CDN

Service Overview

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Huawei Cloud Computing Technologies Co., Ltd.

Contents

1 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. 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

See the following documents to learn how to use 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

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 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 redirects the request to CDN using a CNAME record. Then, CDN finds the PoP that responds the fastest 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 following figure shows the HTTP request process after CDN is used.
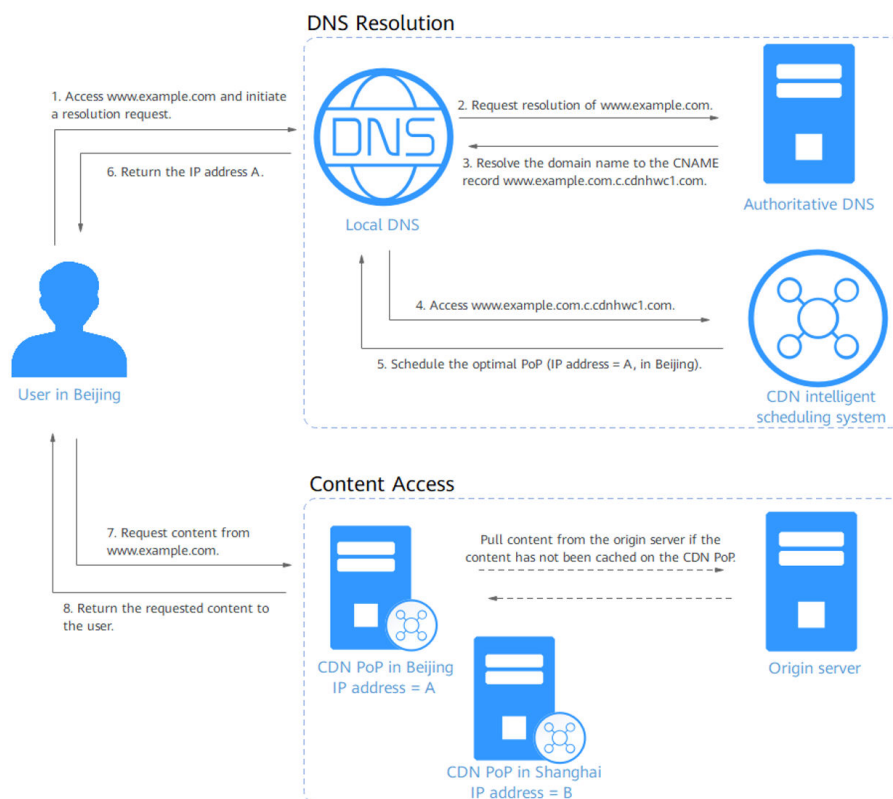
The HTTP request process is as follows:

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.

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 of the domain name).

4. The local DNS redirects the request to the CDN service.

5. CDN performs intelligent domain resolution, then provides the local DNS 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 and connects to networks of over 1,600 carriers. 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, Hebei, Inner Mongolia Autonomous Region, Shanxi, and Tianjin
East China	Anhui, Fujian, Jiangsu, Jiangxi, Shandong, Shanghai, and Zhejiang
Central China	Henan, Hubei, and Hunan
South China	Guangdong, Guangxi Zhuang Autonomous Region, and Hainan

