Legal disclaimer

Alibaba Cloud reminds you to carefully read and fully understand the terms and conditions of this legal disclaimer before you read or use this document. If you have read or used this document, it shall be deemed as your total acceptance of this legal disclaimer.

1. You shall download and obtain this document from the Alibaba Cloud website or other Alibaba Cloud-authorized channels, and use this document for your own legal business activities only. The content of this document is considered confidential information of Alibaba Cloud. You shall strictly abide by the confidentiality obligations. No part of this document shall be disclosed or provided to any third party for use without the prior written consent of Alibaba Cloud.

2. No part of this document shall be excerpted, translated, reproduced, transmitted, or disseminated by any organization, company, or individual in any form or by any means without the prior written consent of Alibaba Cloud.

3. The content of this document may be changed due to product version upgrades, adjustments, or other reasons. Alibaba Cloud reserves the right to modify the content of this document without notice and the updated versions of this document will be occasionally released through Alibaba Cloud-authorized channels. You shall pay attention to the version changes of this document as they occur and download and obtain the most up-to-date version of this document from Alibaba Cloud-authorized channels.

4. This document serves only as a reference guide for your use of Alibaba Cloud products and services. Alibaba Cloud provides the document in the context that Alibaba Cloud products and services are provided on an "as is", "with all faults" and "as available" basis. Alibaba Cloud makes every effort to provide relevant operational guidance based on existing technologies. However, Alibaba Cloud hereby makes a clear statement that it in no way guarantees the accuracy, integrity, applicability, and reliability of the content of this document, either explicitly or implicitly. Alibaba Cloud shall not bear any liability for any errors or financial losses incurred by any organizations, companies, or individuals arising from their download, use, or trust in this document. Alibaba Cloud shall not, under any circumstances, bear responsibility for any indirect, consequent
ial, exemplary, incidental, special, or punitive damages, including lost profits arising from the use or trust in this document, even if Alibaba Cloud has been notified of the possibility of such a loss.

5. By law, all the contents in Alibaba Cloud documents, including but not limited to pictures, architecture design, page layout, and text description, are intellectual property of Alibaba Cloud and/or its affiliates. This intellectual property includes, but is not limited to, trademark rights, patent rights, copyrights, and trade secrets. No part of this document shall be used, modified, reproduced, publicly transmitted, changed, disseminated, distributed, or published without the prior written consent of Alibaba Cloud and/or its affiliates. The names owned by Alibaba Cloud shall not be used, published, or reproduced for marketing, advertising, promotion, or other purposes without the prior written consent of Alibaba Cloud. The names owned by Alibaba Cloud include, but are not limited to, "Alibaba Cloud", "Aliyun", "HiChina", and other brands of Alibaba Cloud and/or its affiliates, which appear separately or in combination, as well as the auxiliary signs and patterns of the preceding brands, or anything similar to the company names, trade names, trademarks, product or service names, domain names, patterns, logos, marks, signs, or special descriptions that third parties identify as Alibaba Cloud and/or its affiliates.

