian
Central China	Henan, Hubei, and Hunan
South China	Guangdong, Hainan, and Guangxi Zhuang Autonomous Region

Geographic Region	PoP Distribution
Northwest China	Shaanxi, Gansu, Qinghai, Ningxia Hui Autonomous Region, and Xinjiang Uygur Autonomous Region
Southwest China	Chongqing, Sichuan, Guizhou, Yunnan, and Tibet Autonomous Region
Northeast China	Heilongjiang, Jilin, and Liaoning

PoP Distribution Outside the Chinese Mainland



Geographic Region	PoP Distribution (Divided Based on Huawei's Internal Businesses)				
Asia	Hong Kong (China), Macao (China), Taiwan (China), Japan, South Korea, Vietnam, India, Indonesia, Thailand, Philippines, Singapore, Malaysia, Cambodia, Laos, Kyrgyzstan, Brunei, Myanmar, Nepal, Bangladesh, Mongolia, Sri Lanka, Kazakhstan, Georgia, Armenia, Uzbekistan, Cyprus, and Azerbaijan				
Europe	United Kingdom, Germany, France, Netherlands, Spain, Italy, Ireland, Sweden, Belgium, Austria, Poland, Romania, Belarus, Portugal, Türkiye, Moldova, Bulgaria, Latvia, Switzerland, Czech Republic, Hungary, Luxembourg, Greece, Croatia, Serbia, and Finland				

Geographic Region	PoP Distribution (Divided Based on Huawei's Internal Businesses)		
Middle East and Africa	United Arab Emirates, Saudi Arabia, Pakistan, Qatar, Oman, Kuwait, Bahrain, Iraq, South Africa, Egypt, Kenya, Tanzania, Madagascar, Djibouti, Mauritius, Ghana, Angola, Nigeria, Jordan, Yemen, Israel, and Senegal		
North America	United States, Canada, and Mexico		
Oceania	Australia, New Zealand, and Fiji		
South America	Brazil, Chile, Argentina, Peru, Colombia, and Ecuador		

4 Advantages

Global Network

Get content delivered from 2,800+ PoPs from popular carriers in six continents. Bandwidth reaches 180 Tbit/s network-wide.

Precise Scheduling

Enhance user access experience with accurate, evolving IP geolocation database and dynamic PoP adjustment.

Ease of Use

Configure domains with CDN in several steps, customize them on the console, and call open APIs for app integration and cross-cloud management.

High-Performance Cache

Improve cache hit ratio and shorten access queues with proprietary AICache, multi-level cache scheduling, and fast, massive SSD storage.

Security

Protect your resources with network-wide HTTPS transmission, anti-leeching, referer validation, URL validation, and access control.

Refined Management

Stay on top of your services by analyzing statistics about access, package quota, and traffic, and tracking offline logs.

5 Application Scenarios

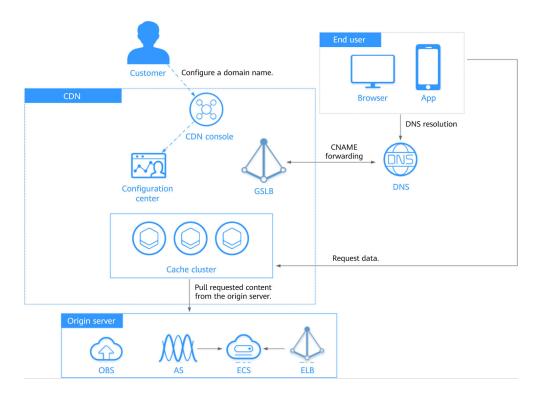
Overview

Huawei Cloud CDN provides the following four types of services:

Service Type	Scenario
Website acceleratio n	Web portals, e-commerce platforms, news apps, and user generated content (UGC)-focused apps. CDN can speed up distribution of static content such as images and small files.
Download acceleratio n	Download clients, game clients, app stores, and websites that provide download services based on HTTP or HTTPS
On- demand service acceleratio n	On-demand video/audio services, such as online education websites and video sharing websites
Whole site acceleratio n	Websites with dynamic and static content and sites with abundant ASP, JSP, or PHP requests

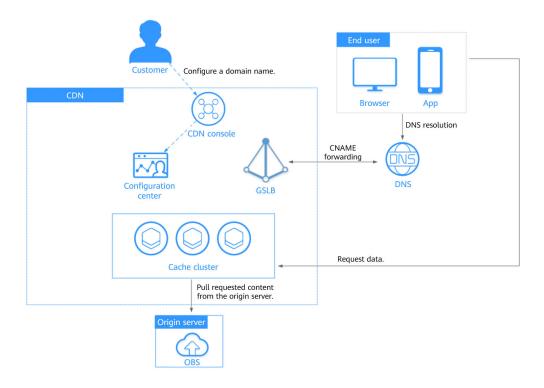
Website Acceleration

CDN is perfect for web portals, e-commerce platforms, news apps, and user generated content (UGC)-focused apps. It can speed up distribution of static content such as images and small files. It provides excellent acceleration for **static content** associated with acceleration domain names. It allows you to customize cache policies for caching content on CDN PoPs. CDN can cache ZIP, EXE, WMV, GIF, PNG, BMP, WMA, RAR, JPEG, JPG files and more.



