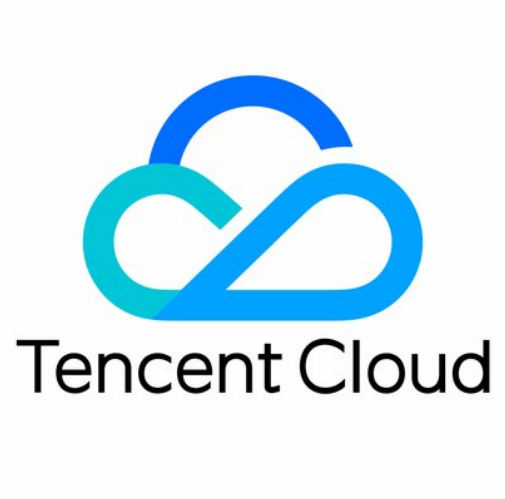
Tencent Cloud EdgeOne

Rule Engine

Product Documentation



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Rule Engine
Overview

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Overview

The rule engine is designed to meet more flexible and fine-grained business requirements through a rich rule language. You can customize the match type as needed and apply it to the corresponding operations. Compared to the configuration of site acceleration, the priority of the rule engine is higher, meaning that the custom policies created by the rule engine will override the configurations of site acceleration.

Use Cases

Provide custom configurations based on different conditions (subdomain name, path and file extension) when site-level configuration in **Site Acceleration** cannot meet your needs.
Provide basic features (caching and HTTPS) and acceleration features (custom cache key, URL rewrite and HTTP header modification).

Key Terms

Term	Description
Rule	It defines specific types of requests and the applicable operations.
Conditional Expression	It defines the logics that identify the requests. The followings are supported. IF Note 1 ELSE IF ELSE
Matching Condition	It defines the criteria that identifies the requests. The followings are included. Matching type Operator Value
And/Or	Logical AND/OR, which can link multiple conditions.
Action	A wide range of feature configurations that can be applied to hit requests.

Note:

Note 1:
An IF statement can be nested inside another IF statement, indicating that the nested one will be executed only after the other is met.

Rule Priorities

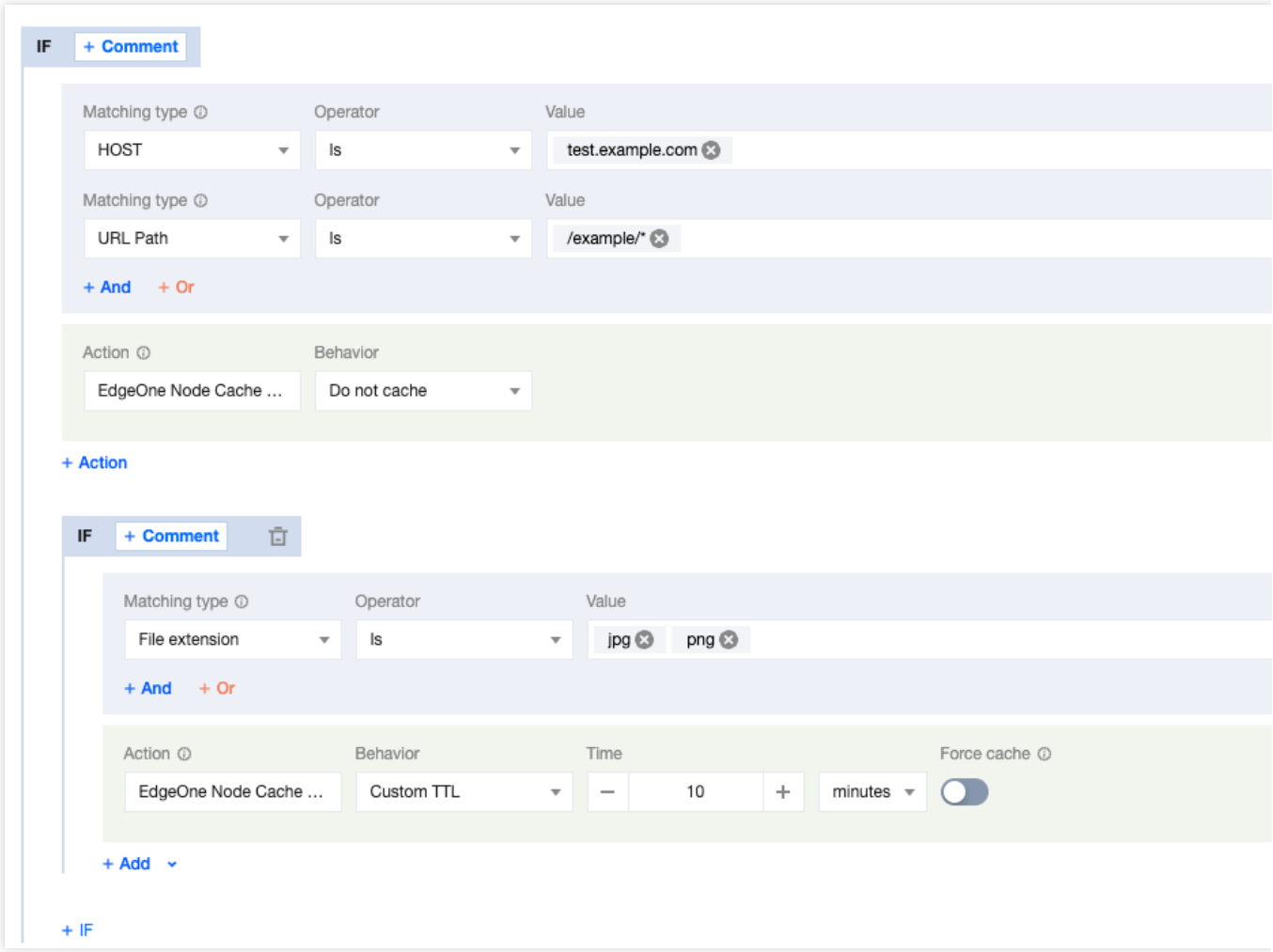
Range	Description
Site Acceleration vs Rule Engine	If the same operation is configured for both site acceleration and the rule engine, the rule engine has a higher priority and is the final effective configuration.
Single rule in the rule engine	If there exist nested IF conditions within an IF statement, the execution of the embedded IF statement necessitates the fulfillment of the outermost IF condition. In the event of multiple coequal IF conditions, they are executed in relative order from top to bottom. That is, if multiple rules are matched simultaneously, the operations of the lower rules will supersede those of the upper rules. In the event that IF, Else IF, and Else coexist, upon satisfying any one of the IF or Else IF conditions, the corresponding operation will be executed and concluded, precluding further matching of other rules under the current IF condition. If none are met, operations will be executed in accordance with the Else rule.
Multiple rules in the rule engine	The rules are executed in relative order, from top to bottom. Note: You can place general or coarse-grained rules at the top as the default configuration and request-specific or finer-grained rules at the bottom.

