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## Document conventions

<table>
<thead>
<tr>
<th>Style</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>![dangerNotice]</td>
<td>A danger notice indicates a situation that will cause major system changes, faults, physical injuries, and other adverse results.</td>
<td>⚠️ <strong>Danger:</strong> Resetting will result in the loss of user configuration data.</td>
</tr>
<tr>
<td>![warningNotice]</td>
<td>A warning notice indicates a situation that may cause major system changes, faults, physical injuries, and other adverse results.</td>
<td>⚠️ <strong>Warning:</strong> Restarting will cause business interruption. About 10 minutes are required to restart an instance.</td>
</tr>
<tr>
<td>![cautionNotice]</td>
<td>A caution notice indicates warning information, supplementary instructions, and other content that the user must understand.</td>
<td>⚠️ <strong>Notice:</strong> If the weight is set to 0, the server no longer receives new requests.</td>
</tr>
<tr>
<td>![note]</td>
<td>A note indicates supplemental instructions, best practices, tips, and other content.</td>
<td>⚠️ <strong>Note:</strong> You can use Ctrl + A to select all files.</td>
</tr>
<tr>
<td>&gt;</td>
<td>Closing angle brackets are used to indicate a multi-level menu cascade.</td>
<td>Click <strong>Settings &gt; Network &gt; Set network type.</strong></td>
</tr>
<tr>
<td><strong>Bold</strong></td>
<td>Bold formatting is used for buttons, menus, page names, and other UI elements.</td>
<td>Click <strong>OK.</strong></td>
</tr>
<tr>
<td><strong>Courier font</strong></td>
<td>Courier font is used for commands.</td>
<td>Run the <code>cd /d C:\window</code> command to enter the Windows system folder.</td>
</tr>
<tr>
<td><strong>Italic</strong></td>
<td>Italic formatting is used for parameters and variables.</td>
<td><code>bae log list --instanceid Instance_ID</code></td>
</tr>
<tr>
<td>[] or [a</td>
<td>b]</td>
<td>This format is used for an optional value, where only one item can be selected.</td>
</tr>
<tr>
<td>Style</td>
<td>Description</td>
<td>Example</td>
</tr>
<tr>
<td>------------</td>
<td>----------------------------------------------------------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>{} or {a</td>
<td>b}</td>
<td>This format is used for a required value, where only one item can be selected.</td>
</tr>
</tbody>
</table>
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1 RAM SDK Reference

1.1 RAM SDK overview

This topic lists RAM SDKs for different programming languages. Before you use the RAM SDK for a language, we recommend that you read the topic specific to the language.

RAM SDKs for different programming languages

- SDK for Java
- SDK for .NET
- SDK for Python
- SDK for PHP
- SDK for Node.js

1.2 SDK for Java

This topic describes how to install and use the RAM SDK for Java.

Background information

Before you use a RAM SDK, install a core Alibaba Cloud SDK and a RAM SDK.

- The package name of the core Alibaba Cloud SDK for Java is aliyun-java-sdk-core. You can use OpenAPI Explorer to generate sample code and perform debug operations.
- The package name of the RAM SDK for Java is aliyun-java-sdk-ram. For information about RAM API operations, see API Reference (RAM).

Install the RAM SDK for Java

Add dependencies on the SDK packages by using Maven, or download the SDK packages and then add them to your project.

- Recommended. Add package dependencies by using Maven.
  1. Use Maven to create a project.

```java
mvn archetype:generate -DgroupId=com.aliyun.ram.sample -DartifactId=ram-sdk-sample -Dpackage=com.aliyun.ram.sample
```
2. Add the dependencies inside the dependencies element of the pom.xml file in the project.

