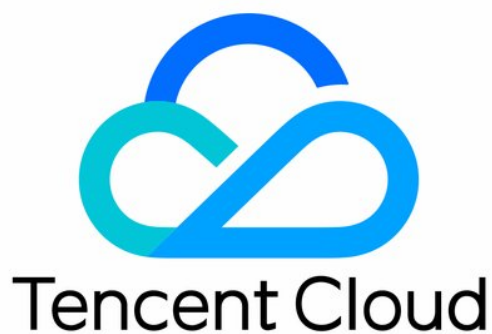


# **Tencent Smart Advisor-Chaotic Fault Generator Operation Guide Product Documentation**



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# Operation Guide

## Template Library

### Using Industry Template Library

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To help users quickly create experiments, CFG provides experiment templates for multiple industries such as e-commerce, gaming, and multimedia, covering various typical application scenarios like cross-availability zone disaster recovery. Users can quickly and efficiently reuse mature solutions based on their business needs to validate the system's availability.

## Introduction to Industry Template Library

Based on platform user practices, CFG has distilled the following categories of typical industry templates. For details, see [Recommendation Templates](#).

Industry Category	Template Name
General	Cross-availability zone disaster recovery experiment Hybrid cloud disaster recovery experiment
E-commerce	Microservices governance in e-commerce scenarios Service stress experiment in flash sale scenarios
Games	Database failure experiment in gaming scenarios Network failure experiment in gaming scenarios
Media	Network failure in streaming media scenarios

## How to Use the Industry Experience Library

### Step 1. Create an Experiment

1. Log in to [Tencent Smart Advisor > Chaotic Fault Generator](#), enter the **Experiment Management** page, click **Create a New Experiment**.
2. Click **Skip and create a blank experiment**.

### Step 2. View and Select Industry Template Library

The repository template is divided into **Industry Template Library** and the user-defined **My Template Library**, click different industry Tags to filter corresponding industry templates. Meanwhile, the search box on the right supports searching by repository title (If you do not want to use any template, you can click **Skip and create a blank experiment** at the bottom left corner, to directly create a new blank experiment).

### Step 3. Use the Industry Template Library

Click a template to open the **Experience Template Preview Page**, which includes basic information, experience value, involved failure types, etc. Click **Go to use**, to directly enter the experiment creation process.

### Step 4. Complete Experiment Information

1. When creating an experiment using the industry template, the system will automatically pull the basic experiment information and experiment action group choreography information, filling it into the form. Users only need to select instance resources.

If there is a preconfigured experiment plan, it can be linked here. (optional)

2. In the experiment object configuration, click **Add Instance**, to select the specified instance resources for the action group to participate in the experiment. For detailed instance configuration steps, refer to [Create a Fault Experiment](#).

### Step 5. Global Configuration

Supplement the global configuration, optionally add guardrail policies and monitoring indicators. After completion, click **Submit** to finish the experiment setup.

# Creating a Template Library

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A template library is used to help users consolidate commonly used fault experiment scenes, orchestrations, and the selection of guardrail and alarm policies. After creating a template library, you can quickly select your custom templates when creating an experiment, allowing you to swiftly complete the creation of experiments.

## Open the Template Library List

Click [Template Library Management](#) in the left-hand menu. Go to the template library list page.

## Create a Template

1. Click [Create New Template](#) and fill in the basic information of the template library. Adding tags here will make it easier to filter and manage resource permissions.
2. Fill in the experiment object information, select the object (cloud product) to be experimented on, then select the corresponding region, and instance range, and select the appropriate fault scene and parameters for the experiment.

### Note:

An action group supports only one cloud product. If you need to experiment with multiple cloud products simultaneously, you can click **New Action Group** in the lower left corner to add the required products for the experiment.

3. After completing the action orchestration, you can select the corresponding alarm rules and monitoring metrics. The guardrail policy is integrated with the alarm rules of the Tencent Cloud Observability Platform, which will filter and display the relevant alarm rules in the list for you to select.

