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Alibaba Cloud

Data Transmission Service
RAM-based Access Control

Document Version: 20210723

Alibaba Cloud

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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.Authorize DTS to access Alibaba Cloud resources

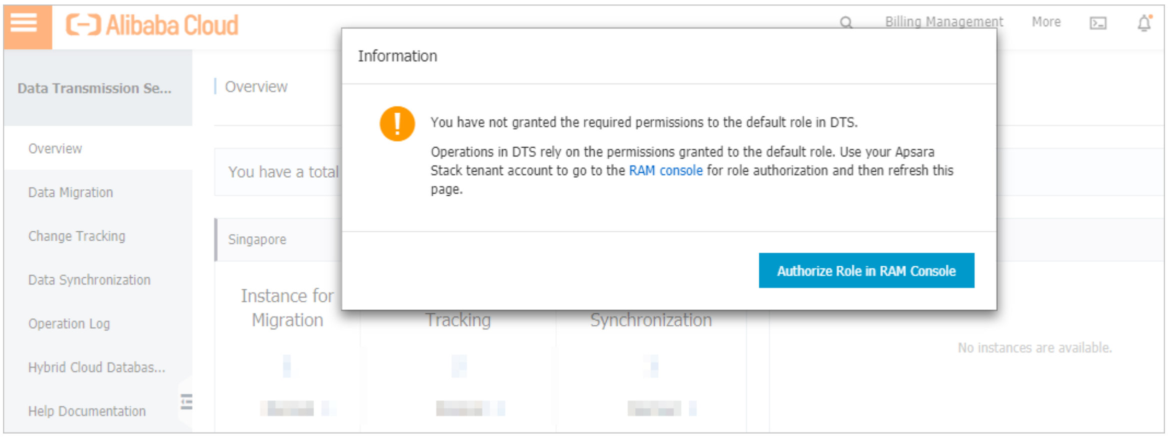
The first time that you log on to the Data Transmission Service (DTS) console, you are prompted to assign the **AliyunDTSDefaultRole** role to DTS. With this role, DTS can access the resources owned by the current Alibaba Cloud account during data replication.

Note

If no authorization message is displayed when you log on to the DTS console, this indicates that DTS has already been authorized. You can skip the steps that are described in this topic.

Procedure

1. Log on to the DTS console.
2. In the **Information** message, click **Authorize Role in RAM Console**.



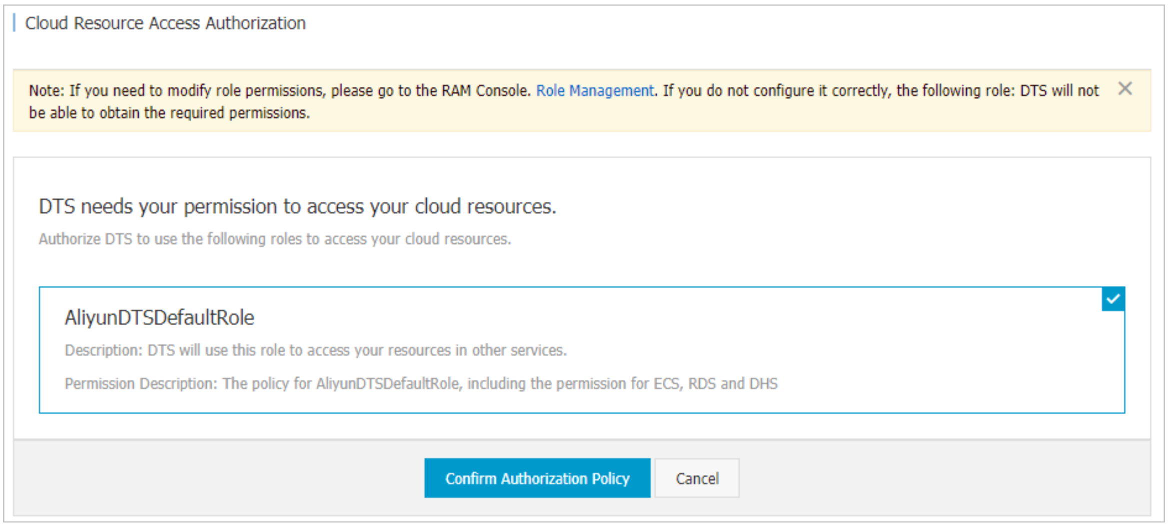
Information

You have not granted the required permissions to the default role in DTS.

Operations in DTS rely on the permissions granted to the default role. Use your Apsara Stack tenant account to go to the RAM console for role authorization and then refresh this page.

Authorize Role in RAM Console

3. In the **Cloud Resource Access Authorization** dialog box, click **Confirm Authorization Policy**.



Cloud Resource Access Authorization

Note: If you need to modify role permissions, please go to the RAM Console. Role Management. If you do not configure it correctly, the following role: DTS will not be able to obtain the required permissions.

DTS needs your permission to access your cloud resources.

Authorize DTS to use the following roles to access your cloud resources.

☑ AliyunDTSDefaultRole

Description: DTS will use this role to access your resources in other services.

Permission Description: The policy for AliyunDTSDefaultRole, including the permission for ECS, RDS and DHS

Confirm Authorization Policy | Cancel

Permission policy

The **AliyunDTSDefaultRole** policy is attached to the default role of DTS. This policy allows DTS to access ApsaraDB for RDS, ECS, DataHub, Elasticsearch, DRDS, ApsaraDB for PolarDB, ApsaraDB for MongoDB, ApsaraDB for Redis, and HybridDB for MySQL. The policy is defined as follows:

```
{
```

```
{
  "Version": "1",
  "Statement": [
    {
      "Action": [
        "rds:Describe*",
        "rds:CreateDBInstance",
        "rds:CreateAccount*",
        "rds:CreateDataBase*",
        "rds:ModifySecurityIps",
        "rds:GrantAccountPrivilege"
      ],
      "Resource": "*",
      "Effect": "Allow"
    },
    {
      "Action": [
        "ecs:DescribeSecurityGroupAttribute",
        "ecs:DescribeInstances",
        "ecs:DescribeRegions",
        "ecs:AuthorizeSecurityGroup"
      ],
      "Resource": "*",
      "Effect": "Allow"
    },
    {
      "Action": [
        "dhs:ListProject",
        "dhs:GetProject",
        "dhs:CreateTopic",
        "dhs:ListTopic",
        "dhs:GetTopic",
        "dhs:UpdateTopic",
        "dhs:ListShard",
        "dhs:MergeShard",
        "dhs:SplitShard",
        "dhs:PutRecords",
        "dhs:GetRecords",
        "dhs:GetCursors"
      ],
      "Resource": "*",
      "Effect": "Allow"
    },
    {
      "Action": [
        "elasticsearch:DescribeInstance",
        "elasticsearch:ListInstance",
        "elasticsearch:UpdateAdminPwd",
        "elasticsearch:UpdatePublicNetwork",
        "elasticsearch:UpdateBlackIps",
        "elasticsearch:UpdateKibanaIps",
        "elasticsearch:UpdatePublicIps",
        "elasticsearch:UpdateWhiteIps"
      ],
      "Resource": "*"
      "Resource": "*",
      "Effect": "Allow"
    },
    {
      "Action": [
        "drds:DescribeDrds*",
        "drds:ModifyDrdsIpWhiteList",
        "drds:DescribeRegions",
        "drds:DescribeRdsList",
        "drds:CeateDrdsDB",
        "drds:DescribeShardDBs"
      ],
      "Resource": "*",
      "Effect": "Allow"
    },
    {
      "Action": [
        "polardb:DescribeDBClusterIPArrayList",
        "polardb:DescribeDBClusterNetInfo",
        "polardb:DescribeDBClusters",
        "polardb:DescribeRegions",
        "polardb:ModifySecurityIps"
      ],
      "Resource": "*",
      "Effect": "Allow"
    },
    {
      "Action": [
        "dds:DescribeDBInstanceAttribute",
        "dds:DescribeReplicaSetRole",
        "dds:DescribeSecurityIps",
        "dds:DescribeDBInstances",
        "dds:ModifySecurityIps",
        "dds:DescribeRegions"
      ],
      "Resource": "*",
      "Effect": "Allow"
    },
    {
      "Action": [
        "kvstore:DescribeSecurityIps",
        "kvstore:DescribeInstances",
        "kvstore:DescribeRegions",
        "kvstore:ModifySecurityIps"
      ],
      "Resource": "*",
      "Effect": "Allow"
    },
    {
      "Action": [
        "petadata:DescribeInstanceInfo",
        "petadata:DescribeSecurityIPs",
        "petadata:DescribeInstances",
        "petadata:ModifySecurityIPs"
      ],
      ],
      "Resource": "*",
      "Effect": "Allow"
    }
  ]
}
```

2.Authorize a RAM user to use DTS

You can create a Resource Access Management (RAM) user account and then grant the RAM user required permissions to access Data Transmission Service (DTS) functionalities. In this way, you can assign different permissions to different users.

Permission policies

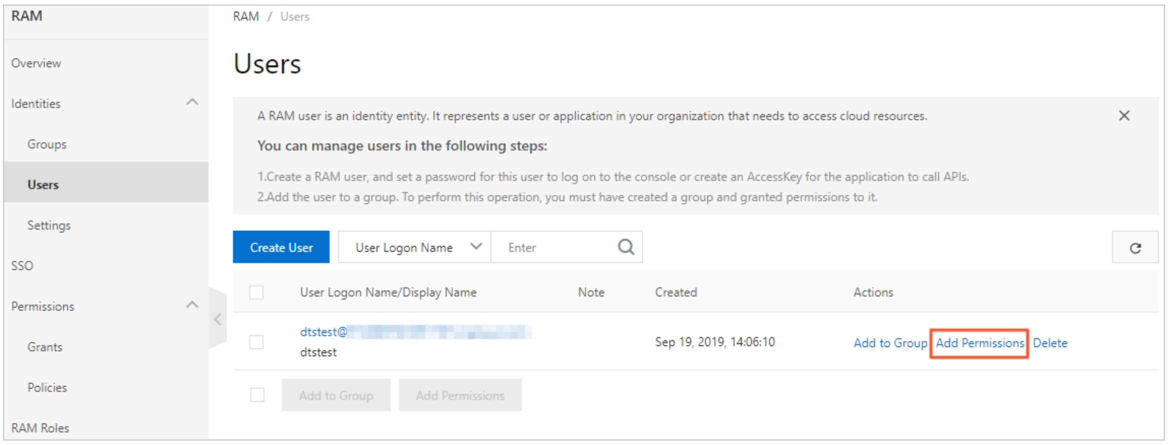
DTS provides two system permission policies, for read/write and read-only operations, respectively.

