ModelArts

Troubleshooting

Issue	01
Date	2024-12-30

HUAWEI CLOUD COMPUTING TECHNOLOGIES CO., LTD.

Trademarks and Permissions

Notice

The purchased products, services and features are stipulated by the contract made between Huawei Cloud and the customer. All or part of the products, services and features described in this document may not be within the purchase scope or the usage scope. Unless otherwise specified in the contract, all statements, information, and recommendations in this document are provided "AS IS" without warranties, guarantees or representations of any kind, either express or implied.

The information in this document is subject to change without notice. Every effort has been made in the preparation of this document to ensure accuracy of the contents, but all statements, information, and recommendations in this document do not constitute a warranty of any kind, express or implied.

Huawei Cloud Computing Technologies Co., Ltd.

Address: Huawei Cloud Data Center Jiaoxinggong Road
Qianzhong Avenue
Gui'an New District
Gui Zhou 550029
People's Republic of China

Website: https://www.huaweicloud.com/intl/en-us/

Contents

1 General Issues

1.1 Incorrect OBS Path on ModelArts

Symptom

- When an OBS bucket path is used in ModelArts, a message indicating that the created OBS bucket cannot be found or message "ModelArts.2791: Invalid OBS path" is reported.
- "Error: stat:403" is reported when you perform operations on an OBS bucket.
- "Permission denied" is reported when a file is downloaded from OBS to Notebook.

Possible Causes

- The OBS bucket and ModelArts are in different regions.
- You do not have access to OBS buckets of other users.
- Access authorization has not been configured on ModelArts.
- Encrypted files are to upload to OBS. ModelArts does not support encrypted OBS files.
- The permissions and access control lists (ACLs) of the OBS bucket are incorrectly configured.
- When a training job is created, the code directory and boot file are configured incorrectly.

Solution

Check whether the OBS bucket and ModelArts are in the same region.

1. Check the region where the created OBS bucket is located.
   a. Log in to **OBS management console**.
   b. On the **Buckets** page, enter the name of created OBS bucket in the search box or locate the bucket in the **Bucket Name** column.

      In the **Region** column, view the region where the created OBS bucket is located.

2. Check the region where ModelArts is deployed.

   Log in to the ModelArts management console and view the region where ModelArts is located in the upper left corner.

3. Check whether the region of the created OBS bucket is the same as that of ModelArts. Ensure that they are the same.

Check whether you have the permission to access the OBS bucket.

Check whether you have the permission to access OBS buckets of other users from a notebook instance.

Check delegation authorization.

Go to the **Global Configuration** page and check whether you have the OBS access authorization. If you do not, see **Configuring Access Authorization (Global Configuration)**.

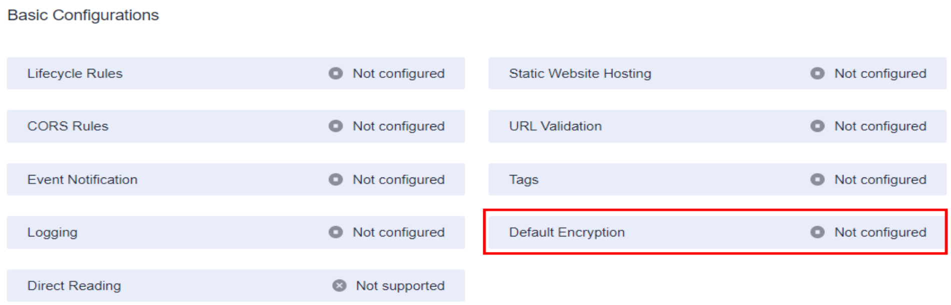
Check whether the OBS bucket is encrypted.

1. Log in to the OBS management console and click the bucket name to go to the **Overview** page.
2. Ensure that default encryption is disabled for the OBS bucket. If the OBS bucket is encrypted, click **Default Encryption** and disable it.

