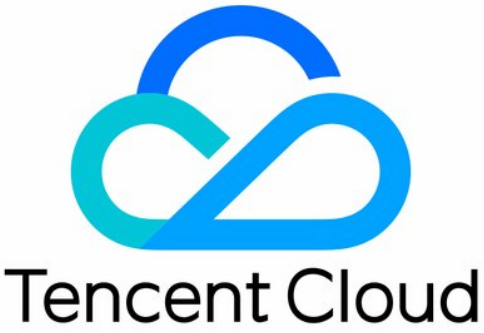
Enterprise Content Delivery Network Product Introduction



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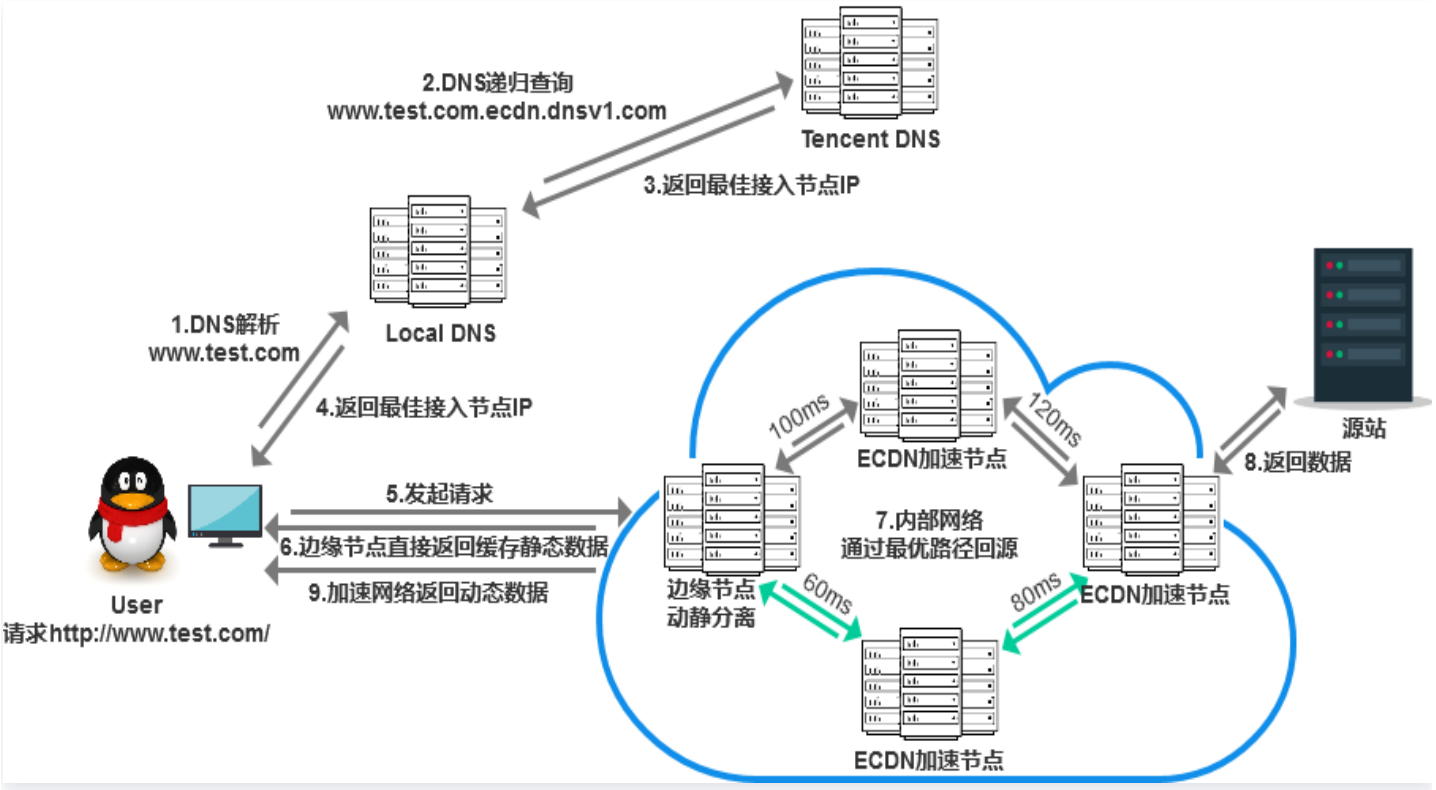
Product Overview

