Alibaba Cloud

dcdn

Product Introduction

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Document conventions

Style	Description	Example
⚠ Danger	A danger notice indicates a situation that will cause major system changes, faults, physical injuries, and other adverse results.	⚠ **Danger:** Resetting will result in the loss of user configuration data.
🔔 Warning	A warning notice indicates a situation that may cause major system changes, faults, physical injuries, and other adverse results.	🔔 **Warning:** Restarting will cause business interruption. About 10 minutes are required to restart an instance.
🔊 Notice	A caution notice indicates warning information, supplementary instructions, and other content that the user must understand.	🔊 **Notice:** If the weight is set to 0, the server no longer receives new requests.
⑦ Note	A note indicates supplemental instructions, best practices, tips, and other content.	⑦ **Note:** You can use Ctrl + A to select all files.
>	Closing angle brackets are used to indicate a multi-level menu cascade.	Click **Settings> Network> Set network type**.
Bold	Bold formatting is used for buttons , menus, page names, and other UI elements.	Click **OK**.
Courier font	Courier font is used for commands	Run the `cd /d C:/window` command to enter the Windows system folder.
Italic	Italic formatting is used for parameters and variables.	`bae log list --instanceid` *Instance_ID*
[] or [a|b]	This format is used for an optional value, where only one item can be selected.	`ipconfig [-all|-t]`
{} or {a|b}	This format is used for a required value, where only one item can be selected.	`switch {active|stand}`

Table of Contents

1.What is DCDN?

Dynamic Route for CDN (DCDN) is a service developed by Alibaba Cloud based on Alibaba Cloud CDN (CDN). CDN accelerates the delivery of static content. DCDN accelerates the delivery of both static and dynamic content over TCP, UDP, and WebSocket. DCDN allows you to integrate service security and edge computing with more than 2,800 edge nodes that are distributed around the world. This can help improve the performance of your websites and your business efficiency, and provide a better experience for your users.

DCDN is simple and easy to use. You do not need to adjust your business structure or perform complex configurations. To use DCDN, you only need to log on to the DCDN console and add the domain names that you want to accelerate to DCDN. For more information, see Quick Start.

Features

DCDN can help improve your business efficiency:

- DCDN can accelerate content delivery over HTTP, HTTPS, and WebSocket. This way, DCDN can identify static and dynamic content and use optimal acceleration policies to accelerate the delivery of your website content.

- DCDN supports IP Application Accelerator (IPA) based on TCP and UDP. This way, you do not need to focus on specific protocols when you want to accelerate the delivery of your website content.

- DCDN has more than 2,800 globally distributed edge nodes that provide scalable resources. This ensures high availability of your services.

- You can offload compute and bandwidth workloads, and connections from origin servers to edge nodes to reduce costs.

- DCDN allows you to customize features such as A/B testing, URI rewrite, and blacklists on edge nodes.

- DCDN provides a standardized API that is easy to use.

For more information, see Features.