Note:
There are two scenarios with special execution:
Token authentication will be executed first no matter where it is placed. If a request hits two rules, token authentication will be executed first, as other operations will be performed only after authentication is passed.
For operations with redirect logic, such as URL redirection and forced HTTPS, their execution method is Break. This means that if the same request encounters both a redirect operation and other operations, the other operations below will not be executed after the redirect operation is executed.

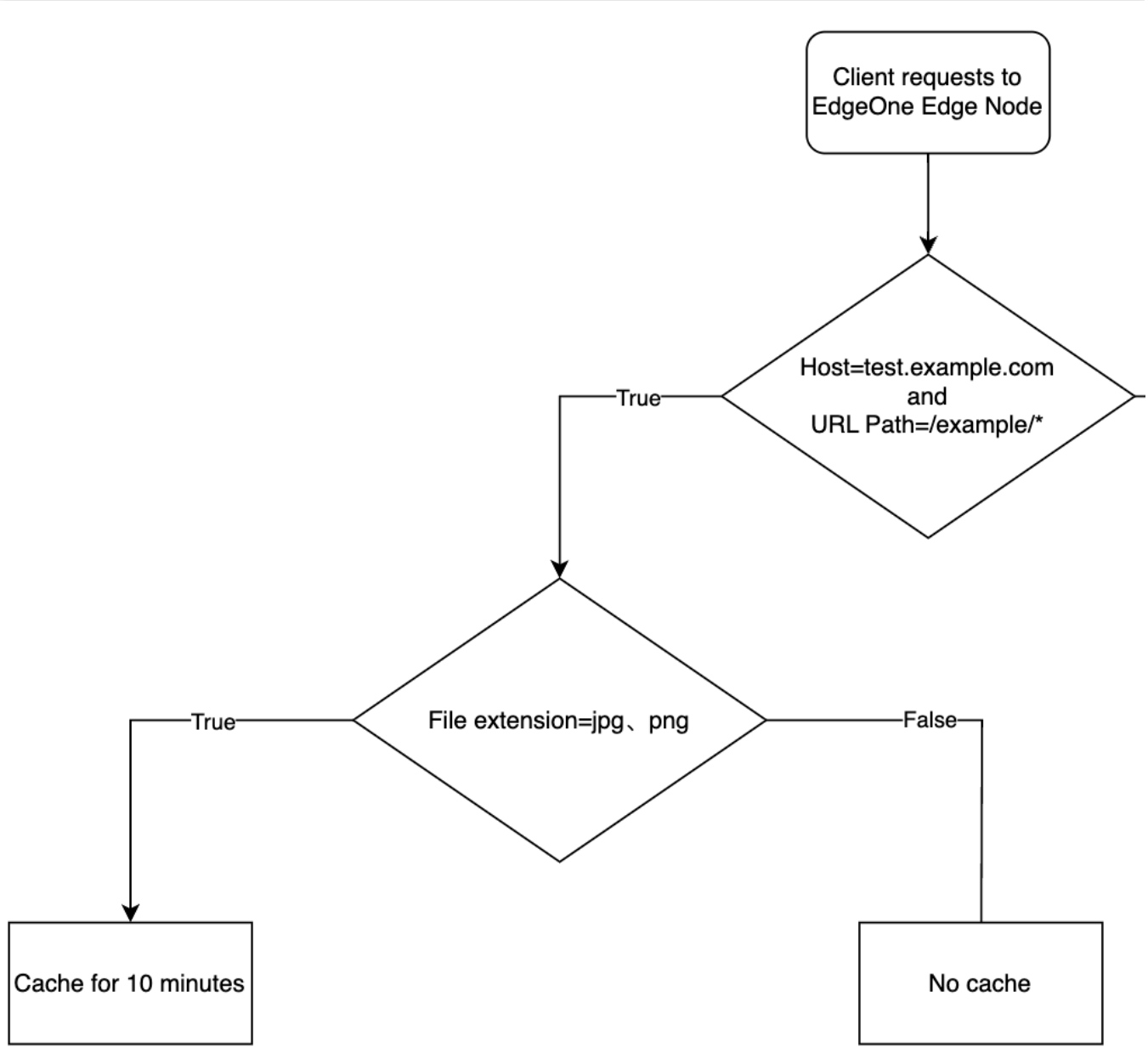
Example of Rule Priorities

Example One: Nested IF Conditions within IF Matches

The current user's node cache TTL rule configuration is as follows, with multiple nested IF conditions present.



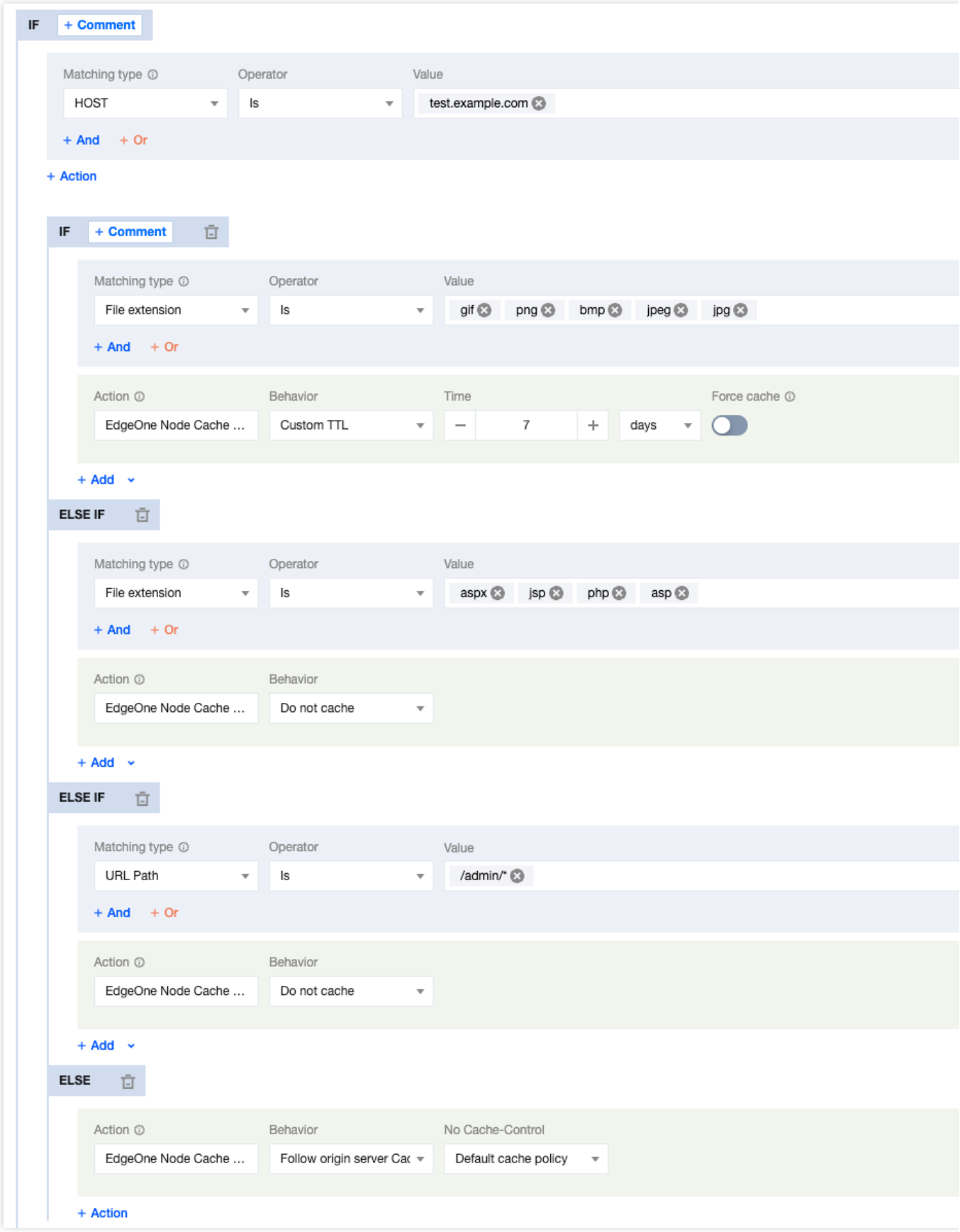
The caching behavior of the user-requested URL is activated as follows:



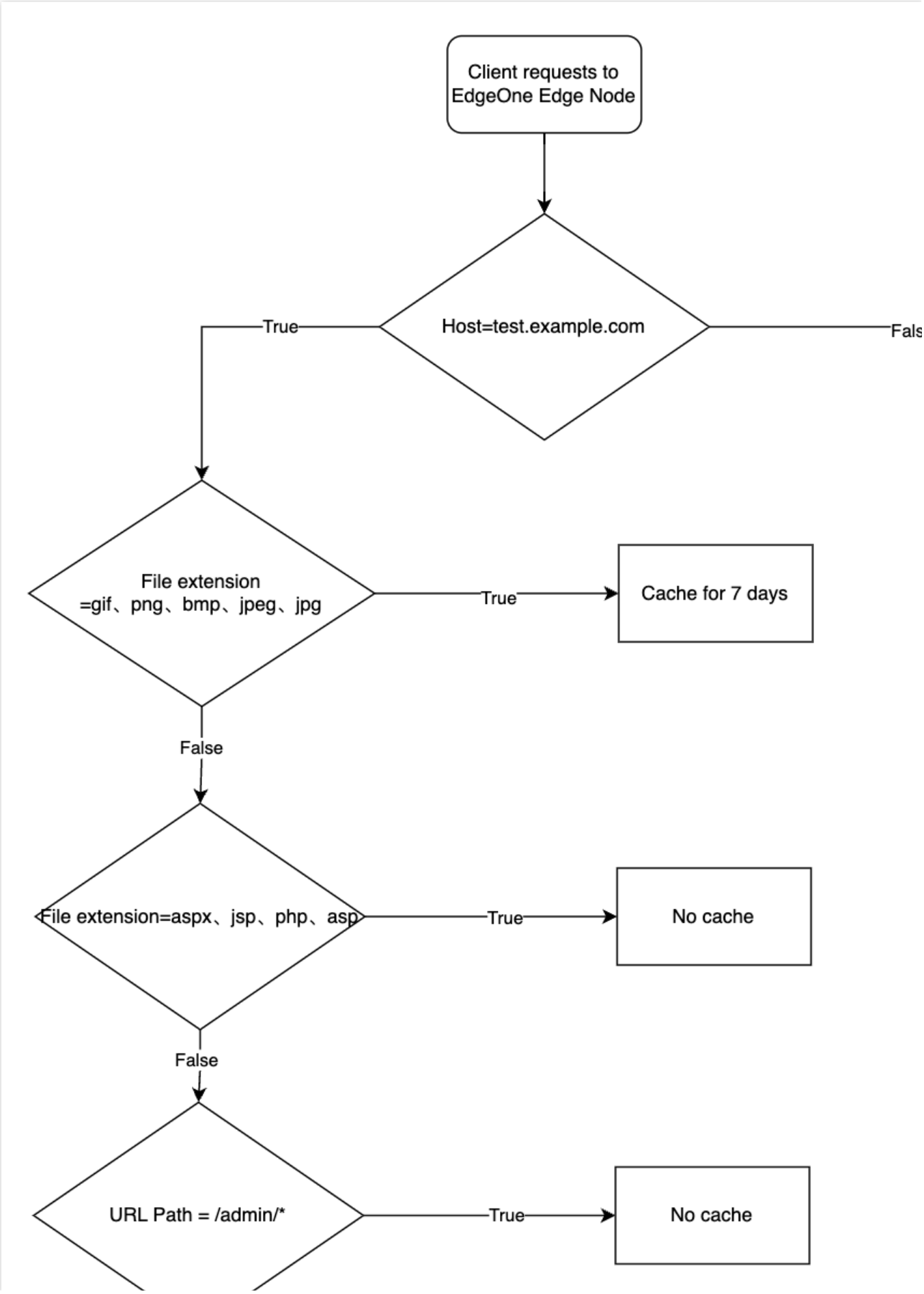
When the request URL is: `https://test.example.com/example/1.jpg` , the file is cached for a duration of 10 minutes.
When the request URL is: `https://test.example.com/example/1.mp4` , the file is not subjected to caching.
When the request URL is: `https://test.example.com/video/1.jpg` , it does not conform to the stipulated rule.

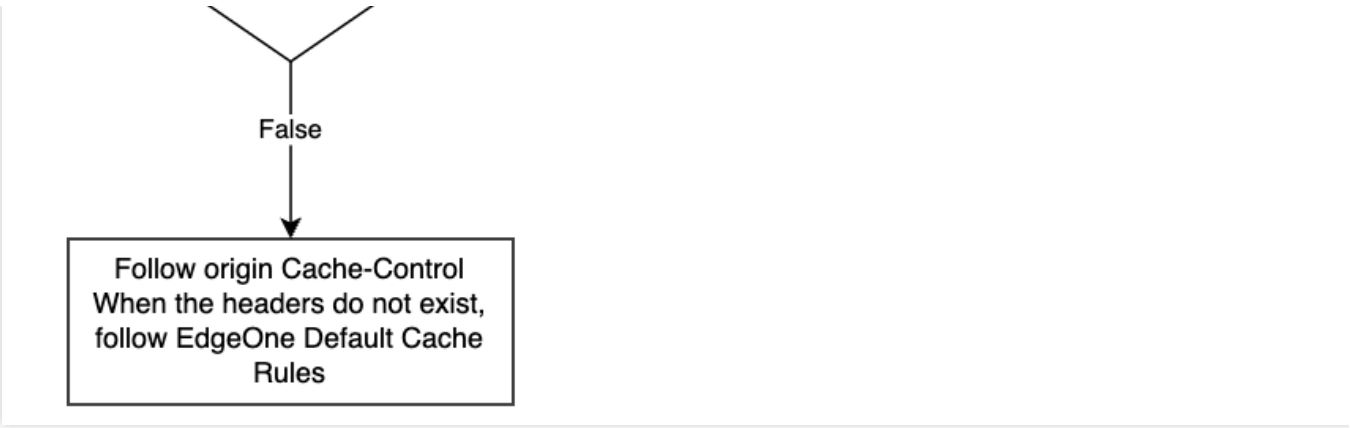
Example Two: IF Condition Contains Multiple Parallel Else IF Matches