The following code is an example of the dependencies on the aliyun-java-sdk packages. In this example, the SDK version is 2.0.7.

```xml
<dependency>
  <groupId>com.aliyun</groupId>
  <artifactId>aliyun-java-sdk-ram</artifactId>
  <version>2.0.7</version>
</dependency>
<dependency>
  <groupId>com.aliyun</groupId>
  <artifactId>aliyun-java-sdk-core</artifactId>
  <version>4.4.6</version>
</dependency>
```

**Note:**

Note the following information of the packages:

- aliyun-java-sdk packages have been added to the Maven repository. You do not need to edit the settings.xml file.
- You can visit the Maven repository to obtain the latest version of the aliyun-java-sdk-core package.

- Download the JAR files of the core Alibaba Cloud SDK and the RAM SDK, and then add the files to your project.

  You can download the files from the following links:

  - Core Alibaba Cloud SDK for Java
  - RAM SDK for Java

**Use the RAM SDK for Java**

The section describes how to create a RAM user by using the RAM SDK for Java.

```java
package com.aliyun.ram.sample;

import com.aliyuncs.DefaultAcsClient;
import com.aliyuncs.exceptions.ClientException;
import com.aliyuncs.profile.DefaultProfile;
import com.aliyuncs.profile.IClientProfile;

//The version of the RAM API was released on May 1, 2015.
import com.aliyuncs.ram.model.v20150501.*;

/**
 * Created by JasonGao on 15/11/4.
 */
```
public class RamServiceSample {
    public static void main(String[] args) {
        // Construct an Alibaba Cloud client. The client will be used to send a request.
        // When you construct the client, set the AccessKey ID and AccessKey secret.
        // RAM is a global service. Its API endpoint is located in the China (Hangzhou) region.
        // Therefore, specify cn-hangzhou.
        IClientProfile profile = DefaultProfile.getProfile("cn-hangzhou",
            "<AccessKeyId>",
            "<AccessKeySecret>");
        DefaultAcsClient client = new DefaultAcsClient(profile);

        // Construct a CreateUser request.
        final CreateUserRequest request = new CreateUserRequest();

        // Specify the UserName parameter.
        request.setUserName("alice");

        // Issue the request and obtain a response.
        try {
            final CreateUserResponse response = client.getAcsResponse(request);
            System.out.println("UserName: " + response.getUser().getUserName());
            System.out.println("CreateTime: " + response.getUser().getCreateDate());
        } catch (ClientException e) {
            System.out.println("Failed.");
            System.out.println("Error code: " + e.getErrCode());
            System.out.println("Error message: " + e.getErrMsg());
        }
    }
}

1.3 SDK for .NET

This topic provides the download URL of the .NET SDK package that is required for you to use RAM. This topic also describes how to use the RAM SDK for .NET.

Download URL

You can download the SDK package from the following link: SDK for .NET.

Note:
The RAM SDK package has been uploaded to NuGet. For more information, visit the NuGet website.

Use the RAM SDK for .NET

The section describes how to create a RAM user by using the RAM SDK for .NET.

using System;
using Aliyun.Acs.Core;
using Aliyun.Acs.Core.Profile;
namespace ram_net_sdk_sample
{
    class Program
    {
        static void Main(string[] args)
        {
            // Construct an Alibaba Cloud client. The client will be used to send a request.
            // When you construct the client, set the AccessKey ID and AccessKey secret.
            // RAM is a global service. Its API endpoint is located in the China (Hangzhou) region. Therefore, specify cn-hangzhou.
            IClientProfile profile = DefaultProfile.GetProfile("cn-hangzhou", "<access-key-id>", "<access-key-secret>");
            DefaultAcsClient client = new DefaultAcsClient(profile);

            // Construct a CreateUser request.
            CreateUserRequest request = new CreateUserRequest();

            // Specify the UserName parameter.
            request.UserName = "alice";

            // Issue the request and obtain a response.
            try
            {
                CreateUserResponse response = client.GetAcsResponse(request);

                Console.WriteLine("UserName: " + response.User.UserName);
                Console.WriteLine("CreateTime: " + response.User.CreateDate);
            }
            catch (Exception ex)
            {
                Console.WriteLine(ex.ToString());
                Console.ReadLine();
            }
        }
    }
}

1.4 SDK for Python

This topic describes how to install and use the RAM SDK for Python.

