Cloud Firewall

Getting Started

 Issue
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Cloud Firewall (CFW) is a next-generation cloud-native firewall. It protects the Internet border and VPC border on the cloud by real-time intrusion detection and prevention, global unified access control, full traffic analysis, log audit, and tracing. It employs AI for intelligent defense, and can be elastically scaled to meet changing business needs, helping you easily handle security threats. CFW is a basic service that provides network security protection for user services on the cloud.

This document describes how to use CFW to protect the Internet border. The following figure shows **the process of using CFW**.





2 Step 1: Purchase CFW

You can purchase CFW in yearly/monthly mode.

Edition Description

CFW provides the standard edition, and the professional edition. You can use access control, intrusion prevention, traffic analysis, and log audit functions on the console.

Feature		Standard	Professional
Protection	Protected EIPs at Internet boundary	20 (expandable)	50 (expandable)
	Peak protection traffic at Internet boundary	10 Mbit/s (expandable)	50 Mbit/s (expandable)
	Protected VPCs	×	2 (expandable)
	Max. peak protection traffic between VPCs	×	200 Mbit/s (can be increased with the number of VPCs)
Access traffic control	ACL access control for public network assets (based on IP addresses, domain names, domain groups, and geographical locations)	\checkmark	\checkmark
	North-south traffic protection and cloud resource (including EIP) protection against risks on the Internet	\checkmark	\checkmark

Table 2-1 Editions

Feature		Standard	Professional
North-south traffic audit and log query		√	√
	East-west traffic protection, asset protection between VPCs, and full traffic analysis	×	\checkmark
	East-west traffic monitoring to obtain inter-VPC traffic data in real time	×	\checkmark
Protection policies	Intrusion prevention system (IPS)	\checkmark	\checkmark
	Custom IPS signature database	×	\checkmark
	Virtual patching	\checkmark	\checkmark
	Sensitive directories and reverse shells	\checkmark	\checkmark
	Antivirus	×	\checkmark

Purchasing a Firewall in Yearly/Monthly Mode

Step 1 Log in to the management console.

- **Step 2** Click in the upper left corner of the management console and select a region or project.
- **Step 3** In the navigation pane on the left, click = and choose **Security & Compliance** > **Cloud Firewall**. The **Dashboard** page will be displayed.
- **Step 4** Click **Buy CFW** and configure parameters on the **Buy CFW** page. For more information, see **Table 2-2**.

Parameter	Description	
Region	Region where the CFW is to be purchased.	
	NOTICE CFW can be used in the selected region only. To use CFW in another region, switch to the corresponding region and then purchase it. For details about the regions where CFW is available, see Can CFW Be Used Across Clouds or Regions?	

Table 2-2 Yearly/Monthly CFW parameters

Parameter	Description
Edition	 Edition. Standard Professional NOTE For details about the differences between versions, see Editions.
Engine	Direct engine. You can implement fine-grained application control, for example, by using policies and limiting sessions. You can also take advantage of intrusion prevention, virus filtering, and defense functions to enhance access security, defend against attacks, and identify and control applications.
Add EIP Protection Capacity	 (Optional) Number of additional EIPs to be protected. Value range: 0 to 2000 NOTE By default, 20 public IP addresses are protected by the standard edition (included in the package fee). If you have 65 public IP addresses, you only need to enter 45.
Add Peak Traffic Protection Capacity	 (Optional) Additional peak inbound or outbound traffic. The value range is 0 to 5000 Mbit/s per month. (The value must be an integer multiple of 5.) NOTE By default, up to 10 Mbit/s per month is protected by the standard edition (included in the package fee). If your protection traffic is 200 Mbit/s per month, you only need to enter 190 Mbit/s per month. The protection traffic is determined based on the maximum inbound or outbound traffic, whichever is higher.
Enterprise Project	Select an enterprise project from the drop-down list. This option is only available if you have logged in using an enterprise account, or if you have enabled enterprise projects. To use this function, Enable Enterprise Center . You can use an enterprise project to centrally manage your cloud resources and members by project. NOTE Value default indicates the default enterprise project. Resources that are not allocated to any enterprise projects under your account are displayed in the default enterprise project.
Firewall Name	 Firewall name. It must meet the following requirements: Only letters (A to Z and a to z), numbers (0 to 9), spaces, and the following characters are allowed:

Parameter	Description	
Advanced Settings	Tag : You can use a tag for multiple cloud resources. You are advised to predefine tags in TMS. For details, see Resource Tag Overview .	
	If your organization has configured a tag policy for CFW, you need to add tags in compliance with the policy. If a tag does not comply with the tag policies, firewall instance creation may fail. Contact your organization administrator to learn more about tag policies.	
Required Duration	Service duration. After selecting a duration, you can select Auto-renew . If you select and agree to service auto renewal, the system automatically generates a renewal order based on the subscription period and renews the service before it expires. Note the Auto-Renewal Rules when enabling auto-renewal.	

