Alibaba Cloud Application Configuration Management

Access Control

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Document conventions

Style	Description	Example
	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.
	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.
	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.
	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]`

Style	Description	Example
{} or {a|b}	**This format is used for a required value, where only one item can be selected.**	`switch {active|stand}`

Contents

1 Access ACM with instance RAM role

This topic explains how to access ACM with the RAM role of ECS instances.

Overview

In the past, for an application deployed in an ECS instance to access ACM, the Access Key ID and Access Key Secret (“AK”) must be stored in the ECS instance as a configuration file or in other forms. However, this increases the complexity of AK management and the risk of leaking sensitive data.

Now, with the *RAM role of an instance*, you can associate a RAM role with an ECS instance, and then inform ACM SDK (Version 1.0.8 and later) of the name of this RAM role, so that you can access ACM without configuring AK later. In addition, with *RAM (Resource Access Management)*, you can also have multiple instances with different authorizations for ACM by tweaking their roles and authorization policies. For example, if assigned a role with a read-only authorization policy, an ECS instance can read ACM configurations but can’t add or modify one.

Prerequisites

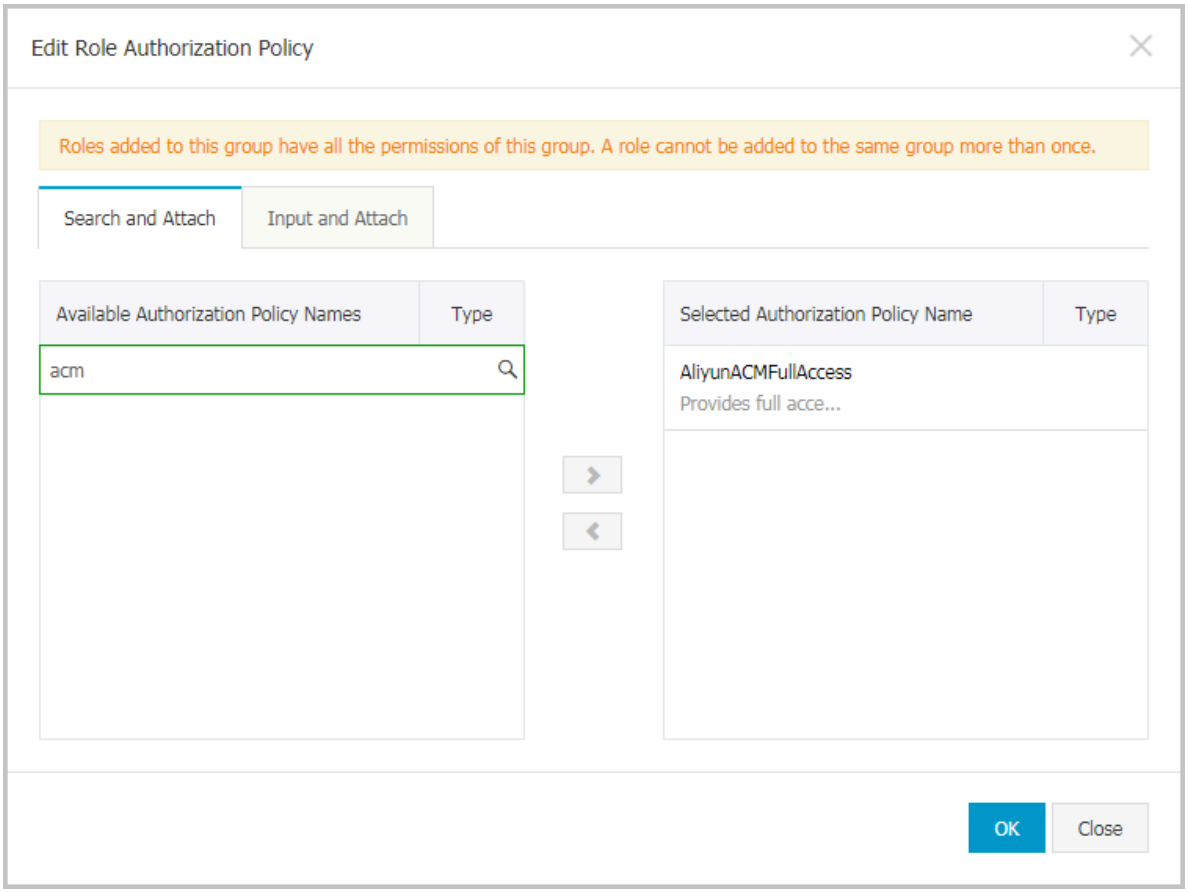
You’re running a VPC network.