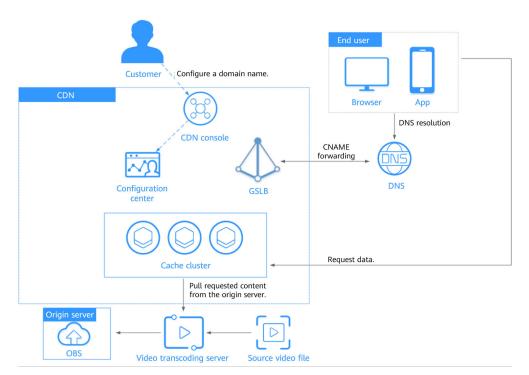
Download Acceleration

CDN is useful for download clients, game clients, app stores, and websites that provide download services based on HTTP or HTTPS. An increasing number of new services need to update software in real time. Conventional download services need to provide even more and larger downloads. If origin servers have to handle all these requests, it places tremendous strain on these servers and results in bottlenecks. CDN can distribute content to PoPs, ease the pressure on origin servers, and speed up downloads.



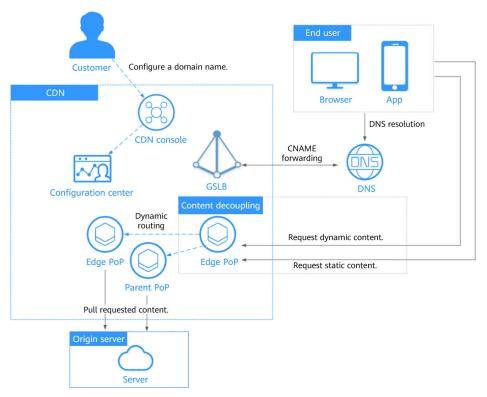
On-Demand Service Acceleration

For customers providing on-demand audiovisual services, CDN is a must. Such ondemand services include online education, video sharing, and music/video on demand. Conventional on-demand services put a heavy load on servers and consumes great bandwidth. Low-speed services compromise user experience. CDN can deliver content to all PoPs. It ensures fast, reliable, and secure acceleration for such services. Users are then able to get that content from nearby PoPs anywhere and anytime.



Whole Site Acceleration

CDN is a good option for websites that consist of both dynamic and static content and for sites with abundant ASP, JSP, or PHP requests. Whole site acceleration accelerates both dynamic and static content. It serves static content from nearby PoPs and pulls dynamic content via the fastest possible route. As such, clients can load dynamic pages faster by bypassing congested routes.



6 Performance Metrics

CDN provides stable acceleration and relieves pressure on origin servers. You can view performance metrics before and after CDN is used to check the acceleration effect.

Common Metrics

The following table lists CDN common metrics.

Metric	Description				
Latency	Total time required for uploading or downloading a file.				
Packet loss rate	Ratio of the number of lost packets to the number of sent packets.				
Origin pull ratio	This ratio includes the origin request rate and pull traffic rate.				
	 Origin request ratio = Requests with cache misses/All requests on CDN PoPs. Requests with cache misses include requests that are not cached, have expired (cacheable), or cannot be cached. 				
	 Pull traffic ratio: Origin traffic is generated when CDN PoPs request content from origin servers. Pull traffic ratio Pull traffic/(Pull traffic + Traffic generated by user requests). A lower ratio indicates a better performance. 				

Metric	Description
Cache hit ratio	Cache hit ratio includes request hit ratio and traffic hit ratio. A higher cache hit ratio indicates a better performance.
	 Cache hit ratio = Number of requests that hit caches/ Number of total requests
	 Traffic hit ratio = Traffic generated when CDN PoP caches are hit/Total request traffic Total request traffic = Traffic generated when CDN PoP caches are hit + Traffic generated during origin pull
	NOTE The traffic hit ratio indicates the load on the origin server. A lower traffic hit ratio means a larger origin pull traffic, which leads to a larger output traffic and higher bandwidth consumption on the origin server.

NOTE

- When CDN is used, the latency, packet loss rate, and origin pull ratio decrease, whereas the cache hit ratio increases. However, the acceleration performance varies between service scenarios and types, even if the CDN configuration is the same. Therefore, this topic provides only qualitative indicators for your references.
- If you do not use CDN, the origin pull ratio is 100% and the cache hit ratio is 0.

Acceleration Case

This test uses the universal test method in the industry. The service provider is Tingyun. Test objects are Huawei Cloud OBS buckets and Huawei Cloud CDN. Test carriers are China Unicom and China Telecom.