   NOTE

   When you create an OBS bucket, do not select **Archive** or **Deep Archive**. Otherwise, training models will fail.

Figure 1-1 Bucket encryption status



Basic Configurations

Lifecycle Rules ● Not configured

CORS Rules ● Not configured

Event Notification ● Not configured

Logging ● Not configured

Direct Reading ⊗ Not supported

Static Website Hosting ● Not configured

URL Validation ● Not configured

Tags ● Not configured

Default Encryption ● Not configured

Check whether the OBS file is encrypted.

1. Log in to the OBS management console and click the bucket name to go to the **Overview** page.
2. In the navigation pane on the left, choose **Objects**. The object list is displayed. Click the name of the object that stores files and find the target file. In the **Encrypted** column of the file list, check whether the file is encrypted. File encryption cannot be canceled. In this case, cancel bucket encryption and upload images or files again.

Check the ACLs of the OBS bucket.

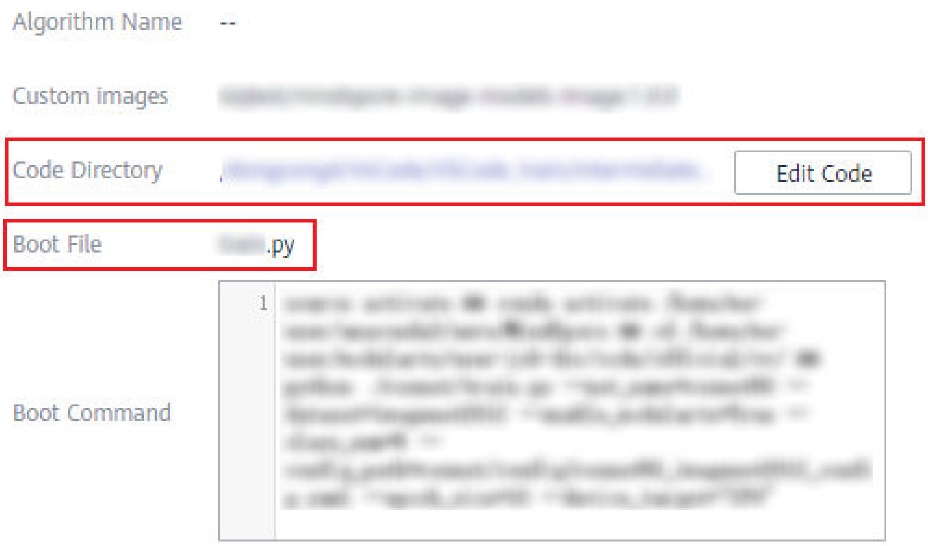
1. Log in to the OBS management console and click the bucket name to go to the **Overview** page.

2. In the navigation pane, choose **Permissions** and click **Bucket ACLs**. Then, check whether the current account has the read and write permissions. If it does not, contact the bucket owner to obtain the permissions.
3. In the navigation pane on the left, choose **Permissions** > **Bucket Policy**, and check whether the current OBS bucket can be accessed by IAM users.

Check the code directory and boot file of a training job.

1. Log in to the ModelArts management console, choose **Training Management** > **Training Jobs**, locate the failed training job, and click its name or ID to go to the job details page.
2. In the pane on the left, check whether the code directory and startup file are correct, and ensure that the OBS file name does not contain spaces.
   - Select an OBS directory for code directory. If a file is selected, the system will display a message indicating an invalid OBS path.
   - The boot file must be in the .py format. Otherwise, the system will display a message indicating an invalid OBS path.

Figure 1-2 Code Directory and Boot File of a training job



Algorithm Name --

Custom images [redacted]

Code Directory [redacted]

Boot File [redacted].py

Boot Command [redacted]

If the fault persists, see **Why Can't I Access OBS (403 AccessDenied) After Being Granted with the OBS Access Permission?** for further troubleshooting.