Step 1: Create a RAM role and configure the authorization policy

1. **Log on to the *RAM console*. Click Roles in the left-side navigation pane.**
2. **Click New in the upper right corner of the page.**
3. **In the Create Role dialog box, complete the following steps.**
   a. **On the Select Role Type page, click Service Role.**
   b. **On the Enter Type page, select ECS Elastic Compute Service.**
   c. **On the Configure Basic Information page, enter a custom Role Name and optionally a description, and click Create.**

   Note:
   A newly created role doesn’t have any authorizations.
4. **InRole managementPage, click to the right of the roleOperationOf a columnAuthorization.**

5. **In the Edit Role Authorization Policy dialog box, search for the authorization policy `AliyunACMFullAccess`, and click the > button to move it to the right-side Selected Authorization Policy Name list, and then click OK. To use the configuration encryption and decryption features, add the `AliyunKMSCryptoAccess` authorization policy.**



Now this role is granted all authorizations for ACM.

Step 2: Attach this RAM role to the ECS instance

1. **Login*ECS Console*, Click onInstance.**
2. **Click the target ECs instance in the listOperationOf a columnMore, And selectGrant/recover Ram roleTo grant this instance the role that was new in the previous step.**

Step 3: Inform ACM SDK of the name of this RAM role and access configurations

You can inform ACM SDK (Version 1.0.8 and later) of the name of this RAM role in one the following ways:

- **By setting a JVM parameter: `-Dram.role.name=$ramRoleName` (For example `-Dram.role.name=ECS-RAM`)**

- **By passing parameters with code**

> **Note:**
> **JVM parameter setting takes precedence over passing parameters with code.**

This is how to pass parameters with code:

```
import java.util.Properties;
import com.alibaba.edas.acm.ConfigService;
import com.alibaba.edas.acm.exception.ConfigException;
// Sample code, for sample test only.
public class ACMTest {
    public static void main(String[] args) {
        try {
            Properties properties = new Properties();
            // Obtain the endpoint from "Namespace details" or "Sample
 code" in the ACM console
            properties.put("endpoint", "$endpoint");
            // Obtain the namespace from "Namespace details" or "
Sample code" in the ACM console
            properties.put("namespace", "$namespace");
            // The name of the newly created RAM role associated with
an ECS instance, for example "ECS-RAM"
            properties.put("ramRoleName", "$ramRoleName");
            ConfigService.init(properties);
            // Actively get the configuration.
            String content = ConfigService.getConfig("${dataId}", "${
group}", 6000);
            System.out.println(content);
        } catch (ConfigException e) {
            e.printStackTrace();
        }
    }
}
```

Related documents

- *RAM (Resource Access Control)*
- *#unique_4*
- *#unique_6*
- *#unique_7*

2 Access control

This topic explains how to use the access control functionality of ACM with an example of authorize a RAM user to use a namespace.

Background information

Previously, once granted the AliyunACMFullAccess authorization, a RAM user immediately has the full access to ACM, including the read and write access to all configurations and all namespaces. Given that the configurations of different RAM users are not isolated, misoperations or malicious operations can cause significant losses and severe consequences. More importantly, sensitive configurations such as database accounts and passwords are facing the risk of leakage due to their visibility to all authorized users.

Now, ACM provides access control of finer granularity, so that you can grant minimal access to users, and grant different users (or roles) different resource operation permission. Mirroring RAM's authorization policy, access can be granted in terms of Action or Resource.

Action

- **Read: can read all configurations in the scope specified by Resource, and read the basic information of namespaces. The corresponding RAM authorization policy Action is `acms: R`.**
- **Write: can add, delete, or modify all configurations in the scope specified by Resource, but cannot add, delete, or modify namespaces. The corresponding RAM authorization policy Action is `acms: W`.**
- **Full access: can read and write all configurations in the scope specified by Resource, and read the basic information of namespaces. Also can add, delete, or modify namespaces if Resource is `*`. The corresponding RAM authorization policy Action is `acms:*`.**