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

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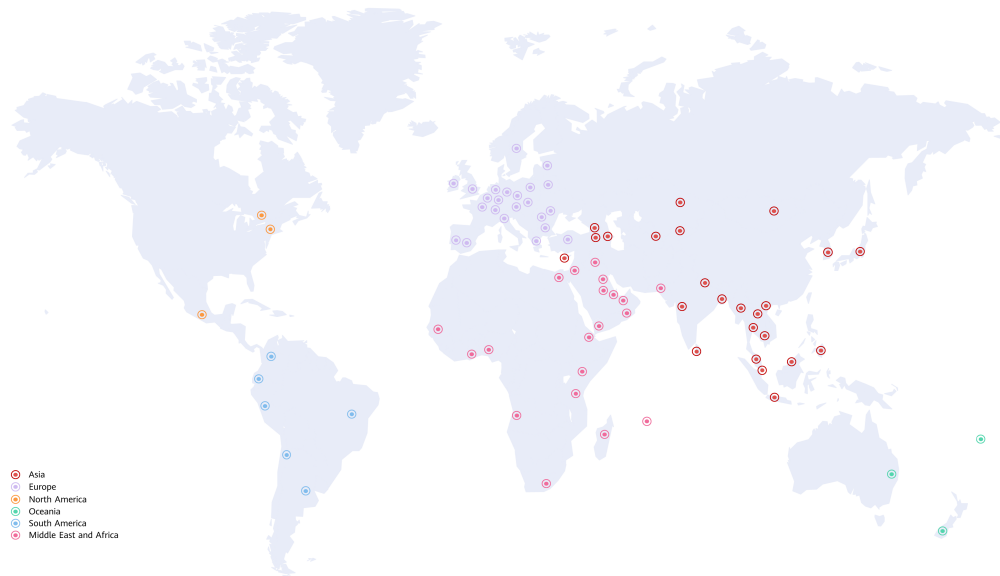
Geographic Region	PoP Distribution (Divided Based on Huawei's Internal Businesses)
Asia	Armenia, Azerbaijan, Bangladesh, Brunei, Cambodia, Cyprus, Georgia, Hong Kong (China), India, Indonesia, Japan, Kazakhstan, Kyrgyzstan, Laos, Macao (China), Malaysia, Mongolia, Myanmar, Nepal, Philippines, Singapore,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

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

4 Advantages

Global Network

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

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, real-time tracking of global popularity, and fast, massive SSD storage.

Security

Protect your resources with network-wide HTTPS transmission, referer validation, URL validation, and IP address 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 acceleration	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 acceleration	Download clients, game clients, app stores, and websites that provide download services based on HTTP or HTTPS
On-demand service acceleration	On-demand video/audio services, such as online education websites and video sharing websites
Whole site acceleration	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.
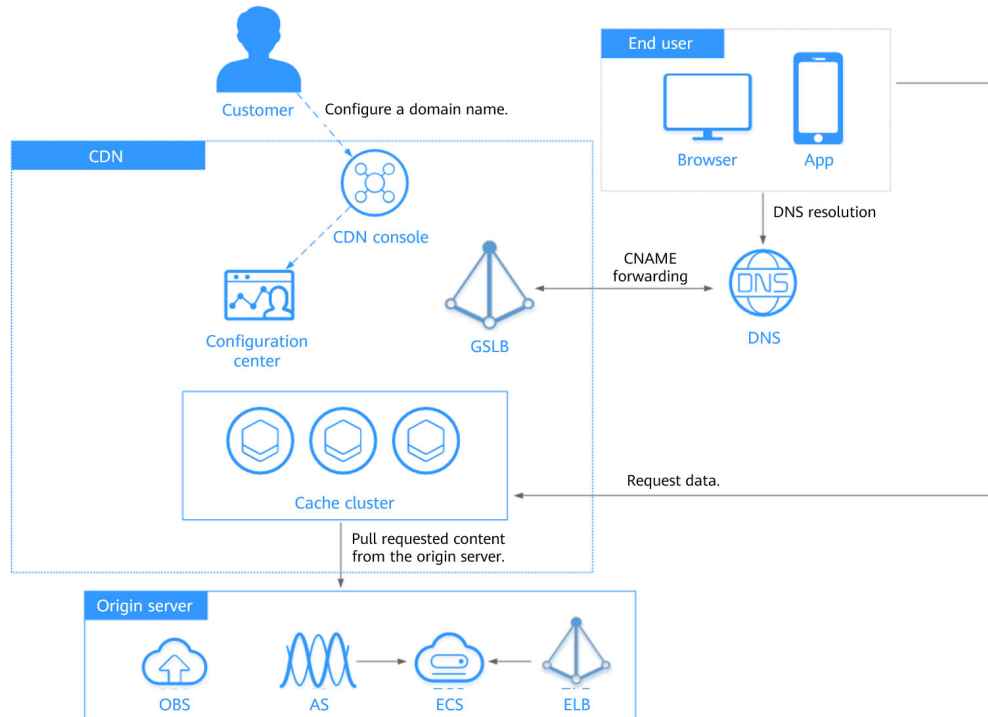
Download Acceleration