> **Note** API operation-level access control is not supported.

- Read/write policy: **AliyunDTSFullAccess**
  This policy grants the read/write permission on DTS. RAM users with this permission policy can purchase, configure, and manage DTS instances and tasks.
- Read-only policy: **AliyunDTSReadOnlyAccess**
  This policy grants the read permission on DTS. RAM users with this permission policy can view the details and configurations of all DTS tasks under the Alibaba Cloud account. However, these RAM users cannot perform change operations.

Procedure

1. Log on to the RAM console by using an Alibaba Cloud account.
2. Create a RAM user. For more information, see Create a RAM user.
3. In the left-side navigation pane, click **Identities > Users**.
4. Find the RAM user that you want to authorize, and then click **Add Permissions** in the **Actions** column.



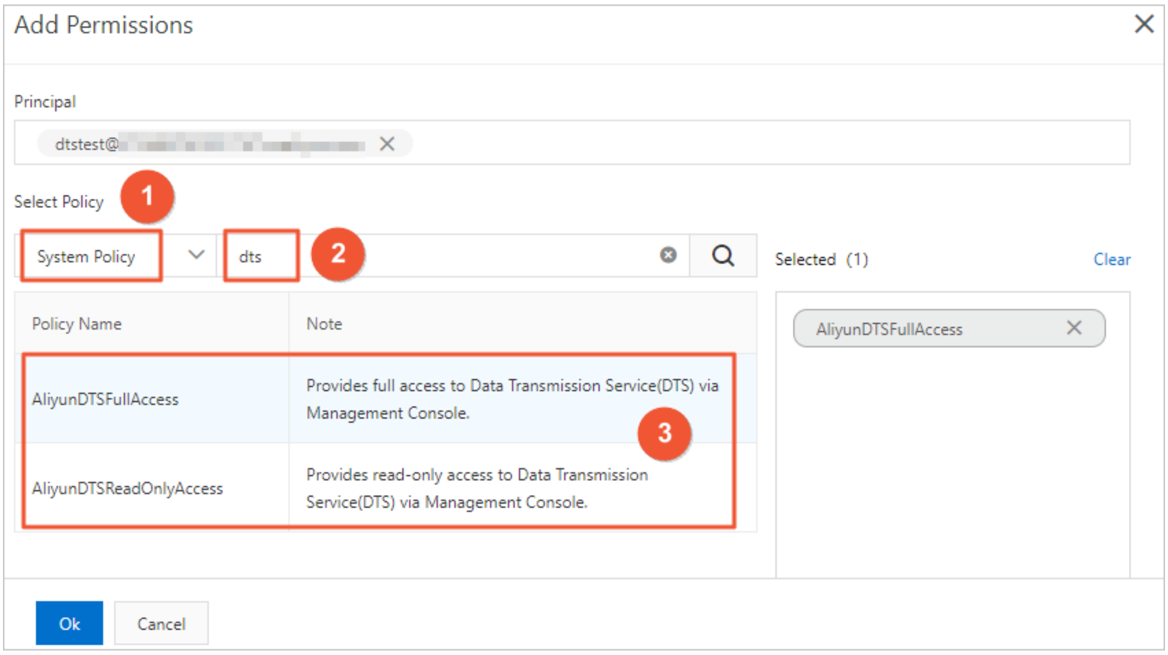
A RAM user is an identity entity. It represents a user or application in your organization that needs to access cloud resources.

You can manage users in the following steps:

1.Create a RAM user, and set a password for this user to log on to the console or create an AccessKey for the application to call APIs.
2.Add the user to a group. To perform this operation, you must have created a group and granted permissions to it.

	User Logon Name/Display Name	Note	Created	Actions
□	dtstest@[redacted] dtstest		Sep 19, 2019, 14:06:10	Add to Group Add Permissions Delete

5. In the **Add Permissions** dialog box, select the required permission policies.



Add Permissions

Principal: dtstest@[redacted]

Select Policy: System Policy, dts

Selected (1): AliyunDTSFullAccess

Policy Name	Note
AliyunDTSFullAccess	Provides full access to Data Transmission Service(DTS) via Management Console.
AliyunDTSReadOnlyAccess	Provides read-only access to Data Transmission Service(DTS) via Management Console.

i. Select **System Policy**.

ii. Enter *dts* in the search box to find all system permission policies that are related to DTS.

iii. Click a policy name to add the policy to the **Selected** list.

> **Note** For more information about permission policies, see Permission policies.

6. Click **OK**.
7. Click **Finished**.

Next steps

Log on to the console as a RAM user.

3.Use a custom policy to authorize a RAM user to manage DTS instances

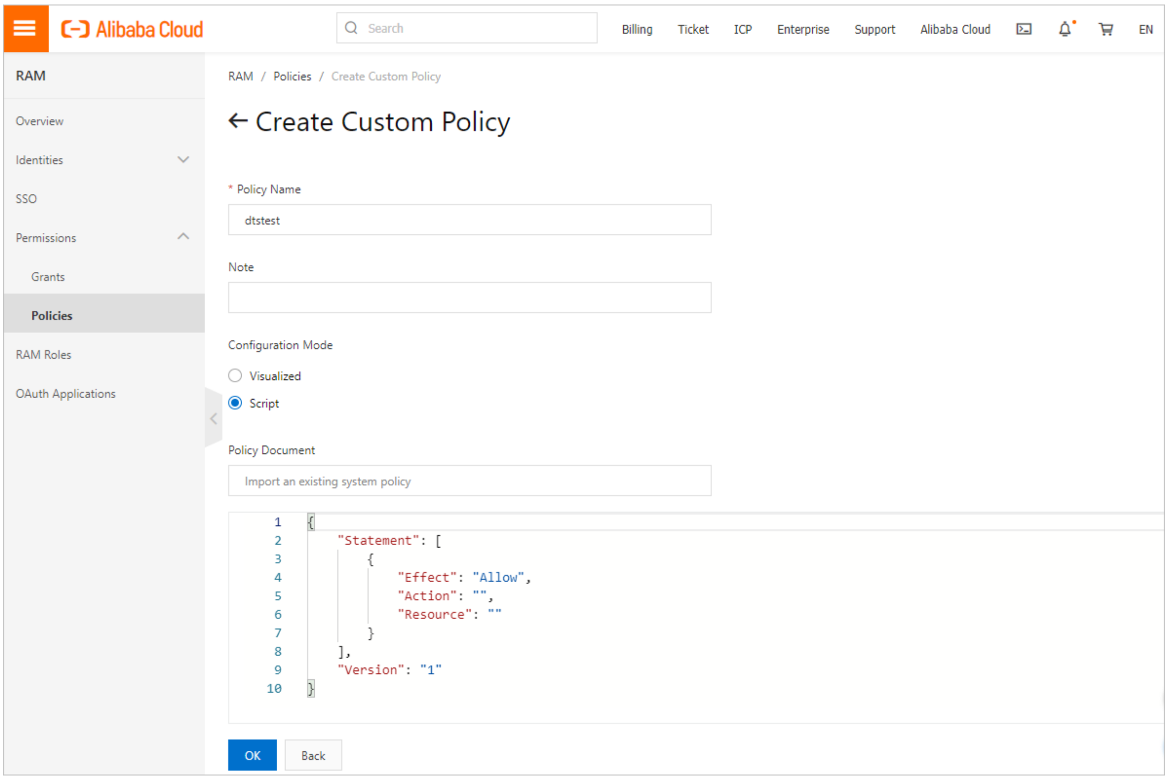
This topic describes how to create a custom policy. Custom policies provide finer-grained control than system policies. For example, you can create a custom policy to control the permissions on specific instances or operations.

Context

A policy defines a set of permissions that are described based on the policy structure and syntax. A policy describes the authorized resource sets, authorized operation sets, and authorization conditions. For more information, see Policy structure and syntax.

Step 1: Create a custom policy

1. Log on to the RAM console by using an Alibaba Cloud account.
2. In the left-side navigation pane, click **Permissions > Policies**.
3. On the **Policies** page, click **Create Policy**.
4. Complete the settings for the custom policy.



← Create Custom Policy

* Policy Name: dtstest

Note:

Configuration Mode: ○ Visualized ● Script

Policy Document: Import an existing system policy

```
{
    "Statement": [
        {
            "Effect": "Allow",
            "Action": "",
            "Resource": ""
        }
    ],
    "Version": "1"
}
```

Setting	Description
Policy Name	Enter a name for the policy.
Note	Optional. Enter a description for the policy.
Configuration Mode	Select **Script**. To configure policies for DTS, you must select **Script**.

Setting	Description
Policy Document	Select an existing system policy from the drop-down list. Note This topic describes how to create a custom policy. You do not need to configure this parameter.
Policy	Enter the permission policy. You can edit the sample policies that are listed in this topic based on your needs. Note ◦ A policy defines a set of permissions that are described based on the policy structure and syntax. A policy describes the authorized resource sets, authorized operation sets, and authorization conditions. For more information, see Policy structure and syntax. ◦ Resource-level and operation-level access control is supported.

Sample custom policies:

> Note
>
> - You must replace the `DTS instance ID` in the following code with the actual ID of your DTS instance.
> - If the read-only permission on a DTS instance is granted to a RAM user, the RAM user can query task details and configurations but cannot change configurations. If the read/write permissions on a DTS instance are granted to a RAM user, the RAM user can configure and manage DTS instances and tasks.

- demo 1: Read-only permission on a single DTS instance.
- demo 2: Read/write permissions on multiple DTS instances.
- demo 3: View the configurations of a data synchronization task.
- demo 4: Start or pause a data synchronization task.

