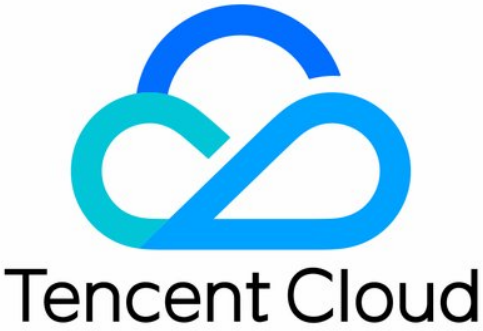
Enterprise Content Delivery Network

Product Introduction

Product Documentation



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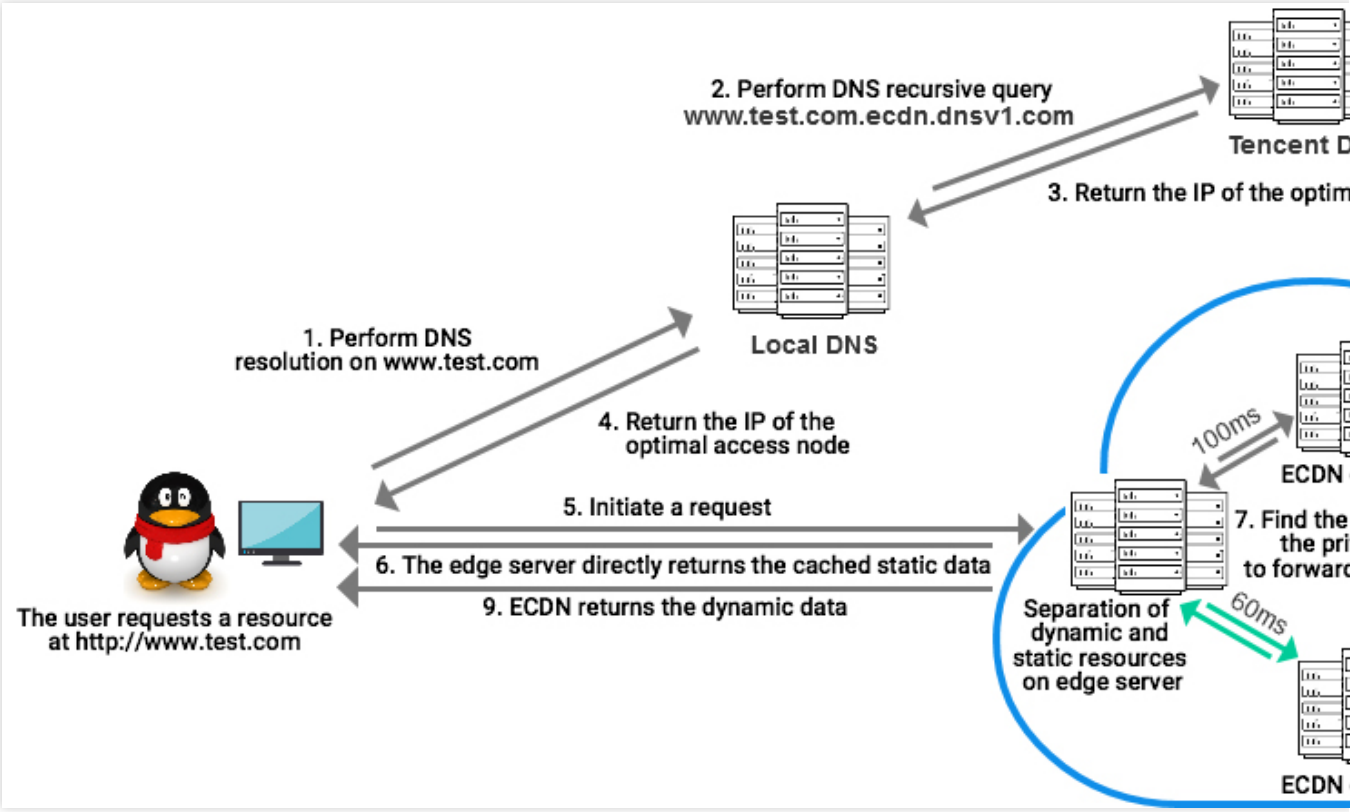
Product Overview