Resource

- **All resources: the corresponding Ram Authorization Policy Resource is `*`.**

- **A single namespace: For example, if the namespace is `1ca01ca0-11b0-1e01-0df1-d1010101bc10`, then the RAM authorization policy Resource is `*:*:*:*:cfg/1ca01ca0-11b0-1e01-0df1-d1010101bc10`.**
- **A group within a single namespace: For example, if the namespace is `1ca01ca0-11b0-1e01-0df1-d1010101bc10`, and the group is `DEFAULT_GROUP`, then the RAM authorization policy Resource is `*:*:*:*:cfg/1ca01ca0-11b0-1e01-0df1-d1010101bc10/DEFAULT_GROUP`.**

Step 1: Create a custom RAM authorization policy

1. **Log on to the *RAM console*.**
2. **In the left-side navigation pane, click Policies.**
3. **In the upper-right corner of the Policy Management page, click Create Authorization Policy.**
4. **On the Select an authorization policy page of the Create Authorization Policy dialog box, click Blank Template.**
5. **On the Edit permissions and submit page, enter your custom authorization policy name, description, and policy content, and then click Create Authorization Policy.**

   For example, to configure the read and write access for namespace `1ca01ca0-11b0-1e01-0df1-d1010101bc10`, please enter the following content in the Policy Content textbox:

```
{
"Version": "1",
"Statement": [
 {
   "Action": [
     "acms:*"
   ],
   "Resource": "*:*:*:*:cfg/1ca01ca0-11b0-1e01-0df1-d1010101bc10",
   "Effect": "Allow"
 }
]
}
```

   Note:

   For instructions on how to create a custom RAM authorization policy, see *#unique_9*.

Step 2: Create a RAM user

1. **Return to the *RAM console*.**
2. **In the left-side navigation pane, click Users.**
3. **Click Create User in the upper-right corner of the User Management page, and enter the user name and other information in the Create User dialog box.**

   Note:
   To generate an AccessKey, select Automatically generate an Access key for this user. Newly created users don't have any permissions. You must authorize them first.
4. **In the table on the User Management page, click the name of the user created at the previous step.**
5. **In the Web Console Logon Management area of the User Details page, click Enable Console Logon on the right side, and set the password for the user.**
6. **In the left-side navigation pane, click User Authorization Policies, and click Edit Authorization Policy in the upper-right corner of the page.**
7. **In the Edit User-Level Authorization dialog box, search for the authorization policy created at the previous step with keywords, click the > button to move it to the Selected Authorization Policy Name list on the right, and then click OK.**

   Note:
   For instructions on how to create and authorize RAM users, see *#unique_10* and *#unique_11*.

Step 3: Log on with the RAM user and verify the access

1. **Return to the *RAM console*.**
2. **On the Dashboard page, click the RAM User Logon Link, and log on with your newly created user.**
3. **Go to the ACM console, and verify if only the namespace specified in the authorization policy can be manipulated.**

More examples

1. **Grant the read-only access to a single namespace (for example `1ca01ca0-11b0-1e01-0df1-d1010101bc10`)**

```
{
"Version": "1",
"Statement": [
 {
   "Action": [
     "acms:R"
   ],
   "Resource": "*:*:*:*:cfg/1ca01ca0-11b0-1e01-0df1-d1010101bc10",
   "Effect": "Allow"
 }
]
}
```

2. **Grant the read and write access to a single group (for example `DEFAULT_GROUP`) within a single namespace (for example `1ca01ca0-11b0-1e01-0df1-d1010101bc10`)**

```
{
"Version": "1",
"Statement": [
 {
   "Action": [
     "acms:*"
   ],
   "Resource": "*:*:*:*:cfg/1ca01ca0-11b0-1e01-0df1-d1010101bc10/
DEFAULT_GROUP",
   "Effect": "Allow"
 }
]
}
```

3. **Grant the read-only access to multiple groups (for example `DEFAULT_GROUP` and `DEFAULT_GROUP_1`) within a single namespace (for example `1ca01ca0-11b0-1e01-0df1-d1010101bc10`)**

```
{
"Version": "1",
"Statement": [
 {
   "Action": [
     "acms:R"
   ],
   "Resource": [
           "*:*:*:*:cfg/1ca01ca0-11b0-1e01-0df1-d1010101bc10/
DEFAULT_GROUP",
           "*:*:*:*:cfg/1ca01ca0-11b0-1e01-0df1-d1010101bc10/
DEFAULT_GROUP_1"
       ],
   "Effect": "Allow"
 }
]
```

```
}
```