6. Please contact Alibaba Cloud directly if you discover any errors in this document.
## Document conventions

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

Legal disclaimer.............................................................................................................1
Document conventions..............................................................................................1
1 Billing..................................................................................................................1
   1.1 Why is the actual billed network traffic different from the network traffic reported by the logging feature?.................................................................1
   1.2 Why are fees still incurred after I have stopped the CDN service?.............2
   1.3 What are the billing rules for CDN nodes in Mainland China to accelerate the delivery of content from an origin server outside Mainland China?.....2
   1.4 How is the network traffic billed when a CDN node retrieves an OSS resource in a back-to-origin operation?.................................................................3
   1.5 How is the network traffic billed when I integrate Alibaba Cloud CDN with other Alibaba Cloud services?.................................................................4
   1.6 How can I view the CDN resource plan I have purchased?.......................5
   1.7 Why do I pay extra fees for network traffic even after I have purchased a CDN data transfer plan?.................................................................6
2 Domain names..................................................................................................7
   2.1 What are static content and dynamic content?........................................7
   2.2 Does CDN support wildcard domains for acceleration?.........................8
   2.3 How can I query IP addresses of L2 nodes for a CDN domain?.............9
   2.4 How does CDN process 302 redirects from an origin server?.................9
   2.5 How do I handle domain names without any ICP licenses?..................10
   2.6 What is DNS resolution?..........................................................................12
   2.7 What is the difference between a CDN node and a mirror?....................14
   2.8 What is the health check mechanism of Alibaba Cloud CDN?..............15
   2.9 What is the impact if I switch the region where my CDN service is deployed?..............................................................................................................16
   2.10 What HTTP methods does CDN support?.............................................17
   2.11 How can I check whether a CNAME record is correctly resolved?........18
3 Security.............................................................................................................20
   3.1 Why can an IP address in the IP blacklist still be used to request resources?...............................................................................................................20
   3.2 How do I handle DDoS or HTTP flood attacks against a CDN domain?...21
   3.3 How can I use CDN to block a specified IP address?.............................21
4 Caches.............................................................................................................23
   4.1 What are the causes of a decreased cache hit rate on a CDN node?........23
1 Billing

1.1 Why is the actual billed network traffic different from the network traffic reported by the logging feature?

Question

Why is the actual billed network traffic different from the network traffic reported by the logging feature?

Answer

The network traffic reported by the logging feature reflects only the network traffic generated at the application layer. The network traffic that occurs at the network layer is 7% to 15% more than the reported network traffic. The extra network traffic may occur because of the following reasons:

• TCP/IP packet headers

HTTP requests are transmitted based on a TCP/IP stack. The maximum transmission unit (MTU) over the Internet is 1,500 bytes, of which the headers inserted by the TCP and IP protocols occupy 40 bytes. The headers are inserted into each packet by the system kernel based on the underlying protocols in the TCP/IP stack. The size of the headers is not captured at the application layer, and is not reflected in the logging feature. This leads to an estimated 3% of outbound data that is untracked. This estimate is based on the following calculation: 40/(1,500 - 40) = 2.74%.

• TCP retransmission

Depending on the physical network conditions of the Internet, about 3% to 10% of packets may be lost during transmission. The corresponding servers resend the packets that have been discarded during transmission over the Internet. The system kernel and the underlying protocols in the TCP/IP protocol stack process the retransmission and consume some network traffic. This consumption is excluded from the statistics collected at the application layer. The proportion between the network traffic for retransmission and the log statistics result varies, depending on the network conditions. For example, the proportion is lower at
off-peak hours in the morning than that at peak hours in the evening. In most cases, the proportion is from 3% to 7%.

Therefore, as an industry standard practice, an excess of 7% to 15% of the consumed network traffic is added to the total billable items. An average proportion of 10% is used for Alibaba Cloud Content Delivery Network (CDN).

1.2 Why are fees still incurred after I have stopped the CDN service?

Question

Why are fees still incurred after I have stopped the Content Delivery Network (CDN) service for my domain?

Answer

If you have stopped the CDN service, fees are still incurred in the following scenarios:

- Your local Domain Name System (DNS) server caches some resources. If the cached resources have not expired after you stopped the CDN service, the local DNS server still resolves the requested CDN domain that has been disabled into the corresponding CDN node. This causes a few network traffic fees in CDN.
- The local DNS server caches some software download resources. The cached resources may still be valid after you stopped the CDN service. In this case, when some software download requests arrive, the local DNS still resolves the requested CDN domain that has been disabled into the corresponding CDN node. This causes a few network traffic fees in CDN.

1.3 What are the billing rules for CDN nodes in Mainland China to accelerate the delivery of content from an origin server outside Mainland China?

Question

If my origin server is located in a region outside Mainland China, how am I charged for using CDN nodes in Mainland China?
The regions outside Mainland China include China (Hong Kong), China (Macao), China (Taiwan), and regions outside China.