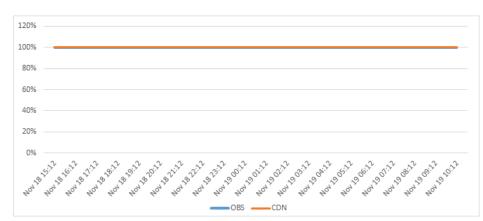
Latency

Unit: second



• Availability

The availability of OBS buckets and CDN is 100%.



• Detailed data

Time	OBS			CDN		
	Latency (s)	Availabilit y (%)	Number of Monitorin g Sites	Latency (s)	Availabilit y (%)	Number of Monitorin g Sites
Nov 18 15:12	1.149	100	57	1.227	100	62
Nov 18 16:12	1.075	100	167	0.616	100	169
Nov 18 17:12	0.867	100	172	0.433	100	171
Nov 18 18:12	0.7	100	169	0.321	100	169
Nov 18 19:12	0.94	100	173	0.534	100	173
Nov 18 20:12	1.119	100	176	0.765	100	176
Nov 18 21:12	0.841	100	175	0.609	100	176
Nov 18 22:12	0.983	100	181	0.682	100	180
Nov 18 23:12	0.923	100	173	0.58	100	174
Nov 19 00:12	1.08	100	184	0.737	100	184
Nov 19 01:12	1.147	100	180	0.812	100	178
Nov 19 02:12	1.29	100	181	0.853	100	183
Nov 19 03:12	1.041	100	177	0.617	100	176
Nov 19 04:12	1.339	100	184	0.997	100	184
Nov 19 05:12	1.035	100	179	0.74	100	179
Nov 19 06:12	0.865	100	180	0.566	100	181
Nov 19 07:12	1.258	100	176	1.071	100	175
Nov 19 08:12	1.338	100	170	0.878	100	170
Nov 19 09:12	1.085	100	155	0.705	100	155

Nov 19 10:12	1.213	100	168	0.822	100	169

CDN

Service Overview

6 Performance Metrics

7 Basic Concepts

• Static Content

Static content is the same every time it is delivered to users. It includes images, videos, HTML, CSS, and JS files on websites, software installation packages, APK files, and compressed packages.

• Dynamic Content

Dynamic content changes every time it is served to users. It includes ASP, JSP, PHP, PERL, and CGI files on websites, APIs, and database interaction requests.

• Acceleration Domain Name

Acceleration domain names are provided by you for CDN acceleration. A domain name is an identification string that defines a realm of administrative autonomy, authority, or control within the Internet, such as a website, an email address, or an FTP server.

CNAME Record

A Canonical Name record (CNAME record) is a type of resource record in the Domain Name System (DNS) that maps one domain name (an alias) to another (the canonical name).

Example:

- a. You have a server that stores some files. You can access the files through **file.example.com**, but you want to access them through **data.example.com**.
- b. Add a CNAME record to your domain's DNS records so that **data.example.com** points to **file.example.com**.
- c. After the CNAME record has been added, all requests for data.example.com will be redirected to file.example.com, and users can get the same content.

• CNAME

On the CDN console, after a domain name is added, the system will assign a CNAME (in the form of ***.*.c.cdnhwc1.com**) to the domain name. Then, add this CNAME to your domain's DNS records and point the domain name to it. After the CNAME record takes effect, all the requests for your domain name will be redirected to CDN PoPs.

• Origin Server

An origin server is the customer's service server, the source of the data accelerated for delivery.

• Domain Name Service (DNS)

DNS translates human readable domain names into IP addresses. With DNS, users can access servers using their assigned domain names.

For example, when you access xxx.abc.com, the domain name is converted into xxx.xxx.1.1 (an IP address) through DNS. You can use Huawei Cloud DNS or a DNS service from other providers.

• Point of Presence (PoP)

PoPs are also known as CDN nodes or cache nodes, which users need the fewest intermediate steps to connect to. Compared with other nodes, PoPs provide users with faster response and connection.

• Origin Pull

If a CDN PoP does not cache origin content or if cached content has expired, the CDN PoP obtains the requested content from the origin server and returns it to the client.

For example, if you access a URL and the CDN PoP does not cache the content, your request will be sent to the origin server and a response will be returned based on the URL.

Host

The origin server determines the IP address of the origin server that an origin pull request is sent to. The host determines which site the origin pull request is sent to.

Example 1: If the origin domain is www.origin.com but the host is www.abc.com, origin pull requests actually go to www.abc.com.

Example 2: If the origin IP address is 192.168.1.1 but the host is www.abc.com, origin pull requests actually go to www.abc.com.

• SSL/TLS

Secure Sockets Layer (SSL) is a cryptographic protocol designed to provide communications security over a computer network. Transport Layer Security (TLS) is an improved version of SSL and has now replaced SSL.

