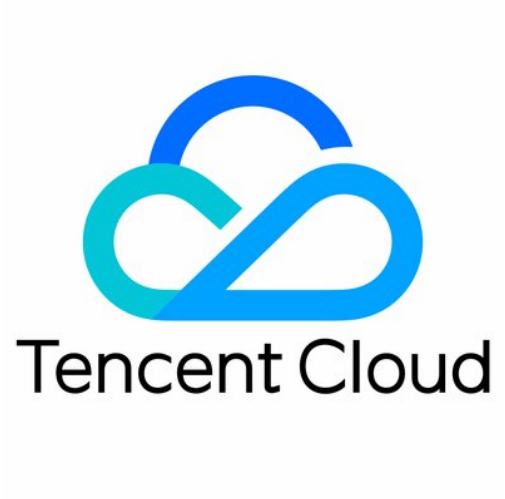
Cloud Message Queue

Message Queue Model

Product Documentation



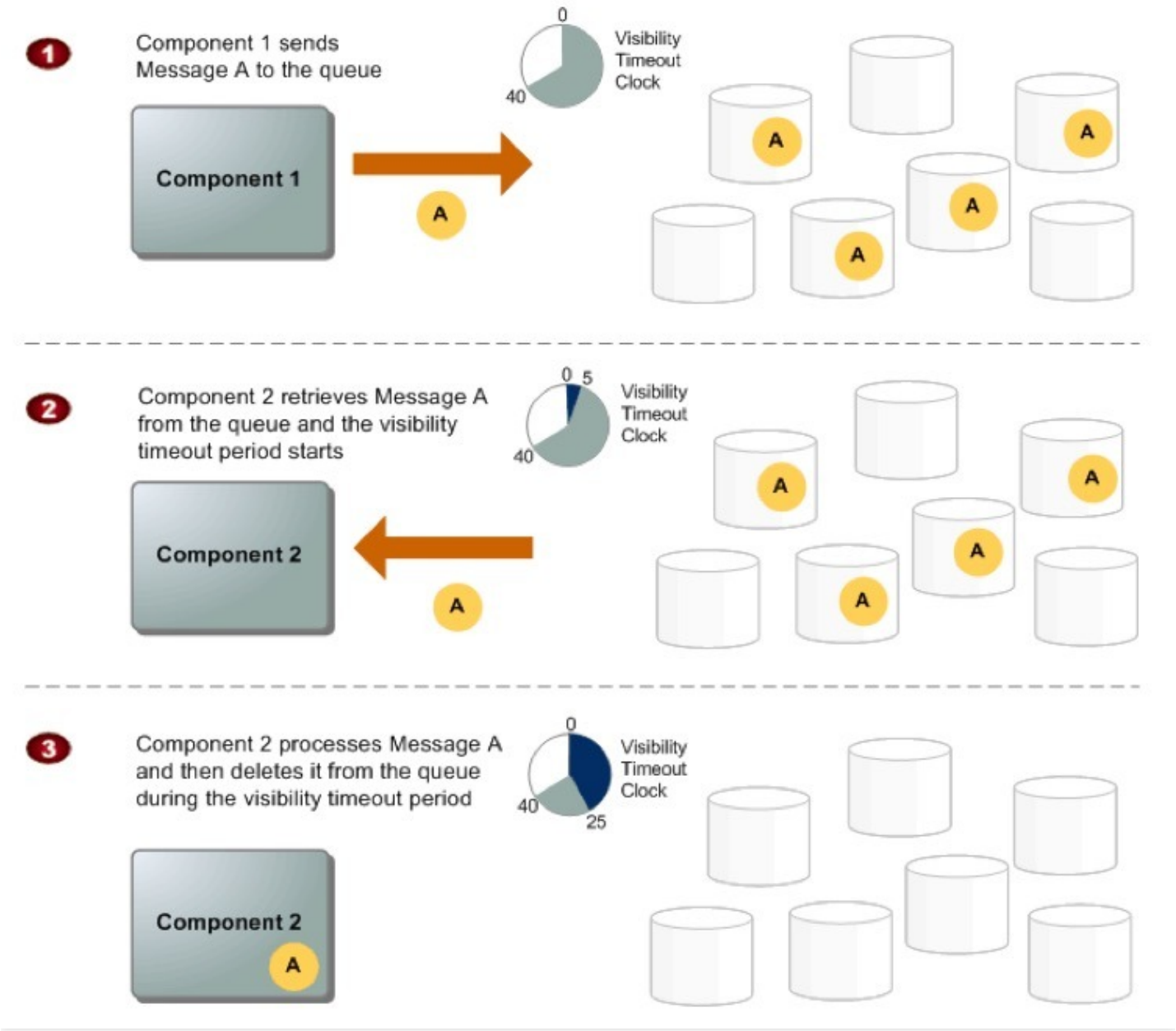
Contents

Message Queue Model
Message Lifecycle

Last updated：2020-07-14 14:34:24

When a general message is sent to a general message queue, its initial status is **Active**. After it is fetched out, its status will become **Inactive** within the time period specified by `VisibilityTimeout` . If the message is not deleted after the period specified by `VisibilityTimeout` elapses, its status will become **Active** again; otherwise, its status will become **Deleted**. The maximum period of time during which the message can be retained is subject to the `MessageRetentionPeriod` attribute value specified when the queue is created. After this period elapses, the message will become **Expired** and be repossessed.

Consumers can read only **Active** messages, which ensures that a message will not be repeatedly consumed simultaneously but can be repeatedly consumed sequentially.



- Component 1 sends message A, which has multiple redundancies across CMQ servers, to a queue.
- After getting ready to process messages, component 2 will retrieve messages from the queue, and message A will be returned. When being processed, message A still stays in the queue. Within the **hidden duration of fetched messages**, other businesses cannot get message A.
- Component 2 can delete message A from the queue to avoid receiving and processing it again after the **hidden duration of fetched messages** elapses. It can also retain message A so that other businesses can consume message A repeatedly.

Queue and Message Identifiers

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When using Tencent Cloud CMQ, you need to get familiar with the following three identifiers: queue name, message ID, and receipt handler.

1. Queue Name

When creating a queue, you need to provide a unique queue name in the current region. Queue names in different regions can be the same. CMQ uses the region and queue name to uniquely identify a queue. When you want to perform an operation on a queue, you always need to provide these two parameters.

2. Message ID

Each message will receive a message ID in the format of `Msg-XXXXXXXX` assigned by the Tencent Cloud system. It is used to identify a message and can be returned to you through the `SendMessage` API request. It should be noted that the message receipt handler instead of message ID is required when a message is deleted.

3. Receipt Handler

Whenever a message is received from a queue, a receipt handler of the message will also be received, which is always relevant to the message receipt operation rather than the message itself. To delete a message or modify message attributes, the receipt handler instead of the message ID needs to be provided, which means that a message can be deleted/modified only after it is received.

> If a message is received multiple times, the obtained receipt handler will vary by receipt. When a request to delete a message is initiated, the last received receipt handler needs to be provided; otherwise, the message may not be deleted.