Tencent Cloud Enterprise Content Delivery Network (ECDN) provides innovative high-performance one-stop content delivery services to swiftly and stably deliver high numbers of static/dynamic resources. By combining static edge caching and dynamic origin-pull route optimizing technologies and leveraging Tencent Cloud's proprietary optimal linkage algorithms and protocol-layer optimizations, ECDN can intelligently schedule traffic to optimal service nodes and automatically identify static/dynamic resources, enabling you to accelerate content delivery in just a few clicks. ECDN is easy to use. You do not need to adjust your business structure or manage any complex configurations. For more information, please see Getting Started.

How Acceleration Works

For example, if your business origin server's domain name is `www.test.com` , which has been connected to ECDN to activate the acceleration service, when a user makes an HTTP request, the request will be processed as shown below:



Details are as follows:

1. When a user makes an access request for a dynamic resource (e.g., an .asp file) or static resource (e.g., text or image) at `www.test.com`, a domain name resolution request will be initiated to the local DNS.
2. When the local DNS resolves `www.test.com`, it finds that CNAME record `www.test.com.dsa.dnsv1.com` has been configured, so the resolution request will be sent to Tencent DNS (GSLB), the proprietary scheduling system of Tencent Cloud, which will assign the optimal node IP for the request.
3. The local DNS receives the resolved IP returned by Tencent DNS.
4. The user receives the resolved IP.
5. The user makes an access request for the resource to the received IP.
6. If the target static resource has already been cached on the edge server, it can be directly returned to the user.
7. For a dynamic resource request, the node can detect the optimal route between the private network and origin server with the intelligent detection algorithm and forward the request to the origin server over the route.
8. After receiving the request, the origin server will return the dynamic data to the ECDN cache node based on the request content.
9. ECDN passes through the dynamic content returned by the origin server to the user through the optimal internal linkage.

Strengths

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Tencent Cloud Enterprise Content Delivery Network (ECDN) has the strengths below:

Mesh-like Interconnection and Global Acceleration

Nodes in the Chinese mainland

To allow your published content to reach users faster, Tencent Cloud has set up more than 2,000 ECDN nodes across the nation, covering mainstream ISPs such as China Mobile, China Unicom, and China Telecom as well as many medium and small-sized ISPs such as China Tietong and Great Wall Broadband. Mesh-like interconnection is implemented between cache nodes, and a huge number of transmission linkages are available.

Nodes outside the Chinese mainland

Tencent Cloud has been working industriously on global acceleration since 2017. As of May 2021, Tencent Cloud has

over 800 cache nodes across more than 70 countries and regions with a total reserved bandwidth of over 40 Tbps, helping your business go global with ease and speed.

One-stop Acceleration for Dynamic and Static Contents

For origin servers with dynamic resources such as ASP and PHP files and static resources such as text, images, audios, and videos, ECDN can deliver convenient data access and efficient data transmission.

Intelligent cache

You can configure cache rules for static contents on edge servers, and the corresponding contents can be returned to requesters directly.

Origin-pull optimization

For scenarios where dynamic contents are pulled from the origin server, ECDN dynamically schedules requests and adopts the optimal origin-pull path, guaranteeing access speed.

Dynamic Scheduling and Optimal Linkage

When requesting resources, your users may be faced up with problems of high delay and high packet loss due to such factors as network, region, or bandwidth. ECDN, through the real-time monitoring of the linkages across the network and by using the self-developed Global Server Load Balance (GSLB) scheduling system and intelligent routing technology, optimizes user's access experience in the following three ways.

Optimal connection

With Tencent Cloud's GSLB scheduling system, your users' requests will be allocated to the nearest, optimal cache node to connect to the acceleration network.

Optimal linkage

ECDN selects the optimal network linkage for the requests to effectively bypass linkages with poor quality or congested linkages, to ensure rapid access to the content based on the real-time status monitoring across network and intelligent routing technology.

Protocol optimization

ECDN has independently developed an optimized algorithm for the protocol layer, which makes full use of the bandwidth resources to make the network transmission more stable and improve the network performance.