Install the RAM SDK for Python

Run the pip command, or download the SDK packages and then add them to your project.

- Run the following command: pip install aliyun-python-sdk-ram.
- Download the SDK packages from the following links and then add the packages to your project:
  - Core Alibaba Cloud SDK package for Python: aliyun-python-sdk-core
  - RAM SDK package for Python: aliyun-python-sdk-ram
Use the RAM SDK for Python

The following sample code uses the RAM SDK for Python to create a RAM user.

```python
#!/usr/bin/env python
#coding=utf-8

from aliyunsdkcore import client
from aliyunsdkram.request.v20150501 import CreateUserRequest

# Construct an Alibaba Cloud client, and set the AccessKey ID and AccessKey secret. The
client will be used to send a request.
clt = client.AcsClient('<access-key-id>','<access-key-secret>')</n
# Construct a CreateUser request.
request = CreateUserRequest.CreateUserRequest()
# Specify the UserName parameter.
request.set_UserName('alice')

# Issue the request and obtain a response.
response = clt.do_action_with_exception(request)

print response
```

1.5 SDK for PHP

This topic provides the download URL of the RAM SDK package for PHP. It also provides an example about how to use the SDK.

Download URL

RAM SDK package for SDK

Use the RAM SDK for PHP

The following sample code uses the RAM SDK for PHP to create a RAM user.

```php
<?php
include_once 'aliyun-php-sdk-core/Config.php';
use Ram\Request\V20150501 as Ram;

// Construct an Alibaba Cloud client. The client will be used to send a request.
// When you construct the client, set the AccessKey ID and AccessKey secret.
// RAM is a global service. However, the RAM API endpoint is located in the China (Hangzhou) region. Therefore, specify cn-hangzhou.
$iclientProfile = DefaultProfile::getProfile("cn-hangzhou", "<access-key-id>", ",<access-key-secret>");
$client = new DefaultAcsClient($iclientProfile);

// Construct a CreateUser request.
$request = new Ram\CreateUserRequest();
// Specify the UserName parameter.
$request->setUserName("alice");

// Issue the request and obtain a response.
$response = $client->doAction($request);

print_r("\n");
```
This topic describes how to install the RAM SDK for Node.js. It also provides an example about how to use the SDK.

### Install the RAM SDK for Node.js

Run the following npm command: `npm install aliyun-sdk`.

### Use the RAM SDK for Node.js

The following sample code uses the RAM SDK for Node.js to create a RAM user.

```javascript
ALY = require("aliyun-sdk")

// Construct an Alibaba Cloud client. The client will be used to send a request.
// When you construct the client, set the AccessKey ID and AccessKey secret.
// RAM is a global service. However, the RAM API endpoint is located in the China (Hangzhou) region. The sample code uses the primary endpoint of the RAM API.
var ram = new ALY.RAM({
  accessKeyId: "<access-key-id>",
  secretAccessKey: "<access-key-secret>",
  endpoint: 'https://ram.aliyuncs.com',
  apiVersion: '2015-05-01'
});

// Construct a CreateUser request.
ram.createUser({
  Action: 'CreateUser',
  UserName: "alice"
}, function (err, res) {
  console.log(err, res);
});
```
2 STS SDK Reference

2.1 STS SDK overview

This topic lists STS SDKs for different programming languages. Before you use the STS SDK for a language, we recommend that you read the topic specific to the language.

STS SDKs for different programming languages

- SDK for Java
- SDK for .NET
- SDK for Python
- SDK for PHP
- SDK for Node.js

2.2 SDK for Java

This topic describes how to install and use the STS SDK for Java.

Background information

Before you use an STS SDK, install a core Alibaba Cloud SDK and an STS SDK.

- The package name of the core Alibaba Cloud SDK for Java is aliyun-java-sdk-core. You can use OpenAPI Explorer to generate sample code and perform debug operations.
- The package name of the STS SDK for Java is aliyun-java-sdk-ram. For information about STS API operations, see #unique_19

Install the STS SDK for Java

Add dependencies on the SDK packages by using Maven, or download the SDK packages and then add them to your project.