URL Parameter Filtering

Enable this configuration item based on your service needs, to filter out parameters after the question mark (?) in a URL and improve the cache hit ratio.

8 Restrictions

The following table lists the restrictions on CDN.

 Table 8-1 Restrictions

ltem	Description				
Domain name	Chinese mainland				
admission	 Your HUAWEI ID has completed real-name authentication. 				
	 The domain name has been licensed by the Ministry of Industry and Information Technology (MIIT) and the Internet Content Provider (ICP) license is still valid. 				
	 The domain name has passed content moderation. 				
	Outside the Chinese mainland				
	 The domain name has passed content moderation. 				
	• Global				
	 You have completed real-name authentication on Huawei Cloud. 				
	 The domain name has been licensed by the Ministry of Industry and Information Technology (MIIT) and the Internet Content Provider (ICP) license is still valid. 				
	 The domain name has passed content moderation. 				

ltem	Description		
Content moderation	CDN does not support the access of websites that violate related laws and regulations, including but not limited to:Websites that contain pornographic content or content		
	related to gambling, illegal drugs, frauds, or infringement		
	Gaming websites that run on illegal private servers		
	Websites that provide pirated games/software/videos		
	P2P lending websites		
	Unofficial lottery websites		
	Unlicensed hospital and pharmaceutical websites		
	 Inaccessible websites or websites that do not contain any substantial information 		
	NOTE		
	 If your domain name content violates related laws and regulations, you shall bear the related risks. 		
	 If any pornographic content or content related to gambling, illegal drugs, or frauds is found on your domain name, the domain name and other domain names that use the same origin server will be deleted from CDN and can no longer access CDN. Acceleration domain name quota of the account will be reduced to 0. 		
Domain name quota	Quotas are enforced for service resources on the platform to prevent unforeseen spikes in resource usage. Quotas limit the number or amount of resources available to users. If an existing resource quota cannot meet your service requirements, submit a service ticket to increase the quota.		
	Number of domain names: 100.		
	Cache purge (file): 2,000 records/day.		
	Cache purge (directory): 100 records/day.		
	Cache prefetch: 1,000 records/day.		

Item	Description				
Acceleration domain name	• A domain name can contain up to 75 characters, including letters, digits, hyphens (-), and periods (.).				
	• You can add up to 100 domain names under each account.				
	• CDN does not allow access from websites containing illicit content. The existing domain names connected to CDN are reviewed regularly. If a domain name involves any violations, the CDN acceleration service will be suspended for the domain name and other domain names in your account.				
	• If a domain name has been in the Disabled or Rejected state for more than 120 days, CDN starts the domain name deletion process and deletes the domain name records after confirmation. If CDN acceleration is required for the domain name, add the domain name again.				
	• If a domain name has not been accessed for more than 180 days, CDN starts the domain name suspension process and disables CDN acceleration for the domain name after confirmation.				
	 If your account enters the retention period due to outstanding payments, CDN will disable services for your domain names and delete their CNAME resolution In this case, the domain names cannot be accessed. 				
	• If a site is attacked, CDN PoPs will bear the attack traffic. Therefore, the origin server will not break down. If CDN PoPs fail to provide services due to heavy attack traffic, CDN will temporarily ban the domain name, change its status to Disabled , and disable the acceleration service for it. CDN PoP resources are occupied during attacks. Therefore, related fees are generated.				
	An acceleration domain name must be unique.				
	• You can add a domain name including a wildcard (*). For example, if you add *.test.com to CDN as an acceleration domain name and have it resolved to the CNAME provided by CDN, all of the level-2 domain names under *.test.com , such as a.test.com , will enjoy CDN acceleration by default. However, level-3 domain names (such as b.a.test.com) would not.				
	 If you add a wildcard to a domain name for a particular account, you cannot add any of the level-2 domain names under that domain name to other accounts. 				
	 You will be billed for the acceleration service provided to all of the level-2 domain names under a 				

ltem	Description
	wildcard domain name. If there are multiple level-2 domain names, billing will be based on the traffic generated by the domain name with the wildcard, not on each of the level-2 domain names.
	NOTE When purging cache or prefetching content of a wildcard domain name, perform cache purge or prefetch for each subdomain name separately. The following is an example:
	A wildcard domain name *.a.com has subdomain names 1.a.com, 2.a.com, and 3.a.com.
	You need to enter http://1.a.com/abc.jpg instead of http://*.a.com/abc.jpg to refresh the cache of the image of a specific subdomain name.