Tencent Cloud ECDN (Enterprise Content Delivery Network, ECDN) provides you with a new high-performance one-stop acceleration service experience, achieving ultra-fast, stable transmission of dynamic and static mixed resources. By combining static edge caching and dynamic origin path optimization, intelligently scheduling optimal service nodes, and automatically identifying dynamic and static resources, it leverages Tencent's self-developed optimal link algorithm and protocol layer optimization technology to enable whole site acceleration with a single click!
The following video gives a detailed introduction to ECDN:
Watch video

Acceleration Principle

Assuming your business's origin server domain name is `www.test.com`, when the domain is connected to ECDN and begins to use the acceleration service, your users initiate an HTTP request, the actual processing flow is as shown in the figure below:



Detailed explanation as follows:

1. When users request a dynamic resource (e.g., .asp) or static resources (e.g., text, images, etc.) under `www.test.com` , they first send a domain name resolution request to Local DNS .
2. When Local DNS is resolving `www.test.com` , it finds that a CNAME record `www.test.com.dsa.dnsv1.com` is already configured. The resolution request is then sent to Tencent DNS(GSLB), which is Tencent Cloud's independently developed scheduling system, assigning the best 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.

Ours Advantages

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Mesh-like Interconnection and Global Acceleration

To allow your published content to reach users faster, Tencent Cloud has set up more than 800 DSA 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 two accelerated nodes, and a huge number of transmission links are available.

Domestic Node Distribution

Tencent Cloud DSA provides more than 100 overseas nodes with a coverage of more than 30 countries and regions across the globe to allow your business to go global seamlessly.

Overseas Node Distribution

Dynamic Scheduling and Optimal Link

When requesting for resources, your users may be faced up with problems of high delay and high packet lost due to such factors as network, region or bandwidth. Tencent Cloud DSA, through the real-time monitoring of the links across the network and by using the self-developed 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, best accelerated node to connect to the accelerated network.

Optimal link

Tencent Cloud DSA will select the optimal network link for the requests to effectively bypass links with poor quality or congested links, to ensure a rapid access to the content based on the real-time status monitoring across network and intelligent routing technology.

Protocol Optimization

Tencent Cloud DSA 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

Complex public environment, packet lost due to network jitter, and malicious hacker attacks may prevent you from providing services to users normally. To guarantee your business security, Tencent Cloud DSA provides an all-round protection for your business in the following two ways.

Private Protocol

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

Redundancy Transmission

Tencent Cloud DSA supports multi-link 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

You do not need to make adjustments or changes to your business to connect to Tencent Cloud DSA. In addition, you don't have to worry that you cannot access the business statistics and business cost details in a transparent way or achieve a real-time monitoring of business status. Tencent Cloud DSA features a quick and simple connection and offers a variety of management tools, so that the whole DSA can be presented to you as transparent as possible.

Simple Connection

To connect to Tencent Cloud DSA, you only need to provide your domain name. DSA will assign you a CNAME in a fixed format. You need to change the CNAME setting corresponding to the domain name at the domain service provider for this domain name. Once the DNS takes effect, you can immediately start using Tencent Cloud DSA.

Statistics Monitoring

Tencent Cloud DSA provides multi-dimensional data analysis for you to get a full picture about the requests from users at business side. If you need to perform real-time monitoring of such statistics, you can go to Cloud Monitor to set relevant alarms, so that you can get an overall sense of the business status in real time.

Various Management Tools

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

Product Features

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Whole Site Acceleration

- **Global Acceleration**
  ECDN deploys acceleration nodes across various regions globally, effectively reducing cross-border access latency and ensuring global acceleration.
- **Optimal Link**
  Each acceleration node is interconnected, performing real-time detection. Combined with Tencent's self-developed optimal link algorithm, it obtains the optimal path for transmission.
- **Intelligent Caching**
  Supports customized static resource caching rules at edge nodes, enabling local acquisition of static resources to ensure response speed.

Access Security

- **Intelligent Multi-Source Switching**
  Acceleration nodes actively monitor origin server performance and automatically select the best origin server for access. Failures can be proactively detected and excluded to ensure business stability.
- **Access Control**
  Supports IP access frequency limits, black/whitelist control, and other access control features.
- **HTTPS Support**
  Supports full-link HTTPS secure protocol transmission, ensuring fast transmission of encrypted data and data security.
- **Origin Server Concealment**
  Using ECDN, customers can hide actual origin server addresses behind the ECDN acceleration network, avoiding security risks caused by exposed origin server addresses.

