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Auto Scaling

Monitoring

Document Version: 20210909

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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.Scaling events

1.1. Overview

A scaling activity is triggered when a scaling rule is executed or when an instance is manually added to or removed from a scaling group. After a scaling activity is triggered, the system performs a scale-in or scale-out action. This topic describes the process of a scaling activity, its status, and instance rollback.

Process of a scaling activity when ECS instances are automatically added or removed

When ECS instances are automatically added to a scaling group after a scaling rule is executed, Auto Scaling perform the following operations:

1. Check the health status and boundary conditions of the scaling group.
2. Assign the activity ID and execute the scaling activity.
3. Create ECS instances.
4. Modify the number of instances in the scaling group.
5. Assign IP addresses to the added ECS instances.
6. Add the ECS instances to the whitelist of the ApsaraDB for RDS instance.
7. Start the ECS instances.
8. Add the ECS instances to the backend server group of the SLB instance, and set the weights of these ECS instances to the values specified by the active scaling configuration of the scaling group.
9. The cooldown period starts after the scaling activity is complete.

When ECS instances are automatically removed from a scaling group after a scaling rule is executed, Auto Scaling perform the following operations:

1. Check the health status and boundary conditions of the scaling group.
2. Assign the activity ID and execute the scaling activity.
3. Remove the ECS instances from the backend server group of the SLB instance.
4. Stop the ECS instances.
5. Remove the ECS instances from the whitelist of the ApsaraDB for RDS instance.
6. Release the ECS instances.
7. Modify the number of instances in the scaling group.
8. The cooldown period starts after the scaling activity is complete.

Process of a scaling activity when ECS instances are manually added or removed

When ECS instances are manually added to a scaling group, Auto Scaling perform the following operations:

1. Check the health status and boundary conditions of the scaling group, and check the status and types of ECS instances.
2. Assign the activity ID and execute the scaling activity.
3. Add the ECS instances to the scaling group.

4. Modify the number of instances in the scaling group.
5. Add the ECS instances to the whitelist of the ApsaraDB for RDS instance.
6. Add the ECS instances to the backend server group of the SLB instance and set the weights of these ECS instances to the values specified by the active scaling configuration of the scaling group.
7. The cooldown period starts after the scaling activity is complete.

When existing ECS instances are manually removed from a scaling group, Auto Scaling perform the following operations:

1. Check the health status and boundary conditions of the scaling group.
2. Assign the activity ID and execute the scaling activity.
3. The SLB instance stops forwarding traffic to the ECS instances.
4. Wait 60 seconds, and remove the ECS instances from the backend server group of the SLB instance.
5. Remove the ECS instances from the whitelist of the ApsaraDB for RDS instance.
6. Modify the number of instances in the scaling group.
7. Remove the ECS instances from the scaling group.
8. The cooldown period starts after the scaling activity is complete.

Status of a scaling activity

The following table describes the states that a scaling activity may undergo.

Status	Description	Reference
Rejected	The scaling activity is rejected in the request phase and does not perform the scale-in or scale-out action.	Scenarios: • The maximum number of instances in the scaling group is 100. • The scaling group already has 100 ECS instances. • A scaling rule is executed to automatically create 10 ECS instances. Result: The scaling activity fails the condition check and is rejected. No subsequent processes are followed. After the scaling activity is complete, the number of instances in the scaling group is still 100.

Status	Description	Reference
Executing	The scaling activity passes the condition check and is in progress. Auto Scaling automatically scales in or out ECS instances based on the maximum and minimum numbers of instances in the scaling group.	Scenarios: • The maximum number of instances in the scaling group is 100. • The scaling group already has 95 ECS instances. • A scaling rule is executed to automatically create 10 ECS instances. Result: The scaling activity passes the condition check and is performed. Only five ECS instances are automatically created. After the scaling activity is complete, the number of instances in the scaling group is changed to 100.
Successful	The scaling activity is complete, and all ECS instances are added to or removed from the scaling group.	Scenario: • The maximum number of instances in the scaling group is 100. • The scaling group already has 90 ECS instances. • A scaling rule is executed to automatically create 10 ECS instances. Result: The scaling activity passes the condition check and is performed. After the scaling activity is complete, the number of instances in the scaling group is changed to 100.

