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Cloud Firewall

Logs

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Document conventions

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

Table of Contents

1.Log audit

All the traffic that passes through Cloud Firewall is recorded as logs and displayed on the **Log Audit** page. The logs are classified into traffic logs, event logs, and operations logs. You can use the logs to audit your network traffic in real time and take measures accordingly. By default, the log audit feature retains logs for seven days.

Cloud Firewall also provides the log analysis feature, which can retain logs for six months. If your business must meet classified protection requirements, we recommend that you enable the log analysis feature. For information about the billing method of the log analysis feature, see Billing.

Event logs

The Event Logs tab displays the logs of events on the Internet firewall and VPC firewalls. You can click the **Internet Firewall** or **VPC Firewall** tab to view information about event logs. The information includes the time an event was detected, the threat type, source IP address, destination IP address, application, severity, and policy action.

Event logs

On the **Event Logs** tab, you can specify the source IP address, destination IP address, threat type, policy action, or time range to search for event logs.

> **Note** The time range must be within the last seven days.

Traffic logs

The Traffic Logs tab displays the logs of traffic on the Internet firewall and VPC firewalls. You can click the **Internet Firewall** or **VPC Firewall** tab to view information about traffic logs. The information includes the start time and end time of traffic, source IP address, destination IP address, application type, source port, application, protocol, policy action, number of bytes, and number of packets.

Traffic logs

On the **Traffic Logs** tab, you can specify the source IP address, destination IP address, application, or time range to search for traffic logs.

> **Note** The time range must be within the last seven days.

To more precisely search for traffic logs, click **Show Advanced Search** in the upper-right corner and specify search conditions such as **Direction**, **Policy Source**, **Port**, and **Region**.

Advanced search

> **Note** If traffic hits an access control policy or IPS policy, the name of the policy is displayed in the **Policy Name** column of the traffic log entry. For traffic that does not hit a policy, the **Policy Name** column is displayed as a hyphen (-).

Operation logs

The **Operation Logs** tab displays the time, type, severity, and other details about each operation performed on Cloud Firewall.

On the **Operation Logs** tab, you can select an option from the **Severity** drop-down list to obtain operations logs of a specific severity.

You can also specify a time range within the last seven days to search for operations logs.

2.Log analysis

2.1. Overview

The Log Analysis service of Cloud Firewall provides internet traffic logs and real-time log analysis.

The Log Analysis service of Cloud Firewall can automatically collect and store real-time log of both inbound and outbound traffic. It outputs query analysis, reports, alarms, and downstream computing interconnection and provide you with detailed analysis result.

Benefits

The Log Analysis service of Cloud Firewall has the following benefits:

- **Classified Protection compliance**: Log Analysis provides log storage duration of six months to help your website meet the requirements of classified protection compliance.
- **Easy configuration**: Easy configuration allows you to collect Internet traffic logs in real time.
- **Real-time analysis**: Integrated with the Simple Log Service (SLS), the Log Analysis service provides the real-time log analysis service and report center. With the help of log analysis, you can view all the traffic and user's visits going through Cloud Firewall.
- **Real-time alarms**: Log Analysis supports you to customize real-time monitoring and alerts based on specific indicators. This ensures you receive real-time alerts when there is any threats detected in the critical business.

Prerequisites

Before you begin to use the service of Log Analysis, the following prerequisite must be available:

You have purchased and activated the Log Analysis service of Cloud Firewall (Log Analysis is available in Pro, Enterprise, and Flagship editions). For details, refer to Enable the Log Analysis feature.

Restrictions

The logstore of Cloud Firewall is an exclusive logstore with the following restrictions:

- You cannot write data into logstore with APIs or SDKs, or modify the attributes of the logstore (such as the storage cycle).

  > **Note** Other general logstore features (such as query, statistics, alarms, and stream consumption) are supported, and there is no difference with the general logstore.

- Alibaba Cloud's Log Service (SLS) does not charge for the exclusive logstore of Cloud Firewall, but SLS itself must be available (not overdue).
- Built-in reports provided by Log Analysis of Cloud Firewall may be updated and upgraded automatically.

Scenarios

- Track Internet traffic logs to trace security threats.

- Allow you to view Internet request activities in real time, and check the security status and trend of your assets.
- Provide you with quick understanding of security operation efficiency and handling the risks in a timely manner.
- Output logs to your self-built data and computing centers.

2.2. Billing

The log analysis feature in Cloud Firewall uses the subscription billing method and is billed based on the log storage duration and capacity.