4. After submission, your personal template library in CFG will be successfully created.

# Experiments

## Pre-Checking Environment for Chaos Engineering Experiments

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### Overview

Some fault actions provided by the platform require certain pre-existing environmental conditions. If these conditions are not met, the corresponding fault actions may fail when executing the chaotic fault generator. To address this, the platform offers the **experiment environmental pre-check** feature, which helps users identify and resolve environmental issues before executing chaos engineering experiments. This feature **will not perform fault injection operations on the experiment instance object** and **will not block** the execution of chaos engineering experiments, so users can **operate with confidence**.

#### Note:

Users can re-trigger the environmental check an unlimited number of times before **executing experiment actions**, with the page displaying the most recent environment check results.

Even if the environmental check fails, you can still execute chaos engineering experiments. However, fault action execution may fail during the experiment.

Once the experiment is in the **execution, suspension, or execution completed** status, you will no longer be able to re-trigger environmental check.

Users can view the environmental check status in the experimental check column on the experiment list page. They can also batch select experiments to re-trigger the environmental check. However, if an experiment is in one of the statuses described in the previous point, the environmental check cannot be triggered.

### Directions

#### Step 1: Create an Experiment

1. Log in to the [Tencent Smart Advisor > Chaotic Fault Generator](#), click **Experiment Management**, and select **Create a New Experiment**.
2. On the **Create a New Experiment** page, after configuring the settings, click **Submit** to complete the experiment creation. An environmental check will be automatically triggered at this point.

#### Step 2: View and Resolve Environmental Issues

After the experiment is created, click to navigate to the **Experiment Details**.

On the **Experiment Details** page, you can view the environment check results for the current experiment. Click **View Detection Details** to open a window displaying specific environmental risk items and operation guides.

**Note:**

The detected risk items could potentially lead to **experiment failure**. It is recommended to operate based on **Operational Recommendations** before continuing the experiment.

You can also click the **Environment Check Result** for each action group to view detailed information for each group's check.

### **Step 3: Double-Check**

After following the operational recommendations, users can click **Double-Check** to re-trigger an environmental check and verify whether the environmental issues have been successfully resolved.



# Creating an Experiment

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## Step 1: Create an Experiment

1. Create a new experiment from the [Industry Template Library](#) template (or customize a blank experiment).
2. Fill in the basic information of the experiment.

## Step 2: Configure Experiment Objects

1. Select the resource type and resource objects, click **Add Instance**, and select the instances you want to include in the experiment.
2. In the exercise action area, click **Add Now** to configure the **experiment action** for the selected instance objects.

## Step 3: View Experiment Details

1. After completing the **Global Configuration** for the experiment, click Submit to complete experiment creation.
2. After the experiment is successfully created, click to view the **Experiment Details Page**, where the system will automatically perform an environmental check.

## Step 4: Execute the Experiment

In the exercise action group area, select the fault action you wish to execute, then click **Execute** to start the experiment action.

## Step 5: End the Experiment

After the experiment is completed, click **End Experiment**, record the experiment result, and complete the process.

# Exporting Experiment Reports

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To help users organize experiment data, CFG provides the option to export the report of an ended experiment, allowing users to obtain basic execution information about the experiment.

## Note:

The experiment report is generated by default as a single-page PDF file, and other file types are currently not supported.

Only experiments that have ended can be exported as a report.

The experiment report can be regenerated and exported multiple times.

The experiment report is saved by default for 7 days. Within this period, there's no need to export it repeatedly. If the report expires, you can regenerate and export it.

After modifying the experiment conclusion, you can regenerate a new experiment report.

## Export Steps

### Generate the Experiment Report for the First Time

Go to the **Experiment Details** page of the experiment for which you want to export a report. Note that only experiments that have **completed** can have their reports exported. Click **Generate Experiment Report** at the bottom left of the **Basic Information** section to generate the report for that experiment.

### Export Experiment Reports

After requesting to export the experiment report, please wait a moment. Once the export is successful, a **Download** option will appear. Click it to download the report. The system **by default saves for 7 days**. If no modifications are made to the experiment result during these 7 days, you can download the report directly without regenerating it.

However, if the experiment result is modified within this period, you can click **Regenerate Experiment Report** to create a new report.