Answer

Only outbound network traffic is billed in CDN. You can use CDN nodes in Mainland China to accelerate the delivery of content from your origin server outside Mainland China. In this case, the fees are charged according to the billing rules for CDN nodes in Mainland China.

However, when CDN nodes in Mainland China retrieve resources from the origin server outside Mainland China, latency may exist in the process of handling the requests. This may downgrade the acceleration performance. If your origin server and end users are both located in regions outside Mainland China, we recommend that you use the CDN nodes in regions outside Mainland China.

1.4 How is the network traffic billed when a CDN node retrieves an OSS resource in a back-to-origin operation?

Question

I use Content Delivery Network (CDN) to accelerate the delivery of content from Object Storage Service (OSS). How does the network traffic is billed when a CDN node retrieves resources from an OSS bucket?

Answer

Alibaba Cloud CDN and OSS incur data transfer fees only for outbound network traffic. The fees are charged according to the billing rules of the service from which the data is transferred.

- When the OSS bucket returns the requested resources to the CDN node, data is transferred from the OSS bucket to the CDN node. In this process, fees are charged for OSS rather than CDN.
- When the CDN node returns the requested resources to end users, data is transferred out of the CDN node. In this process, fees are charged for CDN rather than OSS.

For more information about OSS billing methods, see #unique_8.
1.5 How is the network traffic billed when I integrate Alibaba Cloud CDN with other Alibaba Cloud services?

Question

Alibaba Cloud Content Delivery Network (CDN) can work with other Alibaba Cloud services, such as Elastic Compute Service (ECS) and Object Storage Service (OSS). CDN nodes are distributed across many regions worldwide. Data is transmitted over public networks between CDN and other Alibaba Cloud services. How does the system calculate billing for corresponding network traffic?

Answer

The system calculates network traffic billing for CDN separately from other Alibaba Cloud services. For more information about the billing of each Alibaba Cloud service, see the corresponding billing rules.

For example, you have activated CDN and OSS to provide the file download feature. If a client requests resources from a CDN node that has not cached the resources, the CDN node redirects the request to the specified OSS bucket. In this case, you pay for CDN outbound network traffic according to the CDN billing rules, and pay for OSS outbound network traffic according to the OSS billing rules.

- When the OSS bucket returns the requested resources to the CDN node, data is transferred from the OSS bucket to the CDN node. In this process, fees are charged for OSS rather than CDN.
- When the CDN node returns the requested resources to end users, data is transferred out of the CDN node. In this process, fees are charged for CDN rather than OSS.

Note:

Alibaba Cloud provides offers and discounts if you purchase a combination of services that facilitate each other. For example, when a CDN node retrieves an OSS resource in a back-to-origin operation, the OSS outbound network traffic is billed at a discounted price.
1.6 How can I view the CDN resource plan I have purchased?

**Question**

After I have purchased a Content Delivery Network (CDN) resource plan on the CDN Resource Plan page, how can I view the purchased CDN resource plan?

**Answer**

You can view the purchase history for your resource plans. For more information, see #unique_11. To view the resource plan that you have purchased, follow these steps:

1. **Log on to the Alibaba Cloud CDN platform.**
2. **On the menu bar, choose Billing Management > Billing Management.**
3. **In the left-side navigation pane, choose Resource Packages > Usage Details.**
4. **View the details of the purchased resource plan.**
1.7 Why do I pay extra fees for network traffic even after I have purchased a CDN data transfer plan?

Question

Why do I pay extra fees even after I have purchased a Content Delivery Network (CDN) data transfer plan?

Answer

After you have purchased a CDN data transfer plan, you may pay extra fees due to these causes:

· Billing method

The CDN data transfer plan supports the Pay by Traffic billing method only. If you select Pay by Bandwidth, corresponding fees cannot be deducted from the data transfer plan. To use the data transfer plan, you can change the billing method in the CDN console. For more information, see #unique_13.