You can select this feature and specify the log storage duration and capacity as required on the Cloud Firewall buy page. The fee is calculated based on the specified log storage specifications and the subscription duration of your Cloud Firewall instance.

Log storage specifications

The following table lists prices for different specifications.

Log storage duration	Log storage capacity	Monthly bandwidth	Recommended edition	Cloud Firewall instance in mainland China	
				Monthly subscription	15% discount for annual subscription
180 days	1 TB	Up to 10 Mbit/s	Premium Edition	USD 80	USD 861
	5 TB	Up to 50 Mbit/s	Enterprise Edition	USD 400	USD 4,080
	20 TB	Up to 200 Mbit/s	Ultimate Edition	USD 1,600	USD 16,320

> **Note** We recommend that you increase the log storage capacity by 1 TB for every 10 Mbit/s of bandwidth increase.

Increase of storage capacity

If the log storage capacity is used up, the system reminds you to increase the capacity. You can click **Upgrade Storage** to increase the storage capacity.

Upgrade Storage

> Notice
>
> - The free trial edition of Cloud Firewall does not support the log analysis feature. If you are using the free trial edition, the Cloud Firewall console does not display the log storage capacity. For information about how to enable the log analysis feature, see Enable the Log Analysis feature.
> - If you do not increase the log storage capacity when it is used up, Cloud Firewall stops writing new logs to the Logstore of the log analysis feature. Existing logs in the Logstore are retained. Logs are stored for a maximum of 180 days before they are automatically deleted. If the feature has expired and you have not renewed the subscription within seven days, all logs in the Logstore are deleted. Deleted logs cannot be recovered.

Subscription duration

The subscription duration of the log analysis feature is the same as that of the Cloud Firewall instance.

- **New purchase:** When you buy a Cloud Firewall instance with the log analysis feature enabled, the price of this feature is calculated based on the subscription duration of the instance.
- **Upgrade:** When you upgrade a Cloud Firewall instance with the log analysis feature enabled, the price of this feature is calculated based on the remaining duration (in minutes) of the existing Cloud Firewall instance.

Service expiration

If your Cloud Firewall instance expires, the log analysis feature also expires.

- After the feature expires, Cloud Firewall stops writing logs to the Logstore.
- Logs are retained for seven days after the expiration. If you renew the subscription within seven days, you can continue to use the feature. Otherwise, all logs are deleted.

References

FAQ about Cloud Firewall logs

2.3. Enable the Log Analysis feature

After you activate Cloud Firewall, you can enable the Log Analysis feature in the Cloud Firewall console.

Scenario

The **Log Analysis** feature logs Internet traffic in real time. It retrieves and analyzes log data and displays the results in dashboards. You can specify **Log Storage** when you enable this feature.

> Note The **Log Analysis** feature is available in the Cloud Firewall Pro, Enterprise, and Flagship editions.

Procedure

1. Log on to the Cloud Firewall console.

2. In the left-side navigation pane, choose **Logs > Log Analysis.**
3. Click **Activate Now.**

   

4. Set **Log Analysis** to *Yes* and specify **Log Storage.** Then, pay for the order.

   

   > **Note** For more information about Log Analysis pricing, see Billing.
5. On the **Log Analysis** page, select **internet_log** and turn on the switch next to **Status** to enable log collection.

   

   The Log Analysis feature collects logs of inbound and outbound Internet traffic and analyzes the log data in real time.

2.4. Collect the log

You can enable the log collector function for Cloud Firewall in the Cloud Firewall console.

Prerequisites

- You have activated Cloud Firewall.
- You have activated Alibaba Cloud Log Service.

Context

The log collector function retrieves log data of inbound and outbound Internet traffic for **Alibaba Cloud Firewall** in real time. The retrieved log data can be searched and analyzed in real time, and the returned results are displayed in dashboards. Based on the log data, you can analyze visits to and attacks on your websites and help the security engineers develop protection strategies.

After you enable the Cloud Firewall log analysis function, the log analysis function automatically creates a dedicated Logstore named cloudfirewall-logstore under your account. Cloud Firewall automatically imports log entries to this dedicated Logstore in real time. For more information about the default configuration of the dedicated Logstore, see Default configuration.

Procedure

1. In the left-side navigation pane, locate **Log Analysis.**
2. Click the **Status** switch on the right side to enable the log collector function.