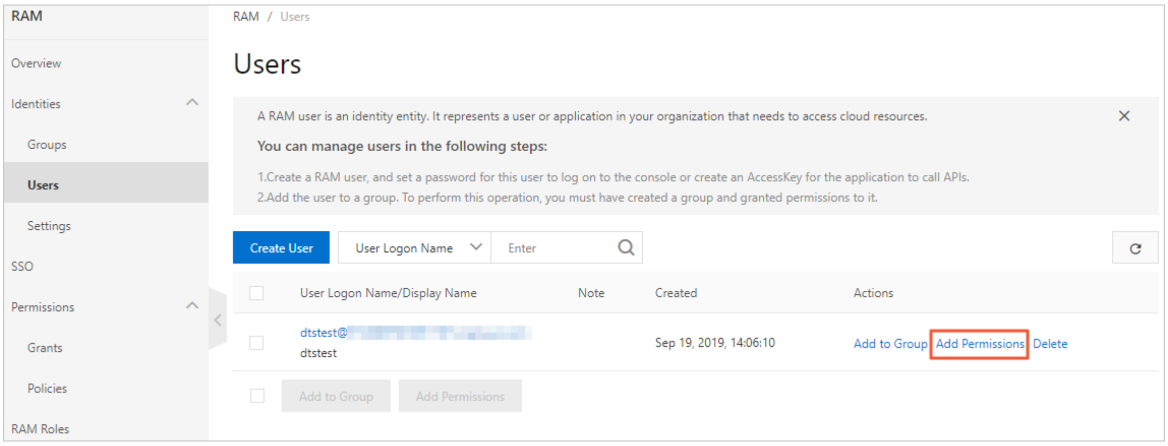
demo 1 demo 2 demo 3 demo 4

```
{
  "Statement": [
    {
      "Effect": "Allow",
      "Action": "dts:Describe*",
      "Resource": "acs:dts:*:*:instance/DTS instance ID"
    }
  ],
  "Version": "1"
}
```

5. Click **OK**.

Step 2: Attach the custom policy to a RAM user

1. Log on to the RAM console by using an Alibaba Cloud account.
2. Create a RAM user.
3. In the left-side navigation pane, click **Users** under **Identities**.
4. In the **User Logon Name/Display Name** column, find the target RAM user.
5. Click **Add Permissions** in the Actions column.



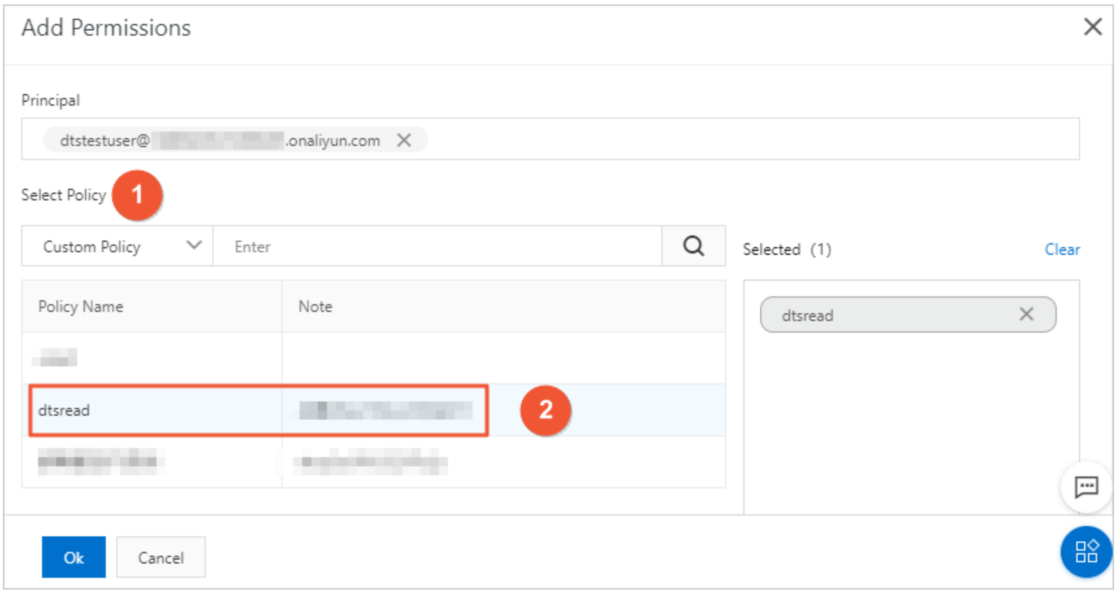
A RAM user is an identity entity. It represents a user or application in your organization that needs to access cloud resources.

You can manage users in the following steps:

1.Create a RAM user, and set a password for this user to log on to the console or create an AccessKey for the application to call APIs.
2.Add the user to a group. To perform this operation, you must have created a group and granted permissions to it.

User Logon Name/Display Name	Note	Created	Actions
dtstest@[redacted] dtstest		Sep 19, 2019, 14:06:10	Add to Group Add Permissions Delete

6. In the **Add Permissions** pane, select the required permission policies.
   1. Select **Custom Policy**.
   2. Click the name of a custom policy to add the policy to the **Selected** section.



Principal: dtstestuser@[redacted].onaliyun.com

Policy Name	Note
[redacted]	
dtsread	[redacted]
[redacted]	[redacted]

Selected: dtsread

7. Click **OK**.
8. Click **Finished**.

Scenarios of operation-level authorization

Note

- The DescribeMigrationJobs , DescribeSubscriptionInstances , and DescribeSynchronizationJobs policies authorize a RAM user to query available DTS instances. If a RAM user has the permissions only on some instances, the user must query available DTS instances before the user can perform related operations.
- To authorize a RAM user to configure data migration, data synchronization, or change tracking, you must create a custom policy and attach the policy to the user. For more information, see Permission policy.

Feature	Operation in the DTS console	Permission policy
Data migration	Create a data migration task	CreateMigrationJob
	Query data migration tasks	DescribeMigrationJobs
	View the details of a data migration task	DescribeMigrationJobs DescribeMigrationJobDetail DescribeMigrationJobStatus
	Modify the name of a data migration task	DescribeMigrationJobs ModifyMigrationObject
	Configure a data migration task	DescribeMigrationJobs DescribeMigrationJobDetail DescribeMigrationJobStatus CreateMigrationJob
	View precheck details	DescribeMigrationJobs DescribeMigrationJobStatus
	Create a similar data migration task	DescribeMigrationJobs DescribeMigrationJobDetail DescribeMigrationJobStatus CreateMigrationJob
	Monitor a data migration task and set alerts	DescribeMigrationJobs DescribeMigrationJobAlert ConfigureMigrationJobAlert
	Change the password that is used to log on to an instance	DescribeMigrationJobs DescribeMigrationJobDetail ModifyMigrationObject
	Start a data migration task	DescribeMigrationJobs StartMigrationJob DescribeMigrationJobDetail
	Pause a data migration task	DescribeMigrationJobs SuspendMigrationJob
	View the details of schema migration	DescribeMigrationJobs DescribeMigrationJobStatus

Feature	Operation in the DTS console	Permission policy
	View the details of full data migration	DescribeMigrationJobs DescribeMigrationJobStatus
	View the details of incremental data migration	DescribeMigrationJobs DescribeMigrationJobStatus
	View the performance of full data migration or incremental data migration	DescribeMigrationJobs DescribeMigrationJobDetail
	View task logs	DescribeMigrationJobs DescribeMigrationJobDetail
Change tracking	Create a change tracking task	CreateSubscriptionInstance
	Query change tracking tasks	DescribeSubscriptionInstances
	View the details of a change tracking task	DescribeSubscriptionInstances DescribeSubscriptionInstanceStatus
	Modify the name of a change tracking task	DescribeSubscriptionInstances ModifySubscriptionObject
	Modify the objects for change tracking	DescribeSubscriptionInstances DescribeSubscriptionInstanceStatus ModifySubscriptionObject
	Create consumer groups	DescribeSubscriptionInstances CreateConsumerGroup
	View the information about a consumer group	DescribeSubscriptionInstances DescribeConsumerGroup
	Modify the password of a consumer group	DescribeSubscriptionInstances ModifyConsumerGroupPassword
	Delete a consumer group	DescribeSubscriptionInstances DeleteConsumerGroup
	Change the password that is used to log on to an instance	DescribeSubscriptionInstances DescribeSubscriptionInstanceStatus ModifySubscriptionObject
	Delete a change tracking task	DescribeSubscriptionInstances DeleteSubscriptionInstance
	Monitor a change tracking task and set alerts	DescribeSubscriptionInstances DescribeSubscriptionInstanceAlert ConfigureSubscriptionInstanceAlert
	Configure a change tracking task	DescribeSubscriptionInstances DescribeSubscriptionInstanceStatus ModifySubscriptionObject

Feature	Operation in the DTS console	Permission policy
	View task logs	DescribeSubscriptionInstances DescribeSubscriptionInstanceStatus
Data synchronization	Create a data synchronization task	CreateSynchronizationJob
	Query data synchronization tasks	DescribeSynchronizationJobs
	View the details of a data synchronization task	DescribeSynchronizationJobs DescribeSynchronizationJobStatus
	Modify the name of a data synchronization task	DescribeSynchronizationJobs ModifySynchronizationObject
	View the configurations of a data synchronization task	DescribeSynchronizationJobs DescribeSynchronizationJobStatus
	View the objects to be synchronized	DescribeSynchronizationJobs DescribeSynchronizationJobStatus
	View the status of initial schema synchronization and initial full data synchronization	DescribeSynchronizationJobs DescribeSynchronizationJobStatus
	View the performance of full data synchronization or incremental data synchronization	DescribeSynchronizationJobs DescribeSynchronizationJobStatus
	View the modification records of the objects to be synchronized	DescribeSynchronizationJobs
	View task logs	DescribeSynchronizationJobs DescribeSynchronizationJobStatus
	Configure a data synchronization task	DescribeSynchronizationJobs DescribeSynchronizationJobStatus ModifySynchronizationObject
	Start a data synchronization task	DescribeSynchronizationJobs StartSynchronizationJob
	Pause a data synchronization task	DescribeSynchronizationJobs SuspendSynchronizationJob
	Modify the objects to be synchronized	DescribeSynchronizationJobs DescribeSynchronizationJobStatus ModifySynchronizationObject