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.
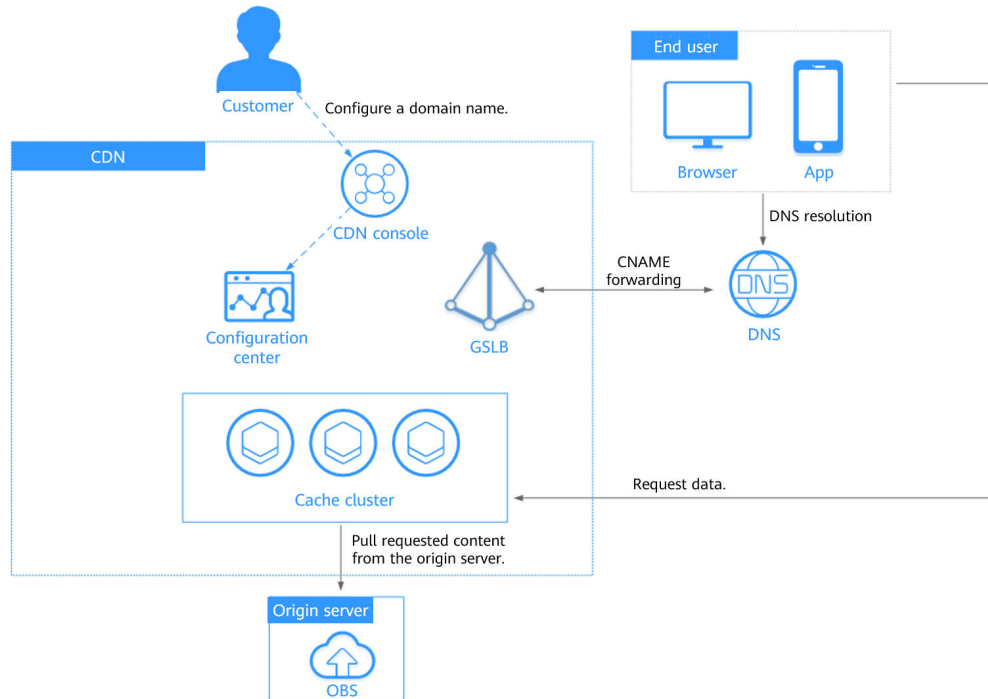
On-Demand Service Acceleration