4. **Grant the read and write access to a single group (for example DEFAULT_GROUP) within all namespaces**

```
{
"Version": "1",
"Statement": [
 {
   "Action": [
     "acms:*"
   ],
   "Resource": [
           "*:*:*:*:cfg/*/DEFAULT_GROUP"
       ],
   "Effect": "Allow"
 }
]
}
```

Note

- **Only when the authorization policy** *Action* **is** `acms:*`**, and the** *Resource* **is** `*`**, users (or roles) granted this policy can add, delete, or modify namespaces.**
- **Due to the cache system, it usually takes about 10 seconds for added and modified authorization policies to be effective.**
- *Access ACM with instance RAM role* **: you can also achieve access control of finer granularity by granting the aforementioned authorization policy.**

Related documents

- *#unique_5*
- *#unique_9*
- *#unique_10*
- *#unique_11*
- *#unique_12*
- *Access ACM with instance RAM role*

3 Sub-Account Management

The ACM system supports the Resource Access Management (RAM) account system of Alibaba Cloud. A primary account can create RAM sub-accounts, so that the account key is not shared with other users and only minimum permissions are assigned to these sub-accounts as necessary, thus enabling the enterprise to function efficiently.

About RAM sub-accounts

When using ACM, a primary account can enable clearly defined roles and responsibilities by assigning different roles and resources to its sub-accounts. This primary and sub-account permission model works in a similar way to the system and normal user model in the Linux system, where system users can grant or revoke permissions from normal users.

Description of RAM sub-accounts:

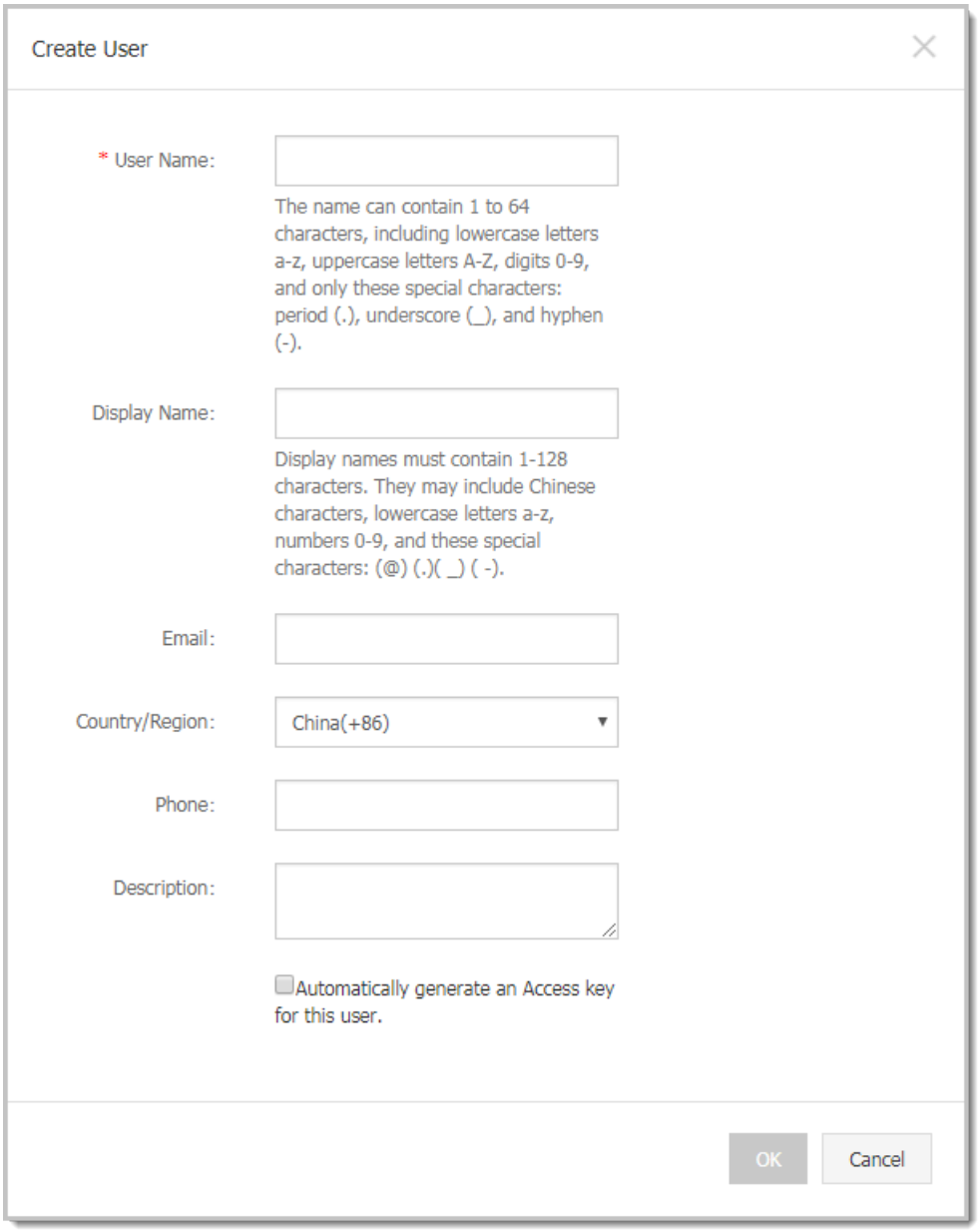
- **RAM sub-accounts are created by a primary account in the RAM system. No legality verification is required provided that each sub-account under the same primary account has a unique name.**
- **Unlike logons with an Alibaba Cloud account, RAM sub-accounts log on through a unique logon entrance, which can be found in the RAM console.**