Default log analysis configuration

Default configuration item	Description

Default configuration item	Description
Project	The log analysis project created by Cloud Firewall. The project name is determined according to the region of your Cloud Firewall instance. ○ If the Cloud Firewall instance is deployed in a Mainland China region, the project name is: cloudfirewall-project-*Alibaba Cloud account ID*-cn-hangzhou . ○ If the Cloud Firewall instance is deployed in the Finance Cloud (Hangzhou) region, the project name is: cloudfirewall-project-*Alibaba Cloud account ID*-cn-hangzhou-finance . ○ If the Cloud Firewall instance is deployed in other regions, the project name is: cloudfirewall-project-*Alibaba Cloud account ID*-ap-southeast-1 .
Logstore	The default Logstore is cloudfirewall-logstore . All log data retrieved by Cloud Firewall is stored in this Logstore.
Region	○ If the Cloud Firewall instance is deployed in a Mainland China region, the project is saved in the China (Hangzhou) region by default. ○ If the Cloud Firewall instance is deployed in other regions, the project is saved in the Singapore region by default.
Shard	By default, two shards are created and the Automatic shard splitting function is enabled.
Dashboards	A dashboard is created by default.

Note The default log analysis configuration items cannot be modified.

Restrictions and guidelines

- After you enable the Log Analysis function, the system automatically creates a Logstore named **cloudfirewall-logstore** in the Log Service console. The Logstore is dedicated to Cloud Firewall and stores all log entries of Cloud Firewall. Do not delete this Logstore.
- Other data cannot be written into the dedicated Logstore.

  Log entries generated by Cloud Firewall are stored in the dedicated Logstore. You cannot write other data into this Logstore by using the API, SDK, or other methods.

  Note The dedicated Logstore has no restrictions in search, statistics, alerts, streaming consumption, and other functions.

- Basic configurations, such as the log storage period, cannot be modified.

- The dedicated Logstore is not billed.

  To use the dedicated Logstore, you must activate Log Service for your account.

  > **Note** When your Log Service is overdue, the Cloud Firewall log collector function is suspended until you pay the bills.

- Do not delete or modify the configurations of the default project, Logstore, index, and dashboards created by Log Service. Log Service will update the Cloud Firewall log analysis function. The index of the dedicated Logstore and the default report are also updated.
- If you want to use the Cloud Firewall log analysis function with a RAM user account, you must grant the required Log Service permissions to the RAM user account. For more information, seeAuthorize RAM user accounts with Log Analysis function.

2.5. Log analysis

Could Firewall console supports the **Log Analysis** function.

Overview

After you enable the Log Analysis function in Cloud Firewall console, you can perform real-time log search and analysis, view or edit dashboards, and set up monitoring and alerts on the Log Analysis page.

Procedure

1. Log on to the Cloud Firewall console.
2. In the left-side navigation pane, select **Logs > Log Analysis**.
3. Click the **Status** switch on the right side to enable the Log Analysis function.

   
4. Enter a search and analysis statement, select a time range, and click **Search & Analysis**.

   

More actions

On the **Log Analysis** page, you can perform the following actions to handle the returned search results:

- **Customize search and analysis**

  The log analysis function provides the search and analysis statements for you to search and analyze log entries in different scenarios. For more information, see Customize search and analysis.

- **View the distribution of log entries by time**

  The histogram under the search box shows the distribution of log entries that are filtered by time and search statement. The horizontal axis indicates the time period, and the vertical axis indicates the number of log entries. The total number of the log entries returned is also displayed.

> **Note** You can drag the mouse pointer in the histogram to narrow down the time period. The time picker automatically updates the time period, and the search results are also updated accordingly.

- **View raw logs**

  On the **Raw Logs** tab page, each log entry is detailed on an individual page, which includes the time when the log is generated, the content, and the columns in the log entry. You can click **Display Content Column** to set the display mode for the long strings in the content column. The display modes include **Full Line** and **New Line**. You can click **Column Settings** to customize the columns to be displayed, or click the Download icon to download the search results.

  

  Additionally, you can click a value or a property name in the content column to add a search condition to the search box. For example, if you click `log_service` in the `__source__: log_service` field, the following search statement is added to the search box:

  ```
  "Former Search Statement" and source: log_service
  ```

- **View analysis graphs**

  The log analysis function enables you to show the analysis results in graphs. You can select the graph type as needed on the **Graph** tab page. For more information, see Analysis graphs.

  

- **Quick analysis**

  The quick analysis function on the **Raw Logs** tab provides you with a quick interactive search function. You can view the distribution of a property within a specific time period. This function can reduce the time used for indexing key data. For more information, see Quick analysis.