Business analysis

- **Log Download**
  Provides detailed user access log downloads, supporting the storage of historical log data for the last 40 days.
- **Business Transparency**
  Provides multi-dimensional access data statistics and analysis, assisting the business side

in analyzing access distribution.

Application Scenario

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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.

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.

Concepts

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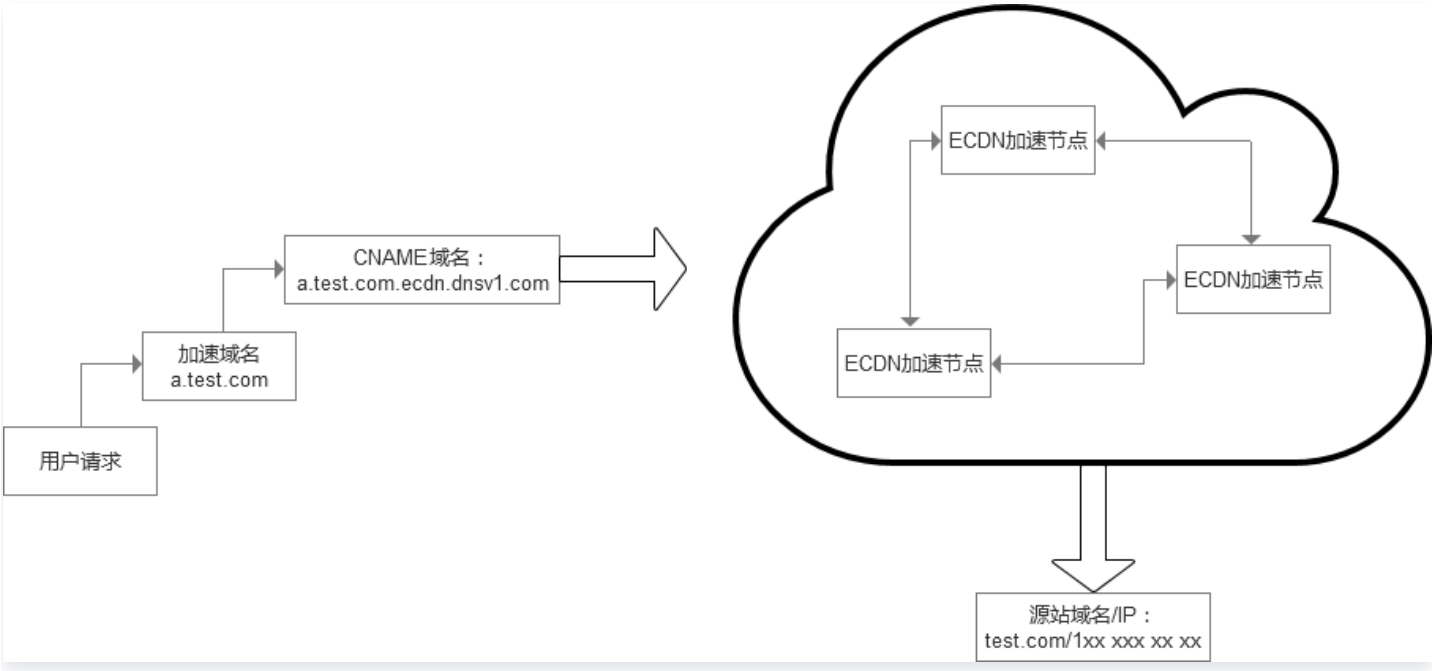
CNAME Record

A CNAME (Canonical Name) record refers to the alias record in 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 these services, two CNAME records (`www.example.com` and `mail.example.com`) can be added at its DNS Resolution Service Provider. All requests to access these two CNAMEs will be forwarded to `host.example.com` .

CNAME Domain Name

After the CNAME domain name (CNAME domain name) is accessed in the Tencent Cloud ECDN console for acceleration, the system will assign a "CNAME domain name" to the accelerated domain name (with the domain suffix: `` `.ecdn.dnsv1.com` ``). Users need to add a CNAME record at their domain service provider. Once the record takes effect, the domain name's resolution will officially switch to Tencent Cloud ECDN, and all requests for this domain name will be redirected to the nodes of Tencent Cloud ECDN.
The diagram below describes the sequence of the **origin server domain name/IP**, **accelerated domain name**, and **CNAME domain name**, when a user initiates a request reaching the origin server:



Users visit the accelerated domain name, which is resolved to the CNAME domain name of the acceleration node, and after going through Tencent Cloud ECDN network acceleration, it reaches the origin server.