Secure, Stable, and Reliable

In a complex public network environment, your origin server may fail to serve when suffers packet loss caused by network jitters or attacks from hackers. ECDN comprehensively safeguards your businesses in the following two

aspects:

Private protocol

When a user requests for a connection to the acceleration network, you can use a reliable Tencent private protocol for transmission through private network to ensure security.

Redundancy transmission

ECDN supports multi-linkage redundancy transmission, to guarantee the reliability of data transmission, so that users can enjoy a reliable web experience.

One-click Connection and Transparency in Business

Using ECDN is easy. You do not need to adjust your businesses, worry about not having clear business statistics and consumption details, or monitor business status in real time. ECDN features quick and simple connection and comes with a wide variety of management tools, presenting you with a comprehensive overview of the entire ECDN service.

Simple connection

To use the ECDN service, you only need to provide your domain name, and ECDN will assign you a standard CNAME. You then need to add a corresponding CNAME record at your domain name service provider to finish the service connection. You can use ECDN right after the DNS resolution takes effect.

Statistics monitoring

ECDN provides multi-dimensional data analysis for you to understand user requests. If you want to monitor the real-time data, you can use Cloud Monitor to configure related alarms to keep track of your businesses.

Diversified management tools

You can perform domain name management, setting changes, going online/going offline, deletion and other operations through the ECDN console. You can also make queries on the above statistics and charts.

Features

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ECDN

Global acceleration

With cache nodes deployed across the world, ECDN effectively reduces cross-border access delays and ensures smooth global acceleration.

Optimal linkage

Cache nodes are interconnected in pairs with real-time detection enabled to locate the optimal transfer route with the aid of Tencent Cloud's proprietary optimal linkage algorithm.

Intelligent caching

You can customize the rules for caching static resources on edge servers to enable nearby access to static resources and speed up response.

Access Security

Intelligent multi-origin switch

Cache nodes actively monitor origin servers and automatically select the best-performing servers for access. In addition, cache nodes can actively eliminate faulty origin servers to ensure business stability and continuity.

Access control

Access control features such as IP access limit, blocklist, and allowlist are supported.

HTTPS support

Full-linkage transfer over HTTPS is supported to quickly transfer encrypted data, ensuring high data security.

Origin server hiding

With ECDN, your real origin server addresses can be hidden behind the ECDN acceleration network to avoid the security risks caused by address exposure.

Business Analysis

Log download

Detailed user access logs for the last 40 days can be downloaded.

Business transparency

Multi-dimensional analysis of access statistics is available to help you analyze the distribution of access requests.

Scenarios

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Dynamic Content Acceleration

For the dynamic data in scenarios such as game battles, e-commerce transactions, financial payment, online education concerning teacher-student interactions, ECDN can select the optimal origin-pull linkage through technologies such as dynamic path detection and intelligent routing to greatly reduce access latency for users and solve problems such as slow loading of dynamic content, operation lags, etc., significantly improving user experience.

Dynamic and Static Hybrid Acceleration

ECDN can automatically identify dynamic and static contents. Static contents are cached on edge servers and the requests to them are processed with the global load balancing technology, enabling nearby access for users to get resources. For dynamic contents, ECDN can determine the optimal linkage through dynamic path detection to pull origin servers for resources. With ECDN, you can have the one-stop acceleration service for dynamic and static content without using different platforms.

Upload Acceleration

ECDN is ideal for uploading acceleration in information collection and content releasing scenarios such as audio/video uploading, file uploading, financial POST requests, and online course releasing. Through content delivery and dynamic acceleration technologies, stable and fast data uploading can be achieved.

Secure Acceleration

Combining ECDN with SCDN allows you to quickly apply WAF protection, DDoS cleansing, precise access control, and more security protection features for your domain name, safeguarding your business without compromising the acceleration effect.

Cross-border Acceleration

International large enterprises dealing in global businesses may suffer issues such as network jitter and high packet loss rate during cross-border and cross-network data transmission. ECDN has deployed thousands of service nodes across the globe with network nodes covering more than 50 countries and regions, fully meeting your needs in business globalization.