How to work with DCDN

The following figure shows how DCDN works.
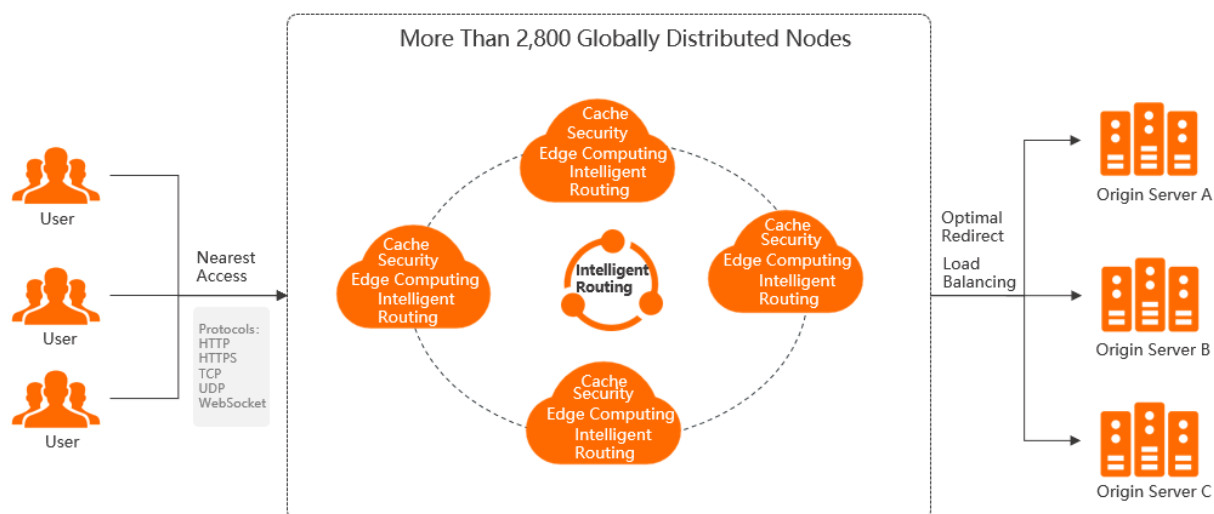
- DCDN identifies static and dynamic content to accelerate your entire website.

DCDN supports HTTP and HTTPS. After you add your domain name to DCDN, DCDN can identify static and dynamic content on your websites. Then, optimal acceleration policies are used to accelerate the delivery of your website content. Static content is cached on DCDN nodes. Users can retrieve the cached static content from the nearest DCDN nodes. Requests for dynamic content are redirected to the origin server by using an optimal route that is selected by an intelligent routing system.

- DCDN supports multiple acceleration protocols to meet requirements of different business scenarios.

  DCDN supports Layer 7 acceleration based on WebSocket and Layer 4 acceleration based on TCP and UDP.

- High availability

  DCDN has more than 2,800 globally distributed edge nodes that provide scalable resources. This ensures high availability of your services.

- Edge security

  DCDN supports security features, such as rate limiting and DDoS mitigation, to ensure the security of edge nodes.

- Edge computing

  DCDN allows you to customize features such as A/B testing, URI rewrite, and blacklists on edge nodes.

Differences between DCDN and CDN

Item	CDN	DCDN
Accelerated content	Static content.	Both static and dynamic content.
Acceleration method	Accelerates the delivery of static content. Static content, such as images and videos, is cached on edge nodes of CDN. Users can retrieve static content from the nearest nodes.	Accelerates the delivery of dynamic content, or both dynamic and static content. • Accelerates the delivery of dynamic content If content is requested by specific requests, such as POST requests, the content is not cached on edge nodes. In this case, the edge nodes redirect the requests to the origin server by using the optimal route to retrieve content based on an intelligent routing system. • Accelerate the delivery of both dynamic and static content Intelligently identifies static and dynamic content. Static content is cached on edge nodes. Users can retrieve the cached static content from the nearest edge nodes. Requests for dynamic content are redirected to the origin server by using an optimal route that is selected by the intelligent routing system.

Item	CDN	DCDN
Supported protocols	HTTP and HTTPS.	HTTP, HTTPS, TCP, UDP, and WebSocket.
Content identification	Cannot separate dynamic content from static content. You need to separate dynamic content from static content. CDN can accelerate the delivery of only static content. CDN cannot accelerate the delivery of dynamic content.	Intelligently identifies static and dynamic content. You do not need to separate dynamic content from static content. DCDN can identify static and dynamic content and separately accelerate the delivery of static and dynamic content.
Edge computing	You can use JavaScript to customize features such as A/B testing and prefetch on edge nodes.	You can configure edge computing on the edge nodes and customize features such as A/B testing, URI rewrite, and blacklists on edge nodes.

For more information about dynamic and static content, see What are static content and dynamic content?.

Scenarios

DCDN is suitable for various industries, including online education, gaming, retail, finance, media, and social media.