· Value-added service fees

After you have purchased a CDN or Dynamic Content Delivery Network (DCDN) resource plan and selected the Pay by Traffic billing method, you may still have to pay extra fees. In this case, you can check whether you have enabled some value-added services, such as HTTPS. Value-added services are billed on a pay-as-you-go basis. The system automatically deducts corresponding fees from your account balance. You can purchase a resource plan for your value-added services. For more information, see #unique_14.

· Fees for CDN nodes outside Mainland China

CDN nodes outside Mainland China only support the Pay by Traffic billing method. If you set Region to Outside Mainland China or Global when you add a CDN domain, select an outbound data transfer plan for the region where your CDN node is located. For more information about pricing for CDN nodes outside Mainland China, see Pricing of CDN.
2 Domain names

2.1 What are static content and dynamic content?

Static content

Static content refers to any file that can be delivered without modifications or processing. Static content is also known as static resources. Therefore, the static resources that Alibaba Cloud Content Delivery Network (CDN) delivers for different requests are the same. Static content includes images, video content, HTML documents, CSS stylesheets, JavaScript files, software installation packages, APK files, and compressed package files.

CDN caches resources on CDN nodes to accelerate the content delivery. For example, CDN caches the static content from your server on the edge node nearest to end users. When end users request the static content, they do not need to connect to the origin server. Instead, end users can retrieve the requested content cached on the CDN node. In this way, CDN can mitigate the pressure on the origin server.

Dynamic content

Dynamic content refers to any content that varies according to requests. Dynamic content is also known as dynamic resources. Different dynamic resources will be served for each request. Dynamic content includes the .asp, .jsp, .php, .perl and .cgi files, API requests, and database interactive requests on a website.

When end users request the dynamic content, a CDN node redirects the requests to your server. The server dynamically generates requested data and returns the data to end users. Therefore, CDN cache-based acceleration is not applicable to dynamic content. CDN cannot cache dynamic content that is lively updated. Instead, the CDN node has to redirect the request for dynamic content to your origin server. As a result, CDN cannot accelerate the delivery of dynamic content.

Your website or application may have lots of dynamic content. For example, if you want to accelerate the delivery of various API requests, you can use Dynamic Route for CDN (DCDN). DCDN can accelerate the delivery of both dynamic and static content. To accelerate the delivery of different content, we recommend that you:

- Use CDN to accelerate static content delivery.
Use DCDN to accelerate the retrieval of dynamic content from your origin server. To achieve the acceleration of dynamic content, DCDN applies acceleration techniques, such as routing optimization and data transmission optimization.

2.2 Does CDN support wildcard domains for acceleration?

What are wildcard domains?

Wildcard domains refer to the Content Delivery Network (CDN) domains that contain wildcards. You can use wildcard domains to accelerate the content delivery for all corresponding second-level domains. For example, you can add `.test.com` as a CDN domain. If you map `*.test.com` to a CNAME domain in CDN, all second-level domains of `.test.com` such as `a.test.com` support the acceleration of content delivery. However, CDN cannot accelerate the delivery of content for third-level domains such as `b.a.test.com` of the wildcard domain `*.test.com`.

Scenarios supported by wildcard domains

Alibaba Cloud CDN supports wildcard domains. You can use wildcard domains in the following scenarios:

- #unique_18
- #unique_19
- #unique_20

Rules for adding wildcard domains

To add a wildcard domain, follow these rules:

- Each CDN domain name must be less than 100 bytes in length.
- A maximum of three levels of wildcard domain names are supported. A third-level wildcard domain contains three dots, for example, `*.b.c.com`.
- Similar to common domains, network traffic generated by all second-level domains of a wildcard domain is billed. Network traffic generated by wildcard domains is recorded in resource monitoring. The system provides billing data for all second-level domains of a wildcard domain under the same CDN domain.
Notes

A log file is provided for a single wildcard domain at specified intervals. The log file contains acceleration information for all second-level domains of the wildcard domain.

If you refresh or preload content on a cache node, URLs and directories of wildcard domains are not supported. Instead, only URLs and directories of accurate domains can be refreshed or preloaded.