2 ExeML

2.1 Preparing Data

2.1.1 Failed to Publish a Dataset Version

If this fault occurs, the data does not meet the requirements of the data management module. As a result, the dataset fails to be published and the following operations cannot be performed.

Check your data, exclude the data that does not meet the following requirements, and restart the ExeML training task.

ModelArts.4710 OBS Permission Issues

This fault is caused by OBS permissions when ModelArts interacts with OBS. If the message "OBS service Error Message" is displayed, the fault is caused by OBS permissions. Perform the following steps to rectify the fault. If this information is not contained in the error message, the fault is caused by backend services. **Contact Huawei Cloud technical support**.

1. Check whether the current account has OBS permissions.

   Perform this step if you log in to ModelArts as an IAM user.

   Grant the current IAM user with the **Tenant Administrator** permission on global services so that the user has all OBS operation permissions. For details, see **OBS Permissions Management**.

   To restrict the IAM user account' permissions, configure the minimum OBS operation permissions for it. For details, see **Creating a Custom Policy**.

2. Check whether the user has OBS bucket permissions.

   NOTE

   The OBS bucket described in the following steps is specified when you create an ExeML project or the one where the dataset selected during project creation is stored.

   - Check whether the current account has been granted with the read and write permissions on the OBS bucket (specified in bucket ACLs).

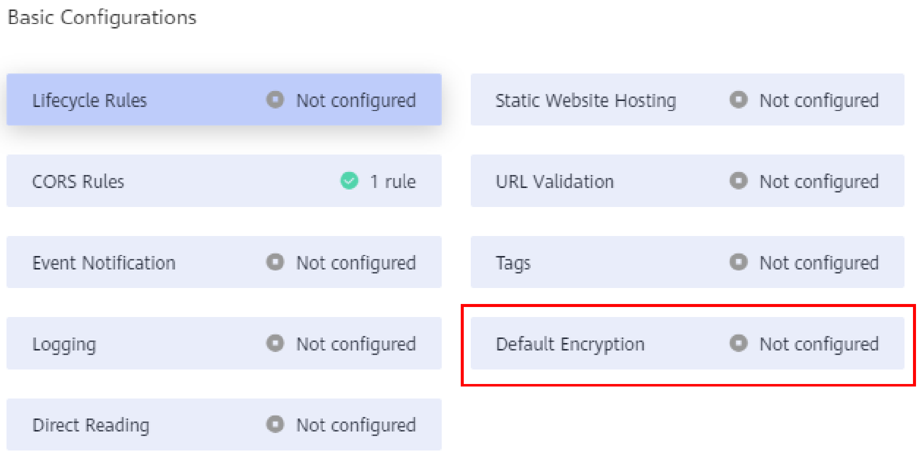
- Go to the OBS management console, select the OBS bucket used by the ExeML project, and click the bucket name to go to the **Overview** page.
- In the navigation pane, choose **Permissions** > **Bucket ACLs**. On the **Bucket ACLs** page that is displayed, check whether the current account has the read and write permissions. If it does not, contact the bucket owner to grant the permissions.

– Check whether the OBS bucket is unencrypted.

i. Go to the OBS management console, select the OBS bucket used by the ExeML project, and click the bucket name to go to the **Overview** page.

ii. Ensure that the default encryption function is disabled for the OBS bucket. If the OBS bucket is encrypted, click **Default Encryption** and change its encryption status.

Figure 2-1 Checking whether the default encryption function is enabled for the OBS bucket