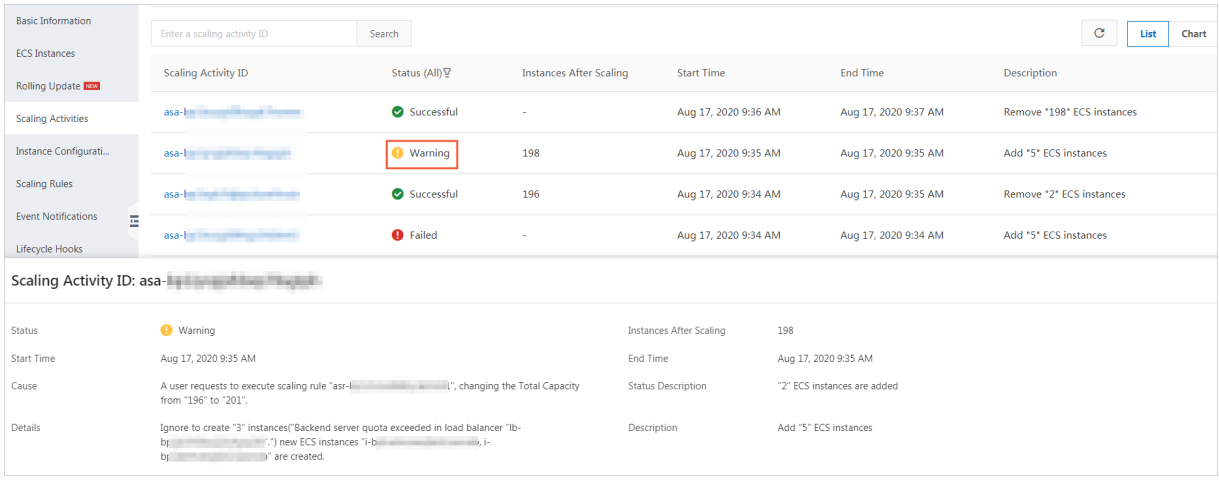
Status	Description	Reference
Warning	The scaling activity is complete. At least one ECS instance is added to or removed from the scaling group, while at least one ECS instance fails to be added to or removed from the scaling group. An ECS instance is considered to be added to the scaling group if the instance is created, added to the backend server group of the SLB instance, and then added to the whitelist of the ApsaraDB for RDS instance. If any step fails, the instance is not considered to be added to the scaling group. When an instance fails to be added to a scaling group, the instance will be rolled back. For more information, see ECS instance rollback.	Scenario: • The scaling group is associated with an SLB instance. All created ECS instances in the scaling group are automatically added to the backend server group of the SLB instance. • The quota for backend servers of the SLB instance is 200. Note For more information, see Limits. • The maximum number of instances in the scaling group is 300. • The scaling group already has 199 ECS instances added to the backend server group of the SLB instance. • A scaling rule is executed to automatically create five ECS instances. Result: The scaling activity passes the condition check and is performed to create five ECS instances. However, four ECS instances fail to be added to the backend server group and cannot be added to the scaling group because the quota for backend servers of the SLB instance is 200. After the scaling activity is complete, only one instance is added to the scaling group. The number of instances in the scaling group is 200.

Status	Description	Reference
Failed	The scaling activity is complete, and all ECS instances fail to be added to or removed from the scaling group.	Scenario: • The instance types specified by the active scaling configuration are out of stock in the region where the scaling group resides. • The maximum number of instances in the scaling group is 100. • The scaling group already has 95 ECS instances. • A scaling rule is executed to automatically create five ECS instances. Result: The scaling activity passes the condition check and is performed. The five instances fail to be created due to insufficient resources. After the scaling activity is complete, no instances are added to the scaling group. The number of instances in the scaling group is still 95.

ECS instance rollback

When some ECS instances fail to be added to a scaling group during a scaling activity, Auto Scaling prioritizes the integrity of the ECS instances over that of the scaling activity. Auto Scaling will roll back the ECS instances that fail to be added to the scaling group, but not the scaling activity. Auto Scaling uses Alibaba Cloud Resource Access Management (RAM) to call ECS API operations to create ECS instances. ECS instances that are rolled back are still charged after they are created and before they are automatically released.

For example, you want to add five ECS instances to a scaling group and to the backend server group of the SLB instance associated with the scaling group. After the five instances are created, two instances are added to the scaling group, and three instances fail to be added and are automatically released. After the scaling activity is complete, its status is **Warning**.



When ECS instances in a scaling group are rolled back, the scaling group does not reach its expected capacity. This means that the scaling group cannot provide the required computing power and maintain monitoring metrics at the required values. In this case, you can use other methods to ensure that the scaling group can provide the required computing power for your business needs. For example, you can manually trigger scaling rules, manually add existing ECS instances to the scaling group, or configure scheduled or event-triggered tasks to trigger a scaling activity.