- **Step 5** Confirm the purchase information and click **Buy Now**.
- Step 6 Confirm the order details, select I have read and agreed to the Huawei Cloud Firewall Service Statement, and click Next.
- **Step 7** Select a payment method and pay for your order.

Effective Conditions

Your CFW instance is purchased when your instance edition and its quota information are shown in the upper left corner of the management console.

3 Step 2: Enable EIP Protection

When you use CFW for the first time, you need to synchronize assets and enable protection for EIP assets so that your service traffic can pass through CFW.

After EIP protection is enabled, the default action of CFW is **Allow**. CFW will block traffic based on your protection policy.

Procedure

- Step 1 Log in to the management console.
- **Step 2** Click in the upper left corner of the management console and select a region or project.
- **Step 3** In the navigation pane on the left, click and choose **Security & Compliance** > **Cloud Firewall**. The **Dashboard** page will be displayed.
- Step 4 (Optional) If the current account has only one firewall instance, the firewall details page is displayed. If there are multiple firewall instances, click View in the Operation column to go to the details page.
- **Step 5** In the navigation pane, choose **Assets** > **EIPs**. The EIP page is displayed. The EIP information is automatically updated to the list.
- **Step 6** Enable EIP protection.
 - Enable protection for a single EIP. In the row of the EIP, click **Enable Protection** in the **Operation** column.
 - Enable protection for multiple EIPs. Select the EIPs to be protected and click **Enable Protection** above the table.

NOTICE

- Currently, IPv6 addresses cannot be protected.
- An EIP can only be protected by one firewall.
- Only EIPs in the enterprise project to which the current account belongs can be protected.

Step 7 On the page that is displayed, check the information and click **Bind and Enable**. Then the **Protection Status** changes to **Protected**.

D NOTE

After EIP protection is enabled, the default action of the access control policy is **Allow**.

4 Step 3: Configure a Protection Policy

4.1 Configuring Intrusion Prevention

CFW provides you with basic defense functions, and, with many years of attack defense experience, it detects and defends against a wide range of common network attacks and effectively protects your assets.

Procedure

Step 1 Log in to the management console.

- **Step 2** Click in the upper left corner of the management console and select a region or project.
- **Step 3** In the navigation pane on the left, click and choose **Security & Compliance** > **Cloud Firewall**. The **Dashboard** page will be displayed.
- Step 4 (Optional) If the current account has only one firewall instance, the firewall details page is displayed. If there are multiple firewall instances, click View in the Operation column to go to the details page.
- **Step 5** In the navigation pane, choose **Attack Defense** > **Intrusion Prevention**.

Function	Description
Protection Mode	• Observe : Attacks are detected and recorded in logs but are not intercepted.
	 Intercept: Attacks and abnormal IP address access are automatically intercepted.
	 Intercept mode - loose: The protection granularity is coarse. In this mode, only attacks with high threat and high certainty are blocked.
	 Intercept mode - moderate: The protection granularity is medium. This mode meets protection requirements in most scenarios.
	 Intercept mode - strict: The protection granularity is fine-grained, and all attack requests are intercepted.
	 You are advised to use the observe mode for a period of time before using the intercept mode. For details about how to view attack event logs, see Attack Event Logs
	 If packets are incorrectly intercepted, you can modify the action of a single defense rule in the basic defense rule library. For details about operations, see Managing Intrusion Prevention.
Basic Protection	Basic protection on your assets. It is enabled by default. Its functions are as follows:
	Scan for threats and scan vulnerabilities.
	• Detects whether traffic contains phishing, Trojan horses, worms, hacker tools, spyware, password attacks, vulnerability attacks, SQL injection attacks, XSS attacks, and web attacks.
	 Checks whether there are protocol anomalies, buffer overflow, access control, suspicious DNS activities, and other suspicious behaviors in traffic.
	NOTE For details about how to view basic defense rules, see Checking the IPS Rule Library.
Virtual Patching	Hot patches are provided for IPS at the network layer to intercept high-risk remote attacks in real time and prevent service interruption during vulnerability fixing.
	New IPS rules are displayed in the virtual patch rule library. To view the rule library, click View Virtual Patch . For details about the parameters in the rule library, see Checking the IPS Rule Library .
	Auto Update : After this function is enabled, rules in the virtual patch take effect. Protection is implemented in real time and protection actions can be manually modified.