Online education	Gaming	Retail	Finance	Media	Social media
• APIs • Online examination • Online programming • Interactive whiteboards • Learning and examination reports • Uploads of images and audio content • Curriculum • Knowledge communities • Online chat • Online shops	• APIs • Browser games • Turn-based games • Real-time interaction • Online multiplayer games • Deployment of game servers • In-game purchases • Online chat • Player rankings • Installation packages and resource plans	• Online shops • APIs • Commodity search • Orders and transactions • Shipping updates • Online customer service • Promotional HTML5 pages • Sales promotions • Flash sales • Cross-border e-commerce	• apps and websites • Financial transactions • Financial investments • Cross-border financial services • Financial markets • Financial news and information • Real-time quotation • SSL and VPN services for enterprises • Virtual desktops • IPv6 services	• Websites and apps • News and information • Breaking news • Logon, registration, and query services • Personalized recommendations • Comments, replies, and likes	• APIs • Online chat • File synchronization • Breaking news • Information graphics • Uploads of images and text • Comments and replies • Online shops • Likes and gifts • Personal information display

Pricing

You are charged for basic services, requests, data transferred over WebSocket or bandwidth of WebSocket connections, and value-added services of DCDN. You can use resource packages to offset resource fees. For more information, see Billing overview and DCDN Pricing.

We recommend that you understand the billing rules of DCDN before you activate the service. For more information, see Activate DCDN.

Manage DCDN

After you create an Alibaba Cloud account, you can manage DCDN as shown in the following examples:

• Use the DCDN console

The DCDN console is an easy-to-use web console that supports interactive operations. For more information, see Feature .

• Call DCDN API operations

The DCDN API is a remote procedure call (RPC) API that supports GET and POST requests. For more information, see API Reference.

References

Use DCDN to accelerate content delivery for ECS instances

2.Features

Dynamic Route for CDN (DCDN) has the following benefits: stability, efficiency, scalability, and cost-effectiveness. This topic describes the features of DCDN.

Stability

- Alibaba Cloud provides more than 2,800 globally distributed edge nodes. The total bandwidth capacity of DCDN reaches up to 150 Tbit/s. DCDN supports hundreds of millions of concurrent queries per second (QPS) to ensure stable content acceleration.
- Advanced distributed system architecture: supports load balancing to ensure node availability.
- High stability and performance: The cache hit ratio of requests for static cached content reaches up to 95%. Performance inside mainland China can be improved by 100%. Performance in regions outside mainland China can be improved by 200%.
- Optimized transmission protocols: supports the HTTP/2 transmission protocol for fast and stable data transmission.

Efficiency

- Accurate caching: uses the intelligent object algorithm to cache content based on object popularity in a multi-level and hierarchical manner to accurately accelerate content delivery.
- High-speed caching: DCDN provides a high-performance caching system. This system balances the use of multi-core processing capabilities, achieves efficient memory usage and control, and maximizes input/output operations per second (IOPS) and throughput of solid state drives (SSDs).
- High read and write rates: All nodes are configured with SSDs to support high-rate data reads and writes. Based on the acceleration capabilities, these SSDs can reduce the response time and improve the availability.
- Efficient back-to-origin processes: provide failover and retransmission mechanisms to ensure efficient back-to-origin process and information synchronization.
- Intelligent scheduling: implements data-based real-time scheduling and supports node-level traffic prediction. This improves the scheduling quality and accuracy.
  - Multi-level scheduling: If some nodes fail, services are not interrupted.
  - Multi-system coordination: coordinates with the security defense system, refresh system, and content management system to maximize the performance of each module.
  - Ordered processing of back-to-origin requests: automatically responds to and adjusts for traffic spikes. DCDN implements QPS-based throttling for back-to-origin requests to protect the availability of the origin server. The waiting room solution allows you to customize the waiting page, waiting duration, and release rules to maximize user experience.