Office Collaboration Acceleration

Office collaboration not only involves sharing of static content such as files and documentation, but requires dynamic data transmission in multi-person collaboration and real-time communication, in which, however, work efficiency can be greatly reduced by slow downloading and information latency. With ECDN, the one-stop acceleration service for dynamic and static content can be delivered for your stable, reliable, and easy office collaboration.

Basic Concepts

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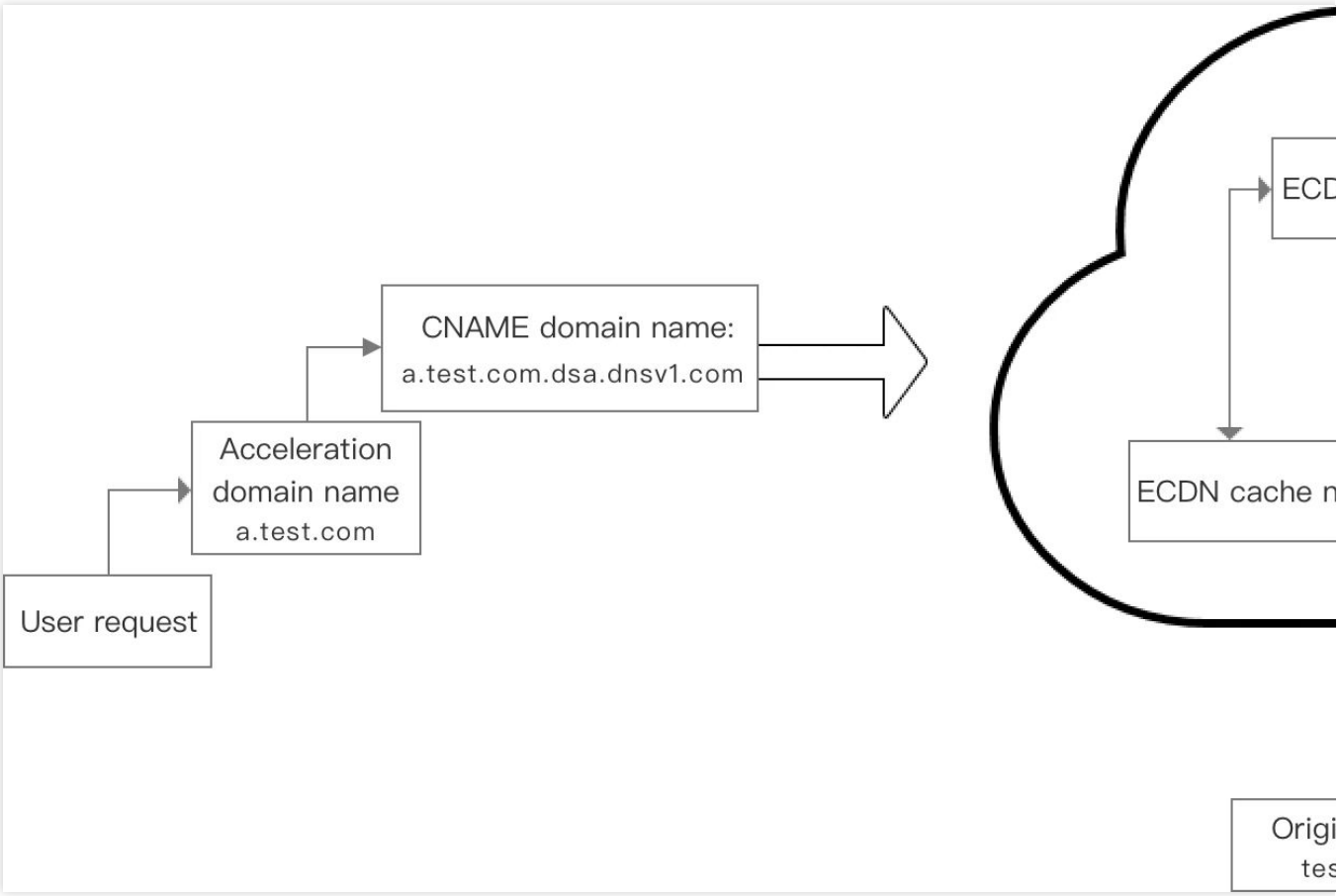
CNAME Record

A CNAME (Canonical Name) record refers to the alias record in a domain name resolution.
For example, a server named `host.example.com` provides both WWW and MAIL services. To make it easier for users to access those services, two CNAME records (`www.example.com` and `mail.example.com`) can be added for this server at its DNS service provider, and all requests to access these two CNAME records will be forwarded to `host.example.com` .