Item	Description
Origin server	Add up to 50 origin servers for each acceleration domain name.
	• An origin server address contains up to 250 characters.
	• IP address
	 If an IP address is used as the origin address, CDN PoPs access the IP address directly to pull origin content.
	 Enter up to 15 IP addresses for the primary origin server.
	Domain name
	 You can enter only one origin domain here.
	 An origin domain cannot be the same as an acceleration domain name.
	 You can also enter the domain name of an object storage bucket.
	NOTE
	 If you want to use an object storage bucket from a non- Huawei Cloud service provider as your origin server, select Domain name for Origin Server Address and enter the domain name of the object storage bucket.
	• Private buckets cannot be used as origin servers.
	 If you use an object storage bucket as your origin server, the object storage service will charge the CDN origin pull traffic based on the billing standard for outgoing Internet traffic.
	• OBS bucket : You can select an OBS bucket under your account or enter the domain name of an OBS bucket. OBS charges the CDN origin pull traffic based on the billing standard for outgoing Internet traffic. If you set a bucket of OBS 3.0 or a later version as the origin server, you can purchase OBS pull traffic packages to deduct origin pull traffic. For details, see OBS Billing for CDN Acceleration .
	 If your OBS private bucket is unsuitable as an origin for your domain name, do not set the private bucket as the origin server.
	 If you enter a domain name of an OBS bucket, the origin domain name must end with .myhuaweicloud.com or .myhuaweicloud.cn.
	 If you use an OBS private bucket, enable OBS authorization and select the Private bucket checkbox. Otherwise, origin pull will fail.
	NOTE If you use CDN for the first time, you cannot set an OBS private bucket as the origin server when you add your first domain name. After adding the domain name, you can enable OBS authorization and then change the origin server to an OBS private bucket.

Item	Description
	 To use a custom OBS private bucket as the origin server, configure a policy for the private bucket. For details, see Configuring a Policy for a Custom OBS Private Bucket.
	 If you have enabled static website hosting for your OBS bucket, select the Static website hosting checkbox when adding a domain name. In this way, the list of all files in the bucket will not be displayed when users access the bucket.
Origin pull	• The default timeout interval of origin pull is 30s.
File	• File upload : You can upload a file with up to 300 MB to CDN. Traffic fees will be charged for file upload.
Request method	GET, PUT, POST, and DELETE.

9 Security

9.1 Shared Responsibilities

Huawei guarantees that its commitment to cyber security will never be outweighed by the consideration of commercial interests. To cope with emerging cloud security challenges and pervasive cloud security threats and attacks, Huawei Cloud builds a comprehensive cloud service security assurance system for different regions and industries based on Huawei's unique software and hardware advantages, laws, regulations, industry standards, and security ecosystem.

Figure 9-1 illustrates the responsibilities shared by Huawei Cloud and users.

- Huawei Cloud: Ensure the security of cloud services and provide secure clouds. Huawei Cloud's security responsibilities include ensuring the security of our IaaS, PaaS, and SaaS services, as well as the physical environments of the Huawei Cloud data centers where our IaaS, PaaS, and SaaS services operate. Huawei Cloud is responsible for not only the security functions and performance of our infrastructure, cloud services, and technologies, but also for the overall cloud O&M security and, in the broader sense, the security and compliance of our infrastructure and services.
- **Tenant**: Use the cloud securely. Tenants of Huawei Cloud are responsible for the secure and effective management of the tenant-customized configurations of cloud services including IaaS, PaaS, and SaaS. This includes but is not limited to virtual networks, the OS of virtual machine hosts and guests, virtual firewalls, API Gateway, advanced security services, all types of cloud services, tenant data, identity accounts, and key management.

Huawei Cloud Security White Paper elaborates on the ideas and measures for building Huawei Cloud security, including cloud security strategies, the shared responsibility model, compliance and privacy, security organizations and personnel, infrastructure security, tenant service and security, engineering security, O&M security, and ecosystem security.

Data security	Tenant Data	Customer-side data encryption & data integrity check Server-side encryption (Encryption/Integrity/identity) Tenant Application Services Custom Tenant Configurations Virtual networks, gateways, advanced protection, platforms, applications, data, identity management, key management, and more						
Application security	Huawei Cloud Application Services				, in the second s			Tenant IAM
	Services							
Platform security	Huawei Cloud Platform Services			Huawei Cloud IAM				
Infrastructure	laaS	Compute	Sto	rage Da	tabase	Networking		
security	Physical Infrastructure	Region		AZ		Edge		
Device security	Terminal Device Security							
Green: Huawei Cloud's responsibilities Blue: Tenant's response			nsibilities					

Figure 9-1 Huawei Cloud shared security responsibility model

9.2 Identity Authentication and Access Control

Identity authentication

You can access CDN through the CDN console, APIs, or SDK. Regardless of the access method, requests are sent through the REST APIs provided by CDN. You can access CDN APIs only after successful authentication. For details, see **Authentication**.

Access control

- CDN works with Identity and Access Management (IAM). IAM is a basic Huawei Cloud service. It provides permissions management to help you control access to CDN. With IAM, you can add users to a user group and configure policies to control their access to CDN resources. You can allow or deny access to a specific CDN resource in a fine-grained manner. For details about access permissions for CDN resources, see CDN Permissions Management.
- CDN supports **referer validation**. You can configure filter policies to filter out requests from specific access sources.
- CDN supports IP access control lists (ACLs). You can configure filter policies to filter out requests from specific IP addresses.
- CDN supports **User-Agent ACLs**. You can configure filter policies to filter out requests from specific proxies.
- CDN supports token validation. You can protect your site resources from malicious download.