# Fault Action

## Editing Action Parameters

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### Background

If users want to inject faults with different action parameters in an existing experiment, there's no need to create a new experiment. They can manually edit the parameters of the completed fault actions and re-execute the fault injection.

If the fault action execution has not yet been completed, action parameters cannot be edited.

After confirming the modifications, you can re-execute the fault action.

#### **Note:**

To edit fault action parameters, ensure that the current **fault action has been completed** and **the experiment is in progress**. If the experiment is in the **completed** status, then the **fault action parameters cannot be modified**.

# Concurrent Injection of Multiple Action Groups in Experiments

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CFG supports injecting faults into Tencent Cloud products, such as CVM, TKE, and Redis. Each object type is inherently independent of the others, so when injecting platform fault actions, the actions should also be non-interfering with each other. Based on this principle, the platform introduces the concept of action groups, which are used to manage fault actions for a specific type of object.

## Create an Action Group

Users can create a new action group based on their needs by clicking **Add Action Group** during the experiment. Each action group manages different Tencent Cloud product instance objects and fault actions.

## Execute an Experiment

Once the experiment is started, you can simultaneously start fault actions in different action groups. Depending on the execution mode of the experiment, these fault actions can be executed manually or automatically, with no interference between action groups.

## Avoid Injection of Same-Type Faults at the Same Time

To prevent users from injecting the same type of faults into an instance, which could hinder the observation of actual effects, the platform restricts the injection of similar actions into the same instance at the same time. Any subsequent fault injection of the same type will be blocked by the platform and will not be allowed to proceed.

# Guide to Viewing Action Execution Duration Data

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## Background

Users can repeatedly trigger fault injections within an experiment, and the parameters of each fault action may change. The platform provides action execution duration data. Users can view the complete execution records by clicking **Action Details**, making it easier to perform comparative analysis.

## View Method

Click Action Details, and in the expanded detail drawer page, select Action Execution Record to view them.

# Guardrail Monitoring

## Using Guardrails

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## Background

When users execute fault actions via CFG, some unforeseen impacts may occur. To ensure these impacts remain within a controllable range, the platform provides guardrails to help users minimize losses and protect normal business operations.

### Note:

Guardrails can be triggered and recovered by users through the Guardrail TencentCloud API. For details, see [Trigger/Restore Guardrails Cloud API Interface Documentation](#). Current guardrails support two policies:

**Pause the Experiment:** When the guardrail is triggered by the user, the experiment will automatically pause.

**Sequential Rollback of Actions:** When the guardrail is triggered by the user, the pending recovery actions will be automatically executed. Once the necessary recovery actions are completed, the experiment will automatically pause. If the guardrail is in the **Trigger** status and you manually continue to execute fault actions, the above policies will still be applied.

We do not recommend injecting faults into the same instance simultaneously. Otherwise, automatic recovery may fail, and users will need to manually execute the corresponding recovery actions.

## Guardrail Use Method

### Select Guardrail Policy

In Step 4 Global Configuration of Create an Experiment, you can select the guardrail policy for the current experiment, such as the **Sequential Rollback of Actions** policy. You can click **How to trigger the guardrail?** to view trigger code examples.

### Guardrail Trigger Method

When selecting a guardrail policy, click **How to trigger the guardrail?** to view example code for calling the Trigger/Recover Guardrail TencentCloud API.

### Execute an Experiment and Trigger Guardrails

After the experiment is created, execute the shutdown experiment. During the shutdown process, actively trigger the guardrail by calling the Guardrail Trigger TencentCloud API.

1. After triggering the guardrail by calling the TencentCloud API, the system will automatically execute the startup recovery action. Once completed, the experiment will be automatically paused.
2. You can click the **Guardrail Policy** tag to view the guardrail trigger records. In the guardrail trigger event, you can click **Guardrail Details** to view the guardrail's name and specific details.
3. You can click the **Experiment Log** button in the upper right corner to view the experiment logs, where you can see the guardrail execution logic logs.
4. Call the TencentCloud API to recover the guardrail. Once the guardrail is recovered, you can continue executing the experiment.
5. Continue executing the shutdown fault injection. If the fault injection is successful, the recovery action will not be automatically executed, and the experiment will not be paused.