Message Delay

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CMQ message timer allows you to specify an initial period during which messages to be added to the queue are invisible. This period is called **inflight**. For example, if you set the `DelaySeconds` parameter to 45 for a message, the consumer will not be able to see it in the first 45 seconds after it enters the queue. The default value of `DelaySeconds` is 0.

Value range of message delay: when specifying a queue for message production, you can add the `DelaySeconds` input parameter in the value range of 0–3600, i.e., the message can be invisible for up to one hour. If this parameter is left empty, the message will not be delayed.

Use limits: up to 20,000 inflight messages are allowed in one queue. If this limit is exceeded, newly produced messages will be invisible in the queue. Currently, this feature is not available in topic mode.

Message Rewinding

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CMQ provides a message rewind feature similar to that in Kafka. After your business successfully consumes and deletes a message, you can use this feature to consume the message again, which facilitates operations such as reconciliation and business system retry for core finance businesses.

Feature Description

As shown above, the message lifecycle is circled in the blue box. After message rewind is enabled, messages consumed and deleted by consumers will be moved to the **rewindable message** section and retained on the CMQ backend. However, if the message existence exceeds the message lifecycle of the queue (assumed as 1 day), the message will be automatically deleted and cannot be rewound. The specific product logic is as follows:

- **Enable:** if message rewind is not enabled, after a message is consumed by a consumer and its deletion is confirmed, it will be deleted immediately. When enabling this feature, you need to specify the rewind time range, which must be equal to or shorter than the message lifecycle.
- **Milestone:** according to the policy above, after message rewind is enabled, the number of rewindable messages will keep increasing as consumers continuously consume and delete messages.
- **Disable:** after message rewind is disabled, messages in the rewindable message section will be deleted immediately and cannot be rewound.
- **Queue attribute:** message rewind is an attribute of a queue and can be set when you create the queue or modify its configuration. After specifying a rewind time, all consumers will consume messages produced after this time point.
- **Billing:** after message rewind is enabled, rewindable messages will incur certain retention fees. The unit price is calculated as a part of message retention fees.
- **Specify rewind time**: when a consumer initiates rewind consumption, the queue name and specific rewind time need to be specified, and messages will be rewound from the maximum time point. The time is a `key` , and reverse consumption is not supported. You can consume from timeA to timeB/timeC but not vice versa as shown below.