CNAME Domain Name

After a domain name is connected in the Tencent Cloud ECDN Console, the system will assign a CNAME domain name suffixed with `.dsa.dnsv1.com` to the acceleration domain name. Then you need to configure a CNAME record at your domain name service provider. After the record takes effect, the domain name resolution will be taken care of by ECDN and all requests made to this domain name will be forwarded to ECDN nodes.
The figure below shows the order in which **origin server domain name/IP**, **acceleration domain name**, **CNAME domain name** appear when a user sends a request to the origin server:



First, a user accesses an acceleration domain name, then the domain name is resolved to its CNAME domain name on the cache node, and finally the user request arrives at the origin server after being accelerated through Tencent Cloud ECDN.

Acceleration Domain Name

The acceleration domain name differs from the origin server domain name. It is a domain name you provide to the ECDN cache node to configure CNAME.

Note:

The origin server domain name must be different from the acceleration domain name.

Origin Server Domain Name

It refers to the domain name of your business server.

Origin Server IP

It refers to the IP address of your business server.

Static Content

It refers to the returned content that stays the same each time users make requests for the same resource, such as HTML, CSS and JS files, images, videos, software installation packages, APK files, and compressed files.

Dynamic Content

It refers to the returned content that changes each time users make requests for the same resource, such as APIs, JSP, ASP, PHP, PERL, and CGI files.

Intermediate Server

It refers to the origin-pull server at the middle layer between a business server (origin server) and an edge server. It can cache origin-pull requests of multiple edge servers. For requests to the same content, the intermediate server only needs to perform origin-pull once to deliver the content to each edge server, reducing access pressure on the business server (origin server).

Case of Acceleration Outside Mainland China

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Test Description

Test methods

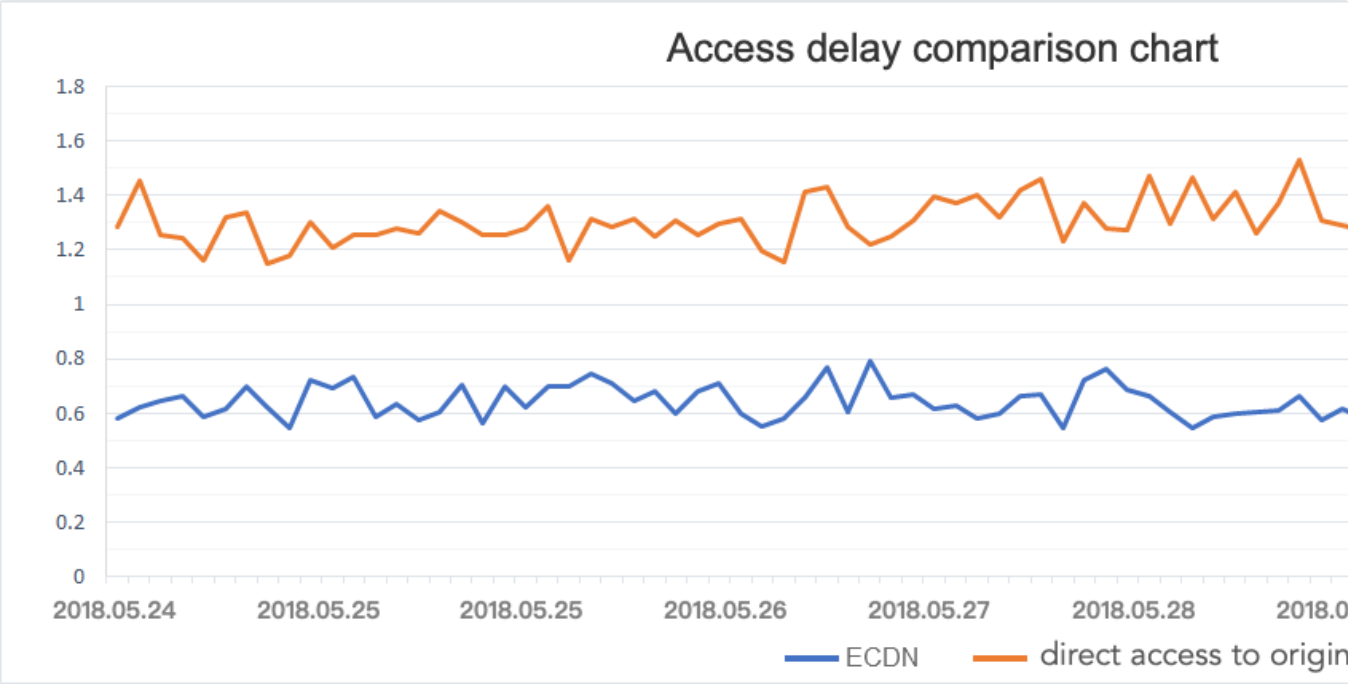
A third-party network application performance monitoring and speed test method widely used in the industry is adopted, and the test service provider is Bonree.