9.3 Data Protection Technologies

Huawei Cloud CDN takes different measures to secure your data in CDN.

Measure	Description
Encrypted transmission	Huawei Cloud CDN supports HTTPS and HTTP/2 on the entire network. For details, see HTTPS Settings.
Certificate management	Huawei Cloud CDN supports batch SSL certificate configuration. For details, see Certificate Management.
Data consistency protection	When CDN PoPs send resource, CDN performs cyclic redundancy check (CRC) on the resources to prevent resource hijacking or tampering.
Data consistency verification	CDN allows you to create a task to check whether resources cached by CDN are the same as those on the origin server.

Table 9-1 CI	DN data prote	ction measures
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Beyond that, CDN makes every effort to protect user privacy in accordance with applicable laws and regulations. CDN provides acceleration services only for domain names. It does not collect or store any user privacy data. For details about the use and protection of privacy data, see **Privacy Statement**.

9.4 Audit and Logging

Audit

Cloud Trace Service (CTS) records operations on cloud resources in your account. You can use the logs to perform security analysis, track resource changes, audit compliance, and locate faults.

After CTS is enabled, traces can be generated for operations performed on the CDN console.

- For details about how to enable and configure CTS, see Enabling CTS.
- For details about CDN operations that can be tracked by CTS, see Auditing.
- After you enable CTS, the system starts to record CDN operations. You can view operations of the past seven days on the CTS console. For details, see Querying Real-Time Traces.
- Logging

CDN records detailed logs about access of all domain names (excluding those deleted if you have enabled the enterprise project function). You can download logs for a specific period over the past 30 days. Then you can analyze the access to your service resources in detail. For details about how to view CDN logs, see Log Management.

10 Permissions Management

If you need to assign different permissions to employees in your enterprise to access your CDN resources, IAM is a good choice for fine-grained permissions management. IAM provides identity authentication, permissions management, and access control, helping you securely access your Huawei Cloud resources.

With IAM, you can use your Huawei Cloud account to create IAM users, and assign permissions to the users to control their access to specific resources. For example, some software developers in your enterprise need to use CDN resources but should not be allowed to delete the resources or perform any other high-risk operations. In this scenario, you can create IAM users for the software developers and grant them only the permissions required for using CDN resources.

If your HUAWEI ID does not require individual IAM users, skip this chapter.

IAM is a free service. You only pay for the resources in your account. For more information about IAM, see **IAM Service Overview**.

CDN Permissions

By default, new IAM users do not have any permissions assigned. You need to add a user to one or more groups, and attach permissions policies or roles to these groups. Users inherit permissions from the groups to which they are added and can perform specified operations on cloud services based on the permissions.

CDN is a global service deployed and accessed without specifying any physical region. CDN permissions are assigned to users in the global project, and users do not need to switch regions when accessing CDN.

You can grant users permissions by using roles and policies.

- Roles: A type of coarse-grained authorization mechanism that defines permissions related to user responsibilities. This mechanism provides only a limited number of service-level roles for authorization. When using roles to grant permissions, you need to also assign other roles on which the permissions depend to take effect. However, roles are not an ideal choice for fine-grained authorization and secure access control.
- Policies: A type of fine-grained authorization mechanism that defines permissions required to perform operations on specific cloud resources under certain conditions. This mechanism allows for more flexible policy-based

authorization, meeting requirements for secure access control. For example, you can grant ECS users only the permissions for managing a certain type of ECSs. Most policies define permissions based on APIs. For the API actions supported by CDN, see **Permissions Policies and Supported Actions**.

A policy is a set of permissions defined in JSON format. By default, new IAM users do not have any permissions assigned. You need to add a user to one or more groups, and assign permissions policies to these groups. The user then inherits permissions from the groups it is a member of. This process is called authorization. After authorization, the user can perform specified operations on CDN based on the permissions. IAM provides system policies that define the common permissions for different services, such as administrator and read-only permissions.

CDN is a global service deployed and accessed without specifying any physical region. CDN permissions are assigned to users in the global project, and users do not need to switch regions when accessing CDN.

 Table 10-1 lists all system-defined policies supported by CDN.