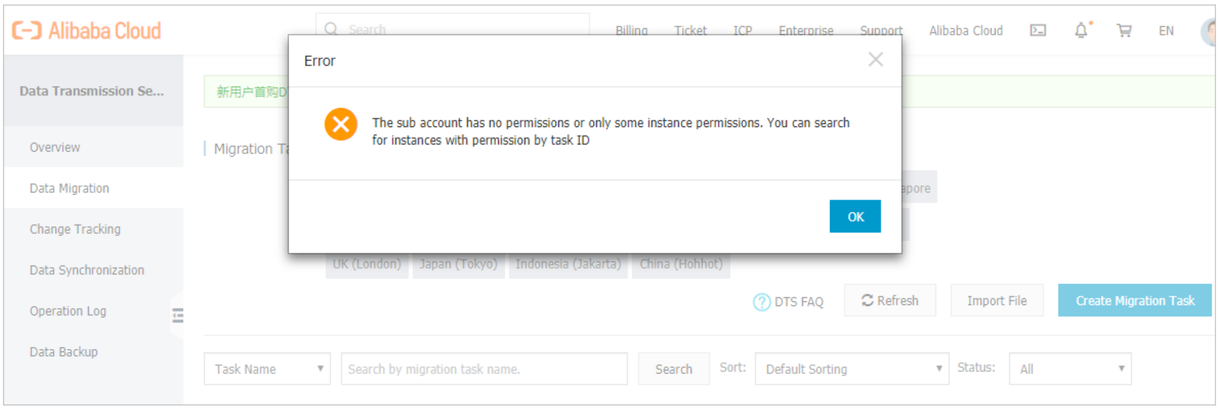
Feature	Operation in the DTS console	Permission policy
	Delete a data synchronization task	DescribeSynchronizationJobs DeleteSynchronizationJob
	Stop a data synchronization task	DescribeSynchronizationJobs DeleteSynchronizationJob
	Monitor a data synchronization task and set alerts	DescribeSynchronizationJobs DescribeSynchronizationJobAlert ConfigureSynchronizationJobAlert
	Change the password that is used to log on to an instance	DescribeSynchronizationJobs DescribeSynchronizationJobStatus ModifySubscriptionObject

What to do next

Log on to the console as a RAM user.

FAQ

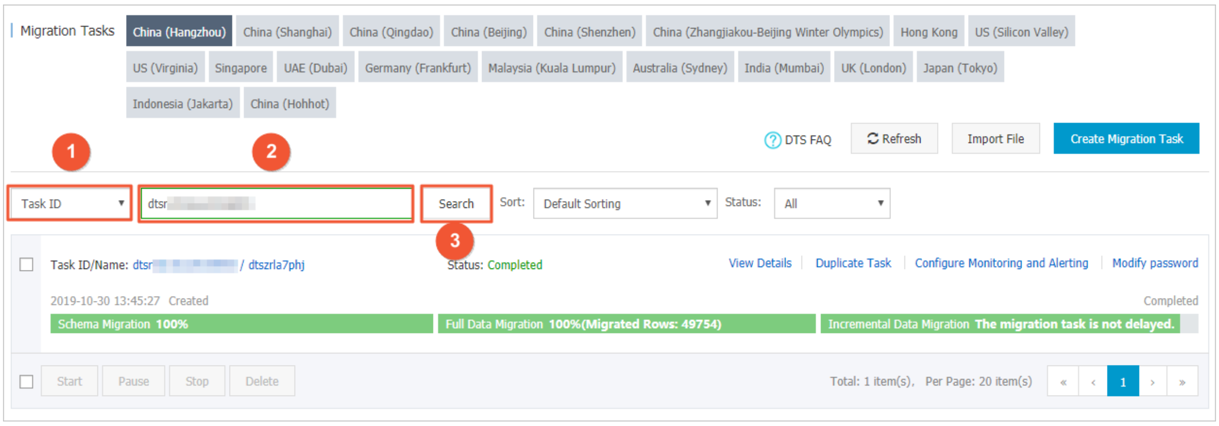
Q: Why does an error message instead of the instance list appear when I log on to the DTS console as a RAM user?



Error

The sub account has no permissions or only some instance permissions. You can search for instances with permission by task ID

A: The RAM user may have no permissions or may have permissions only on some instances. In this case, the DTS console does not show the instance list. You must contact the RAM administrator and obtain the IDs of the DTS instances on which the RAM user has administrative permissions. Then, you can search for DTS instances by using their IDs in the DTS console.



Task ID: dtsr[redacted]

Sort: Default Sorting

Status: All

Task ID/Name: dtsr[redacted] / dtszrla7phj

Status: Completed

2019-10-30 13:45:27 Created

Completed

Schema Migration 100%

Full Data Migration 100%(Migrated Rows: 49754)

Incremental Data Migration The migration task is not delayed.

Total: 1 item(s), Per Page: 20 item(s)

4.Authorize a RAM user to use the DTS SDK

Data Transmission Service (DTS) allows you to use Resource Access Management (RAM) to manage permission policies. You can create and manage tasks as a RAM user. You can also subscribe to data changes in real time by using the AccessKey ID and AccessKey secret of the RAM user.

Permission policies

DTS supports read/write and read-only policies.

- Read/write policy: **AliyunDTSFullAccess**
  This policy grants the read/write permission on DTS. If this policy is attached to a RAM user, the RAM user can purchase, configure, and manage DTS instances.
- Read-only policy: **AliyunDTSReadOnlyAccess** This policy grants the read permission on DTS. If this policy is attached to a RAM user, the RAM user can view the details and configurations of all DTS tasks under the Alibaba Cloud account. However, the RAM user cannot perform change operations.

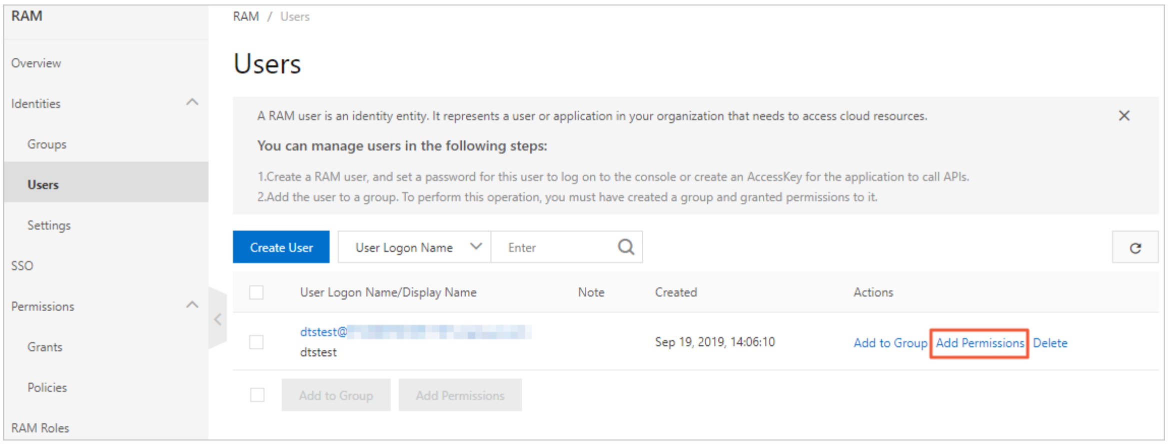
  > ? **Note** Change operations include the purchase, configuration, and management of DTS instances.

Procedure

1. Log on to the RAM console by using an Alibaba Cloud account.
2. Create a RAM user.

   > ? **Note** When creating a RAM user, you must specify **Programmatic Access** as the **access mode** and download and save the AccessKey pair.

3. In the left-side navigation pane, click **Users** under **Identities**.
4. In the **User Logon Name/Display Name** column, find the target RAM user.
5. Click **Add Permissions** in the Actions column.



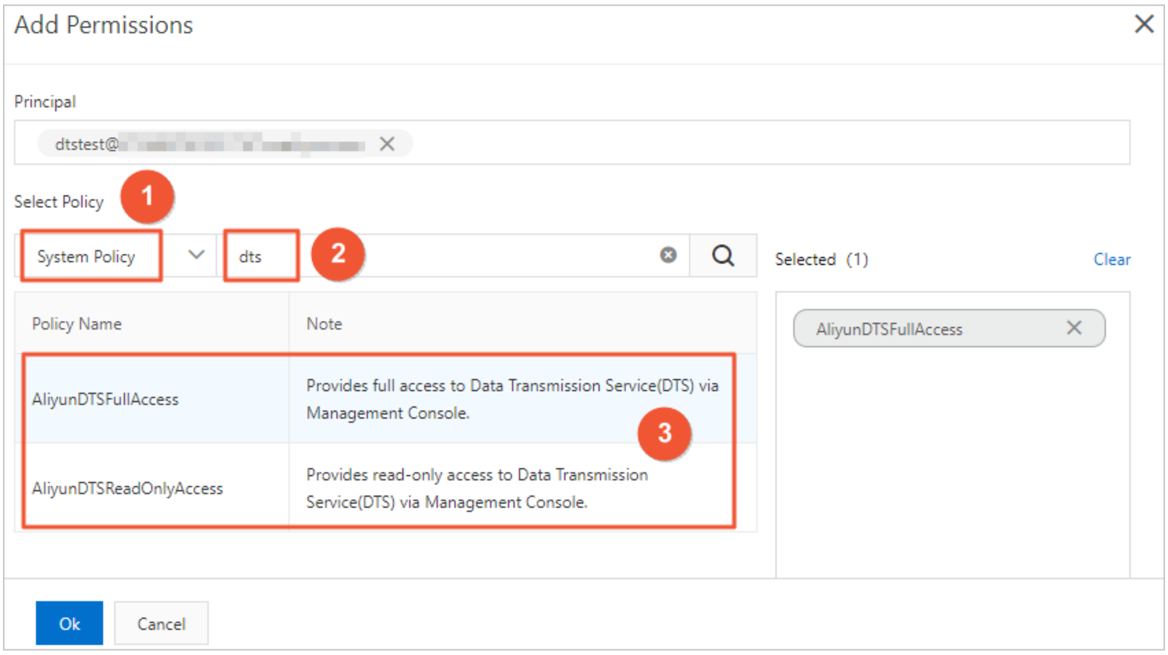
A RAM user is an identity entity. It represents a user or application in your organization that needs to access cloud resources.

You can manage users in the following steps:

1.Create a RAM user, and set a password for this user to log on to the console or create an AccessKey for the application to call APIs.
2.Add the user to a group. To perform this operation, you must have created a group and granted permissions to it.