Test parameters

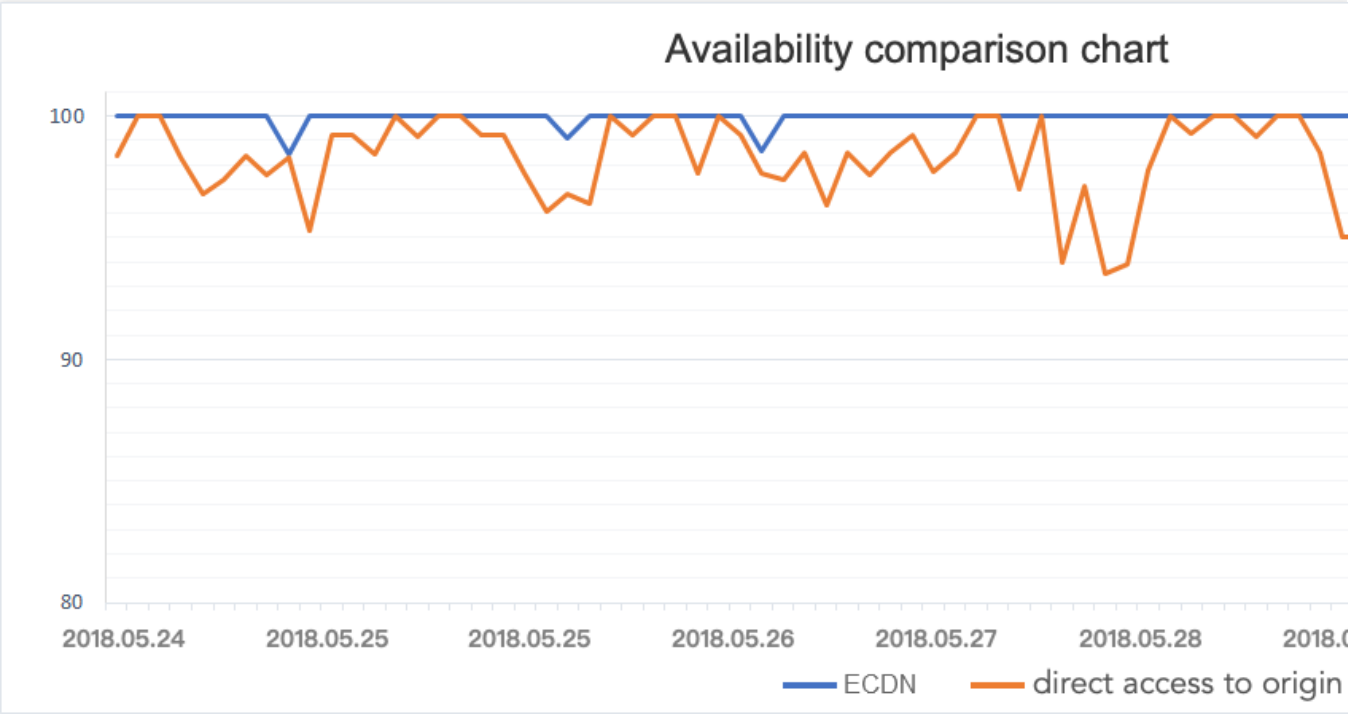
Test time	May 24, 2010 00:00–May 30, 2018 20:00
Client address	Countries and regions such as Hong Kong (China), Singapore, and Malaysia
Origin server address	IDC in Virginia, US
Test link	https://****/**/GetPage?PageId=7141974606000205
Comparison method	The same test link is used to compare the direct access to the origin server and ECDN accelerated access by setting host IP and CNAME resolution respectively