Scalability

- Scalable resources: You are charged for actual resource usage. Resources are available across Internet service providers (ISPs) and regions.
- Customized management: DCDN provides a wide range of simple custom configuration options to allow you to add, delete, modify, and query domain names. DCDN also allows you to customize cache policies, HTTP response headers, and other features.
- OpenAPI: DCDN provides a wide array of API operations. You can call these API operations to use multiple DCDN features including service activation, content refresh, monitoring, and log download and distribution. For more information about API operations, see List of operations by function.

- Performance optimization

  - Intelligent compression: compresses content transmitted over the network. This reduces the number of bytes transmitted over the network, shortens the data transmission time, and improves acceleration.

  - HTML optimization: removes redundant content such as spaces, line breaks, tabs, and comments from the page to reduce the size of the page. It also combines multiple JavaScript or CSS files into one request. This reduces the number of requests.

  - Refresh and prefetch: provides the cache refresh and object prefetch features.

Cost-effectiveness

- Optimal route: makes routing decisions and selects the optimal back-to-origin routes for dynamic content delivery by using origin monitoring, real-time network monitoring, and intelligent routing mechanisms.

- Connection multiplexing: Edge nodes accept connection requests from users and establish persistent connections based on actual back-to-origin requests. This reduces the I/O pressure on the origin server.

  - Analyzes inbound and outbound traffic conditions to ensure that the client can be reached within a limited number of hops. This avoids network failures and congestions.

  - The last hop to connect to edge nodes adopts Border Gateway Protocol (BGP) multi-line. This can ensure efficient back-to-origin process under the same region and network provider.

3.Scenario

Alibaba Cloud Dynamic Route for CDN (DCDN) is extensively used in e-commerce, government and enterprise industries, gaming, finance, and other industries to improve site performance and user experience.

E-commerce

Background: E-commerce platforms include a large number of online systems and links, such as user registration, website logon, product browsing, and payment settlement. Network access speed and content transmission security have become two important indicators for measuring user experience.

Requirements: Most e-commerce websites contain a mixture of dynamic and static content, where large static image files need acceleration to showcase products. At the same time, e-commerce websites must support online payments, flash sales, and promotional activities. These activities slow down the website response time and increase workloads on the origin server.

Typical use cases: traveling platforms for air tickets and hotels, online booking platforms for food delivery and taxis, fast-moving consumer goods industry, and vertical e-commerce platforms.

DCDN can meet the requirements of websites that contain both dynamic and static content. This ensures a smooth user experience and prevents customer loss.

Social networking

Background: More and more websites are adding dynamic content, such as comment sections or audio and video content. If a large number of users try to open the same page simultaneously, the website may experience latency or become inaccessible.

Requirements: Users are placing more importance on stable access to websites and quick content updates. For such websites, we recommend that you use the DCDN service for better site performance and user experience.

Typical use cases: forums, blogs, and interactive news sites.

Governments and enterprises

Requirements: Whole site acceleration and secure acceleration. Official websites of enterprises or governments represent their image and credibility.

In addition to accelerating static and dynamic content by using its rich node resources, DCDN also protects your assets against DDoS and HTTP flood attacks.

Gaming

Requirements: Performance and stability for gaming websites, security package downloading, logon services, gaming services, and other services. During peak hours, game players need smoother support when they log on to game servers, trade with other players, update data, and play games.

Typical use cases: web games and battle games. DCDN can provide them with routing optimization, cache-based acceleration, security protection, and other acceleration services.

Finance

Requirements: High network availability and security. Trading processes involve dynamic and interactive content, which can be exposed to risks if cross-network connections are unstable. Therefore, we recommend that you use DCDN in financial scenarios to safeguard every transaction.

Typical use cases: online banking, mobile payments, credit card bonus malls, mobile securities, P2P loans, and other Internet finance applications.

4.Limits

This topic describes the limits that Alibaba Cloud Dynamic Route for CDN (DCDN) imposes on domain names. Before you add a domain name to DCDN, make sure that the domain name meets the requirements. This helps you prevent losses that can be caused by violations.