For customers providing on-demand audiovisual services, CDN is a must. Such on-demand services include online education, video sharing, and music/video on demand. Conventional on-demand services put a heavy load on servers and consume 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.
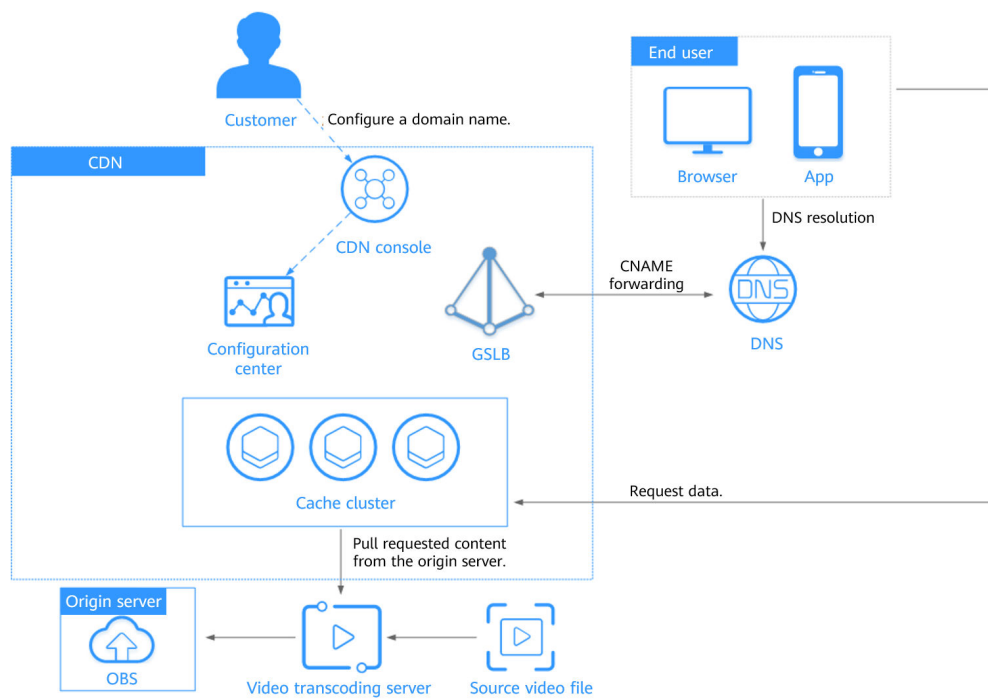
Whole Site Acceleration

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 delivery of both dynamic and static content. It serves static content from nearby PoPs and pulls dynamic content via the fastest possible route. It bypasses congested routes in real time for faster dynamic page loading and higher access success rate.
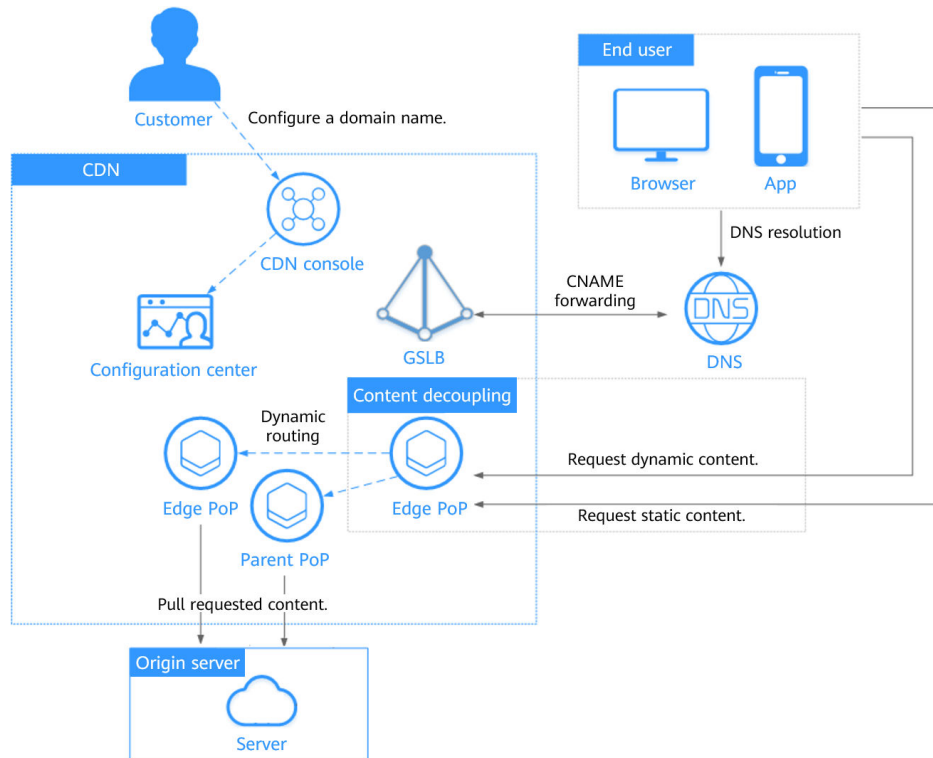
6 Performance Metrics