Test Results

Performance curve



Usability curve



Note：

1. After ECDN is used, the average access performance of the product is improved by 104.71%, and the page loading performance is significantly improved;

2. In cross-border access scenarios, traditional public network access is affected by network packet losses and long delays, and the access stability fluctuates greatly. After ECDN is used, the **availability and stability** of page access are greatly improved.

Data summary analysis

Monitoring Task	Performance (Seconds)			Availability (%)			Monitors	
	Average	Best	Worse	Average	Best	Worse	Erroneous Points	Monitored Points
ECDN Accelerated Access	0.637	0.337	1.440	99.93	100.00	98.44	7	10694
Direct Access to Origin Server	1.304	0.989	2.872	98.37	100.00	93.55	173	10620

Data details

Time	ECDN Accelerated Access			Direct Access to Origin Server		
	Performance (Seconds)	Availability (%)	Monitored Points	Performance (Seconds)	Availability (%)	Monitored Points
May 24, 2018 01:00	0.583	100.00	128	1.287	98.39	124
May 24, 2018 03:00	0.622	100.00	136	1.454	100.00	128
May 24, 2018 05:00	0.648	100.00	120	1.256	100.00	108
May 24, 2018 07:00	0.664	100.00	132	1.241	98.33	120
May 24, 2018 09:00	0.586	100.00	120	1.159	96.77	124
May 24,	0.614	100.00	132	1.319	97.41	116

2018 11:00						
May 24, 2018 13:00	0.696	100.00	120	1.335	98.39	124
May 24, 2018 15:00	0.621	100.00	116	1.152	97.58	124
May 24, 2018 17:00	0.547	98.44	128	1.181	98.33	120
May 24, 2018 19:00	0.723	100.00	140	1.302	95.31	128
May 24, 2018 21:00	0.693	100.00	128	1.209	99.19	124
May 24, 2018 23:00	0.734	100.00	124	1.257	99.24	132
May 25, 2018 01:00	0.589	100.00	136	1.254	98.44	128
May 25, 2018 03:00	0.636	100.00	144	1.277	100.00	124
May 25, 2018 05:00	0.578	100.00	128	1.262	99.17	120
May 25, 2018 07:00	0.606	100.00	116	1.343	100.00	120
May 25, 2018 09:00	0.706	100.00	120	1.305	100.00	128
May 25, 2018 11:00	0.563	100.00	136	1.253	99.22	128
May 25, 2018 13:00	0.701	100.00	124	1.255	99.24	132
May 25, 2018 15:00	0.624	100.00	128	1.277	97.66	128
May 25, 2018 17:00	0.698	100.00	136	1.359	96.09	128
May 25,	0.697	99.11	112	1.160	96.77	124

2018 19:00						
May 25, 2018 21:00	0.744	100.00	124	1.312	96.43	140
May 25, 2018 23:00	0.711	100.00	136	1.284	100.00	136
May 26, 2018 01:00	0.643	100.00	132	1.316	99.22	128
May 26, 2018 03:00	0.683	100.00	128	1.248	100.00	120
May 26, 2018 05:00	0.596	100.00	136	1.307	100.00	128
May 26, 2018 07:00	0.678	100.00	128	1.258	97.66	128
May 26, 2018 09:00	0.709	100.00	132	1.298	100.00	128
May 26, 2018 11:00	0.601	100.00	132	1.315	99.24	132
May 26, 2018 13:00	0.553	98.57	140	1.195	97.66	128
May 26, 2018 15:00	0.583	100.00	128	1.153	97.41	116
May 26, 2018 17:00	0.658	100.00	132	1.414	98.53	136
May 26, 2018 19:00	0.768	100.00	136	1.430	96.32	136
May 26, 2018 21:00	0.603	100.00	132	1.285	98.48	132
May 26, 2018 23:00	0.792	100.00	124	1.218	97.58	124
May 27, 2018 01:00	0.659	100.00	132	1.249	98.48	132
May 27,	0.667	100.00	140	1.310	99.24	132