Item	Description
Accelerated domain name	
Origin server	**Address length**: The address of an origin server cannot exceed 67 characters in length. **Maximum number of origin servers**: You can set a maximum of 20 origin server addresses for each accelerated domain name. **OSS Domain** - If you use an Object Storage Service (OSS) bucket as the origin server, you can enter the public domain name of the OSS bucket, for example, `***.oss-cn-hangzhou.aliyundoc.com`. Internal domain names of OSS buckets are not supported. - You can view the public domain name of an OSS bucket in the OSS console. You can also select an OSS bucket that belongs to the current Alibaba Cloud account from the Domain Name drop-down list. **IP**: Enter the public IP addresses of one or more servers. Public IP addresses of Alibaba Cloud Elastic Compute Service (ECS) instances do not need to be reviewed. **Site Domain**: Enter the domain names of one or more origin servers. ⓘ Note - The origin domain name must be different from the accelerated domain name. If the origin domain name is the same as the accelerated domain name, a DNS resolution loop occurs, and requests cannot be redirected to the origin server. - The domain name must be in lowercase letters. - If a domain name contains Chinese characters, such as 阿里云.网址, you must apply for an ICP number for the domain name and use the Punnycode tool to convert the Chinese domain name to an English domain name, such as xn--fiq****.xn--eq****.
CNAME	CNAMEs that are assigned by Alibaba Cloud CDN, DCDN, ApsaraVideo Live, ApsaraVideo VOD, or Secure CDN (SCDN) are used only for domain name resolution. If Alibaba Cloud discovers that your CNAME is used for malicious activities, Alibaba Cloud reserves the right to close your Alibaba Cloud account and remove the domain names.

Item	Description
Service quota	- Accelerated domain name Each Alibaba Cloud account can add up to 50 domain names to DCDN. If the average daily peak bandwidth value exceeds 50 Mbit/s and your workloads are protected, you can submit a ticket to add more domain names to DCDN. - Cache refresh - URL refresh: 10,000 URLs per day for each Alibaba Cloud account. - Directory refresh: 100 directories per day for each Alibaba Cloud account. If the daily peak bandwidth value of your workloads exceeds 200 Mbit/s, you can submit a ticket to request a quota increase. After your application is approved, Alibaba Cloud increases the quota based on your business requirements. - File prefetch You can prefetch files only by using URLs. Each Alibaba Cloud account can submit up to 1,000 URLs per day. If the daily peak bandwidth value of your workloads exceeds 200 Mbit/s, you can submit a ticket to request a quota increase. After your application is approved, Alibaba Cloud increases the quota based on your business requirements.

Item	Description
Content moderation	Alibaba Cloud reviews the content of all accelerated domain names. Domain names that cannot be accelerated by DCDN include but are not limited to: • Websites whose content is inaccessible or does not provide valid information • Servers that host pirated games • Websites that provide multiplayer role-playing games and card games • Websites that provide downloads of pirated software • Websites that run peer-to-peer (P2P) lending • Unofficial lottery websites • Websites of unlicensed hospitals and pharmaceuticals • Websites that contain pornography, drugs, and gambling content ⑦ Note • You are legally responsible for the content hosted on your accelerated domain name. DCDN regularly reviews the content of accelerated domain names. If illicit content is detected from a domain name, DCDN immediately disables or blocks the domain name. If the violation is severe, DCDN may even permanently block all domain names that belong to the Alibaba Cloud account. • If you add a wildcard domain name, for example, `*.example.com`, to DCDN and a specific domain name, for example, `a.example.com`, that matches the wildcard domain name contains illicit content, DCDN disables the wildcard domain name `*.example.com`. • If a domain name fails the review, you can check the reason for rejection on the Domain Names page in the DCDN console. Then, you can modify the content based on the rejection details and submit the domain name for review again.
Origin fetch	• An HTTP request header cannot exceed 300 bytes. • The timeout period. By default, the timeout period for back-to-origin requests that are transmitted over TCP is 10 seconds. The timeout period for back-to-origin requests that are transmitted over HTTP is 30 seconds. • Response header If an origin server does not respond to `Content-Type`, DCDN automatically adds `Content-Type:application/octet-stream`. • Automatic conversion from HEAD to GET for back-to-origin requests By default, HEAD requests are sent to DCDN nodes before the requests are redirected to origin servers. In this case, HEAD requests are converted to GET requests. If you do not want to convert HEAD requests to GET requests, you can navigate to the Custom Origin HTTP Header tab in the DCDN console, and configure custom HTTP headers for back-to-origin requests. For more information, see Customize an origin HTTP header.