  

Customize search and analysis

The log analysis function provides the search and analysis statements. Separate the search and analysis statements with a vertical bar (`|`):

```
$Search | $Analytics
```

Type	Description
Search	A keyword, a fuzzy string, a numerical value, or a range can be used as a search condition. You can also combine these search conditions. If the statement is empty or only contains a wildcard character (`*`), all log entries are searched.
Analytics	Performs calculation and statistics to the search results or all log entries.

> **Note** Both the search and the analysis statements are optional.
>
> - When the search statement is empty, all log entries within the specified time period are displayed. Then, the search results are used for statistics.
> - When the analysis statement is empty, the search results are returned. No statistical analysis is performed.

Search statements

The search statements of Log Service support **full text search** and **field search**. You can set the New Line mode, syntax highlighting, and other functions in the search box.

- **Full text search**

  You can enter keywords without specifying fields to perform the search. You can enter a keyword enclosed in quotation marks (") to query log entries that contain the entire keyword. You can also use spaces or `and` to separate multiple keywords.

  Examples

  - **Search by keyword**

    The following statements can be used to search for log entries that contain `www.aliyun.com` and `error`.

    `www.aliyun.com error` or `www.aliyun.com and error`.

  - **Search by condition**

    The following statement can be used to search for log entries that contain `www.aliyun.com`, `error`, or `404`.

    ```
    www.aliyun.com and (error or 404)
    ```

  - **Search by prefix**

    The following statement can be used to search for log entries that contain `www.aliyun.com` and start with `failed_`.

    ```
    www.aliyun.com and failed_*
    ```

    > **Note** The wildcard character (`*`) can only be added as a suffix. The wildcard character (`*`) cannot be added as a prefix. For example, the statement cannot be `*_error`.

- **Search by field**

  To narrow down the search results, you can search by field.

  You can specify numeric fields. The format is `field name: value` or `field name>=value`. Moreover, you can use both the `and` and `or` operators in full text search.

> **Note** The Cloud Firewall log analysis function supports searching by field. For more information about the definition, type, format, and other information of each field, see Cloud Firewall log field descriptions.

Examples

- **Search by specifying multiple fields**

  If you want to search for log entries about client `1.2.3.4` accessing IP address `1.1.1.1`, set the following search conditions:

  ```
  src_ip: 1.2.3.4 and dst_ip: 1.1.1.1
  ```

  > **Note** In this example, the `src_ip` field and `dst_ip` field are log fields created by Cloud Firewall.

- **Search by specifying numeric fields**

  The following statement can be used to search log entries where the response time exceeds five seconds.

  ```
  request_time_msec > 5000
  ```

  Searching by time period is also supported. For example, you can search for log entries where the response time exceeds five seconds and is no greater than ten seconds.

  ```
  request_time_msec in (5000 10000]
  ```

  > **Note** You can get the same result by using the following search statement:
  >
  > ```
  > request_time_msec > 5000 and request_time_msec <= 10000
  > ```

- **Field search**

  You can search whether a field exists as follows:

  - Search for log entries that include the `total_pps` field.

    ```
    total_pps :*
    ```

  - Search for log entries that include the `ua_browser` field .

    ```
    not total_pps :*
    ```

For more information about the search statements supported by Log Service, see Indexes and search.

Analysis statements

You can use the SQL/92 statements for log analysis and statistics.

For more information about the statements and functions supported by Log Service, see Real-time analysis.

> **Note**
>
> - The `from table name` part (the `from log` part) in the standard SQL statements can be omitted.
> - The first 100 log entries are returned by default. You can modify the number of the returned log entries by using the LIMIT statement.

Examples of search and analysis

Time-based log search and analysis

Each Could Firewall log entry has a `time` field, which is used to indicate the time. The format of field is `year-month-dayThour:minute:second+time zone`. For example, in `2018-05-31T20:11:58+08:00`, the time zone is `UTC+8`.

Meanwhile, each log has a built-in field `__time__`, This field also indicates the time when the log entry is generated. The field is used for calculation during the time-based statistics process. The format of this field is *Unix timestamp*, and the value of this field indicates the amount of seconds that have elapsed since 00:00:00 Coordinated Universal Time (UTC), January 1, 1970. Therefore, if you want to display a calculated result, you must convert the format first.