Origin Server Domain Name

An origin domain is the domain name of your business server.

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 IP

An origin IP is 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 Node

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 Intranet Access Acceleration

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Test Descriptions

Test Method

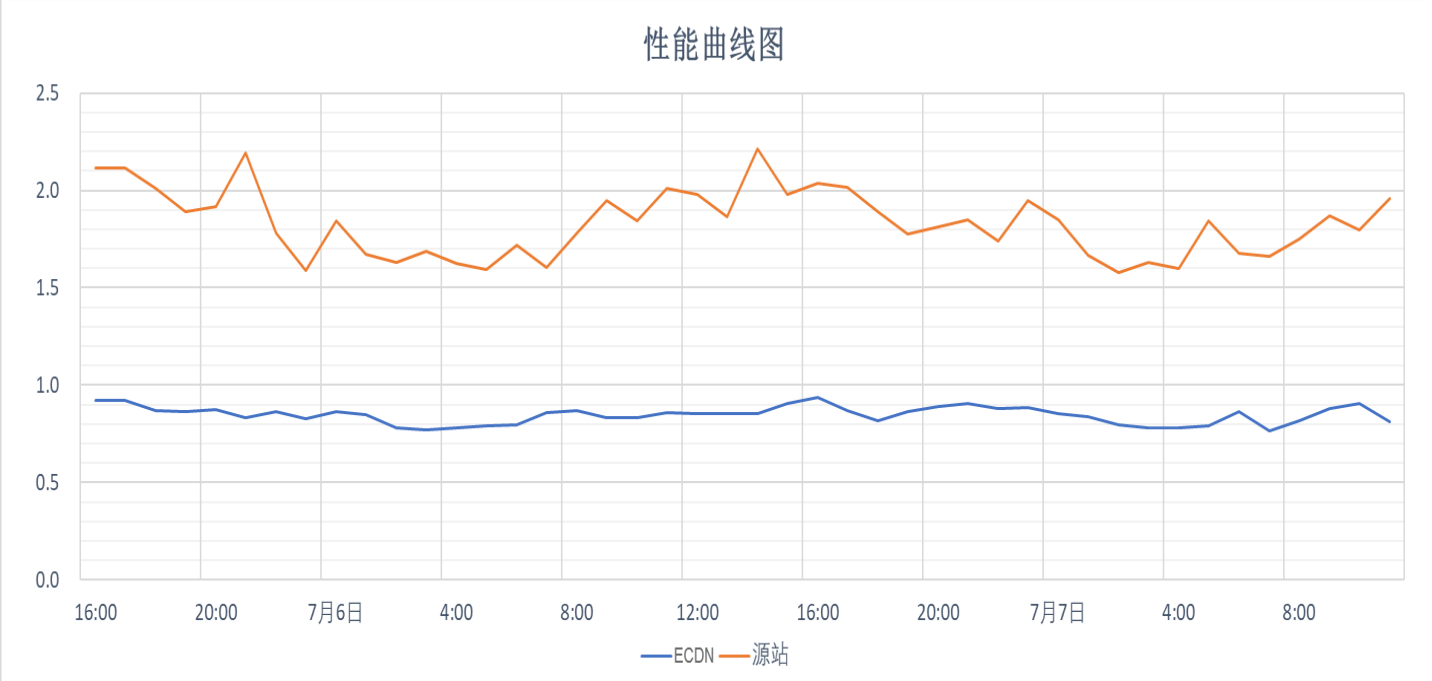
Using industry-standard third-party network APM speed testing methods. The testing service provider is Beijing Boruihongyuan Data.