□	User Logon Name/Display Name	Note	Created	Actions
□	dtstest@[redacted] dtstest		Sep 19, 2019, 14:06:10	Add to Group Add Permissions Delete

6. In the **Add Permissions** dialog box, select the required permission policies.



Add Permissions

Principal

dtstest@[redacted]

Select Policy

System Policy

dts

Policy Name	Note
AliyunDTSFullAccess	Provides full access to Data Transmission Service(DTS) via Management Console.
AliyunDTSReadOnlyAccess	Provides read-only access to Data Transmission Service(DTS) via Management Console.

Selected (1)

AliyunDTSFullAccess

i. Select **System Policy**.

ii. Enter *dts* in the search box to query the system permission policies that are related to DTS.

iii. Click **AliyunDTSFullAccess** to add the policy to the **Selected** section.

7. Click **OK**.

8. Click **Finished**.

Subscribe to data changes as a RAM user

After you create a RAM user and grant the required permissions to the RAM user, you can use the SDK provided by DTS to subscribe to data changes. For more information about how to use the DTS SDK, see Introduction to SDK Demo.

> **Note** You must replace the sample AccessKey pair in the SDK demo with the AccessKey pair of your RAM user.

5.Configure RAM authorization for cross-account data replication

DTS supports data migration and synchronization between ApsaraDB for RDS instances that belong to different Alibaba Cloud accounts. This topic describes how to configure RAM authorization for the Alibaba Cloud account to which the source instance belongs if the destination instance belongs to a different Alibaba Cloud account.

Prerequisites

The Alibaba Cloud account to which the source instance belongs has authorized the RAM role of DTS to access the cloud resources of the account. For more information, see Authorize DTS to access cloud resources.

Instance types supported by cross-account data migration and synchronization

Feature	Source instance type	Destination instance type
Data migration	RDS instance	RDS instance
		DRDS instance
		HybridDB for MySQL instance
		ApsaraDB for OceanBase instance
		User-created database hosted on ECS
		User-created database with a public IP address
Data synchronization	RDS instance	RDS instance
		MaxCompute (previous name: ODPS) instance
		Elasticsearch instance

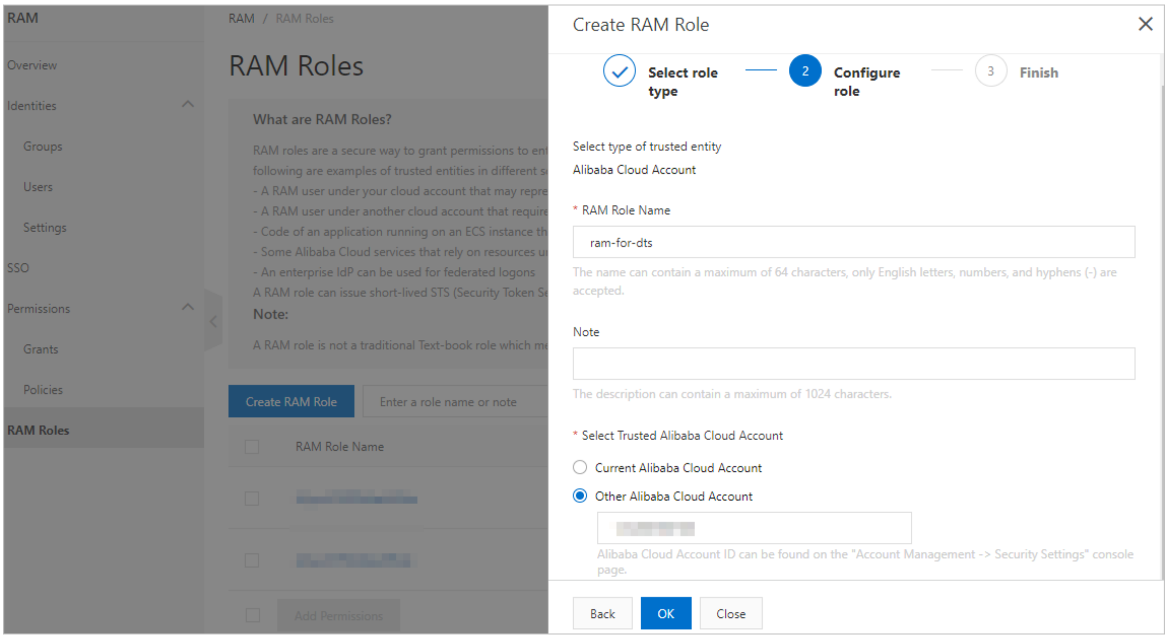
Background information

When you use DTS for data migration or synchronization, you must configure RAM authorization for the Alibaba Cloud account to which the source instance belongs. You must specify the Alibaba Cloud account to which the destination instance belongs as a trusted account. This ensures that the destination account can access cloud resources of the Alibaba Cloud account to which the source instance belongs.

> **Note** After authorization, you can create a data migration task or data synchronization task by using the Alibaba Cloud account to which the destination instance belongs.

Procedure

1. Log on to the RAM console with the Alibaba Cloud account to which the source instance belongs.
2. In the left-side navigation pane, click **RAM Roles**.
3. Click **Create RAM Role**, select **Alibaba Cloud Account**, and then click **Next**.
4. On the **Create RAM Role** page, configure parameters for the RAM role.



What are RAM Roles?

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- Some Alibaba Cloud services that rely on resources u
- An enterprise IdP can be used for federated logons
A RAM role can issue short-lived STS (Security Token Se

Note:

A RAM role is not a traditional Text-book role which me

Create RAM Role

Select type of trusted entity
Alibaba Cloud Account

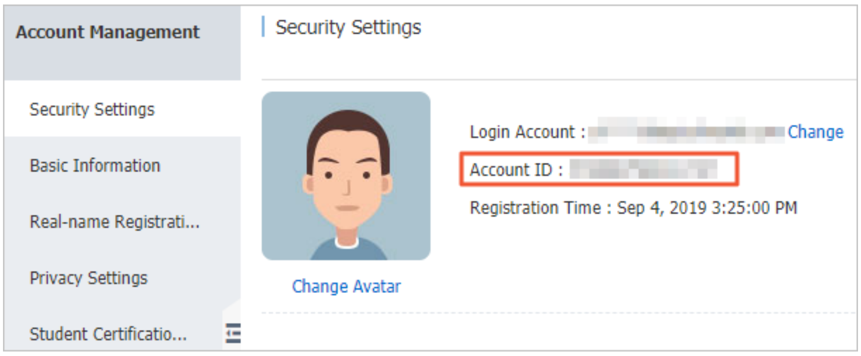
* RAM Role Name
ram-for-dts
The name can contain a maximum of 64 characters, only English letters, numbers, and hyphens (-) are accepted.

Note

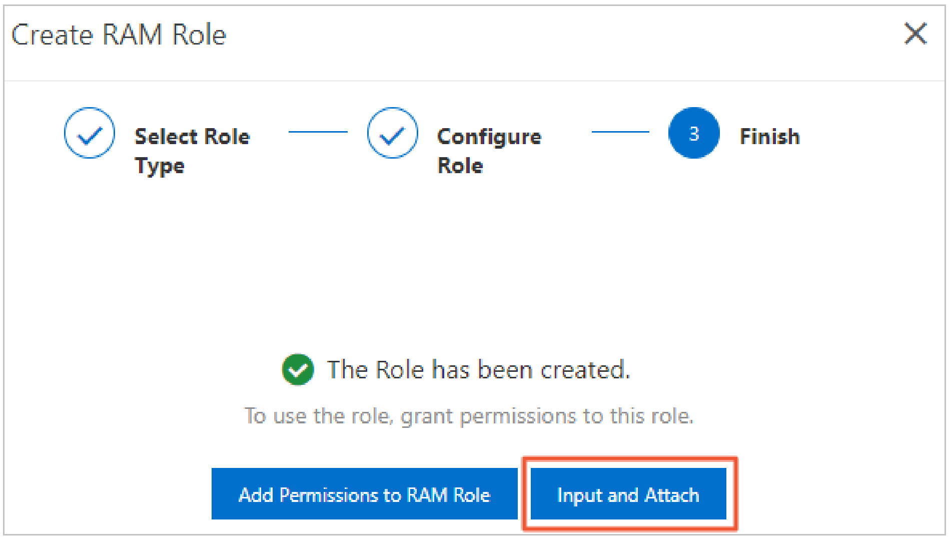
The description can contain a maximum of 1024 characters.

* Select Trusted Alibaba Cloud Account
○ Current Alibaba Cloud Account
● Other Alibaba Cloud Account
[redacted]
Alibaba Cloud Account ID can be found on the "Account Management -> Security Settings" console page.

Parameter	Description
RAM Role Name	Specify a name for the RAM role. In this example, enter **ram-for-dts**. **Note** The name must be 1 to 64 characters in length and can contain letters, digits, and hyphens (-).
Note	Optional. Specify the description for the RAM role.

Parameter	Description
Select Trusted Alibaba Cloud Account	Select **Other Alibaba Cloud Account** and enter the ID of the Alibaba Cloud account to which the destination instance belongs. **Note** To obtain the ID of the Alibaba Cloud account to which the destination instance belongs, you must log on to the Alibaba Cloud console with the account and go to the Account Management page.  Account Management Security Settings Basic Information Real-name Registrati... Privacy Settings Student Certificatio... Security Settings Change Avatar Change Login Account : [redacted] Account ID : [redacted] Registration Time : Sep 4, 2019 3:25:00 PM

5. Click **OK**.
6. Click **Input and Attach**.

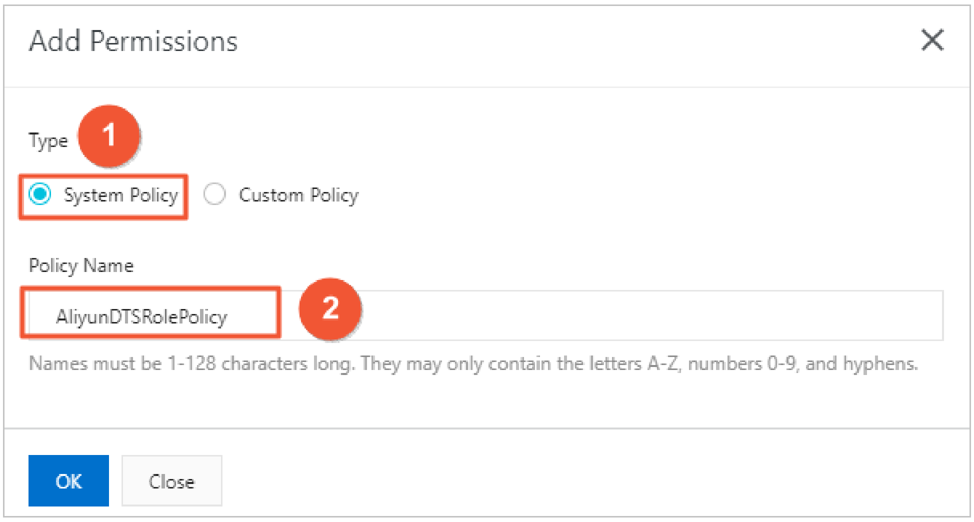


Create RAM Role

The Role has been created.