Policy	Description	Туре
CDN Administrator	All operations on CDN. Scope: Global-level service	System role
CDN DomainReadOnlyAc- cess	Read-only permissions on CDN acceleration domain names. Scope: Global-level service	System-defined policy
CDN StatisticsReadOn- lyAccess	Read-only permissions on CDN statistics. Scope: Global-level service	System-defined policy
CDN LogsReadOnlyAccess	Read-only permissions on CDN logs. Scope: Global-level service	System-defined policy
CDN DomainConfigura- tion	Permissions for configuring CDN acceleration domain names. Scope: Global-level service	System-defined policy
CDN RefreshAndPreheatAc- cess	Permissions for configuring CDN cache purge and prefetch. Scope: Global-level service	System-defined policy
CDN FullAccess	All operations on CDN. Scope: Global-level service	System-defined policy

Table 10-1 System-defined policies supported by CDN

Policy	Description	Туре
CDN ReadOnlyAccess	All read-only operations on CDN.	System-defined policy
	Scope: Global-level service	

Table 10-2 lists the common operations supported by each system-defined policy or role of CDN. Select the policies or roles as needed.

Table 10-2 Common operations supported by each system-defined policy or role	
of CDN	

Operation	CDN Admi nistra tor	CDN Dom ainRe adOn lyAcc ess	CDN Statis ticsR eadO nlyAc cess	CDN Logs Read Only Acces S	CDN Dom ainCo nfigu ratio n	CDN Refre shAn dPre heat Acces s	CDN FullA ccess	CDN Read Only Acces s
Querying domain names	Supp orted	Supp orted	Not suppo rted	Not suppo rted	Not suppo rted	Not suppo rted	Supp orted	Supp orted
Creating domain names	Supp orted	Not suppo rted	Not suppo rted	Not suppo rted	Supp orted	Not suppo rted	Supp orted	Not suppo rted
Removing domain names	Supp orted	Not suppo rted	Not suppo rted	Not suppo rted	Supp orted	Not suppo rted	Supp orted	Not suppo rted
Querying origin information	Supp orted	Supp orted	Not suppo rted	Not suppo rted	Not suppo rted	Not suppo rted	Supp orted	Supp orted
Querying HTTPS settings	Supp orted	Supp orted	Not suppo rted	Not suppo rted	Not suppo rted	Not suppo rted	Supp orted	Supp orted
Querying cache rules	Supp orted	Supp orted	Not suppo rted	Not suppo rted	Not suppo rted	Not suppo rted	Supp orted	Supp orted
Querying IP blacklists	Supp orted	Not suppo rted	Not suppo rted	Not suppo rted	Not suppo rted	Not suppo rted	Supp orted	Not suppo rted
Modifying origin server details	Supp orted	Not suppo rted	Not suppo rted	Not suppo rted	Supp orted	Not suppo rted	Supp orted	Not suppo rted

Operation	CDN Admi nistra tor	CDN Dom ainRe adOn lyAcc ess	CDN Statis ticsR eadO nlyAc cess	CDN Logs Read Only Acces s	CDN Dom ainCo nfigu ratio n	CDN Refre shAn dPre heat Acces s	CDN FullA ccess	CDN Read Only Acces s
Configuring HTTPS	Supp orted	Not suppo rted	Not suppo rted	Not suppo rted	Supp orted	Not suppo rted	Supp orted	Not suppo rted
Configuring cache rules	Supp orted	Not suppo rted	Not suppo rted	Not suppo rted	Not suppo rted	Not suppo rted	Supp orted	Not suppo rted
Enabling the purge function	Supp orted	Not suppo rted	Not suppo rted	Not suppo rted	Not suppo rted	Supp orted	Supp orted	Not suppo rted
Enabling the prefetch function	Supp orted	Not suppo rted	Not suppo rted	Not suppo rted	Not suppo rted	Supp orted	Supp orted	Not suppo rted
Querying the total network traffic	Supp orted	Not suppo rted	Supp orted	Not suppo rted	Not suppo rted	Not suppo rted	Supp orted	Supp orted
Querying details of network traffic	Supp orted	Not suppo rted	Supp orted	Not suppo rted	Not suppo rted	Not suppo rted	Supp orted	Supp orted
Querying details of network bandwidth	Supp orted	Not suppo rted	Supp orted	Not suppo rted	Not suppo rted	Not suppo rted	Supp orted	Supp orted
Querying consumption summary	Supp orted	Not suppo rted	Supp orted	Not suppo rted	Not suppo rted	Not suppo rted	Supp orted	Supp orted
Querying carrier consumption	Supp orted	Not suppo rted	Supp orted	Not suppo rted	Not suppo rted	Not suppo rted	Supp orted	Supp orted
Querying logs	Supp orted	Not suppo rted	Not suppo rted	Supp orted	Not suppo rted	Not suppo rted	Supp orted	Supp orted

D NOTE

The CDN DomainConfiguration and CDN RefreshAndPreheatAccess permissions cannot be configured separately. To configure the two permissions, you must configure the CDN DomainReadOnlyAccess permission as well. Otherwise, all domain names are invisible, and domain configurations and refreshing and preheating configurations cannot be performed.

Dependencies Between CDN and Other Services

Some CDN permissions depend on the policies of other cloud services. To view or use other cloud resources on the CDN console, enable the system policy access control feature of IAM and assign dependency policies for other cloud services.