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 ratio and pull traffic ratio. ● Origin request ratio = Requests with cache misses/All requests on CDN PoPs. A cache miss occurs when the content is not cached, the cache of the content (cacheable) has expired, or the content 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
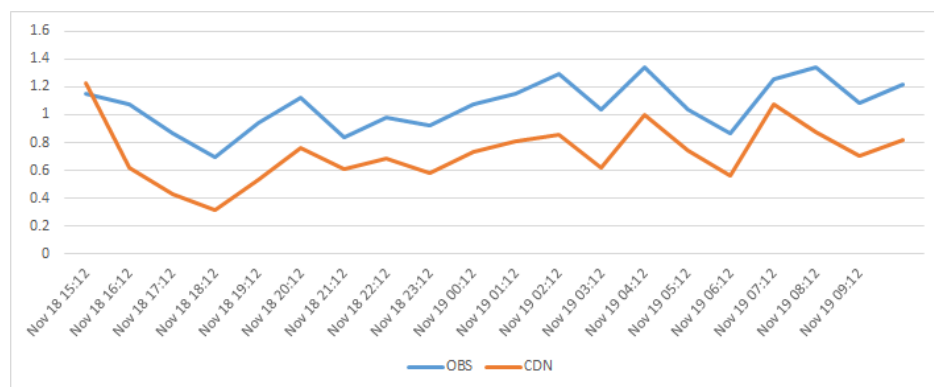
- Availability

  The availability of OBS buckets and CDN is 100%.
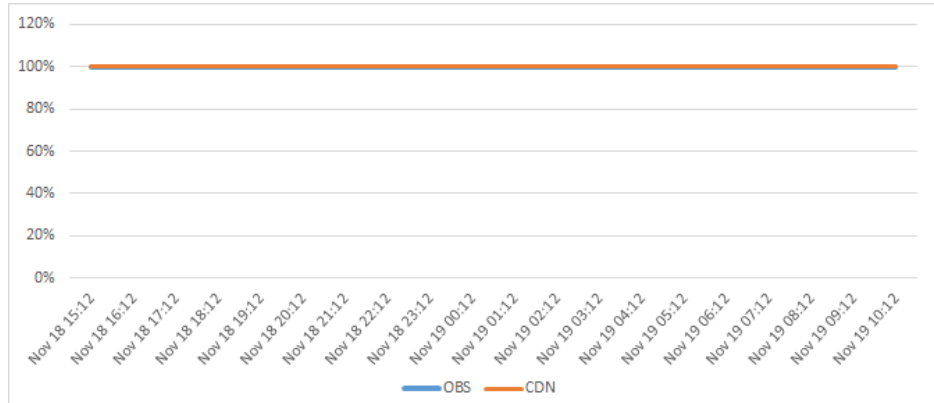
- Detailed data

Time	OBS			CDN		
	Latency (s)	Availability (%)	Monitoring Sites	Latency (s)	Availability (%)	Monitoring 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

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. Users can access the files through **file.example.com**, but you want users to access them through **data.example.com**.

  b. You add a CNAME record to your domain's DNS records to point **data.example.com** to **file.example.com**.

  c. Then all requests for **data.example.com** are redirected to **file.example.com**, and users 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.

- **Secure Sockets Layer (SSL)/Transport Layer Security (TLS)**

  SSL is a cryptographic protocol designed to provide communications security over a computer network. 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 Notes and Constraints

Before connecting a domain name to Huawei Cloud CDN, understand CDN's requirements on domain names and origin servers to prevent service loss caused by violations.