To use the role, grant permissions to this role.

7. On the **Add Permissions** page, select **System Policy** and enter **AliyunDTSRolePolicy**.



Add Permissions

Type

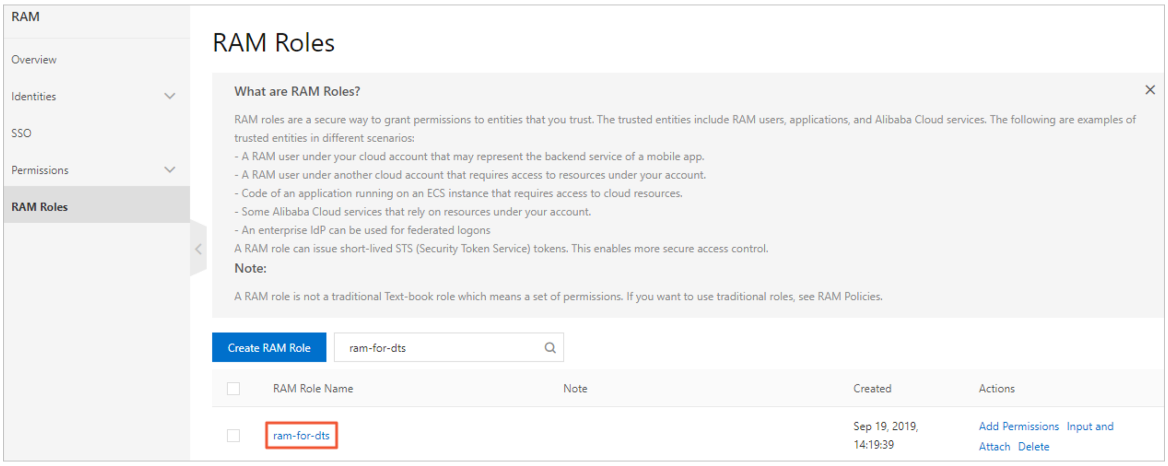
● System Policy ○ Custom Policy

Policy Name

AliyunDTSRolePolicy

Names must be 1-128 characters long. They may only contain the letters A-Z, numbers 0-9, and hyphens.

8. Click **OK**.
9. Click **Close**.
10. On the **RAM Roles** page, find the newly created RAM role, and click the role name to view details.



RAM Roles

What are RAM Roles?

RAM roles are a secure way to grant permissions to entities that you trust. The trusted entities include RAM users, applications, and Alibaba Cloud services. The following are examples of trusted entities in different scenarios:
- A RAM user under your cloud account that may represent the backend service of a mobile app.
- A RAM user under another cloud account that requires access to resources under your account.
- Code of an application running on an ECS instance that requires access to cloud resources.
- Some Alibaba Cloud services that rely on resources under your account.
- An enterprise IdP can be used for federated logons
A RAM role can issue short-lived STS (Security Token Service) tokens. This enables more secure access control.

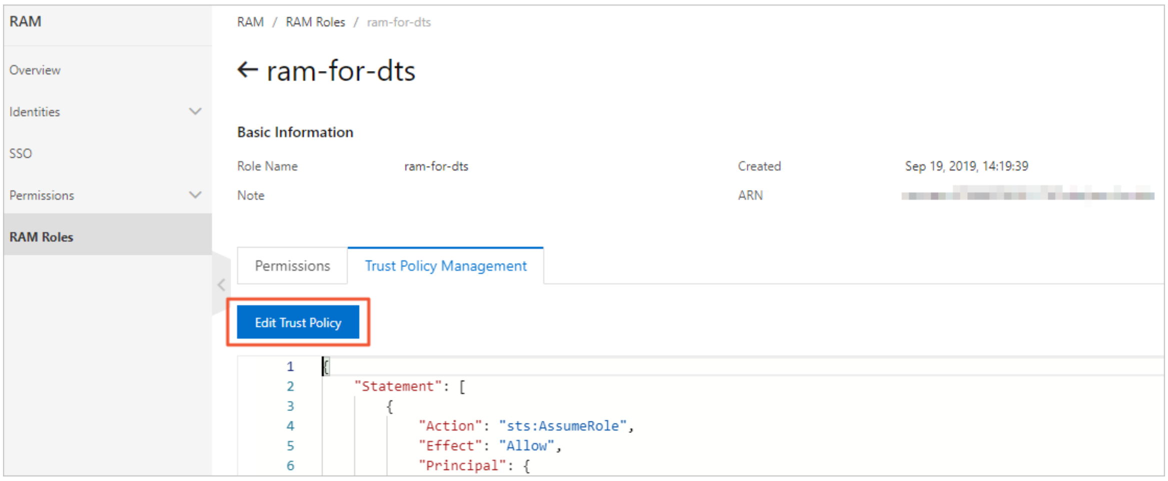
Note:

A RAM role is not a traditional Text-book role which means a set of permissions. If you want to use traditional roles, see RAM Policies.

ram-for-dts

□	RAM Role Name	Note	Created	Actions
□	ram-for-dts		Sep 19, 2019, 14:19:39	Add Permissions Input and Attach Delete

11. On the **Basic Information** page of the RAM role, click the **Trust Policy Management** tab.
12. On the **Trust Policy Management** tab, click **Edit Trust Policy**, and copy the following sample statements to the page that appears.



RAM / RAM Roles / ram-for-dts

← ram-for-dts

Basic Information

Role Name ram-for-dts

Created Sep 19, 2019, 14:19:39

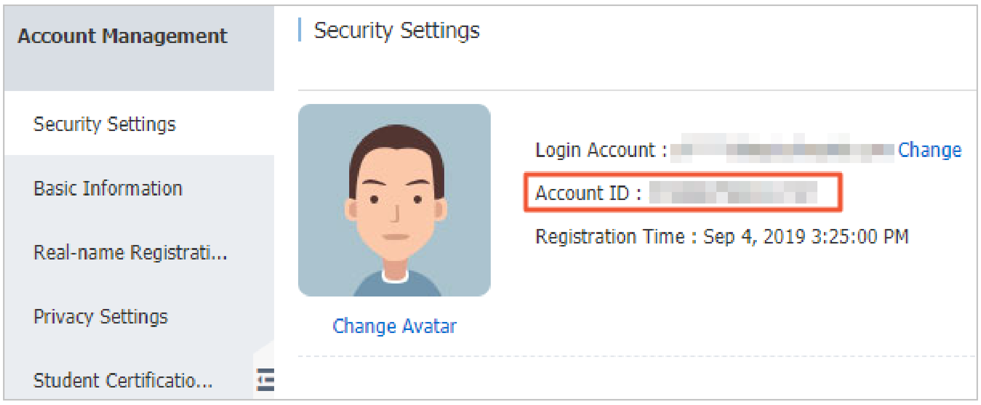
Note

ARN [redacted]

```
{
  "Statement": [
    {
      "Action": "sts:AssumeRole",
      "Effect": "Allow",
      "Principal": {
```

```
{
  "Statement": [
    {
      "Action": "sts:AssumeRole",
      "Effect": "Allow",
      "Principal": {
        "RAM": [
          "acs:ram::<ID of Alibaba Cloud account to which the destination instance belongs>:root"
        ],
        "Service": [
          "<ID of Alibaba Cloud account to which the destination instance belongs>@dts.aliyuncs.com"
        ]
      }
    }
  ],
  "Version": "1"
}
```

ⓘ **Note** To obtain the ID of the Alibaba Cloud account to which the destination instance belongs, you must log on to the Alibaba Cloud console with the account and go to the Account Management page. Then, you must replace the `ID of Alibaba Cloud account to which the destination instance belongs` in the preceding statements with the obtained ID.



Account Management

Security Settings

Basic Information

Real-name Registrati...

Privacy Settings

Student Certificatio...

Security Settings

Login Account : [redacted] Change

Account ID : [redacted]

Registration Time : Sep 4, 2019 3:25:00 PM

Change Avatar

After authorization, you can create a task to migrate or synchronize data between RDS instances that belong to different Alibaba Cloud accounts.

Next steps

Log on to the DTS console with the Alibaba Cloud account to which the destination instance belongs, and then create a data migration task or data synchronization task.

6.Configure RAM authorization for data migration from a user-created database in a VPC across different Alibaba Cloud accounts

This topic describes how to configure RAM authorization for data migration from a user-created database in a VPC across different Alibaba Cloud accounts. After authorization, DTS can read data from a VPC that belongs to another Alibaba cloud account when you configure data migration. You can migrate data from a user-created database that is connected over Express Connect across different Alibaba Cloud accounts.