• Dependency policies are assigned based on the CDN FullAccess or CDN ReadOnlyAccess policy you configured.

NOTE

To grant an IAM user permissions to view or use resources of other cloud services on the CDN console, you must first grant the CDN Administrator, CDN FullAccess, or CDN ReadOnlyAccess policy to the user group to which the user belongs and then grant the dependency policies listed in Table 10-3.

Console Function	Dependent Services	Roles or Policies Required
OBS authorizatio n	Identity and Access Management (IAM)	 Creating an agency: iam:agencies:createAgency Listing agencies: iam:agencies:listAgencies Querying agency details: iam:agencies:getAgency Granting permissions to an agency for a region-specific project: iam:permissions:grantRoleToAgen- cyOnProject Checking whether an agency has specified permissions for a region- specific project: iam:permissions:checkRoleForAgen- cyOnProject Listing projects: iam:projects:listProjects Listing permissions: iam:roles:listRoles

Table 10-3 Dependency poli	icies and re	oles
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Console Function	Dependent Services	Roles or Policies Required
Origin server settings • Setting the domain name of an OBS bucket as the origin server	Object Storage Service (OBS)	 Listing buckets: obs:bucket:ListAllMyBuckets Listing objects in a bucket: obs:bucket:ListBucket Checking whether a bucket exists and obtaining its metadata: obs:bucket:HeadBucket
SCM certificates	Cloud Certificate Manager (CCM)	 Listing certificates: scm:cert:list Exporting a certificate: scm:cert:download
Filtering domain names by tag	Tag Management Service (TMS)	Querying predefined tags: tms:predefineTags:list
Enterprise projects	Enterprise Management	 Querying details about an enterprise project: eps:enterpriseProjects:get Listing enterprise projects: eps:enterpriseProjects:list

Helpful Links

- IAM Service Overview
- Creating a User and Granting CDN Permissions
- Permissions Policies and Supported Actions

11 Related Services

Table 11-1 Related services

Interactive Function	Related Service	Reference	
An OBS bucket can function as the origin server of an acceleration domain name.	Object Storage Service (OBS)	Accelerating OBS Resources	
 IAM provides: User and permission management IAM user and user group management Fine-grained policy management Agency management Allow CDN to access your OBS private buckets on the IAM console. 	Identity and Access Management (IAM)	Permissions Management OBS Authorizatio n	
CTS records operations on CDN resources for future query, audit, and backtracking.	Cloud Trace Service (CTS)	Auditing	
CDN enterprise projects can be created on the Enterprise Project Management Service page to achieve centralized management.	Enterprise Management	Enterprise Projects	

A Change History

Released On	Description
2024-01-24	This issue is the nineteenth official release.Updated the PoP map.
2023-10-10	 This issue is the eighteenth official release. Updated the bandwidth output capability to 180 Tbit/s.
2023-06-20	This issue is the seventeenth official release.Added some restrictions in section "Restrictions."Added section "Performance Metrics."
2023-06-01	 This issue is the sixteenth official release. Updated section "Node Distribution" and added Croatian, Serbian, and Finland nodes.
2022-12-02	This issue is the fifteenth official release.Updated section "Advantages."
2022-11-11	This issue is the fourteenth official release.Added section "Security."
2022-10-26	 This issue is the thirteenth official release. Updated the node distribution map in section "Node Distribution."
2022-07-28	 This issue is the twelfth official release. Added description of new nodes to section "Node Distribution."
2021-11-24	This issue is the eleventh official release.Deleted section "Billing."

Released On	Description
2021-07-14	 This issue is the tenth official release. Deleted sections "OBS Billing for CDN Acceleration" and "Billing FAQ."
2020-10-09	 This issue is the ninth official release. Optimized section "Billing FAQ." Optimized section "Billing." Modified content in Table System-defined policies supported by CDN in section "Permissions Management."
2020-04-10	This issue is the eighth official release.Added section "Billing."Optimized some descriptions.
2019-09-26	 This issue is the seventh official release. Added section "Restrictions." Add descriptions about live streaming acceleration in section "Application Scenarios."
2019-05-08	This issue is the sixth official release.Changed "Product Description" to "What Is CDN?"Optimized the description of "Advantages."
2019-03-14	 This issue is the fifth official release. Combined sections "Accessing CDN" and "Permissions." Deleted section "Pricing."
2019-02-28	 This issue is the fourth official release. Optimized the description of CDN acceleration principles. Optimized the "Overview" section. Optimized the chapter structure and added the "Advantages" section. Optimized the "Related Services" section.
2018-11-30	 This issue is the third official release. The section "Limitations and Constraints" is moved to the <i>CDN User Guide</i>.
2018-09-21	 This issue is the second official release. Updated section "Product Description." Updated section "Related Services." Updated section "Constraints and Limitations."
2018-05-05	This issue is the first official release.