Test parameters

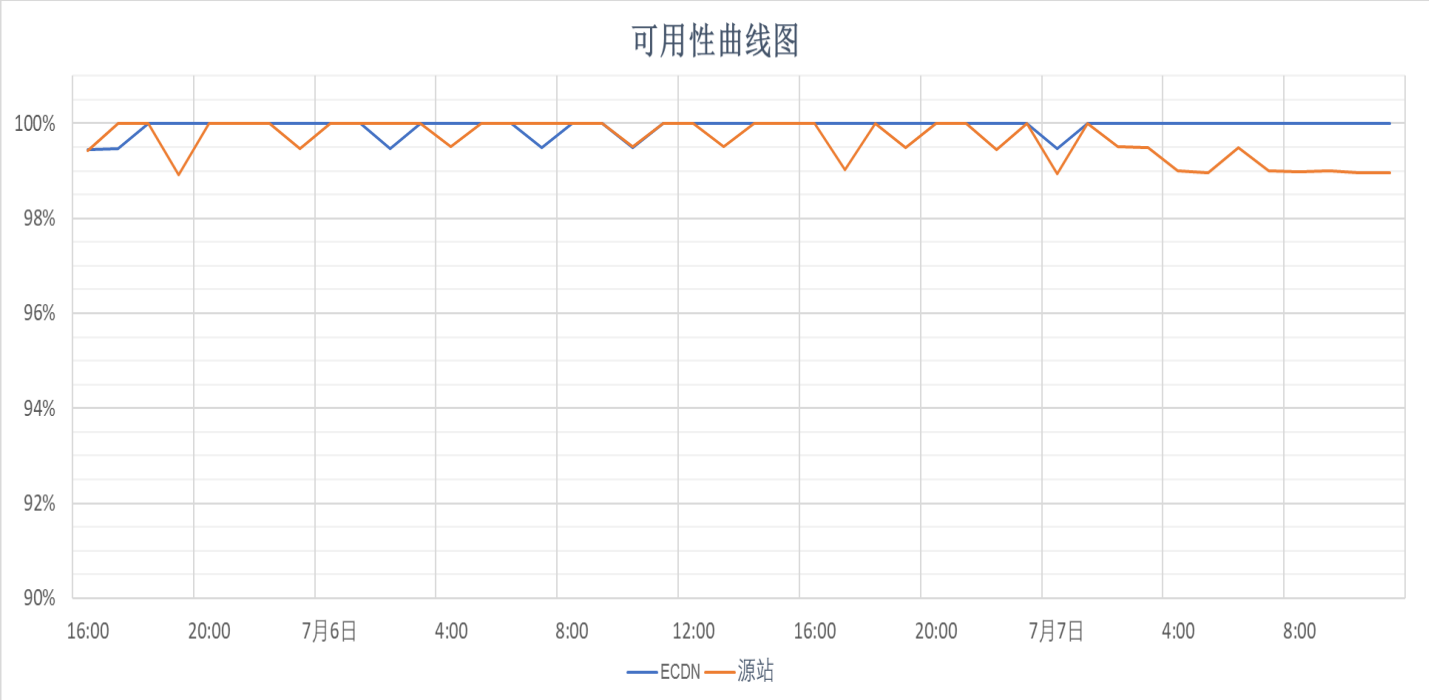
Test time	2018/07/05 16:00 – 2018/07/07 11:00
Client address	Nationwide, the client network covers Telecom, Unicom, Mobile, and other major medium and small ISP
Origin server address	Shanghai Telecom IDC Data Center
ECDN Test Link	`https://sapi.*****/styles/styles.css` , test file size: 42.2 KB
Origin server test link	`https://api.*****/styles/styles.css` , test file size: 42.2 KB
Comparison method	The test uses the same origin server address and test file. Comparing the effects by directly accessing the origin server and using ECDN acceleration through two different access domains

Test Results

Performance Curve



Availability Curve



Data Summary Analysis

Monitoring Task	Performance (in seconds)			Availability (%)			Monitoring Frequency	
	Average	Best	Worst	Average	Best	Worst	Error Points	Total Monitoring Count
ECDN Accelerated Access	0.847	0.586	1.924	99.93	100.00	99.45	6	8574
Direct access to origin server	1.831	0.892	7.380	99.65	100.00	98.92	30	8563

Summary Explanation

1. After using full-site acceleration, average access performance improved by **116.17%**;
2. Reduced cross-ISP network latency, particularly the average access latency optimization for users of small and medium-sized ISPs has shown significant results.