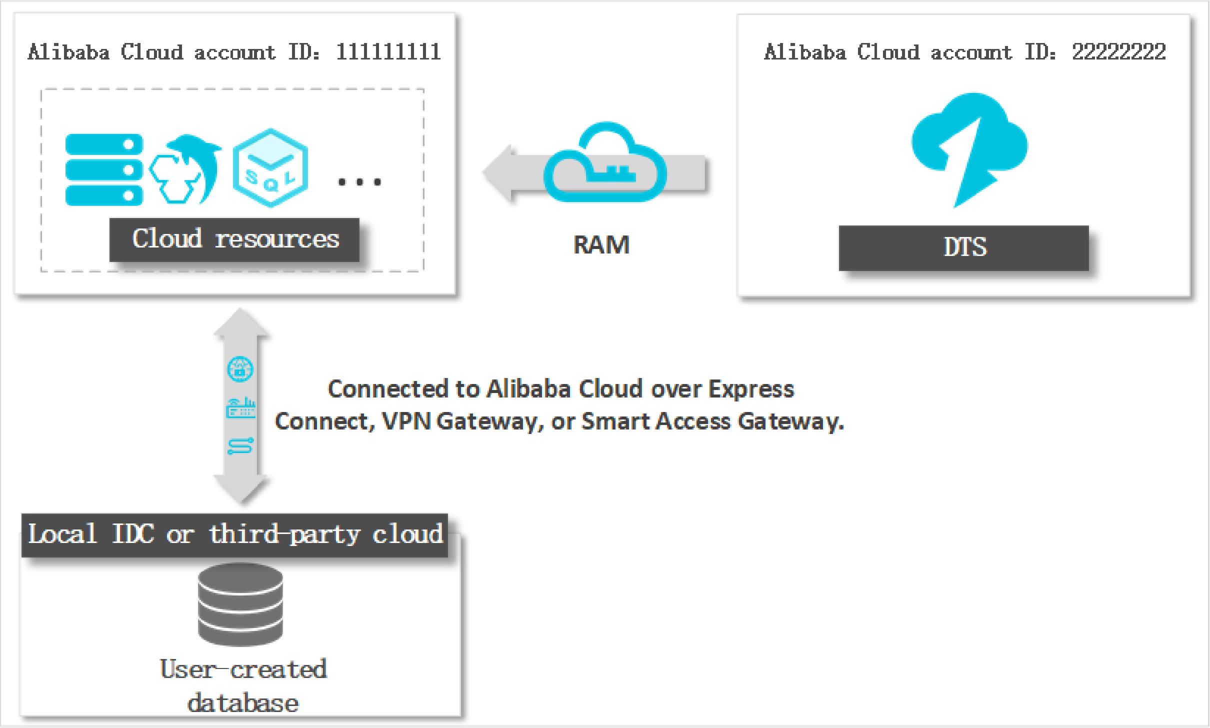
Prerequisites

The Alibaba Cloud account to which the Express Connect circuit belongs has authorized the RAM role of DTS to access the cloud resources of the account. For more information, see Authorize DTS to access cloud resources.

Context

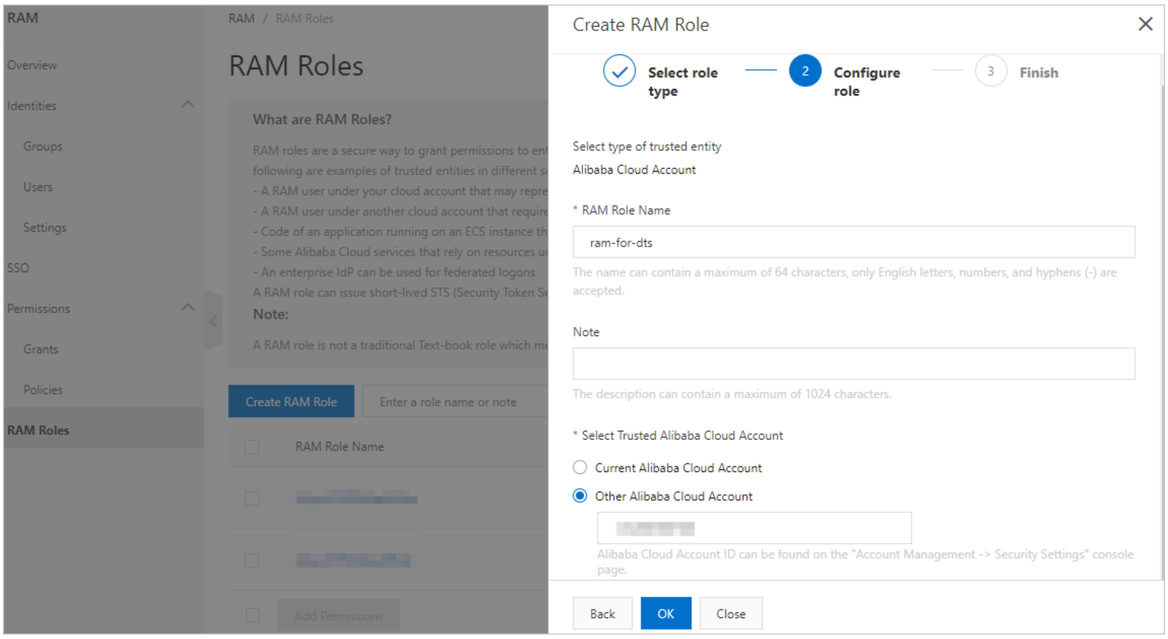
The on-premises data center or a third-party cloud is connected to Alibaba Cloud VPC over Express Connect, VPN Gateway, or Smart Access Gateway. You need to migrate data from a user-created database that resides in an on-premises data center or a third-party cloud to an RDS instance across different Alibaba Cloud accounts. The following figure shows the architecture for this scenario.

> **Note** Before you can use DTS to migrate data from a user-created database in a VPC cross different Alibaba Cloud accounts, you must perform the following steps: Configure RAM authorization for the Alibaba Cloud account to which the Express Connect circuit belongs (Account A), specify the Alibaba Cloud account to which the destination instance belongs (Account B) as a trusted account, and then authorize Account B to access the cloud resources of Account A.


Alibaba Cloud account ID: 111111111
Cloud resources
RAM
Alibaba Cloud account ID: 22222222
DTS
Connected to Alibaba Cloud over Express Connect, VPN Gateway, or Smart Access Gateway.
Local IDC or third-party cloud
User-created database

Step 1: Create a RAM role and grant the default permission on DTS to the RAM role

1. Log on to the RAM console by using the Alibaba Cloud account to which the Express Connect circuit belongs.
2. In the left-side navigation pane, click **RAM Roles**.
3. Click **Create RAM Role**, select **Alibaba Cloud Account**, and then click **Next**.
4. In the **Create RAM Role** pane, configure parameters for the RAM role.



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Note:

A RAM role is not a traditional Text-book role which m

[redacted]

[redacted]

Create RAM Role

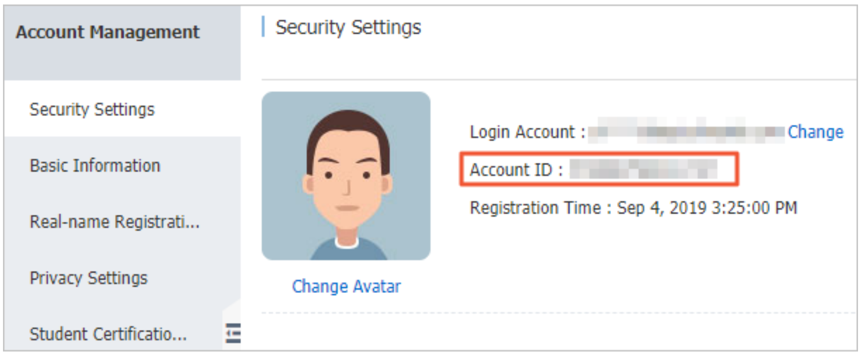
Select type of trusted entity
Alibaba Cloud Account

* RAM Role Name
ram-for-dts
The name can contain a maximum of 64 characters, only English letters, numbers, and hyphens (-) are accepted.

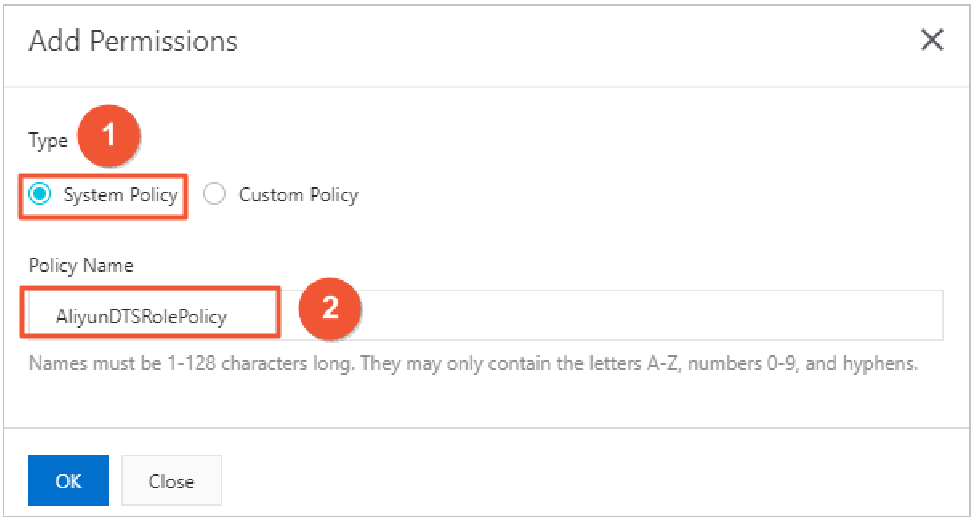
Note

The description can contain a maximum of 1024 characters.

* Select Trusted Alibaba Cloud Account
○ Current Alibaba Cloud Account
● Other Alibaba Cloud Account
[redacted]
Alibaba Cloud Account ID can be found on the "Account Management -> Security Settings" console page.

Parameter	Description
RAM Role Name	Specify a name for the RAM role. In this example, enter **ram-for-dts**. **Note** The name must be 1 to 64 characters in length and can contain letters, digits, and hyphens (-).
Note	Optional. Specify the description for the RAM role.
Select Trusted Alibaba Cloud Account	Select **Other Alibaba Cloud Account** and enter the ID of the Alibaba Cloud account to which the destination instance belongs. **Note** To obtain the ID of the Alibaba Cloud account to which the destination instance belongs, you must log on to the Account Management console by using this account. The account ID is displayed on the Security Settings page.  **Account Management** Security Settings Basic Information Real-name Registrati... Privacy Settings Student Certificatio... Security Settings Login Account : [redacted] Change Account ID : [redacted] Registration Time : Sep 4, 2019 3:25:00 PM Change Avatar

5. Click **OK**.
6. Click **Input and Attach**.
7. In the **Add Permissions** pane, select **System Policy** and enter **AliyunDTSRolePolicy**.