Domain Name Requirements and Specifications

Item	Description
Domain name	- Chinese mainland - 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 MIIT and the ICP license is still valid. - The domain name has passed content moderation.

Item	Description
Acceleration domain name	**Basic specifications:** ● 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. ● An acceleration domain name must be unique. ● CDN does not allow websites containing illicit content. The existing domain names connected to CDN are reviewed regularly. If a domain name involves any violations, CDN acceleration will be disabled 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. **Rules for handling outstanding payments and attacks:** ● 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. **Wildcard domain name specifications:** 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 domain name 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. 1. If you add a wildcard domain name to a particular account, you cannot add any of the level-2 domain names under that domain name to other accounts.

Item	Description
	2. You will be billed for the acceleration service provided to all of the level-2 domain names under a wildcard domain name. If there are multiple level-2 domain names, billing will be based on the traffic generated by the wildcard domain name, 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 URLs of content under a specific subdomain name for cache purge, for example, **http://1.a.com/abc.jpg**, instead of **http://*.a.com/abc.jpg**.

Content Moderation

Item	Description
Content moderation	CDN does not allow 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 be connected to CDN. Acceleration domain name quota of the account will be reduced to 0.

Origin Server Specifications and Constraints

Item	Description
Origin server	● You can add up to 50 origin servers for each acceleration domain name. ● **IP address** – If an IP address is used as the origin address, CDN PoPs access the IP address directly to pull origin content. – IPv4 is supported, but IPv6 is not supported. ● **Domain name** – Start with a letter or digit, use only letters, digits, hyphens (-), and periods (.), and enter up to 255 characters. – 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** as the origin server type 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 its billing standards. ● **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** option. Otherwise, origin pull will fail. – 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**.

Item	Description
	– 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. – When back-to-source by mirroring is configured on OBS and range requests are enabled on CDN, if the mirror origin server does not comply with the RFC Range Requests standard, the response to range requests is not 206 and CDN fails to pull content. In this case, submit a service ticket.

Quotas

Item	Description
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.

Other Constraints

Item	Description
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.

Figure 9-1 Huawei Cloud shared security responsibility model
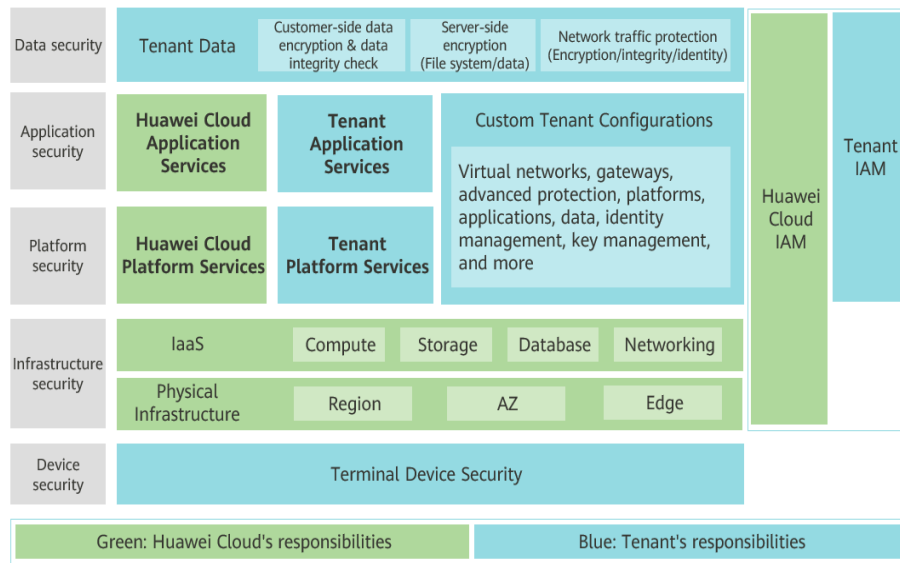
9.2 Data Protection Technologies

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

Table 9-1 CDN data protection measures

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 transmits resources across PoPs, it 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 cached resources are consistent with those on the origin server.