Create a RAM sub-account

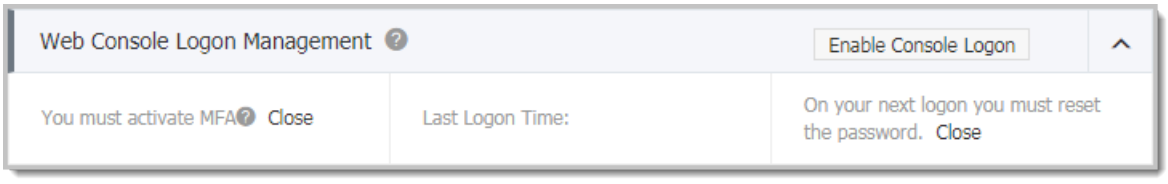
1. **Log on to the *RAM console*, and click Users in the left-side navigation pane.**
2. **In the upper-right corner of the page, click Create User, and in the Create User dialog box, enter the login name and other information, and then click OK. The newly created user is displayed on the Users Management page.**

Note:

The login name must be unique within the primary account.

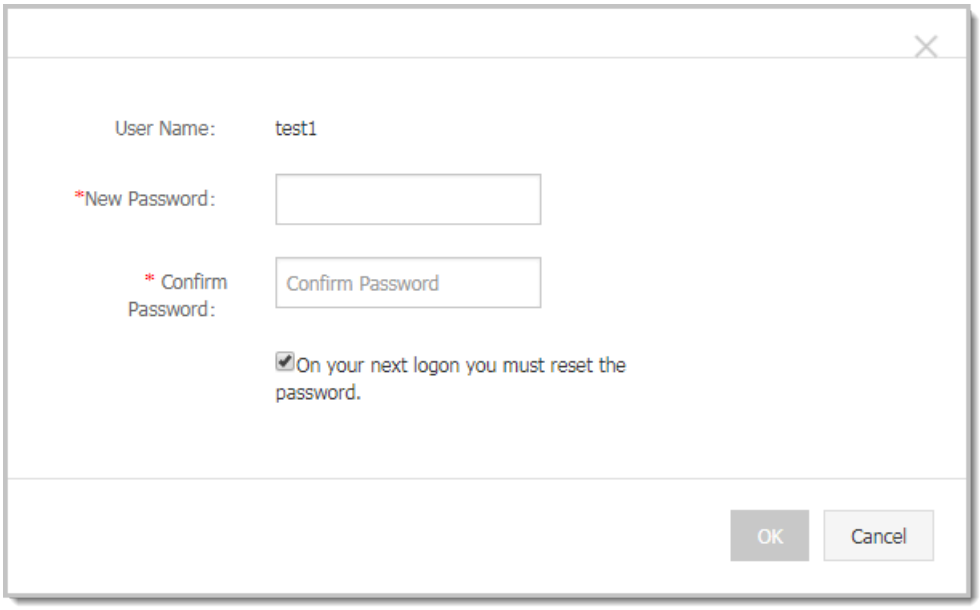


3. **Click the user's User Name/Display Name. The User Details page is displayed.**