Func	tion	Description	
Custo Signa	om IPS ature	If the basic defense rule library does not meet your requirements, you can create custom IPS signatures. Only the professional edition support custom IPS signatures. For details, see Customizing IPS Signatures .	
Adv anc ed	Sensitive Directory Scan Defense	 Defense against scan attacks on sensitive directories on your servers. Action: Observe: If a sensitive directory scanning attack is detected, CFW records it in logs only. For details about how to view attack logs, see Attack Event Logs. Block session: If the firewall detects a sensitive directory scan attack, it blocks the current session. Block IP: If CFW detects a sensitive directory scan attack, it blocks the attack IP address for a period of time. Duration: If Action is set to Block IP, you can set the blocking duration. The value range is 60s to 3,600s. Threshold: CFW performs the specified action if the scan frequency of a sensitive directory reaches this threshold. 	
	Reverse Shell Defense	 Defense against reverse shells. Action: Observe: If a reverse shell attack is detected, it is only recorded in attack logs. For details about how to view attack logs, see Attack Event Logs. Block session: If the firewall detects a reverse shell attact it blocks the current session. Block IP: If CFW detects a reverse shell attack, it blocks the attack IP address for a period of time. Duration: If Action is set to Block IP, you can set the blocking duration. The value range is 60s to 3,600s. Mode: Conservative: coarse-grained protection. If a single session is attacked for four times, observation or interception is triggered. It ensures that no false positivare reported. Sensitive: fine-grained protection. If a single session is attacked for two times, observation or interception is triggered. It ensures that attacks can be detected and handled. 	

4.2 Configuring an Access Control Policy

The default status of an access control policy is **Allow**. Configure a proper access control policy for fine-grained management and control, preventing the spread of internal threats and enhancing security. For details about how to configure an access control policy, see **Adding an Internet Boundary Protection Rule**. For details about how to block all access and allow only certain traffic, see **Configuration Example - Allowing the Inbound Traffic from a Specified IP Address**. For details about how to block the access traffic of a region, see **Configuration Example - Blocking Access from a Region**.

Configuration Example - Allowing the Inbound Traffic from a Specified IP Address

Configure two protection rules. One of them blocks all traffic, as shown in **Figure 4-1**. Its priority is the lowest. The other allows the traffic of a specified IP address, as shown in **Figure 4-2**. Its priority is the highest.

Figure 4-1 Blocking all traffic

Matching Condition

Direction	Inbound	Outbound
Source	Any	~
Destination	Any	~
Service	Any	~

Protection Action

Action	Allow	Block
--------	-------	-------

Matching Condition	n	
Direction	Inbound	Outbound
Source	IP address	✓ 10.1.1.1 ×
Destination	Any	~
Service	Any	~
Protection Action		
Action	Allow	Block

Figure 4-2 Allowing a specified IP address

Configuration Example - Blocking Access from a Region

The following figure shows a rule that blocks all access traffic from **Singapore**.

Figure 4-3 Intercepting the access traffic from Singapore

Matching Conditio	n	
Direction	Inbound	Outbound
Source	Countries and regions	✓ Singapore × ✓
		Before selecting a continent, check to ensure you want this policy to take effect on all the countries/regions in it.
Destination	Any	~
Service	Any	~
Protection Action		
Action	Allow	Block

5 (Optional) Step 4: View Protection Details

5.1 Viewing Network Traffic Analysis

You can view details about the inbound and outbound traffic and attack trend on cloud servers in real time to check for abnormal traffic.