1.2. View the details of a scaling activity

This topic describes how to view the details of a scaling activity. If a scaling activity is triggered by a scheduled or event-triggered task, you can view the details of the scaling activity to check its execution result.

Context

A scaling activity can have the following states: Rejected, Executing, Successful, Warning, and Failed. For more information, see Status of a scaling activity.

> **Note** During a scaling activity, if some ECS instances fail to be added to a scaling group, Auto Scaling performs rollback on these ECS instances. After the scaling activity is complete, the scaling activity enters the Warning state. For more information, see ECS instance rollback.

Procedure

1. Log on to the Auto Scaling console.
2. In the left-side navigation pane, click **Scaling Groups**.
3. In the top navigation bar, select a region.
4. Find the scaling group and use one of the following methods to open the details page of the scaling group:
   - Click the ID of the scaling group in the **Scaling Group Name/ID** column.
   - In the **Actions** column corresponding to the scaling group, click **Details**.
5. In the upper part of the page, click the **Scaling Activities** tab.
6. Find the scaling activity whose details you want to view and click its ID in the **Scaling Activity ID** column.

2.Event notification

2.1. Event notification overview

The event notification feature helps you monitor the scaling activities. It can automatically send messages to CloudMonitor or Message Service (MNS), providing you with timely information on scaling groups to improve automatic management.

Event notification methods

Supported event notification methods include sending messages to CloudMonitor system events, MNS topics, and MNS queues.

In CloudMonitor, you can query and view statistics on system events of various cloud services, such as Auto Scaling. You can also obtain up-to-date information about scaling groups. For more information about the event monitoring feature of CloudMonitor, see View system events.

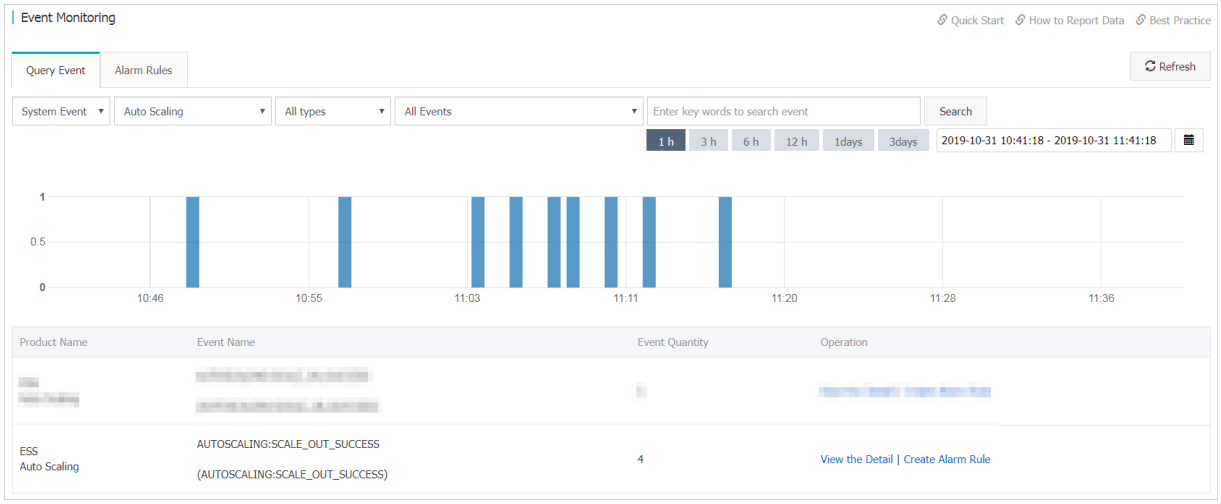
Message Service offers two service models: MNS topic and MNS queue. Message Service is a distributed message service that helps you easily transfer data and notification messages among distributed components, and build loosely coupled systems. For more information about the features of MNS topics and MNS queues, see Message Service overview.

- The MNS queue model supports point-to-point sending and receiving of messages. It is designed to deliver a highly reliable and concurrent consumption model in a point-to-point manner. Each message in a queue can only be consumed by a single consumer.
- The MNS topic model supports one-to-many publishing and subscription of messages. It is designed to publish and subscribe to messages and send notifications in a one-to-many manner. The model also allows you to publish messages in various ways.

The following section provides examples of each event notification method. For more information about the parameter configuration, see Create an event notification.

Example of event notifications through CloudMonitor

You have created an event notification in which Notification Method is set to **CloudMonitor** and Event Types to **Successful Scale-Outs** and **The scale-out activities for the specified scaling group are running**. After a scale-out activity of a scaling group succeeds, CloudMonitor receives an event notification and displays the event. The following figure shows the notification results of the successful scale-out activity. Two events are displayed in the results, including **The scale-out activities for the specified scaling group are running** and **Successful Scale-Outs**.