4. **In the Web Console Logon Management section, click Enable Console Logon.**

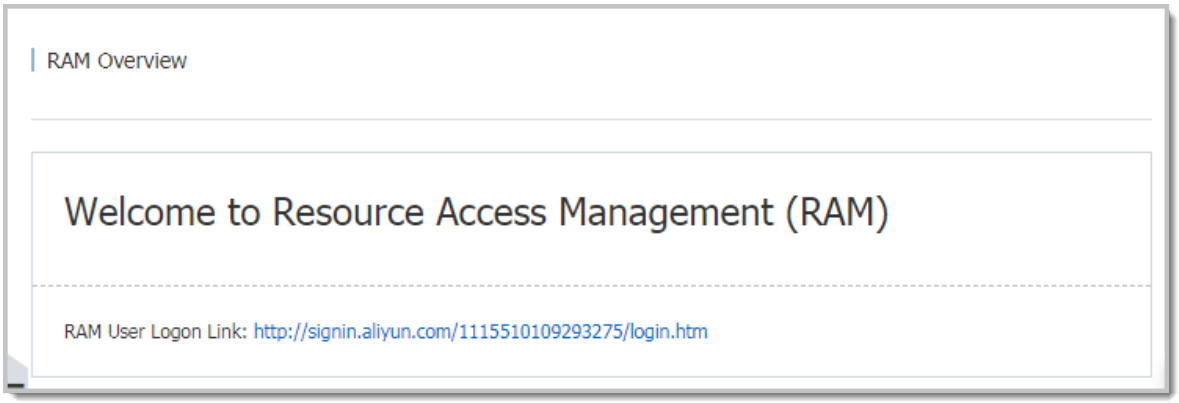
5. **In the password setting dialog box, enter a New Password and Confirm Password, select the check box "On your next logon you must reset the password." as needed, and then click OK.**



So far, a RAM user that can log on to the console is created.

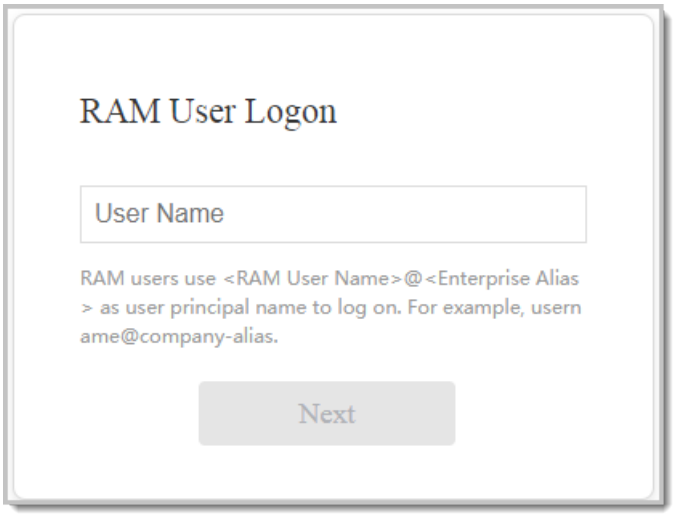
Log on to the ACM console with RAM sub-account

1. **Log on to the *RAM console*, and in the left-side navigation pane, click Dashboard.**
2. **Click the RAM User Logon Link. The Sub-account Logon page is displayed.**