# Tag

## Managing Permissions with Tags

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CFG now supports **resource-level authentication**, allowing specific experiments, template library, custom actions, and other resources to be authorized based on tags and the six-segment CAM resource structure. You can refer to [Permission Management Guide](#) to configure user role permissions.

## Experiments

### Binding Tags

On the experiment management page, click **Create a New Experiment > Add**, then select the corresponding tag key and tag value. The tag binding is completed.

### Searching Tags

On the experiment management page, you can select **Tag Key** and **Tag Value** to perform the corresponding search.

## Template Library

### Binding Tags

On the template library management page, click **Create New Template > Add**, then select the corresponding tag key and tag value. The tag binding is completed.

### Searching Tags

On the template library management page, you can select **Tag Key** and **Tag Value** to perform the corresponding search.

## Custom Actions

### Binding Tags

In the action library list, click **Create Custom Action**, then in the tags section, click **Add**, and select the corresponding tag key and tag value to complete the tag binding.

### Searching Tags



On the action library list page, you can select **Tag Key** and **Tag Value** to perform the corresponding search.

# Agent Management

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To better support a wide range of fault actions on hosts and containers, fault injection will be performed on target resources through fault agents. Users can independently manage fault probes through [Chaotic Fault Generator > Agent Management](#).

## Directions

### Select the Type of Agents

Currently, [CFG](#) supports self-management of agents for two object types: **Cloud Virtual Machine (CVM)** and **Tencent Kubernetes Engine (TKE)**.

### Install Agents

#### Cloud Virtual Machine (CVM)

1. Select the **region** where you want to add a new agent, and then click **Add Agent**.

#### Note:

Currently, installing agents is not supported on the following operating system versions: Ubuntu 20.04, Ubuntu 22.04, Ubuntu Server 24.04 LTS 64-bit, Debian 11.1, Debian 11.4, Debian 12.0, Windows (all versions), OpenCloudOS (all versions), AlmaLinux (all versions), and Fedora (all versions).

2. **Check** the machine instances that require agent installation, and click **Next** to proceed with machine detection.
3. After the detection is passed, if the machine status indicates **installable or upgradable**, you can then click **Start Installation/Upgrade** to install the agent on the target machine.
4. After starting the installation, wait patiently for the agent installation to complete. Once the installation is successful, click **Close** to proceed with fault injection on the machine resources.

#### Tencent Kubernetes Engine (TKE)

1. Click the **Tencent Kubernetes Engine (TKE)** tab to display the fault agents available in the current region.
2. Select the **region** where you want to add a new agent, and then click **Add Agent**.
3. **Check** the clusters that require agent installation and click **Next**. CFG will detect whether the specified clusters meet the conditions for agent installation.
4. If the **test result** indicates **installable, pending upgrade**, the conditions for agent installation are met. You can then click **Start Installation/Upgrade** to install the agent on the eligible clusters. If the conditions for the agent are not met, see the **Remarks** for the description of the check results and proceed with the necessary fixes.
5. Once the installation is successful, you can begin simulating Node and Pod faults within the cluster. For detailed instructions, see [Standard Cluster Node and Pod Network Failure Simulation](#).

## Uninstall Agents

### Batch Uninstall

1. Go to the Agent Management section under the corresponding resource type, **check** the resources that need to be uninstalled, and click **Batch Uninstall** to initiate the agent uninstallation operation.
2. When the agent status changes to **Not Installed**, it indicates that the agent has been successfully uninstalled.

### Uninstall Individually

1. You can locate the installed agents in the list and click **Uninstall** to initiate the agent uninstallation operation.
2. If the agent status does not update promptly during the installation/uninstallation process, you can click the **refresh icon** at the top to manually refresh the status.

### Delete Agents

If you need to delete agent records from CFG, you must first **uninstall** the agents from the installed resources. Once the agent status changes to **Not Installed**, you can proceed to delete the agent record by selecting the **delete** option in the record's operation items.