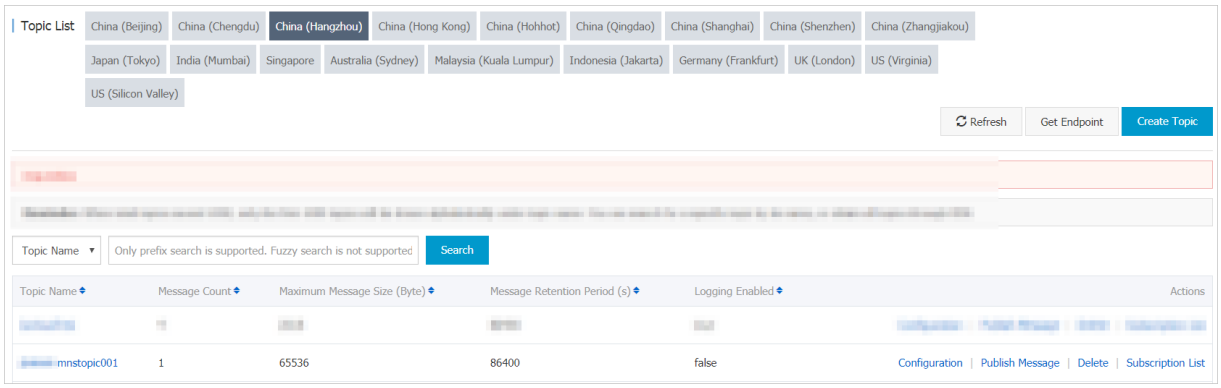


In the CloudMonitor console, you can view the status of scaling groups and create alarm rules to notify multiple alarm contacts through SMS messages and emails. This helps improve operations and maintenance (O&M) efficiency.

Example of event notifications through an MNS topic

You have created an event notification in which Notification Method is set to **MNS Topic** and Event Types to **Successful Scale-Ins** and **The scale-in activities for the specified scaling group are running**. After a scale-in activity of a scaling group succeeds, the specified MNS topic receives an event notification and sends it to its subscribers. The following figure shows the notification results of the successful scale-in activity. The number displayed in the **Message Count** column corresponding to the MNS topic has increased. You can view the subscribers for message details.

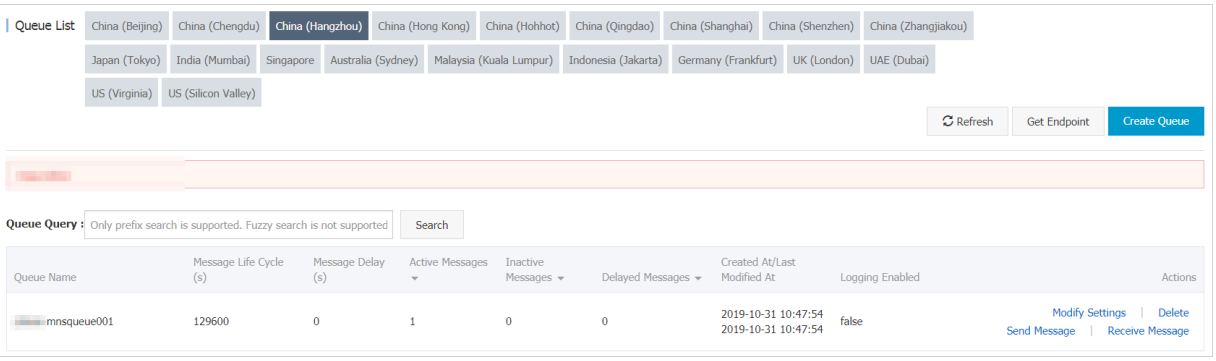
The MNS topic does not allow direct consumption of messages. You must subscribe to the MNS topic through an MNS queue, HTTP request, or email. When the MNS topic receives a message, it pushes the message to subscribers. In this way, multiple subscribers separately consume messages from the same publisher, realizing efficient automatic management.



Example of event notifications through an MNS queue

You have created an event notification in which Notification Method is set to **MNS Queue** and Event Types to **Failed Scale-Outs** and **The scale-out activities for the specified scaling group are running**. After a scale-out activity of a scaling group fails, the specified MNS queue receives an event notification and allows you to configure the messages for consumption. The following figure shows the notification results of the failed scale-out activity. The number displayed in the **Active Messages** column corresponding to the MNS queue has increased.