- **Specify rewind time range:** it ranges from 0 to 15 days. Only after message rewind is enabled in the console can deleted messages be rewound. You are recommended to always enable this feature for key applications and set the message rewind time range to the same as the message lifecycle.

- **Unable to specify message rewind for retained messages:** if a message is retained and not consumed, you cannot specify a specific position for its consumption.

Rewindable Range

The **maximum rewindable time** is the current time minus the configured rewindable time range. Messages cannot be rewound if produced before this time.

Timeline

Message rewind is sorted by message production time and is irrelevant to the order of deletion.

Creating Queues

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On the **CMQ** > **Queue Service** > **Queue** page, click **Create** in the top-left corner to create a message queue.
You need to specify the following attributes when creating a queue:

Attribute	Description	Value
Queue name	`QueueName` , which is the name of queue.	It is a unique identifier of a resource and is used to specify a queue when APIs are called for operations. It cannot be modified after the queue is created. To avoid confusion, queues that have the same name in the same letter case cannot be created. When entering the name, pay attention to the letter case.
Message lifecycle	`msgRetentionSeconds` attribute of queue. It specifies the maximum period of time during which a message can be retained in the queue. After the period specified by this parameter has elapsed since a message is sent to the queue, the message will be deleted no matter whether it has been fetched.	It is measured in seconds and ranges from 60 to 1,296,000 seconds (i.e., 1 minute to 15 days).
Long-polling waiting time for message receipt	`PollingWaitSeconds` , which is the long-polling waiting time. Just like with long polling of Ajax requests, a message consumption request will return a response only after a valid message is fetched or the long-polling time elapses.	It is measured in seconds and ranges from 200 milliseconds to 30 seconds. The default value is 200 milliseconds.
Hidden duration of fetched messages	`VisibilityTimeout` attribute of queue. Each message has a default `VisibilityTImeout` , which starts counting after a worker receives the message. If the worker fails to complete processing the message within the period specified by this attribute, the message will be sent to and processed by another worker.	It is measured in seconds and ranges from 1 second to 43,200 seconds (12 hours). The default value is 30 seconds.
Maximum message size	`MaxMsgSize` attribute of queue. It specifies the maximum length of the message body that can be sent to the queue.	It is measured in bytes and ranges from 1,024 to 65,536 bytes (i.e., 1–64 KB). The default value is 64 KB.

Attribute	Description	Value
Maximum retained messages	It specifies the maximum number of retained (undeleted) messages in a queue.	The maximum number of retained messages in a queue is 100 million, and the minimum number is 1 million. If you need to increase the upper limit, please contact technical support.
Message rewind	If the "message rewind" feature is not enabled, a message consumed by a consumer and confirmed for deletion will be deleted immediately. When enabling this feature, you need to specify the "rewind time range".	The rewind time range must be equal to or shorter than the message lifecycle. You are recommended to set it to the same as the message lifecycle to facilitate troubleshooting. The unit price of message rewind is 0.01 CNY/million messages/hour. For more information, please see Message Rewind.
Specified time range	You can configure this item after enabling message rewind, which is disabled by default in the console. After it is enabled, the default value will be the same as the message lifecycle value.	It ranges from 1 to 15 days. The maximum rewindable time is the current time minus the configured rewindable time range. The messages cannot be rewound if produced before this time.

Producing Messages

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1. Log in to the CMQ Console and click **Queue Service** > **Queue** on the left sidebar.
2. Select the target queue in the queue list and click **Send Messages** in the "Operation" column.
3. Enter the message content and click **Send** to send a testing message to the recipient.

   Message Content: enter the content to be sent of at least 1 byte. The maximum length is subject to the set `MaxMsgSize` attribute.

   Delayed Delivery: you can enable delayed delivery, and then the message will be sent after the specified delay time, which ranges from 1 second to 1 hour.