Viewing Inbound Traffic

- Step 1 Log in to the management console.
- **Step 2** Click in the upper left corner of the management console and select a region or project.
- **Step 3** In the navigation pane on the left, click and choose **Security & Compliance** > **Cloud Firewall**. The **Dashboard** page will be displayed.
- Step 4 (Optional) If the current account has only one firewall instance, the firewall details page is displayed. If there are multiple firewall instances, click View in the Operation column to go to the details page.
- **Step 5** In the navigation pane, choose **Traffic Analysis** > **Inbound Traffic**.
- **Step 6** View the statistics on the traffic passing through the firewall. You can select the query duration from the drop-down list.
 - **Traffic Dashboard**: Information about the highest traffic from the Internet to internal servers.
 - Inbound Traffic: Inbound request and response traffic.
 - Visualizations: Top 5 items ranked by certain parameters regarding inbound traffic within a specified time range. For more information, see Table 5-1. You can click a data record to view the traffic details. A maximum of 50 data records can be viewed.

Parameter	Description			
Top Access Source IP Addresses	Source IP addresses of inbound traffic.			
Top Access Source Regions	Geographical locations of the source IP addresses of inbound traffic.			
Top Destination IP Addresses	Destination IP addresses of inbound traffic.			
Top Open Ports	Destination ports of inbound traffic.			
Application Distribution	Application information about inbound traffic.			

 Table 5-1 Inbound traffic parameters

- IP analysis: Top 50 traffic records in a specified period.
 - EIPs: Traffic information about destination IP addresses.
 - **Source IP Addresses**: Traffic information about source IP addresses.

Viewing Outbound Traffic

- Step 1 Log in to the management console.
- **Step 2** Click in the upper left corner of the management console and select a region or project.
- **Step 3** In the navigation pane on the left, click and choose **Security & Compliance** > **Cloud Firewall**. The **Dashboard** page will be displayed.
- Step 4 (Optional) If the current account has only one firewall instance, the firewall details page is displayed. If there are multiple firewall instances, click View in the Operation column to go to the details page.
- **Step 5** In the navigation pane, choose **Traffic Analysis** > **Outbound Traffic**.
- **Step 6** View the statistics on the traffic passing through the firewall. You can select the query duration from the drop-down list.
 - **Traffic Dashboard**: Information about the highest traffic when internal servers access the Internet.
 - **Outbound Traffic**: Outbound request and response traffic.
 - **Visualizations**: Top 5 items ranked by certain parameters regarding outbound traffic within a specified time range. For more information, see **Table 5-2**. You can click a data record to view the traffic details. A maximum of 50 data records can be viewed.

Parameter	Description				
Top Destination IP Addresses	Destination IP addresses of outbound traffic.				
Top Destination Regions	Geographical locations of the source IP addresses of outbound traffic.				
Top Access Source IP Addresses	Source IP addresses of outbound traffic.				
Top Open Ports	Destination ports of outbound traffic.				
Application Distribution	Application information about outbound traffic.				

Table 5-2 Outbound traffic parameters

- IP analysis: Top 50 traffic records in a specified period.
 - External IP Address: Traffic information about the destination IP address.
 - Assets Initiating Internet Connections: Traffic information whose source IP addresses are public IP addresses.
 - **Assets Initiating Private Network Connections**: Traffic information whose source IP addresses are private IP addresses.

5.2 Viewing Protection Event Logs

For details about how to view attack traffic detected by the cloud firewall in attack logs, see **Attack Event Logs**.

You can also view all traffic allowed or blocked in access control logs to adjust access control policies. For details, see **Access Control Logs**.

Attack Event Logs

- Step 1 Log in to the management console.
- **Step 2** Click in the upper left corner of the management console and select a region or project.
- **Step 3** In the navigation pane on the left, click and choose **Security & Compliance** > **Cloud Firewall**. The **Dashboard** page will be displayed.
- Step 4 (Optional) If the current account has only one firewall instance, the firewall details page is displayed. If there are multiple firewall instances, click View in the Operation column to go to the details page.
- **Step 5** In the navigation pane, choose **Log Audit** > **Log Query**. The **Attack Event Logs** tab page is displayed. You can view details about attack events in the past week.