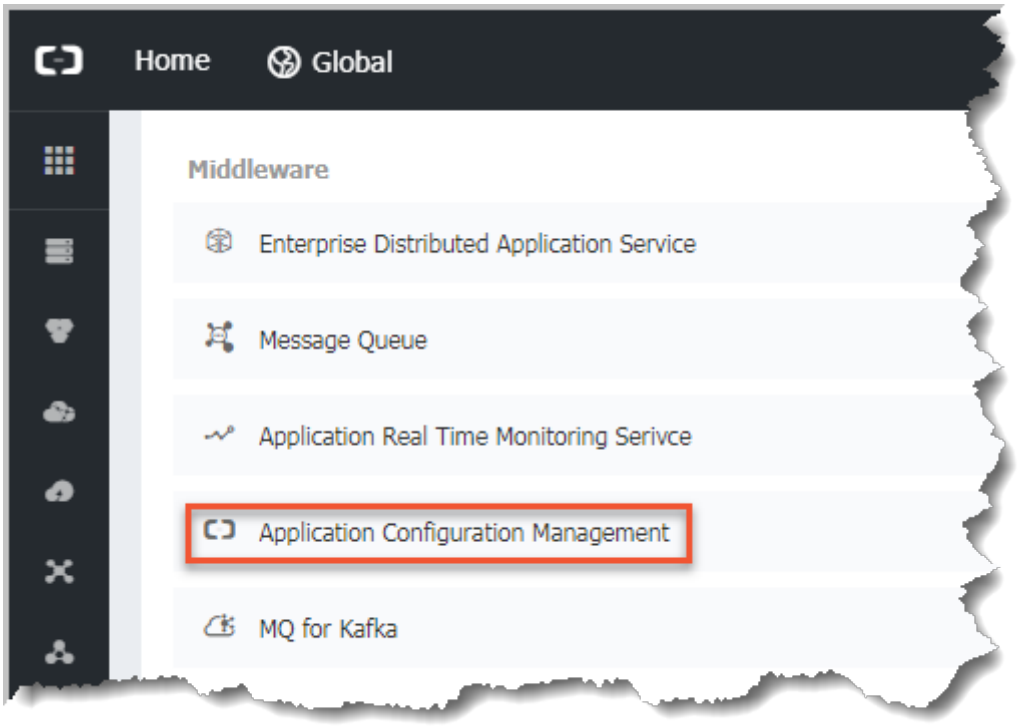


Note:
The RAM user's logon link varies with the primary account.

3. **Enter information as prompted on the page, and enter the RAM console of the RAM sub-account.**



4. **In the RAM console, navigate to the Products & Services section, and in the Middleware area, click Application Configuration Management to enter the ACM console.**

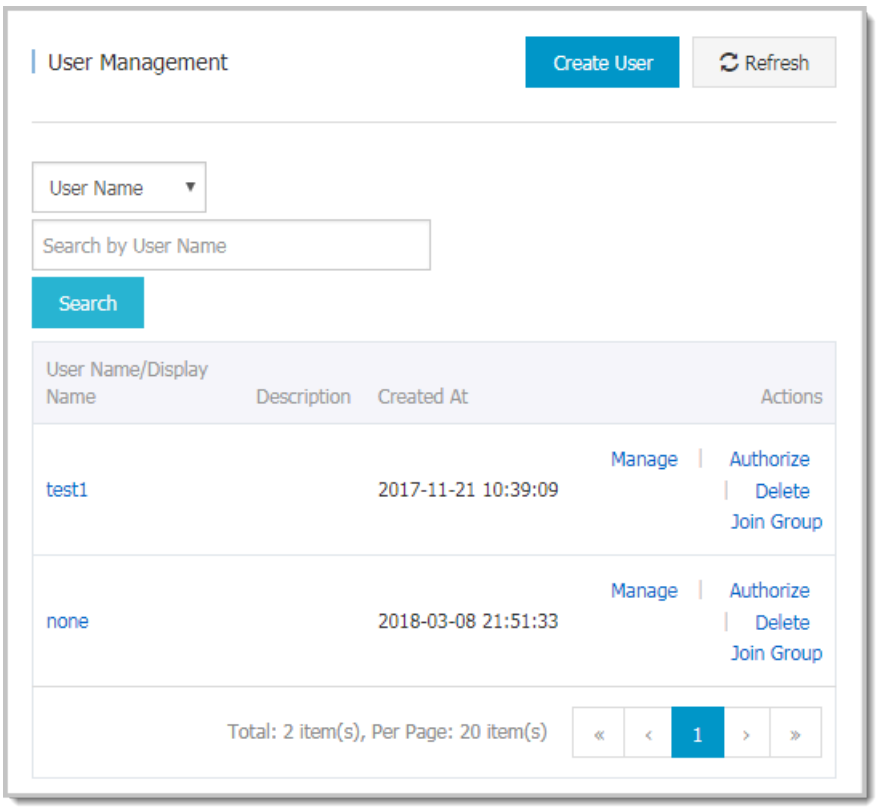


Authorize a RAM sub-account

The authorization of RAM is done on the level of ACM service, which means a user with RAM authorization has the full access to ACM. You can only grant or revoke the RAM authorization in the RAM console.