Item	Description
Bandwidth throttling	Based on the Alibaba Cloud International Website Product Terms of Service, if the metering method of your domain name is pay-by-data-transfer or pay-by-bandwidth and the peak bandwidth value reaches 10 Gbit/s within 1 minute, Alibaba Cloud enables bandwidth throttling for the domain name. Bandwidth throttling protects your domain name from attacks and prevents unexpected high bills. If you want to disable bandwidth throttling, you can contact Alibaba Cloud customer service or .

File	• File cache
	  ○ If the request to a file that is larger than 100 MB is a cache miss, and the origin server returns a no-cache response header, DCDN closes the connection after the amount of data transmitted from the origin server reaches 100 MB.
	  ○ If the origin server returns a response header whose Cache-Control directive allows the response to be cached, DCDN nodes can cache files that are up to 500 GB in size.
	
	• File upload
	  You can upload files to origin servers by using DCDN. Each file can be up to 300 MB in size.

EdgeScript	By default, you can configure only one script for each domain name. If you want to configure more scripts, submit a ticket.
Stress testing	If you want to run stress tests on a domain name that is accelerated by DCDN, you must at least three days in advance. Otherwise, you may experience the following issues: Stress tests on the number of queries per second (QPS) may trigger HTTP flood protection rules of DCDN and the domain name is added to a sandbox.
Length of URLs and HTTP request headers, and total length of URLs and HTTP request headers	HTTP/2: • If the default setting of the NGINX directive is http2_max_field_size=32 KB, the length of an individual HTTP request header or an individual URL cannot exceed 32 KB. Otherwise, the HTTP 414 status code is returned. • If the default setting of the NGINX directive is http2_max_header_size=128 KB, the total length of all HTTP request headers and URLs cannot exceed 128 KB. Otherwise, the HTTP 400 status code is returned. HTTP/1.1: For the large_client_header_buffers directive, number is set to 4 and size is set to 64 KB. In this case, the length of an individual HTTP request header or an individual URL cannot exceed 64 KB. Otherwise, the HTTP 414 status code is returned. The total length of all HTTP request headers and URLs cannot exceed 256 KB. Otherwise, the HTTP 400 status code is returned.

Item	Description
Request methods	DCDN supports the `GET` , `PUT` , `POST` , and `HEAD` request methods. ? Note • If you want your website to support `DELETE` and `PATCH` requests, use DCDN to enable acceleration for dynamic content delivery. • Only HTTP `POST` and `PUT` requests can carry a request body. • By default, DCDN converts HEAD requests to GET requests before the requests are redirected to the origin server. If you want to redirect HEAD requests to the origin server, you can add a custom request header on the **Custom Origin HTTP Header** tab in the DCDN console. For more information, see Customize an origin HTTP header.
Intelligent and Brotli compression	Only files that are not smaller than 1 KB are compressed.

API calls for each account	The maximum number of times that each account can call DCDN API operations is 1,000 per second. If this upper limit is reached, the following message is returned:
	`ErrorCode:Throttling`
	`ErrorMessage:Request was denied due to flow control.`

5.Node distribution

Alibaba Cloud Dynamic Route for Content Delivery Network (DCDN) provides more than 2,800 nodes worldwide. Among these nodes, more than 2,300 are distributed across 31 provincial regions and first-tier cities in the Chinese mainland and more than 500 are distributed across over 70 countries and regions, including Hong Kong (China), Macao (China), and Taiwan (China). The total bandwidth capacity of Alibaba Cloud DCDN can reach up to 150 Tbit/s.