2.3 How can I query IP addresses of L2 nodes for a CDN domain?

Question

How can I query IP addresses of L2 nodes for a CDN domain?

Answer

You can retrieve IP addresses of L2 nodes for a CDN domain by using the following methods:

- If a request misses the caches on an L1 node, CDN redirects the request to an L2 node. CDN automatically assigns an L2 cache node to process the request. If you specify a fixed list of IP addresses of L2 cache nodes, cache hits on L2 nodes may fail.
- If your origin server has SafeDog and other protection software configured, call the #unique_22 operation to query IP addresses of L2 nodes by CDN domain.
- To support the daily peak bandwidth of more than 1 Gbit/s, you can submit a ticket, query IP addresses of L2 nodes, and then add these IP addresses to the whitelist to ensure normal visits to your website.

2.4 How does CDN process 302 redirects from an origin server?

Question

After you use a CDN domain, the corresponding CDN node caches content from your origin server. Therefore, end users can retrieve the content from the CDN node more efficiently than from the origin server. If an end user requests content from the origin that has 302 redirects configured, the CDN node caches the Web page that the URL in the request points to. When other types of terminals request content with the same URL next time, these terminals retrieve the Web page cached
on the CDN node. However, this Web page is not the target Web page after a 302 redirect. As a result, the origin server cannot respond to different terminals with adaptive content. How does CDN process 302 redirects from an origin server?

Answer

The style of a Web page displayed on a terminal depends on the terminal type. If the origin server responds to a request based on a 302 redirect, the target Web page after the 302 redirect is returned.

You can specify that the CDN node does not cache the Web page that the URL in a request points to, but caches the target Web page after a 302 redirect. Accordingly, different types of terminals can retrieve adaptive content from the origin server after 302 redirects through the CDN node. The same type of terminals can retrieve the content cached on the CDN node. Therefore, the content delivery is accelerated for all types of terminals. The CDN node can cache content based on directories and file extensions. You can configure the type of cached objects and the priorities of caching rules in the CDN console. Based on the directory structure of your website, you can specify that the CDN node will not cache the content that a requested URL points to. Instead, the CDN node caches the target content after a 302 redirect. For the same purpose, you can configure a policy on the origin server. This policy specifies that the content a requested URL points to will not be cached. This policy on the origin server has higher priority than the caching policies of CDN. Specifically, you can include the following header settings in the response for a requested URL:

- Cache-Control: no-cache, no-store, private
- Cache-Control: s-maxage=0, max-age=0
- pragma: no-cache

2.5 How do I handle domain names without any ICP licenses?

Description

According to relevant laws and regulations in Mainland China, Alibaba Cloud CDN cannot provide acceleration services for domain names that have not been registered in Mainland China. Therefore, when the Internet Content Provider (ICP) filing information about your domain name expires, Alibaba Cloud CDN will lawfully stop the acceleration service. However, you can handle domain names
without any ICP filing or whose ICP filing information is invalid by using one of the following methods:

Method 1:

We recommend that you temporarily set the Region parameter to Outside Mainland China in the CDN console. If your CDN node is deployed in the region outside Mainland China, you do not need to submit an ICP filing for the CDN domain.

However, your charges will be increased when you use a node outside Mainland China. For more information, see Pricing of CDN.

Note:
The regions outside Mainland China include China (Hong Kong), China (Macao), China (Taiwan), and regions in other countries.

1. Log on to the Alibaba Cloud CDN console.
2. In the left-side navigation pane, click Domain Names.
3. On the Domain Names page, find the target domain name and click Manage.
4. In the Basic Information section, click Modify.
5. In the Region dialog box that appears, set Region to Outside Mainland China.

6. Click OK.

Method 2:

We recommend that you temporarily migrate your business out of Alibaba Cloud CDN, and use CDN services from other providers. After you obtain the ICP license, you can migrate the business to Alibaba Cloud CDN again.

2.6 What is DNS resolution?

What is Domain Name System (DNS) resolution?