The current user's node cache TTL rule configuration is depicted below, with multiple coequal Else IF conditions present.



The caching behavior of the user's requested URL will take effect as follows:

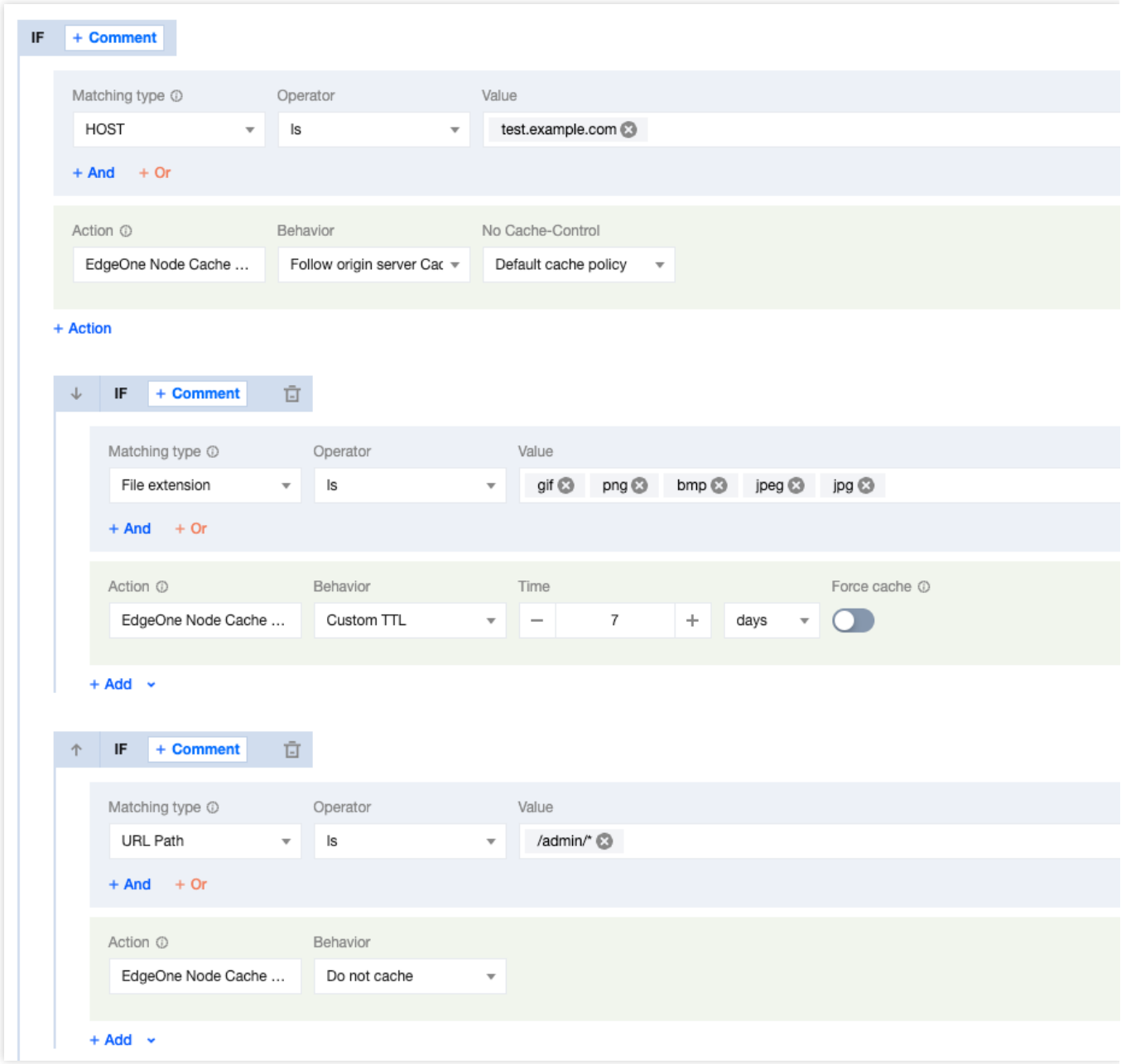




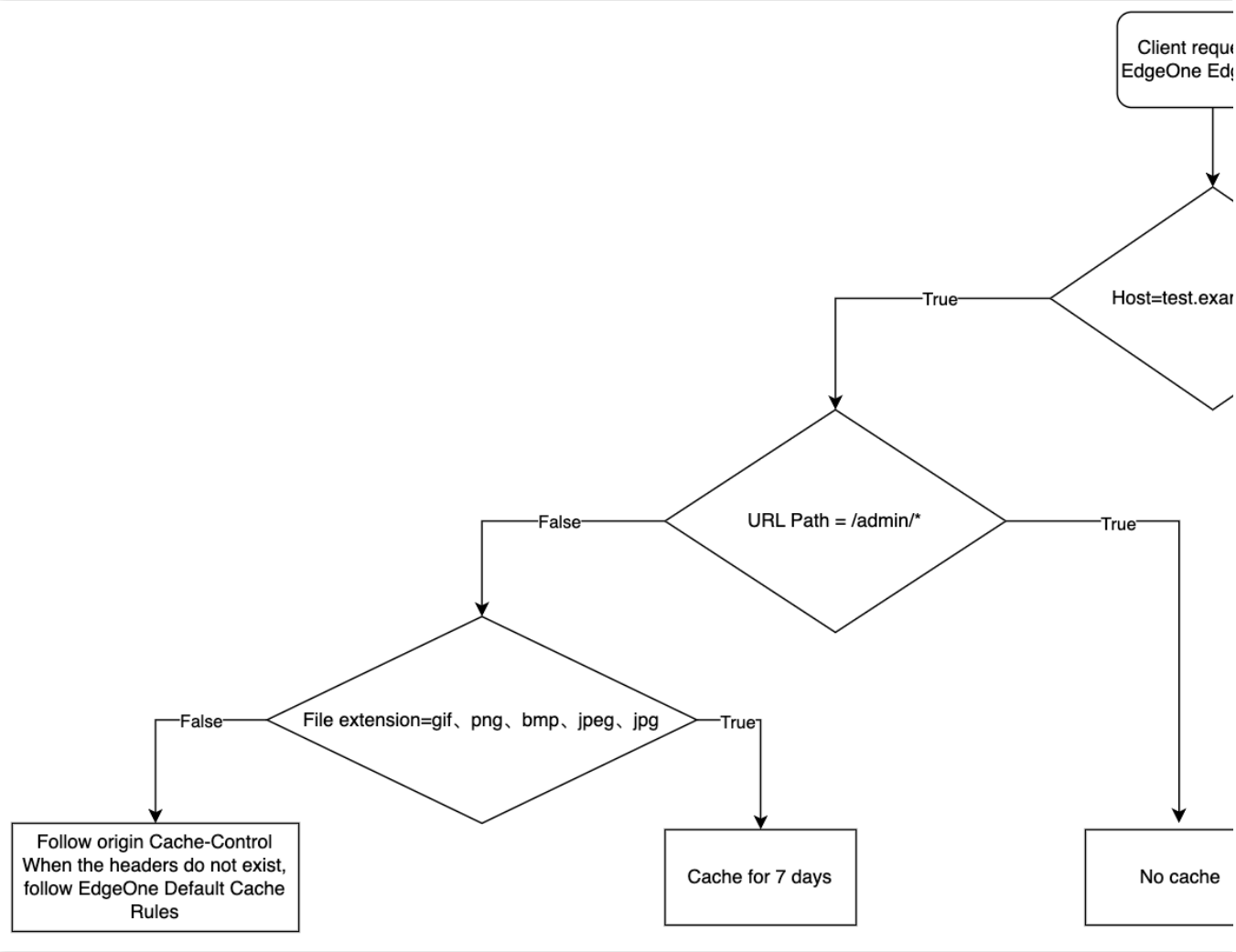
When the request URL is: `https://test.example.com/image/1.jpg` , the file is cached for a duration of 7 days.
When the request URL is: `https://test.example.com/index/1.jsp` , the file is not subjected to caching.
When the request URL is: `https://test.example.com/admin/1.php` , caching is not implemented.

Example Three: Multiple Peer-Level IF Condition Matching

The current user's node cache TTL rule configuration is as follows. In the presence of multiple peer IF conditions, the effectiveness priority sequence of the subsequent conditions is the highest.



The caching behavior of the user's requested URL is activated as follows:



When the request URL is: `https://test.example.com/image/1.jpg` , the file is cached for a duration of 7 days.

When the request URL is: `https://test.example.com/admin/1.php` , the file is not subjected to caching.

When the request URL is: `https://test.exampel.com/admin/1.jpg` , the file is not subjected to caching.

When the request URL is: `https://test.exampel.com/index/1.jpg` , the file adheres to the source site's Cache-Control header settings. In the absence of such a header, it complies with the default caching policy of EdgeOne.

Supported Matching Types and Actions

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Supported Matching Types

Supported matching types are listed in the following tables.

Note

1. URL Path and URL Full support wildcard match. If the `URL Path` is `/foo/*/bar`, both `/foo/example/bar` and `/foo/demo/bar` are valid values.
2. URL Path, URL Full, query string, file extension,file name and HTTP request header support enabling ignoring case (it is disabled by default).