Basic Configurations

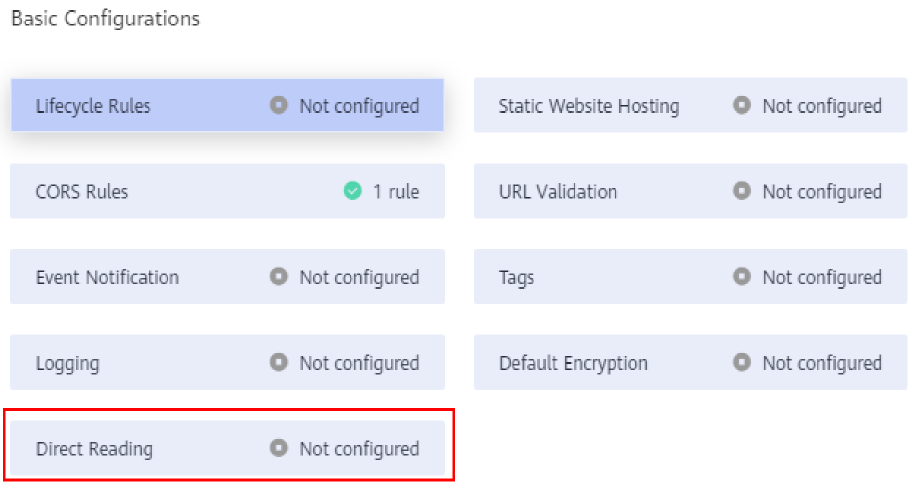
Lifecycle Rules ● Not configured
Static Website Hosting ● Not configured
CORS Rules ✓ 1 rule
URL Validation ● Not configured
Event Notification ● Not configured
Tags ● Not configured
Logging ● Not configured
Default Encryption ● Not configured
Direct Reading ● Not configured

– Check whether the direct reading function of archived data is disabled.

i. Go to the OBS management console, select the OBS bucket used by the ExeML project, and click the bucket name to go to the **Overview** page.

ii. Ensure that the direct reading function is disabled for the archived data in the OBS bucket. If this function is enabled, click **Direct Reading** and disable it.

Figure 2-2 Disabling the direct reading function



Basic Configurations

Lifecycle Rules	● Not configured	Static Website Hosting	● Not configured
CORS Rules	✓ 1 rule	URL Validation	● Not configured
Event Notification	● Not configured	Tags	● Not configured
Logging	● Not configured	Default Encryption	● Not configured
Direct Reading	● Not configured		

ModelArts.4711 Number of Labeled Samples in the Dataset Does Not Meet Algorithm Requirements

Each labeling type must contain at least five images.

ModelArts.4342 Labeling Information Does Not Meet Splitting Conditions

If this fault occurs, modify the labeling data based on the following suggestions and try again.

- At least two multi-label samples (that is, an image contains multiple labels) are required. If you enable dataset splitting when starting training and the number of images with multiple labels is less than 2, the dataset splitting fails. Check your labeling information and ensure that more than two images with multiple labels are labeled.
- After the dataset is split, the label classes contained in the training set and validation set are different. Cause: In the multi-label scenario, after random data segmentation, samples containing a certain type of labels are classified into the training set. As a result, the verification set does not contain the label samples. This issue rarely occurs. You can try to release a new version to handle the issue.

ModelArts.4371 Dataset Version Already Exists

If this error code is displayed, the dataset version already exists. In this case, republish the dataset version.

ModelArts.4712 Datasets Are Being Imported or Synchronized

If the dataset used in ExeML is being imported or synchronized, this error occurs during training. In this case, start the ExeML training task after other tasks are complete.

2.1.2 Invalid Dataset Version

If this issue occurs, the dataset version is successfully released but does not meet the requirements of the ExeML training jobs. As a result, an error message is displayed, indicating that the dataset version does not meet the requirements.

Labeling Information Does Not Meet the Trainning Requirements

For different types of ExeML projects, training jobs have the following requirements on datasets:

- Image classification: There are at least two classes (that is, at least two labels) for the images to be trained, and the number of images in each class cannot be less than 5.
- Object detection: There is at least one class (that is, at least one label) for the images to be trained, and the number of images for each class cannot be less than 5.
- Predictive analytics: The dataset of the predictive analytics task is not managed in a unified manner. Even if the data does not meet the requirements, no fault information is displayed in this issue.
- Sound classification: There are at least two classes (that is, at least two labels) for the audio files to be trained, and the number of audio files in each class cannot be less than 5.
- Text classification: There are at least two classes (that is, at least two labels) for the text files to be trained, and the number of text files in each class cannot be less than 20.