- What is DNS resolution?

After you purchase an Elastic Compute Service (ECS) instance, the system automatically attaches an IP address to the instance. IP addresses are composed of digits. You can map the IP addresses to domain names for easier management. For example, www.aliyun.com is a domain name that corresponds to an IP address. DNS resolution is used to resolve a domain name into the IP address...
where the target website is hosted. Therefore, you can visit the website by using the domain name.

Alibaba Cloud DNS provides the DNS resolution service. Alibaba Cloud DNS is a secure, efficient, stable, scalable, and authoritative DNS service. Alibaba Cloud DNS allows enterprises and developers to translate easy-to-manage domain names into digital IP addresses for computer communications. In this way, end users' requests can be redirected to the corresponding website or application server over the network. For more information, see Alibaba Cloud DNS.

• Why is DNS resolution required?

External users can visit your website only after the requested domain name is resolved into the IP address where your website is hosted. When you build a website, you must purchase an ECS instance, deploy a website, purchase a domain name, apply for an ICP filing, and then complete the DNS resolution settings.

• How do I complete the DNS resolution settings?

Most domain registrars in Mainland China provide their own DNS servers.

What is an A record?

When you configure DNS resolution, you must select a record type. The following section introduces an A record.

An A record is also known as an IP address pointer, and is used to map a domain name to an IP address. The following figure shows an A record. In the A record, the host name is the prefix of a domain name. Common domain name prefixes include www and mail. The record value is the IP address of your Web server.

You may purchase multiple domain names and map these domain names to the same Web server. In this case, you must configure these domain names as subdomain names, and map them to your Web server. Second-level and third-level domain names under top-level domain names are called subdomain names.

After you change an ECS instance, you must map the domain names that point to the original instance to the new ECS instance. However, the mapping changes may
result in a heavy workload. In this case, a Canonical Name (CNAME) record can efficiently help you complete the DNS resolution settings.

What is a CNAME record?

A CNAME record is also called an alias record, and is used to resolve a domain name to another domain name. The CNAME record is applicable to email resolution and CDN resolution.

If you want to use Content Delivery Network (CDN) to accelerate the delivery of the content on your website, you must configure a CNAME record. After you activate the CDN service and add a CDN domain, Alibaba Cloud CDN team assigns a CNAME domain to your CDN domain. You must map the CDN domain to the CNAME domain. Therefore, the requests to the CDN domain can be redirected to the corresponding CDN node for acceleration. For more information, see #unique_26.

The CNAME domain of the CNAME record is also used in the A record.

What is the difference between the CNAME record and the A record?

The A record resolves a domain name into an IP address, and the CNAME record resolves a domain name into another domain name.

If you want to manage a website for a long time, we recommend that you use a CNAME record. The CNAME record can be used to accelerate content delivery, and can also hide the real IP address of your Web server to minimize the attacks against the Web server.

How does the CNAME record work in CDN?

You can use CDN to cache your origin resources on cache nodes nearest to end users. End users will request the resources from the cache nodes instead of the origin server. A CNAME record is used to map a CDN domain to a CNAME domain, so requests to the CDN domain are redirected to the CNAME domain. For more information, see #unique_27.

2.7 What is the difference between a CDN node and a mirror?

Question

What is the difference between a CDN cache node and a mirror?
Alibaba Cloud Content Delivery Network (CDN) uses CDN domains to accelerate the delivery of files. When end users request resources from a CDN domain, the CDN node corresponding to the CDN domain retrieves resources from the specified origin server. Afterward, the CDN node caches the resources and returns the resources to end users. This back-to-origin process is triggered by end users. When an end user requests a resource for a second time, the CDN node returns the cached resource to the end user, and does not need to redirect the request to the origin server.

A mirror is a replica of your website. You can create multiple mirrors of the website, and distribute each of the mirrors to a different local host. In this way, end users can request the resources of the website from a local host, and do not need to connect to the website.