You can consume, delay, activate, or delete the messages as needed, realizing automatic management through event notifications.



2.2. Create an event notification

This topic describes how to create an event notification in a scaling group. After an event of the specified type occurs, Auto Scaling automatically sends a notification to the specified Message Service (MNS) topic, MNS queue, or Cloud Monitor.

Prerequisites

If you want Auto Scaling to automatically send notifications to an MNS topic or queue, you must create the MNS topic or queue in advance. Make sure that the MNS topic or queue belongs to the same region where the scaling group resides. For more information, see Create a topic or Create a queue.

Context

- Only a limited number of event notifications can be created in a scaling group. For more information, see Limits.
- Receivers in a scaling group must be unique. For example, Cloud Monitor, the same MNS topic, or the same MNS queue cannot be used to receive different event notifications in a scaling group.

Procedure

1. Log on to the Auto Scaling console.
2. In the left-side navigation pane, click **Scaling Groups**.
3. In the top navigation bar, select a region.
4. Find the scaling group and use one of the following methods to open the details page of the scaling group:
   - Click the ID of the scaling group in the **Scaling Group Name/ID** column.
   - In the **Actions** column corresponding to the scaling group, click **Details**.
5. In the upper part of the page, click the **Event Notifications** tab.
6. Click **Create Event Notification**.

7. Configure parameters for the event notification.

   The following table describes the parameters for an event notification.

Parameter	Description
Notification Method	Use one of the following notification methods: ○ **CloudMonitor**: If a specific event occurs, a notification is sent to Cloud Monitor. For more information, see View system events. ○ **MNS Topic**: If a specific event occurs, a notification is sent to an MNS topic. ○ **MNS Queue**: If a specific event occurs, a notification is sent to an MNS queue.
Event Notification Type	Choose one or more event notification types based on your requirements. The following section lists the available event notification types: ○ **Successful Scale-out Event**: All ECS instances are added to the scaling group. ○ **Successful Scale-in Event**: All ECS instances are removed from the scaling group. ○ **Failed Scale-out Event**: A scale-out event is triggered, but ECS instances are not added to the scaling group. ○ **Failed Scale-in Event**: A scale-in event is triggered, but ECS instances are not removed from the scaling group. ○ **Rejected Scaling Activity**: Auto Scaling receives a scaling activity request but rejects it because the trigger conditions are not met. ○ **Start of Scale-out Event**: A scale-out event is triggered, and ECS instances start to be added to the scaling group. ○ **Start of Scale-in Event**: A scale-in event is triggered, and ECS instances start to be removed from the scaling group. ○ **Expiration of Scheduled Task**: If you select this type, notifications are sent on a daily basis for seven days before the scheduled task expires. If you specify the frequency for the scheduled task, the task expiration time is the last time when the task is executed. ○ **Partly Successful Scale-out Event**: A scale-out event is triggered, but only some ECS instances are added to the scaling group. ○ **Partly Successful Scale-in Event**: A scale-in event is triggered, but only some ECS instances are removed from the scaling group.

8. Click **OK**.

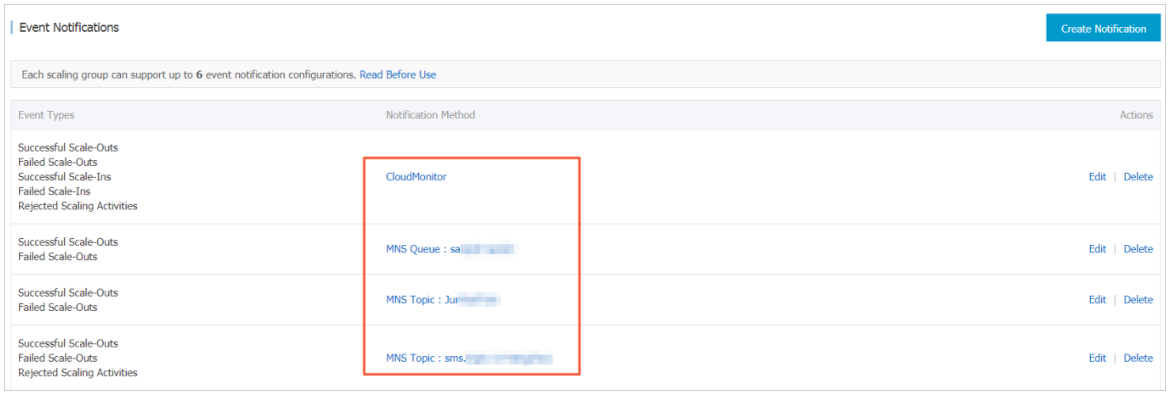
2.3. View an event notification

This topic describes how to view an event notification. In the Auto Scaling console, you can click a link to go the CloudMonitor console or the Message Service (MNS) console to view events or messages.