2018 03:00						
May 27, 2018 05:00	0.617	100.00	132	1.396	97.73	132
May 27, 2018 07:00	0.627	100.00	132	1.374	98.48	132
May 27, 2018 09:00	0.580	100.00	124	1.399	100.00	136
May 27, 2018 11:00	0.600	100.00	140	1.317	100.00	128
May 27, 2018 13:00	0.661	100.00	132	1.420	96.97	132
May 27, 2018 15:00	0.668	100.00	136	1.463	100.00	132
May 27, 2018 17:00	0.544	100.00	124	1.233	93.97	116
May 27, 2018 19:00	0.722	100.00	132	1.374	97.14	140
May 27, 2018 21:00	0.764	100.00	116	1.281	93.55	124
May 27, 2018 23:00	0.686	100.00	128	1.272	93.94	132
May 28, 2018 01:00	0.666	100.00	120	1.473	97.79	136
May 28, 2018 03:00	0.603	100.00	132	1.297	100.00	124
May 28, 2018 05:00	0.549	100.00	124	1.467	99.29	140
May 28, 2018 07:00	0.589	100.00	124	1.312	100.00	140
May 28, 2018 09:00	0.601	100.00	132	1.415	100.00	128
May 28,	0.602	100.00	140	1.263	99.17	120

2018 11:00						
May 28, 2018 13:00	0.613	100.00	128	1.372	100.00	128
May 28, 2018 15:00	0.663	100.00	122	1.531	100.00	124
May 28, 2018 17:00	0.576	100.00	124	1.309	98.53	136
May 28, 2018 19:00	0.614	100.00	136	1.290	95.00	140
May 28, 2018 21:00	0.583	100.00	132	1.275	95.00	140
May 28, 2018 23:00	0.674	100.00	120	1.239	99.26	136
May 29, 2018 01:00	0.657	100.00	132	1.503	99.29	140
May 29, 2018 03:00	0.565	100.00	136	1.469	100.00	136
May 29, 2018 05:00	0.544	100.00	132	1.162	100.00	136
May 29, 2018 07:00	0.579	100.00	136	1.343	100.00	132
May 29, 2018 09:00	0.567	100.00	120	1.310	98.39	124
May 29, 2018 11:00	0.585	100.00	132	1.262	100.00	128
May 29, 2018 13:00	0.606	100.00	136	1.309	97.86	140
May 29, 2018 15:00	0.655	100.00	144	1.253	99.26	136
May 29, 2018 17:00	0.536	100.00	140	1.408	94.29	140
May 29,	0.735	100.00	124	1.255	95.45	132

2018 19:00						
May 29, 2018 21:00	0.655	100.00	124	1.305	97.32	112
May 29, 2018 23:00	0.668	100.00	128	1.222	99.22	128
May 30, 2018 01:00	0.568	100.00	140	1.252	100.00	136
May 30, 2018 03:00	0.647	100.00	144	1.262	100.00	136
May 30, 2018 05:00	0.607	100.00	140	1.156	100.00	124
May 30, 2018 07:00	0.573	100.00	124	1.263	100.00	132
May 30, 2018 09:00	0.680	99.24	132	1.417	100.00	136
May 30, 2018 11:00	0.621	100.00	136	1.461	99.24	132
May 30, 2018 13:00	0.606	99.26	136	1.296	99.22	128
May 30, 2018 15:00	0.769	100.00	136	1.335	95.45	132
May 30, 2018 17:00	0.522	100.00	130	1.199	96.97	132
May 30, 2018 19:00	0.703	100.00	146	1.204	96.53	144

Notes

1. Data in the above case comes from a third-party performance monitoring service provider, and the actual performance is subject to actual end user access results.
2. The above acceleration effect is for reference only, which is subject to factors such as customer business type and origin server network conditions.