- **Select and display the time**
- **Calculate the time**
- **Statistical analysis by group based on a specific time**

> **Note** You can also display the results with a line graph.
>
> 折线

The `date_parse` and `date_format` functions are used to convert the time format. For more information about the functions that can be used to parse the time field, see Date and time functions.

2.6. Log reports

Log reports in Cloud Firewall provide data collected by Log Analysis, such as basic traffic metrics, inbound and outbound traffic distribution. You can specify a time range, subscribe to log reports, and set a refresh frequency to view data in the dashboards.

Prerequisites

The **Status** switch in the upper-right corner of the **Log Analysis** page must be **turned on**. If the switch is **turned off**, Log Analysis is disabled, and you cannot view log reports.

Procedure

1. Log on to the Cloud Firewall console.

2. In the left-side navigation pane, choose **Logs > Log Analysis**.
3. In the upper-right corner of the **Reports** tab, click **Please Select**.

   Select a time range

4. On the **Time** page, specify a time range for displaying reports of Internet traffic logs. You can specify a time range in the **Relative**, **Time Frame**, or **Custom** section.

   Time settings

Section	Description
Relative	Displays log data collected within a specified time range going back from the current time. This time range is accurate to seconds. Assume that the current time is 2019-10-17 23:08:00. The value 2019-10-17 23:07:00~2019-10-17 23:08:00 indicates that log data collected in the last minute is displayed. You can specify a time range in days, hours, minutes, or seconds.
Time Frame	Displays log data collected within a specified time range. For example, the value 2019-10-10 00:00:00~2019-10-17 00:00:00 indicates that log data was collected for the week starting from 2019-10-10 00:00:00. You can specify a time range in days, hours, or minutes.
Custom	Displays log data collected within a custom time range. The start and end time is accurate to minutes.

   After you specify a time range, all dashboards on the Reports tab are refreshed to display data within this time range.

   For more information about the dashboards, see Log report dashboards.

   > **Note** The specified time range is only valid on the current page. The next time you open the Reports tab, the time range of the dashboards is restored to the default.

5. (Optional)On the **Reports** tab, perform operations on a dashboard. In the upper-right corner of the target dashboard, click the icon to show the menu.

   The menu of a dashboard supports the following operations:

   - **Select Time Range**: The dashboard displays basic metrics within the specified time range. You can specify a relative time range, time frame, or custom time range. For more operations, see the descriptions in step 4.
   - **Download Log**: Select this option to save the logs as an Excel file to your computer.
   - **Download Chart**: Select this option to save the dashboard as a PNG file to your computer.
   - **Preview Query Statement**: Click the icon to view the query statement of the log metrics in the dashboard. You can use the statement to query the log data on the Logs tab. For more information about log queries, see Log analysis.

6. (Optional)Subscribe to log reports. You can specify the frequency at which the system sends log data notifications by email or DingTalk chatbot.

   In the upper-right corner of the Reports tab, click **Subscribe**. On the **Create Subscription** page that appears, subscribe to Internet traffic log reports.

   i. In **Subscription Configuration**, configure the following parameters.

Parameter	Description
Subscription Name	The name of the log report subscription. A default name is provided, but you can change it as needed.
Frequency	The frequency at which log report notifications are sent. Valid values: ■ **Hourly**: A notification is sent every hour. ■ **Daily**: A notification is sent each day at a specified hour between 00:00 and 23:00. ■ **Weekly**: A notification is sent each week on a specified day at a specific hour between 00:00 and 23:00. ■ **Fixed Interval**: A notification is sent at a specified interval. You can select **Days** or **Hours**. ■ **Cron**: Use a cron expression to customize the frequency. The time specified in a cron expression is accurate to minutes and is in the 24-hour notation. You can refer to the examples in the console to write a cron expression.
Add Watermark	The address that sends the notification is attached to the image as a watermark. It can be an email address or a webhook URL of the DingTalk chatbot.

   ii. Click **Next** to set a notification type.

Notification type	Parameter	Description
Email	**Recipients**	The email address of the recipient. You can add more than one recipient.
	Subject	The subject of the email. A default subject is provided, but you can change it as needed.
WebHook-DingTalk Bot	**Request URL**	The webhook URL requested. For more information about how to obtain the webhook URL, see Configure DingTalk chatbot notifications.
	Title	The title of the webhook. A default title is provided, but you can change it as needed.

   iii. Click **Submit**.

   iv. In the dialog box that appears, click **OK**.

After the subscription is created, you can move the pointer over the **Subscribe** button on the **Reports** tab to view the subscription.