Procedure

1. Log on to the Auto Scaling console.
2. In the left-side navigation pane, click **Scaling Groups**.

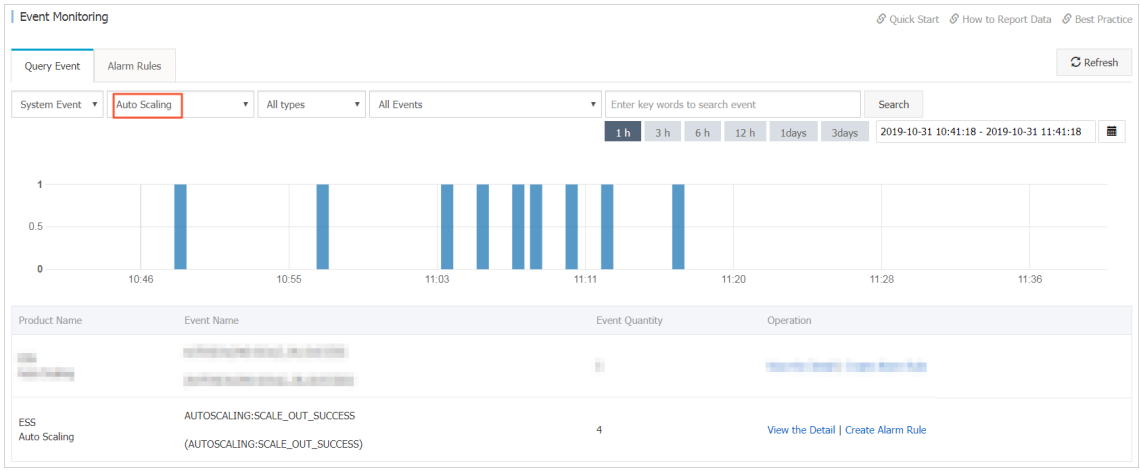
3. In the top navigation bar, select a region.
4. You can use either of the following methods to open the details page of a scaling group.
   - In the **Scaling Group Name/ID** column, click a scaling group name.
   - Click **Manage** in the **Actions** column corresponding to a scaling group.
5. In the left-side navigation pane, click **Event Notifications**.
6. Find the target event notification and click a link in the **Notification Method** column.



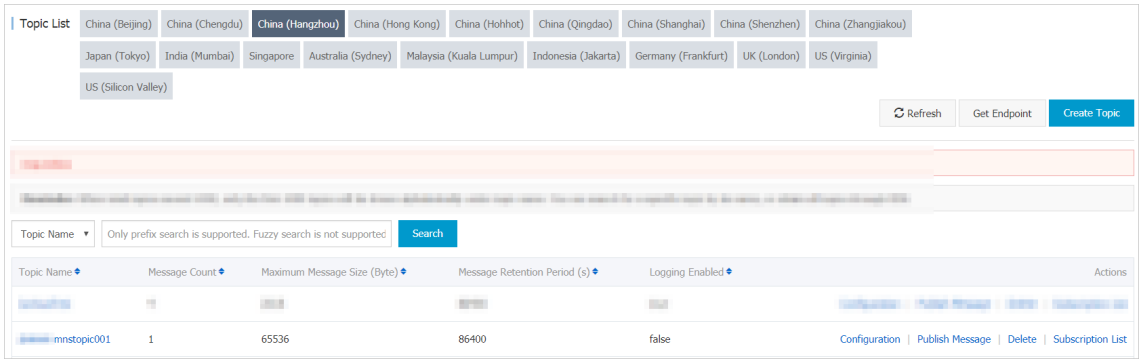
7. View events in CloudMonitor or messages in the MNS topic or queue.

   For more information, see Event notification overview.