Figure 5-1 Attack event logs

Atlack Event Logs Access Control Logs Traffic Logs																	
Infernet Border Firewall																	
Mar 20, 2024 0	9:22:17 — Mar 20, 20;	24 10:22:17				>	Add filter										×Q®
Time 😔	Attack 😔	Severity \ominus	Rule ID \ominus	Rule Na 😔	Source	θ	Source C \varTheta	Source 😔	Destin	a 0	Destina 😔	Destina 🖯	Protocol 🖯	Applica 😔	Direction 😔	Action 😔	Operation
Mar 20, 202	Vulnerability	Critical	331978	Apache Flink		.94	CN	38616		.90	-	80	TCP	HTTP	Inbound	Ø Block	View
Mar 20, 202	Vulnerability	Critical	331978	Apache Flink		.94	CN	38616		.90	-	80	TCP	HTTP	Inbound	Ø Block	View
Mar 20, 202	Vulnerability	Critical	331978	Apache Flink		.94	CN	38616		.90	-	80	TCP	HTTP	Inbound	Ø Block	View

Table 5-3 Attack event log parameters

Parameter	Description		
Time	Time when an attack occurred.		
Attack Type	Type of the attack event, including IMAP, DNS, FTP, HTTP, POP3, TCP, and UDP.		
Severity	It can be Critical , High , Medium , or Low .		
Rule ID	Rule ID		
Rule Name	Matched rule in the library.		
Source IP Source IP address of an attack event. Address			
Source Country/ Region	Geographical location of the attack source IP address.		
Source Port	Source port of an attack.		
Destination IP Address	Attacked IP address.		
Destination Country/ Region	Geographical location of the attack target IP address.		
Destination Port	Destination port of an attack.		
Protocol	Protocol type of an attack.		
Application Application type of an attack.			
Direction	It can be outbound or inbound.		
Action	The value can be Allow, Block, Block IP, or Discard.		
Operation	You can click View to view the basic information and attack payload of an event.		

Access Control Logs

- Step 1 Log in to the management console.
- **Step 2** Click in the upper left corner of the management console and select a region or project.
- **Step 3** In the navigation pane on the left, click and choose **Security & Compliance** > **Cloud Firewall**. The **Dashboard** page will be displayed.
- Step 4 (Optional) If the current account has only one firewall instance, the firewall details page is displayed. If there are multiple firewall instances, click View in the Operation column to go to the details page.
- Step 5 In the navigation pane, choose Log Audit > Log Query. Click the Access Control Logs tab and check the access control traffic details in the past week.

Figure 5-2 Access control logs

Attack Event Logs	Access Control Logs	Traffic Logs									
Internet Border Firewall	VPC Border Firewall										
Apr 01, 2024 10:01:05 -	Apr 08, 2024 10:00:54	C Select a propert	y or enter a keyword.								0
Hit Time \ominus	Source IP \varTheta	Source Country/R 🖯	Source Port \ominus	Destinati	on IP \varTheta	Destination Count \ominus	Destination Port 🖨	Protocol 🖯	Action 😔	Rule 🖯	
Apr 07, 2024 10:58:12	229	United States	56802		.195	Chinese Mainland	3917	TCP	Ø Block	dent_out_in	
Apr 07, 2024 10:58:10	.61	Hong Kong (China)	11111		.195	Chinese Mainland	10002	UDP	Ø Block	dent_out_in	
Apr 07, 2024 10:58:09	.0	Indonesia	-		.195	Chinese Mainland	-	ICMP: ECHO_REQUEST	Allow	permit_out_in	

Table 5-4 Access control log parameters

Parameter	Description						
Hit Time	Time of access.						
Source IP	Source IP address of the access.						
Source Country/ Region	Geographical location of the source IP address.						
Source Port Source port for access control. It can be a single port or consecutive port groups (example: 80-443).							
Destination IP	Destination IP address.						
Destination URL	Destination domain name						
Destination Country/ Region	Geographical location of the destination IP address.						
Destination Port	Destination port for access control. It can be a single port or consecutive port groups (example: 80-443).						
Protocol Protocol type for access control.							

Parameter	Description
Action	Action taken on an event. It can be Observe , Block , or Allow .
Rule	Type of an access control rule. It can be a blacklist or whitelist.

6 Getting Started with Common Practices

After configuring intrusion prevention and access control policies, you can use a series of common practices provided by CFW for your workloads quickly.

Practice	Description				
Configuring Access Policies for IP Address Groups and Service Groups	Configure IP address groups and service groups (ports and protocols) in batches. This policy applies to enterprises or multiple IP addresses or port protocols need to be configured.				
Configuring an Inter-VPC Border Firewall	Configure a VPC border firewall, which applies to scenarios where inter-VPC traffic protection is required.				

Table 6-1	l Common	practices
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