2.8 What is the health check mechanism of Alibaba Cloud CDN?

Question

What is the health check mechanism of Alibaba Cloud Content Delivery Network (CDN)?

Answer

- CDN node health check

Alibaba Cloud CDN intelligent scheduling system can check the status of all CDN nodes and make sure that port 80 of each node is working normally. If the system detects a failed node, the requests to this node are redirected to a normal edge node nearest to the request clients to ensure the availability of the CDN service.
Origin server health check

Alibaba Cloud CDN uses a layer-4 health check policy to test port 80 on an origin server. The policy is described as follows:

- The system checks the status of an origin server at five-second intervals. If the system detects that the origin server has failed three consecutive checks, the origin server is marked as unavailable.
- If the system detects that an unavailable origin server is working in the normal state during a check, the origin server is marked as available or recovered.

2.9 What is the impact if I switch the region where my CDN service is deployed?

Question

What is the impact if I switch the region where my Content Delivery Network (CDN) service is deployed in the CDN console?

Answer

After you switch the region where your CDN service is deployed, the service performance may be downgraded temporarily due to the following reasons:

- Increased back-to-origin traffic

For example, after you change the acceleration region from Mainland China to Global, CDN nodes outside Mainland China are added. These nodes have not cached the resources from your origin server. Therefore, when end users request resources from these new nodes, these nodes have to retrieve resources from your origin server. This increases the back-to-origin network traffic in a short period of time.

In this case, you must check the latest status of your origin server to make sure that the origin server can withstand the increased workload. Alibaba Cloud CDN L2 nodes can minimize the back-to-origin network traffic. However, to prevent possible risks, we recommend that you pay attention to the pressure on your origin server after you change the acceleration region.
· Decreased cache hit rate

New CDN nodes also result in the decreased cache hit rate in a short period of time.

2.10 What HTTP methods does CDN support?

Question

What HTTP methods does CDN support?

Answer

CDN supports all HTTP methods except the CONNECT method, and forwards requests to your origin server without any modifications.

Note:

· CDN caches only GET requests. We recommend that you distribute resources that are requested based on other methods into a different domain.
· CDN supports only the POST or PUT methods to send an HTTP request that includes a request body.

<table>
<thead>
<tr>
<th>Request method</th>
<th>Description</th>
<th>Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>GET</td>
<td>Requests data from a specified resource.</td>
<td>Yes</td>
</tr>
<tr>
<td>POST</td>
<td>Submits the data that you want to process to a specified resource.</td>
<td>Yes</td>
</tr>
<tr>
<td>HEAD</td>
<td>Used in the same way as the GET method, except that only the HTTP header is returned in a response when you use the HEAD method.</td>
<td>Yes</td>
</tr>
<tr>
<td>PUT</td>
<td>Uploads a specified URI.</td>
<td>Yes</td>
</tr>
<tr>
<td>DELETE</td>
<td>Deletes a specified resource.</td>
<td>Yes</td>
</tr>
<tr>
<td>OPTIONS</td>
<td>Returns the HTTP methods that the server supports.</td>
<td>Yes</td>
</tr>
</tbody>
</table>
2.11 How can I check whether a CNAME record is correctly resolved?

Question

How do I check whether a Canonical Name (CNAME) record is correctly resolved after I add the CNAME record for my CDN domain?

Answer

A ping message is used to test connectivity, but is not an ideal option for you to check CNAME resolution. We recommend that you use one of the following methods to check whether a CNAME record is correctly resolved:

- **Windows**

  On your local computer, run the following commands:

  - `nslookup Domain name`
  - `nslookup -qt=CNAME CNAME`
  - `nslookup -qt=CNAME CNAME Domain name`

  The following result indicates that the CNAME resolution is correct.
Linux

Use the telnet command to log on to the origin server, and run the following commands:

- `dig Domain name`
- `dig CNAME CNAME`
- `dig CNAME CNAME @Domain name`

The following result indicates that the CNAME resolution is correct.

```
[root@dalu ~]# dig hzcdn.mycar168.com CNAME
; <<>> DiG 9.9.4-PeR-Hat-9.9.4-74.el7_6.1 <<>> hzcdn.mycar168.com CNAME
; global options: +cmd
; Got answer:
; >>HEADER<<- opcode: QUERY, status: NOERROR, id: 30393
; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
;; EDNS: version: 0, flags:.ud: 4096
;; QUESTION SECTION:
;hzcdn.mycar168.com. IN CNAME

;; ANSWER SECTION:

;; Query time: 5 msec
;; SERVER: 100.100.2.138#53(100.100.2.138)
;; WHEN: Mon Aug 05 18:53:43 CST 2019
;; MSG SIZE rcvd: 93
```
3 Security

This topic describes issues and solutions about security for Alibaba Cloud Content Delivery Network (CDN).

3.1 Why can an IP address in the IP blacklist still be used to request resources?

Question

I have added an IP address to the IP blacklist in the Content Delivery Network (CDN) console. Why can the IP address still be used to request resources?

Answer

CDN cannot restrict client-side requests. However, you can add the IP address to the IP blacklist in CDN. Therefore, the HTTP 403 status code is returned when the IP address is used to request resources from CDN. You can view the corresponding logs. For more information, see #unique_35.

The outbound network traffic used for returning the HTTP 403 responses incurs network traffic fees. In this process, no outbound network traffic is generated for resources. Only the network traffic for the response header is billed. Therefore, returning HTTP 403 responses only incurs a few network traffic fees. For more information, see Pricing of CDN.

Note:

Common logs can be queried about four to eight hours after the logs are generated. We recommend that you enable real-time logs to record activities in CDN.

CDN integrates with Log Service to push logs to Log Service in real time for further analysis. For more information about Log Service, see #unique_36. For more information about the pricing of Log Service, see Pay-as-you-go billing method.
3.2 How do I handle DDoS or HTTP flood attacks against a CDN domain?

Question

How can I protect my CDN domain that is under Distributed Denial of Service (DDoS) or HTTP flood attacks?

Answer

When a CDN domain is under DDoS or HTTP flood attacks, CDN automatically runs the CDN domain in a sandbox. In the sandbox, the CDN domain is still available, but the service performance may be downgraded.

If your CDN domain is vulnerable to DDoS or HTTP flood attacks, we recommend that you use Secure Content Delivery Network (SCDN).

Note:
Secure Content Delivery Network (SCDN) currently only supports mainland China.

3.3 How can I use CDN to block a specified IP address?

Question

After I use Content Delivery Network (CDN) to accelerate content delivery, I must block some malicious IP addresses to secure business data and stabilize the network traffic load on the CDN node. How can I block a specified IP address in the CDN console?

Answer

1. Log on to the Alibaba Cloud CDN console.
2. In the left-side navigation pane, click Domain Names.
3. On the Domain Names page, find the target domain name and click Manage.
4. In the left-side navigation pane of the specified domain, click Access Control.
5. Click the IP Blacklist/Whitelist tab.
6. Click Modify next to IP Blacklist/Whitelist.

7. Set Type to Blacklist, and add the IP address that you want to block in the Rules field.

You can add up to 100 IP addresses or CIDR blocks to each rule, and separate multiple IP addresses by pressing Enter. Duplicate CIDR blocks are not allowed.

8. Click OK.
4 Caches

4.1 What are the causes of a decreased cache hit rate on a CDN node?

Question

What are the causes of a decreased cache hit rate on a CDN node?

Answer

The cache hit rate on a CDN node may decrease in the following scenarios:

· When you refresh the resources cached on a CDN node, the hit rate may be decreased in a short period of time.

· When the bandwidth spikes, the corresponding CDN node has to redirect more back-to-origin requests to the origin server. As a result, the cache hit rate is decreased.

· If the CDN node receives plenty of requests for content that has not been cached, the CDN node has to redirect these requests to the origin server. As a result, the cache hit rate is decreased.

· If you modify the caching policy, the cache hit rate may be decreased.