Data Details

Time	ECDN Accelerated Access			Direct access to origin server		
	Performance (in seconds)	Availability (%)	Monitoring Points	Performance (in seconds)	Availability (%)	Monitoring Points
July 5, 2018 16:00	0.921	99.45 %	183	2.112	99.42 %	172
July 5, 2018 17:00	0.921	99.47 %	189	2.112	100.00 %	192
July 5, 2018 18:00	0.871	100.00 %	195	2.013	100.00 %	187
July 5, 2018 19:00	0.866	100.00 %	196	1.889	98.92 %	186

July 5, 2018 20:00	0.874	100.00 %	186	1.915	100.00 %	170
July 5, 2018 21:00	0.831	100.00 %	190	2.194	100.00 %	181
July 5, 2018 22:00	0.866	100.00 %	192	1.782	100.00 %	189
July 5, 2018 23:00	0.829	100.00 %	189	1.591	99.46 %	186
July 6, 2018 00:00	0.865	100.00 %	196	1.846	100.00 %	198
July 6, 2018 01:00	0.848	100.00 %	198	1.672	100.00 %	196
July 6, 2018 02:00	0.783	99.48 %	192	1.632	100.00 %	194
July 6, 2018 03:00	0.772	100.00 %	185	1.686	100.00 %	196
July 6, 2018 04:00	0.779	100.00 %	205	1.624	99.50 %	202
July 6, 2018 05:00	0.791	100.00 %	195	1.593	100.00 %	196
July 6, 2018 06:00	0.799	100.00 %	192	1.718	100.00 %	201
July 6, 2018 07:00	0.859	99.48 %	193	1.606	100.00 %	196

July 6, 2018 08:00	0.868	100.00 %	214	1.780	100.00 %	200
July 6, 2018 09:00	0.832	100.00 %	205	1.947	100.00 %	205
July 6, 2018 10:00	0.834	99.49 %	198	1.841	99.51%	204
July 6, 2018 11:00	0.860	100.00 %	193	2.008	100.00 %	198
July 6, 2018 12:00	0.855	100.00 %	217	1.981	100.00 %	201
July 6, 2018 13:00	0.855	100.00 %	194	1.864	99.51%	204
July 6, 2018 14:00	0.854	100.00 %	197	2.212	100.00 %	187
July 6, 2018 15:00	0.905	100.00 %	201	1.980	100.00 %	200
July 6, 2018 16:00	0.939	100.00 %	196	2.035	100.00 %	203
July 6, 2018 17:00	0.870	100.00 %	200	2.016	99.01%	203
July 6, 2018 18:00	0.815	100.00 %	191	1.890	100.00 %	204
July 6, 2018 19:00	0.866	100.00 %	189	1.777	99.50 %	199

July 6, 2018 20:00	0.890	100.00 %	193	1.812	100.00 %	186
July 6, 2018 21:00	0.908	100.00 %	194	1.847	100.00 %	192
July 6, 2018 22:00	0.879	100.00 %	191	1.738	99.45 %	182
July 6, 2018 23:00	0.886	100.00 %	213	1.948	100.00 %	183
July 7, 2018 00:00	0.855	99.46 %	185	1.851	98.94 %	189
July 7, 2018 01:00	0.840	100.00 %	194	1.668	100.00 %	200
July 7, 2018 02:00	0.797	100.00 %	186	1.576	99.50 %	201
July 7, 2018 03:00	0.780	100.00 %	187	1.631	99.50 %	200
July 7, 2018 04:00	0.781	100.00 %	196	1.598	99.01%	202
July 7, 2018 05:00	0.790	100.00 %	198	1.843	98.97 %	194
July 7, 2018 06:00	0.863	100.00 %	191	1.679	99.50 %	199
July 7, 2018 07:00	0.765	100.00 %	199	1.662	99.00 %	200

July 7, 2018 08:00	0.816	100.00 %	195	1.751	98.99 %	198
July 7, 2018 09:00	0.882	100.00 %	188	1.871	99.00 %	201
July 7, 2018 10:00	0.905	100.00 %	194	1.796	98.97 %	194
July 7, 2018 11:00	0.814	100.00 %	199	1.958	98.96 %	192

Additional Notes

1. The above case data is sourced from third-party performance monitoring service providers, based on actual end-user access results.
2. The above acceleration effects are for reference only. The product's acceleration effects are also influenced by factors such as the customer's business type and origin server network conditions. Actual test results should be used as the benchmark.