Type	Description	Sample values
HOST	Request Host	`www.example.com`
URL Path	Request URL path	If you need to match the `/example/foo/bar` Path, you can fill in: `/example/foo/bar`; If you need to match the `/example` `directory` and all files under the directory, you can fill in: `/example/*`.
URL Full	Complete content of the request URL	`https://www.example.com/foo`
Query string	Query string in the request URL	Parameter name: key Parameter value: value
File extension	File extension (file extension) of the request content	jpg, png, css
File name	File name of the request content	foo.txt
HTTP request header	HTTP request header	HTTP request header name: name HTTP request header value: value
Client geo location	Country/region of the client IP	United States
Request protocol	Requested protocol type	HTTPS or HTTP
All	Any site request	N/A

Operators

Type	Description
Equal to	The request is equal to a specified value (value of the matching type).
Not equal to	The request is not equal to a specified value (value of the matching type).
Exist	A specified value exists in the request (HTTP header name or query parameter name).
Not exist	A specified value does not exist in the request (HTTP header name or query parameter name).
Regular expression matching	URL Path and URL Full support Google RE2 regular expression matching.

Supported Actions

Actions refer to a series of feature configurations performed after the requests hit the conditions. The supported actions and matching types are listed in the following tables.

Cache configuration

Action	Description	Supported Matching Types
Node Cache TTL	By configuring the cache TTL, you can optimize node cache to improve resource loading and update resources in a timely manner.	HOST URL FULL URL Path File name File extension
Browser Cache TTL	By adjusting the cache period of resources in browsers, you can optimize the browser cache and increase the loading speed of the requested resources.	HOST URL FULL URL Path File name File extension Query string Client geo location
Custom Cache Key	A cache key can be customized to suit your needs by setting the query string, HTTP header and URL case, so that	HOST URL FULL URL Path File name

	requested resources can be loaded faster.	File extension Query string HTTP Request Header Client geo location
Status Code Cache TTL	You can specify a TTL period for origin response status codes, allowing the node to directly respond with non-2XX codes.	HOST URL FULL URL Path File name File extension Query string
Cache Prefresh	Cached resources are validated via origin-pull before expiration, so that your site can respond to requests more rapidly.	HOST URL FULL URL Path File name File extension
Offline Cache	After offline caching is enabled, when your origin fails, and resources cannot be pulled through origin-pull normally, resources cached on nodes (even expired resources) can be used until the origin recovers.	HOST URL FULL URL Path File name File extension Query string HTTP Request Header Client geo location

Network optimization

Action	Description	Supported Matching Types
HTTP/2	HTTP/2 (HTTP 2.0) requests are supported to accelerate sites and improve the web performance.	HOST
HTTP/3 (QUIC)	HTTP/3 (QUIC) requests are supported. HTTP/3 (QUIC) is used to accelerate site requests and improve data transfer efficiency and security.	HOST
WebSocket	EdgeOne supports the WebSocket protocol that allows the server to proactively send data to the client.	HOST
Maximum Upload Size	The maximum upload size is the maximum data volume that can be	HOST URL FULL

	uploaded in a single client request. You can restrict it to improve the data transfer efficiency and optimize the network transfer.	URL Path File name File extension Query string HTTP Request Header
Smart Compression	Smart Compression can automatically compress the resources to Gzip/Brotli files to reduce the files size and shorten the resource loading time.	HOST
Smart Acceleration	Smart acceleration refers to smart dynamic routing acceleration. After this feature is enabled, it will detect the node network latency in real time and use the smart algorithm to select the optimal transfer path, so as to handle both static and dynamic client requests more quickly, stably, and securely. Smart dynamic routing minimizes problems such as high network latency, connection errors, and request failures.	HOST
HTTP/2 Origin-Pull	Request origin-pull over the HTTP/2 protocol is supported.	HOST

HTTPS optimization

Action	Description	Supported Matching Types
Forced HTTPS	You can use 301 or 302 redirect to redirect HTTP client requests to HTTPS requests and send them to EdgeOne.	HOST
HSTS Configuration	Force clients such as browsers to establish connections to edge nodes over HTTPS for global website encryption.	HOST
SSL/TLS Security Configuration	Configure the protocol version and Cipher suite that are allowed to use when the client shakes hands with the edge server TLS as needed.	HOST
OCSP Stapling	Pre-cached OCSP responses are sent at the time of TLS handshake to improve the efficiency.	HOST

Origin-Pull HTTPS	You can specify the protocol that EdgeOne uses in the origin-pull request.	HOST

Modifying HTTP header

Action	Description	Supported Matching Types
Modifying HTTP Response Headers	You can customize, add, and delete headers in HTTP responses from nodes to clients.	HOST URL FULL URL Path File name File extension Query string Client geo location
Client IP Header	The custom header can carry the real client IP to the origin.	HOST URL FULL URL Path File name File extension Query string HTTP Request Header Client geo location
Client IP Geographical Location	The custom header can carry the geographical location information of the client IP to the origin.	HOST Client geo location
Modifying HTTP Origin-Pull Request Headers	You can customize, add, and delete headers in HTTP origin-pull requests from nodes to the origin.	HOST URL FULL URL Path File name File extension Query string HTTP Request Header Client geo location
Host Header Rewriting	Host header rewriting enables you to rewrite the host header to the actual origin domain when the origin domain is different from the acceleration domain in the load balancing task.	HOST URL FULL URL Path File name File extension Query string HTTP Request Header Client geo location Request protocol