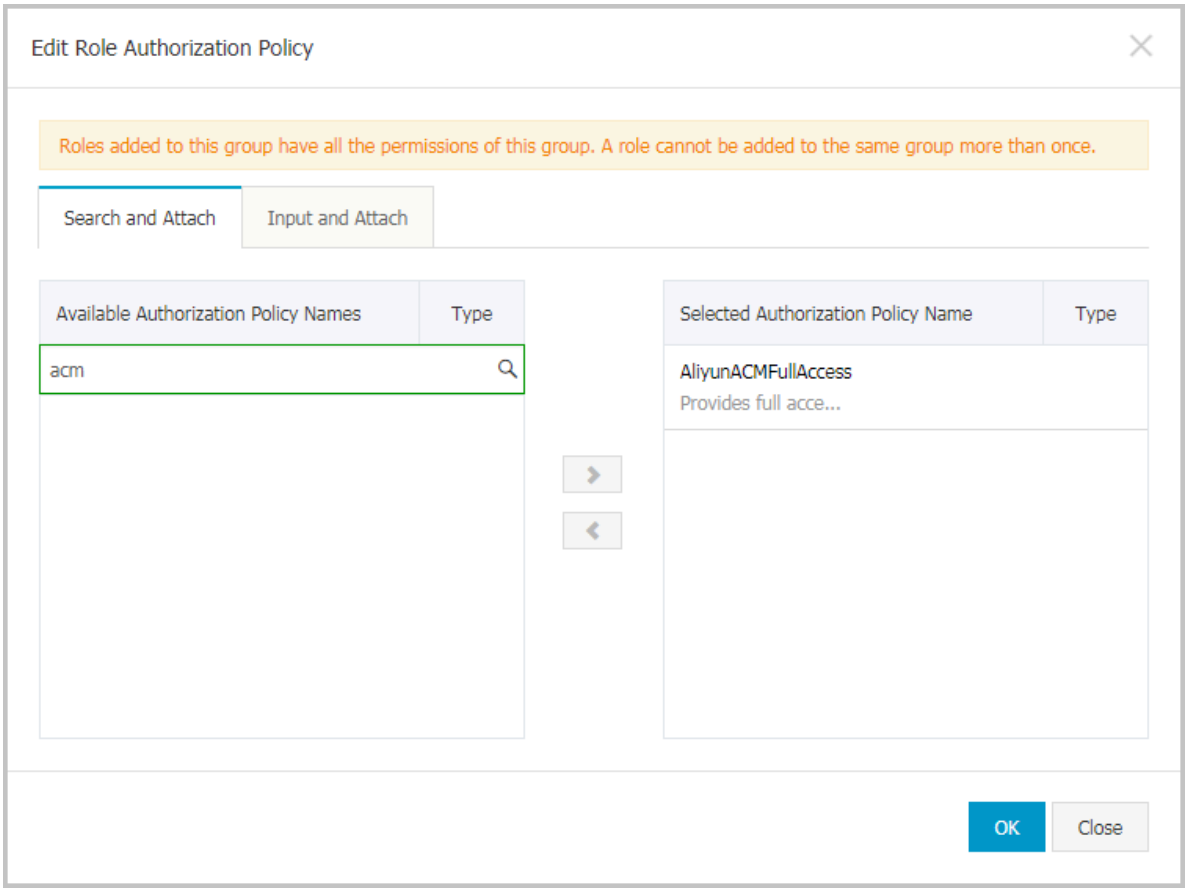
Here are the steps to authorize a RAM sub-account:

1. **Log on to the *RAM console*, and click Users in the left-side navigation pane.**
2. **On the Users Management page, select a user to be authorized, and in the Actions column on the right side of the user, click Authorize.**



3. **In the search box of the Edit User-Level Authorization dialog box, enter `ACM`, select AliyunACMFullAccess to add it to the Selected Authorization Policy Name on the right, and then click OK to grant this sub-account all access to ACM.**

In addition, to use the *encryption and decryption* functions of ACM, also add the AliyunKMSCryptoAccess authorization policy.



After the authorization is complete, the sub-account can log on to the ACM console.

Deauthorize a RAM sub-account

Here are the steps to deauthorize a RAM sub-account:

1. **Log on to the *RAM console*, and in the left-side navigation pane, click Users.**
2. **On the Users Management page, select a user to be deauthorized, and in the Actions column on the right side of the user, click Authorize.**
3. **Move the AliyunACMFullAccess policy from the the right-side area to the left-side area, and click OK.**

Once deauthorized, the RAM sub-account cannot log on to the ACM console.

Unbind a RAM sub-account

1. **Log on to the *RAM console*, and in the left-side navigation pane, click Users.**

2. **On the Users Management page, select a user to be unbound, and in the Actions column on the right side of the user, click Delete.**