- Recommended. Add package dependencies by using Maven.

1. Use Maven to create a project.

```maven
mvn archetype:generate -DgroupId=com.aliyun.sts.sample \
-DartifactId=sts-sdk-sample \
-Dpackage=com.aliyun.sts.sample \
```
2. Add the dependencies inside the dependencies element of the pom.xml file in the project.

The following code is an example of the dependencies on the aliyun-java-sdk packages. In this example, the SDK version is 3.0.0.

```xml
<dependency>
  <groupId>com.aliyun</groupId>
  <artifactId>aliyun-java-sdk-sts</artifactId>
  <version>3.0.0</version>
</dependency>
<dependency>
  <groupId>com.aliyun</groupId>
  <artifactId>aliyun-java-sdk-core</artifactId>
  <version>4.4.6</version>
</dependency>
```

**Note:**

Note the following information of the packages:

- aliyun-java-sdk packages have been added to the Maven repository. You do not need to edit the settings.xml file.
- You can visit the Maven repository to obtain the latest version of the aliyun-java-sdk-core package.

- Download the JAR files of the core Alibaba Cloud SDK and the STS SDK, and then add the files to your project.

You can download the files from the following links:

- Core Alibaba Cloud SDK for Java
- STS SDK for Java

**Use the STS SDK for Java**

Create a file named StsServiceSample.java in the com/aliyun/sts/sample/ directory.

**Note:**

In this section, the core Alibaba Cloud SDK of version 4.4.2 is used as an example.

```java
package com.aliyun.sts.sample;
import com.aliyuncs.DefaultAcsClient;
import com.aliyuncs.exceptions.ClientException;
import com.aliyuncs.http.MethodType;
import com.aliyuncs.profile.DefaultProfile;
import com.aliyuncs.profile.IClientProfile;
import com.aliyuncs.sts.model.v20150401.AssumeRoleRequest;
import com.aliyuncs.sts.model.v20150401.AssumeRoleResponse;
```
public class StsServiceSample {
    public static void main(String[] args) {
        String endpoint = "sts.aliyuncs.com";
        String accessKeyId = "<access-key-id>";
        String accessKeySecret = "<access-key-secret>";
        String roleArn = "<role-arn>";
        String roleSessionName = "session-name";
        String policy = "{" +
                "  " +
                "    " +
                "      " +
                "        " +
                "          " +
                "            " +
                "              " +
                "                " +
                "}";
        try {
            // Construct the default profile. The parameter is not specified.
            IClientProfile profile = DefaultProfile.getProfile("", accessKeyId, accessKeySecret);
            // Use the constructed profile to construct a client.
            DefaultAcsClient client = new DefaultAcsClient(profile);
            final AssumeRoleRequest request = new AssumeRoleRequest();
            request.setSysEndpoint(endpoint);
            request.setSysMethod(MethodType.POST);
            request.setRoleArn(roleArn);
            request.setRoleSessionName(roleSessionName);
            request.setPolicy(policy); // Optional
            final AssumeRoleResponse response = client.getAcsResponse(request);
            System.out.println("Expiration: " + response.getCredentials().getExpiration());
            System.out.println("Access Key Id: " + response.getCredentials().getAccessKeyId());
            System.out.println("Access Key Secret: " + response.getCredentials().getAccessKeySecret());
            System.out.println("Security Token: " + response.getCredentials().getSecurityToken());
            System.out.println("RequestId: " + response.getRequestId());
        } catch (ClientException e) {
            System.out.println("Failed: ");
            System.out.println("Error code: " + e.getErrCode());
            System.out.println("Error message: " + e.getErrMsg());
            System.out.println("RequestId: " + e.getRequestId());
        }
    }
}

Note:

- In the sample code, accessKeyId and accessKeySecret must be replaced with your AccessKey ID and AccessKey secret.
- For the list of STS endpoints in different regions, see #unique_20.
- For more information about the AssumeRole API operation, see #unique_21.
2.3 SDK for .NET

This topic provides the download URLs of the .NET SDK packages that are required for you to use STS. This topic also describes how to use the STS SDK for .NET.