You can also click **Subscribe** to modify the subscription configurations and notification type or cancel the subscription.

> **Note** You can only create one subscription. To create a new subscription, you must cancel the existing one.

7. (Optional)In the upper-right corner of the **Reports** tab, click **Refresh** to set the frequency to refresh log reports.

Frequency	Description
Once	Trigger a refresh immediately.
Auto Refresh	Specify a refresh frequency. You can set it to 15 seconds, 60 seconds, 5 minutes, or 15 minutes.

Log report dashboards

Log reports provide a global view of Internet traffic, including basic traffic metrics, inbound and outbound traffic trends, and traffic distribution. The following table describes all dashboards supported by Cloud Firewall.

Dashboard	Type	Default time range	Description	Example
Total number of Intercepting	Numeric value	1 hour (relative)	The number of Internet access requests blocked by Cloud Firewall for a specified time range.	10
Inbound Traffic	Numeric value	1 hour (relative)	The volume of inbound traffic from the Internet for a specified time range.	10 MB
Outbound Traffic	Numeric value	1 hour (relative)	The volume of outbound traffic to the Internet for a specified time range.	10 GB
SSH Access	Numeric value	1 hour (relative)	The number of SSH access requests for a specified time range.	10
RDP Access	Numeric value	1 hour (relative)	The number of RDP access requests for a specified time range.	10

Dashboard	Type	Default time range	Description	Example
FTP Access	Numeric value	1 hour (relative)	The number of FTP access requests for a specified time range.	10
Interception trend	Line chart	1 hour (relative)	The trend for the number of times inbound traffic is blocked for a specified time range.	-
Intercepted Source Applications	Pie chart	1 hour (relative)	The top 10 applications (such as HTTP, SNMP, SIP, and SSH) requested by blocked inbound traffic for a specified time range.	-
Sources - Global	World map	1 hour (relative)	The geographical distribution of inbound traffic sources for a specified time range.	-
Source Applications - Top 10	Pie chart	1 hour (relative)	The top 10 applications (such as HTTP and SSH) requested by inbound traffic for a specified time range.	-
Source Regions - Top 10	Pie chart	1 hour (relative)	The top 10 source regions with the most inbound traffic for a specified time range.	-
Source Ports - Top 20	Treemap chart	1 hour (relative)	The top 20 ports that are accessed by inbound traffic for a specified time range.	-
Interception trend	Line chart	1 hour (relative)	The trend for the number of times outbound traffic is blocked for a specified time range.	-
Intercepted External Applications	Pie chart	1 hour (relative)	The top 10 applications (such as HTTP and SSH) requested by blocked outbound traffic for a specified time range.	-
External Ports - Top 20	Treemap chart	1 hour (relative)	The top 20 ports accessed by outbound traffic for a specified time range.	-
External IP Addresses - Top 10	Pie chart	1 hour (relative)	The top 10 IP addresses requested by outbound traffic for a specified time range.	-
External Domains - Top 10	Treemap chart	1 hour (relative)	The top 10 domain names requested by outbound traffic for a specified time range.	-

Dashboard	Type	Default time range	Description	Example
External Applications - Top 10	Pie chart	1 hour (relative)	The top 10 applications (such as HTTP and SSH) requested by outbound traffic for a specified time range.	-

2.7. Log fields

Cloud Firewall logs both inbound and outbound traffic. Each log entry contains a number of fields. You can use these fields to search and analyze logs.

Log field	Description	Example	Remarks
__time__	The time when the log was generated.	2018-02-27 11:58:15	-
__topic__	The topic of the log entry.	cloudfirewall_access_log	The value is always cloudfirewall_access_log.
log_type	The type of the log entry.	internet_log	internet_log indicates that the log entry records Internet traffic.
aliuid	The UID of your Alibaba Cloud account.	12333333333333	-
app_name	The application protocol in the traffic.	HTTPS	Possible values include HTTPS, NTP, SIP, SMB, NFS, DNS, and Unknown.
direction	The direction of the traffic.	in	• in: inbound • out: outbound
domain	The domain name.	www.aliyun.com	-
dst_ip	The destination IP address.	1.1.1.1	-
dst_port	The destination port.	443	-
end_time	The time the session ended.	1555399260	Unit: seconds (UNIX timestamp)
in_bps	The inbound traffic rate.	11428	Unit: bps
in_packet_bytes	The total number of bytes of inbound traffic.	2857	-