Case of Acceleration Outside Mainland China

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Test Descriptions

Test Method

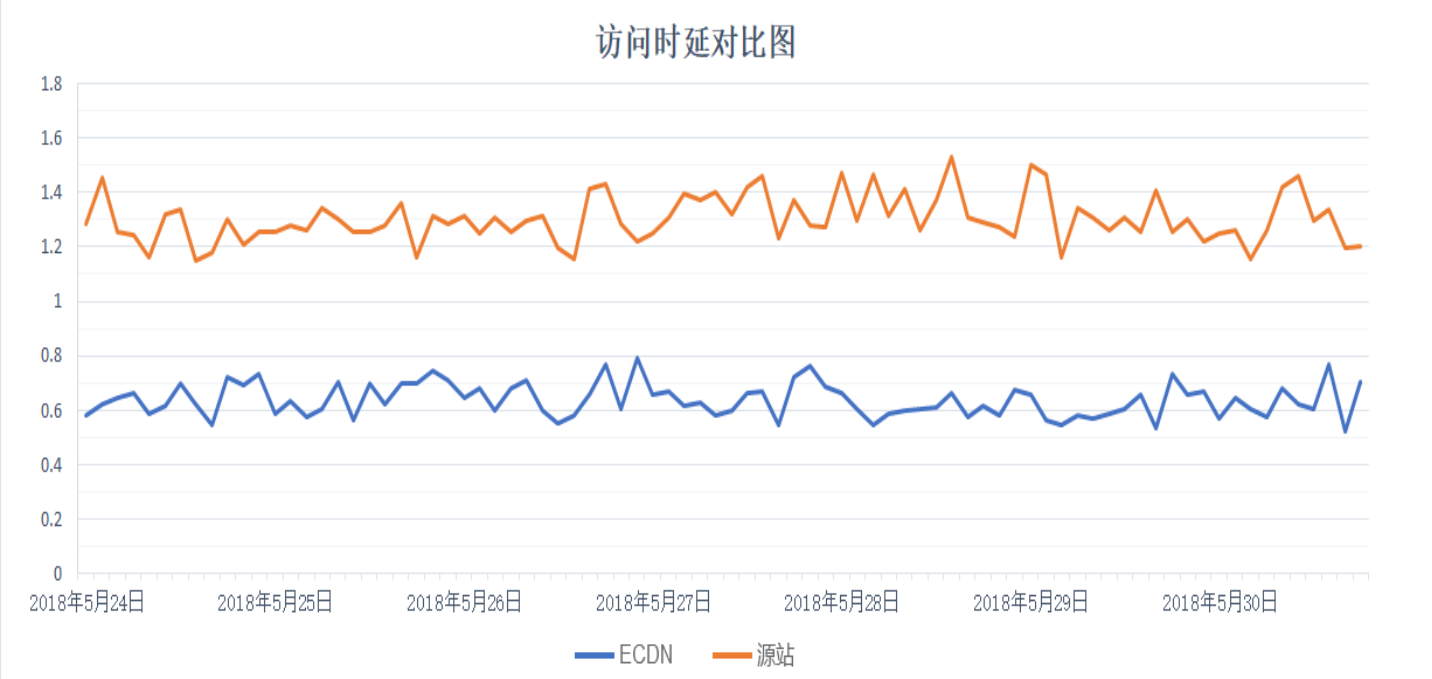
Using industry-standard third-party network APM speed testing methods. The testing service provider is Beijing Boruihongyuan Data.