Download URLs

You can download the SDK packages from the following links:

- Core Alibaba Cloud SDK for .NET
- STS SDK for .NET

Note:
The STS SDK package has been uploaded to NuGet. For more information, visit the NuGet website.

Use the STS SDK for .NET

```csharp
using System;
using Aliyun.Acs.Core;
using Aliyun.Acs.Core.Profile;
using Aliyun.Acs.Core.Http;
using Aliyun.Acs_STS.Model.V20150401;
namespace StsNetSdkDemo
{
    class Program
    {
        static void Main(string[] args)
        {
            const string REGIONID = "cn-shanghai";
            const string ENDPOINT = "sts.cn-shanghai.aliyuncs.com";
            // Construct an Alibaba Cloud client. The client will be used to send a request.
            // When you construct the client, set the AccessKey ID and AccessKey secret.
            DefaultProfile.AddEndpoint(REGIONID, REGIONID, "Sts", ENDPOINT);
            IClientProfile profile = DefaultProfile.GetProfile(REGIONID, "<access-key-id>", "<access-key-secret>");
            DefaultAcsClient client = new DefaultAcsClient(profile);
            // Construct an AssumeRole request.
            AssumeRoleRequest request = new AssumeRoleRequest();
            request.AcceptFormat = FormatType.JSON;
            // Specify the Alibaba Cloud Resource Name (ARN) of the RAM role.
            request.RoleArn = "<role-arn>";
            request.RoleSessionName = "<role-session-name>";
            // Specify the validity period of the returned STS token. This parameter is optional.
            //request.DurationSeconds = 3600;
            // Specify a policy to grant the returned STS token fewer permissions than those granted to the RAM role.
            //request.Policy="<policy-content>"
            try
            {
                AssumeRoleResponse response = client.GetAcsResponse(request);
                Console.WriteLine("AccessKeyId: " + response.Credentials.AccessKeyId);
                Console.WriteLine("AccessKeySecret: " + response.Credentials.AccessKeySecret);
            }
            catch
            {
                throw;
            }
        }
    }
}
```
// The time when the STS token expires. The time that the STS server returns is in UTC+0 and is converted into UTC+8.
} catch (Exception ex)
{
Console.Write(ex.ToString());
} Console.ReadLine();
}
}

Note:

- For the list of STS endpoints in different regions, see #unique_20.
- For more information about the AssumeRole API operation, see #unique_21.

2.4 SDK for Python

This topic provides the download URLs of the Python SDK packages that are required for you to use STS. This topic also describes how to use the STS SDK for Python.

Download URLs

You can download the SDK packages from the following links:

- Core Alibaba Cloud SDK for Python
- STS SDK for Python

Use the STS SDK for Python

#!/usr/bin/env python
#coding=utf-8
from aliyunsdkcore import client
from aliyunsdkcore.profile import region_provider
from aliyunsdksts.request.v20150401 import AssumeRoleRequest
# Construct an Alibaba Cloud client. The client will be used to send a request.
# When you construct the client, set the AccessKey ID and AccessKey secret.
REGIONID = 'cn-shanghai'
ENDPOINT = 'sts.cn-shanghai.aliyuncs.com'
# Specify the STS endpoint that you want to access.
region_provider.add_endpoint('Sts', REGIONID, ENDPOINT)
# Initialize the client.
clt = client.AcsClient('<access-key-id>','<access-key-secret>', REGIONID)
# Construct an AssumeRole request.
request = AssumeRoleRequest.AssumeRoleRequest()
# Specify the Alibaba Cloud Resource Name (ARN) of the RAM role.
request.set_RoleArn('<role-arn>')
# Specify a role session name, which is used to identify the RAM user who assumes the RAM role.
request.set_RoleSessionName('<role-session-name>')
# Specify a policy to grant the returned STS token fewer permissions than those granted to the RAM role.
request.set_Policy('<policy>')
# Issue the request and obtain a response.
response = clt.do_action_with_exception(request)
print response

Note:
- For the list of STS endpoints in different regions, see #unique_20.
- For more information about the AssumeRole API operation, see #unique_21.