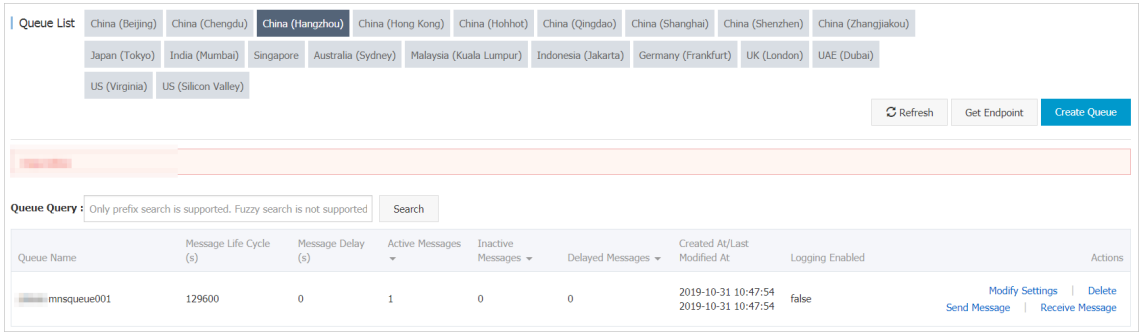
   - CloudMonitor: On the **Event Monitoring** page of the CloudMonitor console, select **System Event** and then **Auto Scaling**. All system events related to Auto Scaling appear on the page.



   - MNS topic: On the **Topic List** page of the MNS console, find the target topic and check whether the number in the **Message Count** column increases. If the number increases, new messages are received. You can view the message details on a subscription client.



- MNS queue: On the **Queue List** page of the MNS console, find the target queue and check whether the number in the **Active Messages** column increases. If the number increases, new messages are received. Click **Receive Message** in the **Actions** column to view the message details.



2.4. Modify an event notification

This topic describes how to modify an event notification. If event types of an event notification cannot meet your requirements, you can change the event types without the need to create another event notification. Note that you cannot change the notification method of an event notification.

Procedure

1. Log on to the Auto Scaling console.
2. In the left-side navigation pane, click **Scaling Groups**.
3. In the top navigation bar, select a region.
4. Find the scaling group and use one of the following methods to open the details page of the scaling group:
   - Click the ID of the scaling group in the **Scaling Group Name/ID** column.
   - In the **Actions** column corresponding to the scaling group, click **Details**.
5. In the upper part of the page, click the **Event Notifications** tab.
6. Find the event notification and click **Edit** in the **Actions** column.
7. Configure the event notification types.

   For more information about event notification types, see Create an event notification.
8. Click **OK**.

2.5. Delete an event notification

This topic describes how to delete an event notification. You can delete an event notification if you do not use it any more.

Procedure

1. Log on to the Auto Scaling console.
2. In the left-side navigation pane, click **Scaling Groups**.
3. In the top navigation bar, select a region.
4. Find the scaling group and use one of the following methods to open the details page of the scaling group:
   - Click the ID of the scaling group in the **Scaling Group Name/ID** column.
   - In the **Actions** column corresponding to the scaling group, click **Details**.
5. In the upper part of the page, click the **Event Notifications** tab.
6. Find the target event notification and click **Delete** in the **Actions** column.
7. Click **OK**.

3.Set notification receiving

This topic describes how to receive notifications about scaling activitiesby using internal messages and emails.

Prerequisites

No event notifications are created.

Context

You can use internal messages and emails to receive notifications. You must handle the notifications on your own after you receive them.

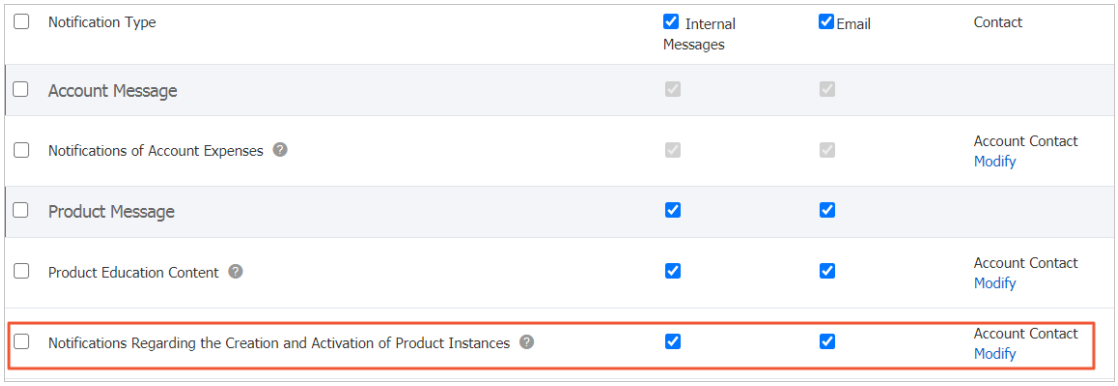
You can also use the event notification feature to configure events related to Auto Scaling to be automatically sent to Cloud Monitor or Message Service (MNS). For more information, see Event notification overview. After you customize handling policies in these services, these services can initiate handling processes after the event notifications are received.