Add Permissions

Type

● System Policy ○ Custom Policy

Policy Name

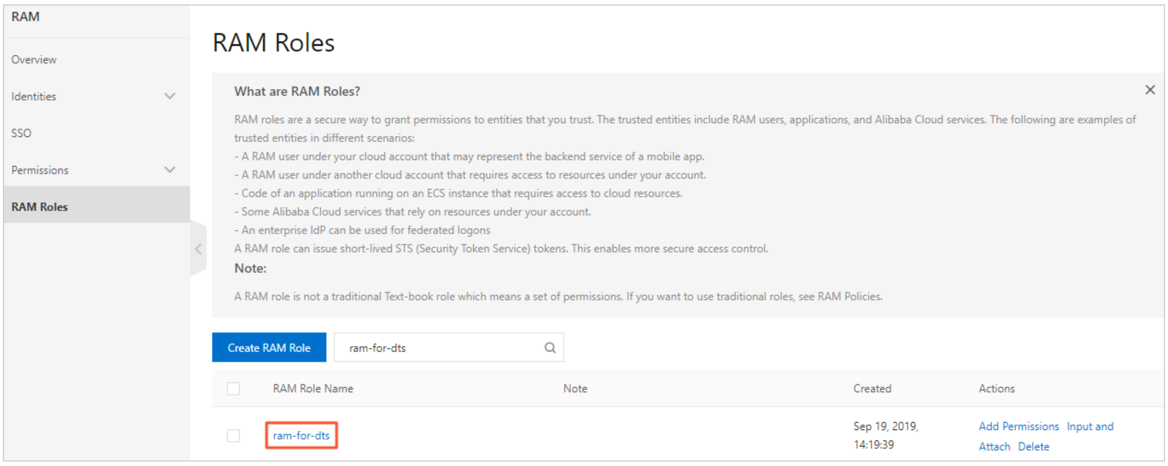
AliyunDTSRolePolicy

Names must be 1-128 characters long. They may only contain the letters A-Z, numbers 0-9, and hyphens.

8. Click **OK**.
9. Click **Close**.

Step 2: Authorize the RAM role to access the VPC under another Alibaba Cloud account

1. Log on to the RAM console by using the Alibaba Cloud account to which the Express Connect circuit belongs.
2. In the left-side navigation pane, click **RAM Roles**.
3. Find the RAM role created in step 1, and click the role name.



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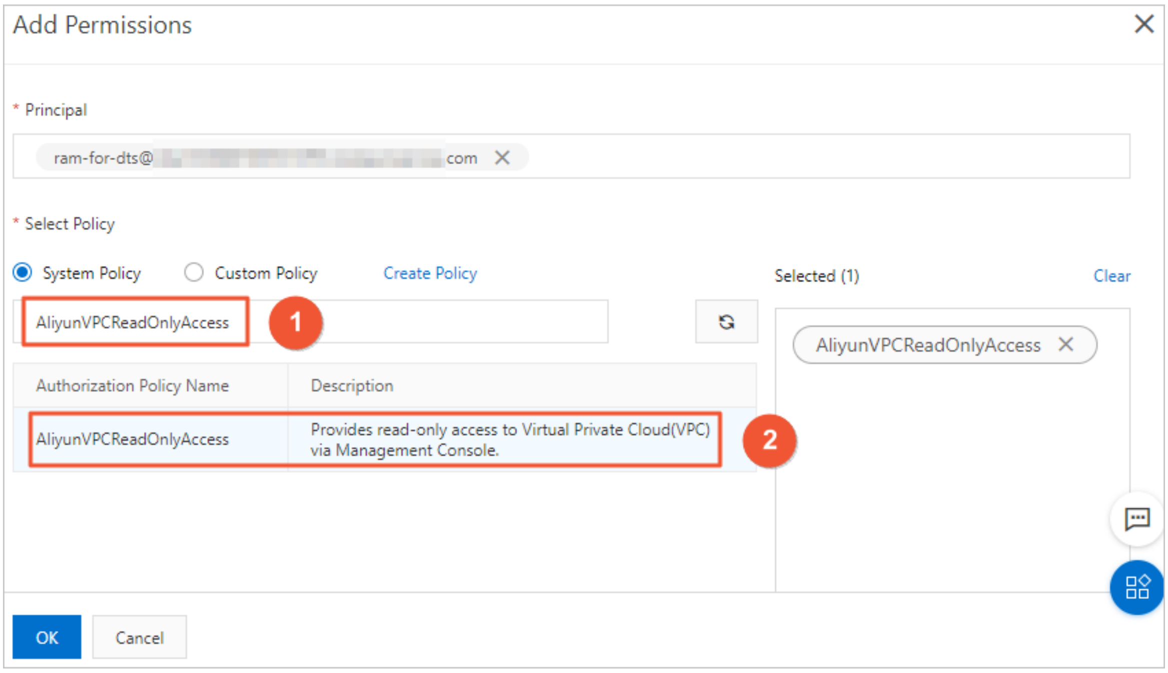
Note:

A RAM role is not a traditional Text-book role which means a set of permissions. If you want to use traditional roles, see RAM Policies.

Create RAM Role | ram-for-dts

□	RAM Role Name	Note	Created	Actions
□	ram-for-dts		Sep 19, 2019, 14:19:39	Add Permissions Input and Attach Delete

4. On the **Basic Information** page of the RAM role, click **Add Permissions**.
5. In the **Add Permissions** pane, enter **AliyunVPCReadOnlyAccess** in the search box and click the policy name to move the policy to the **Selected** section.



Add Permissions

* Principal

ram-for-dts@[redacted]com

* Select Policy

● System Policy ○ Custom Policy Create Policy

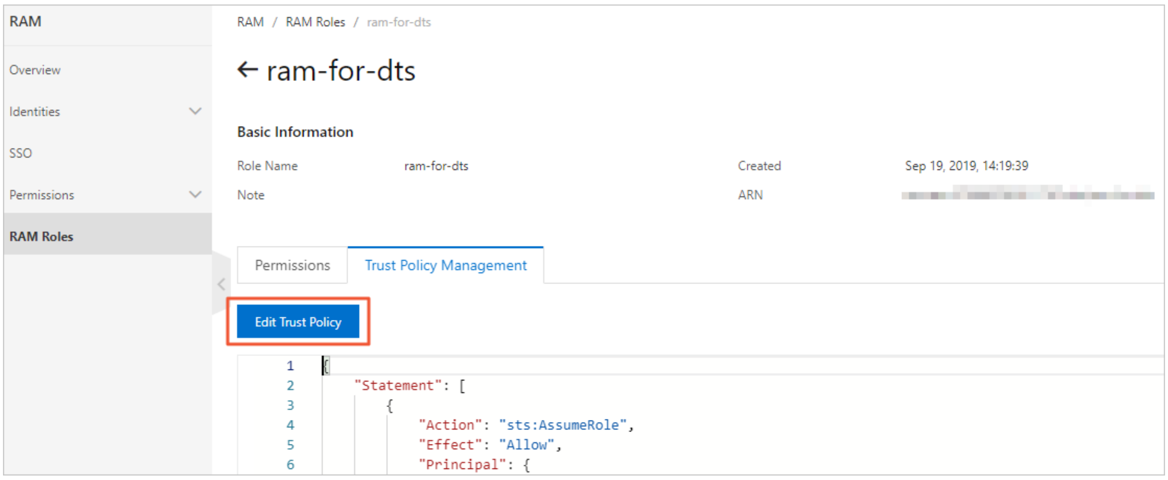
AliyunVPCReadOnlyAccess

Authorization Policy Name	Description
AliyunVPCReadOnlyAccess	Provides read-only access to Virtual Private Cloud(VPC) via Management Console.

Selected (1) Clear

AliyunVPCReadOnlyAccess

6. Click **OK**.
7. On the **Basic Information** page of the RAM role, click the **Trust Policy Management** tab.
8. Click **Edit Trust Policy**, and replace the policy text with the following sample statements.



Basic Information

Role Name: ram-for-dts

Created: Sep 19, 2019, 14:19:39

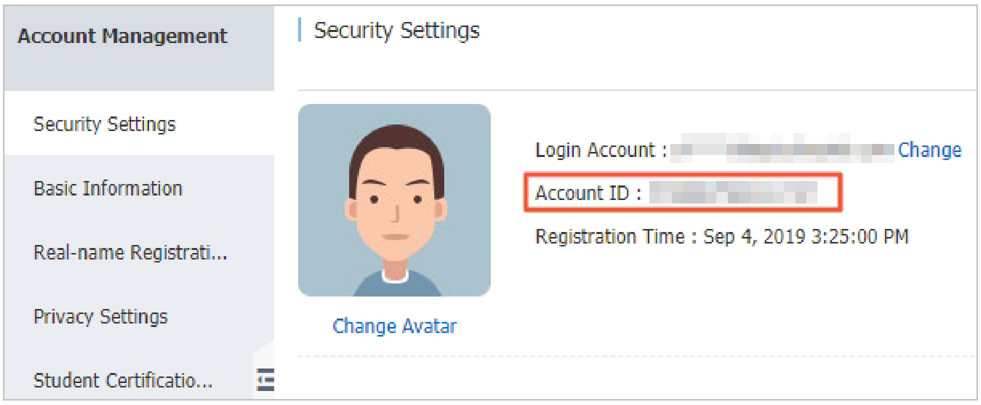
Note:

ARN: [redacted]

```
{
    "Statement": [
        {
            "Action": "sts:AssumeRole",
            "Effect": "Allow",
            "Principal": {
```

```
{
  "Statement": [
    {
      "Action": "sts:AssumeRole",
      "Effect": "Allow",
      "Principal": {
        "RAM": [
          "acs:ram::<ID of the Alibaba Cloud account to which the destination instance belongs>:root"
        ],
        "Service": [
          "<ID of the Alibaba Cloud account to which the destination instance belongs>@dts.aliyuncs.com"
        ]
      }
    }
  ],
  "Version": "1"
}
```

Note To obtain the ID of the Alibaba Cloud account to which the destination instance belongs, you must log on to the Account Management console by using this account. The account ID is displayed on the Security Settings page. Then, you must replace the `<ID of the Alibaba Cloud account to which the destination instance belongs>` in the preceding statements with the account ID.



Login Account : [redacted]

Account ID : [redacted]

Registration Time : Sep 4, 2019 3:25:00 PM

Related topic

Migrate data from a self-managed MySQL database connected over Express Connect, VPN Gateway, or Smart Access Gateway to an ApsaraDB RDS for MySQL instance across Alibaba Cloud accounts