Test parameters

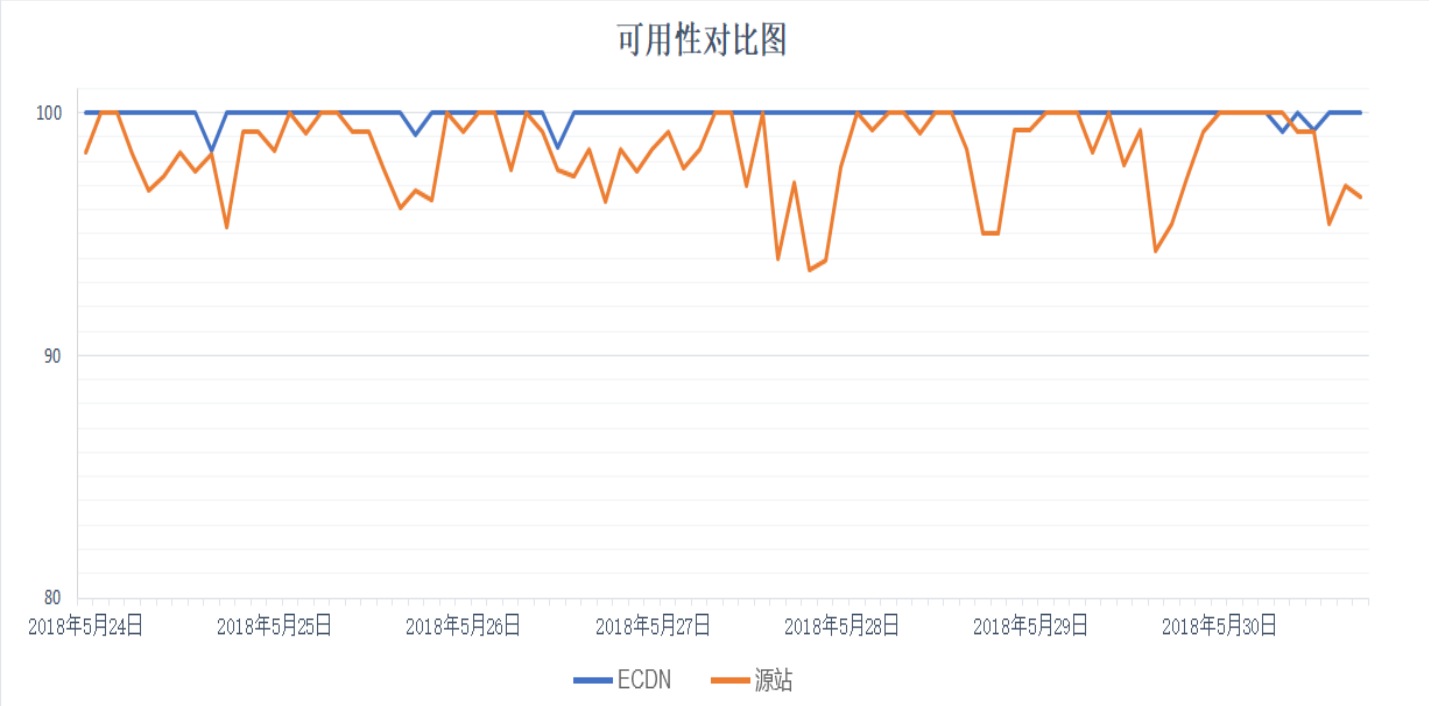
Test time	2018/05/24 00:00 - 2018/05/30 20:00
Client address	Hong Kong (China), Singapore, Malaysia and other regions and countries
Origin server address	US Virginia IDC Data Center
Test Link	`https://**` / `/GetPage?PageId=7141974606000205`
Comparison method	The same test link was used for testing, compared by setting host IP and CNAME resolution methods, and compared direct access to the origin server and using ECDN acceleration

Test Results

Performance Curve



Availability Curve



Summary Explanation

1. After using whole site acceleration, the average product access performance improved by 104.71%, and page loading performance improved significantly;

2. In cross-border access scenarios, traditional public internet access is affected by network packet loss and long latencies, leading to significant fluctuations in access stability. After employing ECDN for full-site acceleration, the usability and stability of web page access have markedly improved.

Data Summary Analysis

Monitoring Task	Performance (in seconds)			Availability (%)			Monitoring Frequency	
	Average	Best	Worst	Average	Best	Worst	Error Points	Total Monitoring Count
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 (in seconds)	Availability (%)	Monitoring Points	Performance (in seconds)	Availability (%)	Monitoring 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	0.664	100.00	132	1.241	98.33	120

07:00						
May 24, 2018 09:00	0.586	100.00	120	1.159	96.77	124
May 24, 2018 11:00	0.614	100.00	132	1.319	97.41	116
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	0.606	100.00	116	1.343	100.00	120

07:00						
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, 2018 19:00	0.697	99.11	112	1.160	96.77	124
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	0.678	100.00	128	1.258	97.66	128

07:00						
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, 2018 03:00	0.667	100.00	140	1.310	99.24	132
May 27, 2018 05:00	0.617	100.00	132	1.396	97.73	132
May 27, 2018	0.627	100.00	132	1.374	98.48	132

07:00						
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	0.589	100.00	124	1.312	100.00	140

07:00						
May 28, 2018 09:00	0.601	100.00	132	1.415	100.00	128
May 28, 2018 11:00	0.602	100.00	140	1.263	99.17	120
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	0.579	100.00	136	1.343	100.00	132

07:00						
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, 2018 19:00	0.735	100.00	124	1.255	95.45	132
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	0.573	100.00	124	1.263	100.00	132

07:00						
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

Additional Notes

1. The above case data is sourced from third-party performance monitoring service providers, based on actual end-user access results.
2. The above acceleration effects are for reference only. The product's acceleration effects are also influenced by factors such as the customer's business type and origin server network conditions. Actual test results should be used as the benchmark.