2.5 SDK for PHP

This topic provides the download URLs of the PHP SDK packages that are required for you to use STS. This topic also describes how to use the STS SDK for PHP.

Download URLs

- Core Alibaba Cloud SDK for PHP
- STS SDK for PHP

Use the STS SDK for PHP

```php
namespace AlibabaCloud\Tests\Feature;
use AlibabaCloud\Sts\Sts;
use PHPUnit\Framework\TestCase;
use AlibabaCloud\Client\AlibabaCloud;
use AlibabaCloud\Sts\V20150401\AssumeRole;
use AlibabaCloud\Client\Exception\ServerException;
use AlibabaCloud\Client\Exception\ClientException;
/**
 * Class StsTest
 *
 * @package   AlibabaCloud\Tests\Feature
 */
class StsTest extends TestCase
{
    /**
     * @expectedException \AlibabaCloud\Client\Exception\ServerException
     * @expectedExceptionMessageRegExp /EntityNotExist.Role: The specified Role not exists/
     * @throws ClientException
     * @throws ServerException
     */
    // Construct an AssumeRole request.
    public function testSts()
    {
        // When you construct the client, set the AccessKey ID and AccessKey secret.
        AlibabaCloud::accessKeyClient('LTAI4Ftm6BWGjEuusQzg****', 'W4ePhh5ArgySotqkAwXsSayQX****');
        Sts::v20150401()
            ->assumeRole()
            ->withRoleArn('acs:ram::151266687691****:role/cloud')
    }
```
// Specify a role session name, which is used to identify the RAM user who assumes
the RAM role.
->withRoleSessionName('client_name')
// Specify a policy to grant the returned STS token fewer permissions than those
granted to the RAM role.
// The policy that is used in this example allows read-only access to all Object
Storage Service (OSS) resources.
->withPolicy('{{
  "Statement":[
    {
      "Action":
      [ "oss:Get*",
        "oss:List*"
      ],
      "Effect": "Allow",
      "Resource": "*"
    }
  ],
  "Version": "1"
})
->connectTimeout(60)
->timeout(65)
->request();

Note:
- For the list of STS endpoints in different regions, see #unique_20.
- For more information about the AssumeRole API operation, see #unique_21.

2.6 SDK for Node.js

This topic describes how to install the STS SDK for Node.js. It also provides an example
about how to use the SDK.

Install the STS SDK for Node.js

Run the following npm command: npm install -S @alicloud/pop-core.

Use the STS SDK for Node.js

```javascript
/*
Usage: npm install -S @alicloud/pop-core
powered by alinode (http://alinode.aliyun.com/)
*/

const Core = require('@alicloud/pop-core');
// Construct an Alibaba Cloud client. The client will be used to send a request.
// When you construct the client, set the AccessKey ID and AccessKey secret.
var client = new Core({
  accessKeyId: '<accessKeyId>',
  accessKeySecret: '<accessKeySecret>',
  endpoint: 'https://sts.aliyuncs.com',
  apiVersion: '2015-04-01'
})
```
// Specify the Alibaba Cloud Resource Name (ARN) of the RAM role and the role session name. You can also specify a policy to grant the returned STS token fewer permissions than those granted to the RAM role.
var params = {
  'RoleArn': '<role-arn>',
  'RoleSessionName': 'session-name',
  'Policy': '<policy>'
};

// Construct an AssumeRole request.
client.request('AssumeRole', params).then((result) => {
  console.log(result);
}, (ex) => {
  console.log(e);
});

**Note:**

- For the list of STS endpoints in different regions, see #unique_20.
- For more information about the **AssumeRole** API operation, see #unique_21.