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**.

9.3 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.

Table 10-1 System-defined policies supported by CDN

Policy	Description	Type
CDN Administrator	All operations on CDN. Scope: Global-level service	System role
CDN DomainReadOnlyAccess	Read-only permissions on CDN acceleration domain names. Scope: Global-level service	System-defined policy
CDN StatisticsReadOnlyAccess	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 DomainConfiguration	Permissions for configuring CDN acceleration domain names. Scope: Global-level service	System-defined policy
CDN RefreshAndPreheatAccess	Permissions for 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
CDN ReadOnlyAccess	All read-only operations on CDN. Scope: Global-level service	System-defined policy

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 Administrator	CDN DomainReadOnlyAccess	CDN StatisticsReadOnlyAccess	CDN Logs ReadOnly Access	CDN DomainConfiguration	CDN RefreshAndPreheat Access	CDN FullAccess	CDN ReadOnly Access
Querying domain names	Supported	Supported	Not supported	Not supported	Not supported	Not supported	Supported	Supported
Creating domain names	Supported	Not supported	Not supported	Not supported	Supported	Not supported	Supported	Not supported
Deleting domain names	Supported	Not supported	Not supported	Not supported	Supported	Not supported	Supported	Not supported
Querying origin information	Supported	Supported	Not supported	Not supported	Not supported	Not supported	Supported	Supported
Querying HTTPS settings	Supported	Supported	Not supported	Not supported	Not supported	Not supported	Supported	Supported
Querying cache rules	Supported	Supported	Not supported	Not supported	Not supported	Not supported	Supported	Supported
Querying IP blacklists	Supported	Not supported	Not supported	Not supported	Not supported	Not supported	Supported	Not supported
Modifying origin information	Supported	Not supported	Not supported	Not supported	Supported	Not supported	Supported	Not supported
Configuring HTTPS	Supported	Not supported	Not supported	Not supported	Supported	Not supported	Supported	Not supported
Configuring cache rules	Supported	Not supported	Not supported	Not supported	Not supported	Not supported	Supported	Not supported

Operation	CDN Administrator	CDN DomainReadOnlyAccess	CDN StatisticsReadOnlyAccess	CDN Logs ReadOnly Access	CDN DomainConfiguration	CDN RefreshAndPreheat Access	CDN FullAccess	CDN ReadOnly Access
Enabling the purge function	Supported	Not supported	Not supported	Not supported	Not supported	Supported	Supported	Not supported
Enabling the prefetch function	Supported	Not supported	Not supported	Not supported	Not supported	Supported	Supported	Not supported
Querying the total network traffic	Supported	Not supported	Supported	Not supported	Not supported	Not supported	Supported	Supported
Querying details of network traffic	Supported	Not supported	Supported	Not supported	Not supported	Not supported	Supported	Supported
Querying details of network bandwidth	Supported	Not supported	Supported	Not supported	Not supported	Not supported	Supported	Supported
Querying consumption summary	Supported	Not supported	Supported	Not supported	Not supported	Not supported	Supported	Supported
Querying carrier consumption	Supported	Not supported	Supported	Not supported	Not supported	Not supported	Supported	Supported
Querying logs	Supported	Not supported	Not supported	Supported	Not supported	Not supported	Supported	Supported

 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 cache purge and prefetch 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**.

Table 10-3 Dependency policies and roles

Console Function	Dependent Services	Roles or Policies Required
OBS authorization	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:grantRoleToAgencyOnProject** - Checking whether an agency has specified permissions for a region-specific project: **iam:permissions:checkRoleForAgencyOnProject** - Listing projects: **iam:projects:listProjects** - Listing permissions: **iam:roles:listRoles**
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**

Console Function	Dependent Services	Roles or Policies Required
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 Delivery of 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 Authorization

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 *CDN User Guide*.
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.