Log field	Description	Example	Remarks
in_packet_count	The total number of packets of inbound traffic.	18	-
in_pps	The packet rate of inbound traffic.	9	Unit: pps
ip_protocol	The IP protocol.	TCP	The protocol can be TCP or UDP.
out_bps	The outbound traffic rate.	27488	Unit: bps
out_packet_bytes	The total number of bytes of outbound traffic.	6872	-
out_packet_count	The total number of packets of outbound traffic.	15	-
out_pps	The packet rate of outbound traffic.	7	Unit: pps
region_id	The region of the traffic.	cn-beijing	-
rule_result	The action that the access control policy uses to process packets.	pass23	Valid values: • pass • alert • drop
src_ip	The source IP address.	1.1.1.1	-
src_port	The source port.	47915	-
start_time	The time a session started (in seconds).	1555399258	Unit: seconds (UNIX timestamp)
start_time_min	The time a session started (in minutes), which is an integer.	1555406460	Unit: minutes (UNIX timestamp)
tcp_seq	The TCP serial number.	3883676672	-
total_bps	The total traffic rate of inbound and outbound traffic.	38916	Unit: bps
total_packet_bytes	The total number of bytes of inbound and outbound traffic.	9729	Unit: byte

Log field	Description	Example	Remarks
total_packet_count	The total number of packets.	33	-
total_pps	The total packet rate of inbound and outbound traffic.	16	Unit: pps
src_private_ip	The private IP address.	1.1.1.1	-
vul_level	The risk level.	1	The risk level of the vulnerability. • 1: low • 2: moderate • 3: high-risk

2.8. Advanced Settings

Log Analysis of Cloud Firewall provides you with **Advanced Settings**. You can set advanced features for Log Service with **Advanced Settings**. For example, you can set alarms and notifications, real-time log collection and consumption, shipping log data, or provide visual representations with other products.

Steps

1. Log on to Cloud firewall console.
2. Go to the left-side navigation pane**Advanced Functions > Log Analysis.**
3. Click **Advanced Settings** in the upper-right corner.
4. In the dialog box that appears, click **Go** to open the Log Service console.
5. In the Log Service console, you can set the following advanced features for log projects and logstores:
   - Alarms and notifications
   - Real-time log collection and consumption
   - Shipping log data to other Alibaba Cloud storage services in real time
   - Providing visual representations with other products

2.9. Export log entries

The Log Analysis function of Cloud Firewall allows you to export log entries to your local device.

You can export log entries on the current page to a CSV file, or export all log entries to a TXT file.

Procedure

1. Log on to the Cloud Firewall console.
2. In the left-side navigation pane, select **Advanced Features > Log Analysis.**

3. On the **Raw Logs** tab page, click the **Download** icon

   on the right side.

   > **Note** The download icon does not appear if there's no search result.

4. In the **Log Download** dialog box, select **Download Log in Current Page** or **Download all logs by the CLI console**.
   - **Download logs in current page:**

     Click **OK** to export the raw log entries on the current page to a CSV file.
   - **Download all logs by CLI:**
     a. For more information about installing the CLI, see CLI guide.
     b. Click Security Information Management Link to view and record the AccessKey ID and AccessKey Secret of the current user.
     c. Click **Copy Command** and paste the command into CLI, replace the `AccessID obtained in step 2` and `AccessKey Secret obtained in step 2` with the AccessKey ID and AccessKey Secret of the current user, and run the command.

     After you run the command, all raw log entries created by Cloud Firewall are automatically exported and saved to the file *download_data.txt*.

2.10. Authorize RAM user accounts with Log Analysis function

If you want to use Cloud Firewall's Log Analysis function with a RAM user account, you must first use your Alibaba Cloud account to authorize this RAM user account with the Log Analysis functions of Cloud Firewall.

Context

The following permissions are required for enabling and using Cloud Firewall's Log Analysis function.

Operations	Required account
Enable the Log Analysis function. You only need to perform this operation once.	Alibaba Cloud account
Authorize Cloud Firewall to write the log data into the dedicated Logstore of Log Analysis in real time. You only need to perform this operation once.	• Alibaba Cloud account • A RAM user account with `AliyunLogFullAccess` permission • A RAM user account with the customized permission of log writing

Operations	Required account
Use the Log Analysis function.	• Alibaba Cloud account • A RAM user account with `AliyunLogFullAccess` permission • A RAM user account with the customized permissions

You can grant permissions to a RAM user account as needed.