> **Note** If you have created event notifications, you cannot set notification receiving. To set notification receiving, you must delete all event notifications.

Procedure

1. Log on to the Auto Scaling console.
2. In the left-side navigation pane, click **Scaling Groups**.
3. In the top navigation bar, select a region.
4. Find the scaling group and use one of the following methods to open the details page of the scaling group:
   - Click the ID of the scaling group in the **Scaling Group Name/ID** column.
   - In the **Actions** column corresponding to the scaling group, click **Details**.
5. In the upper part of the page, click the **Event Notifications** tab.
6. Click **Set Notification Receiving**.
7. Configure the notification method and contact.
   i. In the **Set Notification Receiving** dialog box, click **Learn more**.

ii. On the **Common Settings** page, find **Notifications Regarding the Creation and Activation of Product Instances** in the **Product Message** section and configure the notification method and contact.



8. Go back to the **Set Notification Receiving** dialog box, select the scenarios where notifications are sent, and then click **OK**.

   You can configure notifications for the following scaling scenarios:

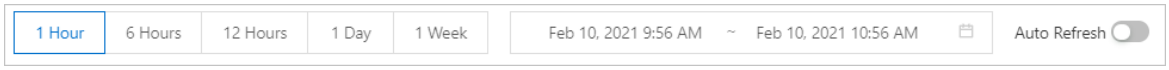
   - **Scaling Activity Success**: Auto Scaling adds or removes ECS instances to or from the scaling group.
   - **Scaling Activity Failed**: A scaling activity is triggered, but Auto Scaling fails to add or remove ECS instances to or from the scaling group.
   - **Scaling Activity Rejected**: The request of a scaling activity is received but rejected because the trigger conditions are not met.

4.View the monitoring information of a scaling group

You can view the monitoring charts of a scaling group. This helps you understand the resource usage of the scaling group within a month.

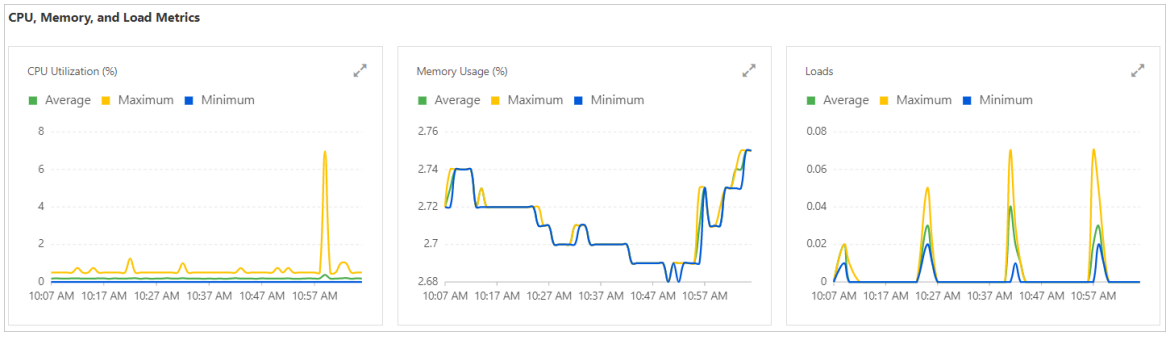
Procedure

1. Log on to the Auto Scaling console.
2. Go to the **Monitoring Details** page of the scaling group.
   i. In the left-side navigation pane, click **Scaling Groups**.
   ii. In the top navigation bar, select a region.
   iii. Find a scaling group and use one of the following methods to open the details page of the scaling group:
      - Click the ID of the scaling group in the **Scaling Group Name/ID** column.
      - In the **Actions** column corresponding to the instance, click **Details**.
   iv. In the upper part of the page, click the **Monitoring Details** tab.
3. Select the time range of the monitoring charts.



   - Time range: You can select 1 Hour, 6 Hours, 12 Hours, 1 Day, or 1 Week, or specify a time period within a month.
   - Auto refresh: If you turn on **Auto Refresh**, the system automatically refreshes the monitoring data every 5 seconds.
4. View the monitoring charts.

   The following figure shows the CPU, Memory, and Load Metrics monitoring charts.



   - You can click a monitoring dimension such as Average or Maximum in the upper part of the monitoring chart to hide or show relevant data in the chart.
   - You can click the icon in the chart to enlarge the current chart. You can also select a time range in the enlarged chart to view data of that time period.
   - If a monitoring chart has no data, you have not created an event-triggered task for the corresponding metric. Create an event-triggered task as prompted. For more information, see Create an event-triggered task.