Advanced configuration

Action	Description	Supported Matching Types
Access URL Redirection	A node redirects the URL requested by the client to the destination URL based on the response status code.	HOST URL FULL URL Path File name File extension Query string HTTP Request Header Client geo location
Token Authentication	As an access control policy, token authentication supports creating rules to validate access and filter out unauthorized access requests. This effectively prevents your site resources from being maliciously hotlinked and thus protects your business.	HOST URL FULL URL Path File name File extension Query string HTTP Request Header
Modify Origin	Configuration of primary and secondary sources, separate Path, and separate region Rules for complex origin-pull strategies.	HOST + Any matching type below： URL Path Client country/region HTTP Request Header Query string File extension
Origin-Pull URL Rewrite	Based on specified rules, this feature rewrites the user request URL received by the node to the destination URL when the node sends the request to the origin server, which doesn't affect the node cache key.	HOST URL FULL URL Path File name File extension Query string HTTP Request Header Client geo location
Controlling Origin-pull Requests	You can specify which part of the query string and Cookie to be included in the request when it’s forwarded to the origin.	HOST URL FULL URL Path File name File extension Query string HTTP Request Header Client geo location

Redirect Following During Origin-Pull	When origin-pull is requested, the redirect will be based on the 302/301 status code of the origin server, and you can specify the maximum number of redirects (which is 3 by default and can be 1-5).	HOST URL FULL URL Path File name File extension Query string HTTP Request Header Client geo location
Custom Error Page	You can redirect requests to a custom error page for specific error status codes returned by the origin. The redirection is performed when a 302 is returned.	HOST URL FULL URL Path File name File extension Query string HTTP Request Header Client geo location
Range GETs	Range GETs can be enabled to reduce the consumption of large file origin-pulls and response time.	HOST URL FULL URL Path File name File extension Query string HTTP Request Header

Rule Management

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The console supports a series of icons and buttons to manage rules, for example, sorting, copying, enabling, and disabling rules, as follows.

Icon/Button	Description
	Drags a rule up or down.
	Pins a rule to the top.
	Pins a rule to the bottom.
	Edits a rule.
	Creates the same rule as the copied rule.
	Deletes a rule.
	Searches for a rule by rule name or keyword.

	
	Rule status Enable: Publishes a rule to the production environment. Disable: Saves a rule but does not publish it to the production environment.
	Saves a rule but does not publish it to the production environment.
	Saves and publishes a rule to the production environment.
	If a single rule is complex and has multiple IF statements, you can add comments to them. Then, the rule navigation will be automatically generated on the right of the rule content to simplify viewing and locating.

variables

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Introduction

The variables of the rule engine allow you to dynamically extract and process data within request. These variables can not only store static values but also use for specific fields or information in the request, the value of which may change when processing each request. For example: the `http.request.host` variable, which can extract the `hostname` in each HTTP request. This capability enables the rule engine to handle more complex business logic.

Content

Name	Type	Description	Example
http.request.scheme	String	Client request protocol	http https
http.request.zone	String	Site name	example.com
http.request.zoneid	String	Site ID	zone-2c2r77pc3796
http.request.host	String	Hostname in the client request URI	www.example.com
http.request.full_uri	String	Full URI of the client request (not including #fragment)	htt-ps://www.example.org/articles/index?section=539061&expand=comments
http.request.method	String	Client request HTTP method	GET
http.request.uri	String	Client request URI path and query string	/articles/index?section=539061&expand=comments
http.request.uri.path	String	Client request URI path	/articles/index
http.request.file_extension	String	File extension of the client request file	jpg
http.request.filename	String	Filename of the client request file	bot.txt

http.request.uri.query	String	The whole query string of the client request, not including the `?` separator	section=539061&expand=comments
http.request.headers["key"]	String	The header value of the specified header name "key" in the client request, "key" can be replaced with your specified name	https://developer.mozilla.org
http.request.uri.args["key"]	String	The parameter value of the specified parameter name "key" in the client query string, "key" can be replaced with your specified name	value
http.request.version	String	The version of the HTTP protocol used in the client request	HTTP/1.0 HTTP/1.1 HTTP/2 HTTP/3
http.request.ip	String	Client TCP IP address, for example: `1.1.1.1`	93.184.216.34
http.request.ip.city	String	City associated with the client IP address	San Francisco
http.request.ip.continent	String	Continent code associated with the client IP address	AF: Africa AS: Asia EU: Europe NA: North America SA: South America OC: Oceania AN: Antarctica
http.request.ip.country	String	2-letter country code in ISO 3166-1 Alpha 2 format associated with the client IP address	GB, see more in ISO 3166-1 Alpha 2

Use Case

1. The custom origin-pull request header carries the information of the country where the client IP address is located back to the origin.

2. Custom origin-pull request headers allow the origin server to collect and analyze which domains have been accelerated by Tencent's EdgeOne.

3. Custom Cross-Origin Request Policy: Allows cross-origin requests from domains specified in the Origin header of the request.