Scenarios	Grant a RAM user account permissions	Procedure
Grant a RAM user account full permission to Log Service.	The `AliyunLogFullAccess` policy specifies full permission to Log Service.	For more information, see RAM user management.
After you use your Alibaba Cloud account to enable the Cloud Firewall log analysis function and complete the authorization, grant the RAM user account the permission to view logs.	The `AliyunLogReadOnlyAccess` policy specifies the read-only permission.	For more information, see RAM user management.
Grant the RAM user account the permissions to enable and use the Cloud Firewall log analysis function. Do not grant other permissions to Log Service.	Create a custom authorization policy, and apply the policy to the RAM user account.	For more information, see the following procedure.

Procedure

1. Log on to the RAM console.
2. Open the **Create Custom Policy** tab page on the **Policies** page.
3. In the upper-right corner of the page, click **Create Authorization Policy**.
4. Click **Blank Template**, enter the **Policy Name** and the following **Policy Content** into this template.

> **Note** Replace `${Project}` and `${Logstore}` in the following policy with the Log Service Project name and Logstore name dedicated for Cloud Firewall, respectively.

```
{
 "Version": "1",
 "Statement": [
    {
    "Action": "log:GetProject",
```

```
  "Resource": "acs:log:*:*:project/${Project}",
  "Effect": "Allow"
 },
 {
  "Action": "log:CreateProject",
  "Resource": "acs:log:*:*:project/*",
  "Effect": "Allow"
 },
 {
  "Action": "log:ListLogStores",
  "Resource": "acs:log:*:*:project/${Project}/logstore/*",
  "Effect": "Allow"
 },
 {
  "Action": "log:CreateLogStore",
  "Resource": "acs:log:*:*:project/${Project}/logstore/*",
  "Effect": "Allow"
 },
 {
  "Action": "log:GetIndex",
  "Resource": "acs:log:*:*:project/${Project}/logstore/${Logstore}",
  "Effect": "Allow"
 },
 {
  "Action": "log:CreateIndex",
  "Resource": "acs:log:*:*:project/${Project}/logstore/${Logstore}",
  "Effect": "Allow"
 },
 {
  "Action": "log:UpdateIndex",
  "Resource": "acs:log:*:*:project/${Project}/logstore/${Logstore}",
  "Effect": "Allow"
 },
 {
  "Action": "log:CreateDashboard",
  "Resource": "acs:log:*:*:project/${Project}/dashboard/*",
  "Effect": "Allow"
 },
 {
  "Action": "log:UpdateDashboard",
```

```
    "Resource": "acs:log:*:*:project/${Project}/dashboard/*",
    "Effect": "Allow"
   },
   {
    "Action": "log:CreateSavedSearch",
    "Resource": "acs:log:*:*:project/${Project}/savedsearch/*",
    "Effect": "Allow"
   },
   {
    "Action": "log:UpdateSavedSearch",
    "Resource": "acs:log:*:*:project/${Project}/savedsearch/*",
    "Effect": "Allow"
   }
  ]
}
```

5. Click **Create Authorization Policy**.
6. Go to the **Users** page, locate the RAM user account, and click **Authorize**.
7. Select the custom authorization policy that you created, and then click **OK**.
   The authorized RAM user account then can enable and use the Log Analysis function. However, this RAM user account is not authorized to use other functions of Log Service.

2.11. Manage the log storage space

After you enable the log analysis feature, log storage space is allocated based on the storage capacity you specify. You can view log storage usage on the Log Analysis page in the Cloud Firewall console.

View log storage usage

You can view log storage usage on the Log Analysis page.

> **Note** Log storage usage is updated every two hours in the Cloud Firewall console. We recommend that you upgrade your log storage before it is used up.

1. Log on to the Cloud Firewall console.
2. In the left-side navigation pane, choose **Logs > Log Analysis**.
3. In the upper-right corner of the **Log Analysis** page, view log storage usage.

Upgrade log storage

On the top of the **Log Analysis** page, click **Upgrade Storage**. Configure a larger storage capacity and pay for the order.

Note If you do not upgrade your log storage space before it is used up, Cloud Firewall cannot store new log entries to the dedicated Logstore.

Clear your log storage space

You can delete log entries stored in the Logstore. For example, you can delete all log entries generated during the test phase to save space for log entries that are generated during service production.

On the top of the **Log Analysis** page, click **Clear** to delete all log entries.

Notice

- Deleted log entries cannot be recovered. Exercise caution when you perform this operation.
- You can clear the log storage space only a few times.