2.2 Training a Model

2.2.1 ExeML Training Job Failed

An ExeML training job fails to be created typically due to a backend service fault. You are advised to re-create the training job later. If the fault persists after three retries, contact **Huawei Cloud technical support**.

If an ExeML training job is successfully created but fails to be executed due to some faults, locate the faults as follows:

If this failure occurs for the first time, check whether your account is in arrears. If your account is normal, rectify the fault based on the job type.

- For details about how to rectify the job training faults related to **Image Classification**, **Sound Classification**, and **Text Classification**, see **Checking Whether Data Exists in OBS**, **Checking the OBS Access Permission**, and **Checking Whether the Images Meet the Requirements**.
- For details about how to rectify the job training faults related to **Object Detection**, see **Checking Whether Data Exists in OBS**, **Checking the OBS Access Permission**, **Checking Whether the Images Meet the Requirements**, and **Checking Whether the Marking Boxes Meet the Object Detection Requirements**.

- For details about how to rectify the job training faults related to **Predictive Analytics**, see **Checking Whether Data Exists in OBS**, **Checking the OBS Access Permission**, and **Troubleshooting of a Predictive Analytics Job Failure**.

Checking Whether Data Exists in OBS

If the images or data stored in OBS is deleted and not synchronized to ModelArts ExeML or datasets, the task will fail.

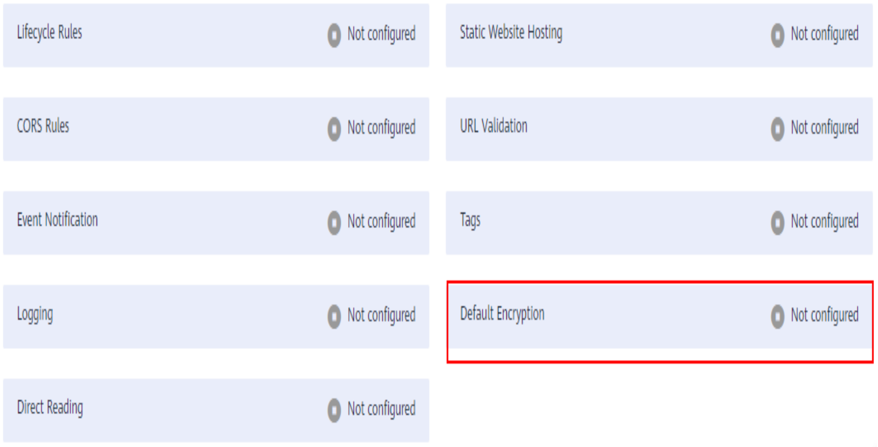
Check whether data exists in OBS. For Image Classification, Sound Classification, Text Classification, and Object Detection, you can click **Synchronize Data Source** on the **Data Labeling** page of ExeML to synchronize data from OBS to ModelArts.

Checking the OBS Access Permission

If the access permission of the OBS bucket cannot meet the training requirements, the training fails. Do the following to check the OBS permissions:

- Check whether the current account has been granted with the read and write permissions on the OBS bucket (specified in bucket ACLs).
  a. Go to the OBS management console, select the OBS bucket used by the ExeML project, and click the bucket name to go to the **Overview** page.
  b. In the navigation pane, choose **Permissions** and click **Bucket ACLs**. Then, check whether the current account has the read and write permissions. If it does not, contact the bucket owner to obtain the permissions.
- Check whether the OBS bucket is unencrypted.
  a. Go to the OBS management console, select the OBS bucket used by the ExeML project, and click the bucket name to go to the **Overview** page.
  b. Ensure that the default encryption function is disabled for the OBS bucket. If the OBS bucket is encrypted, click **Default Encryption** and change its encryption status.

Figure 2-3 Default encryption status



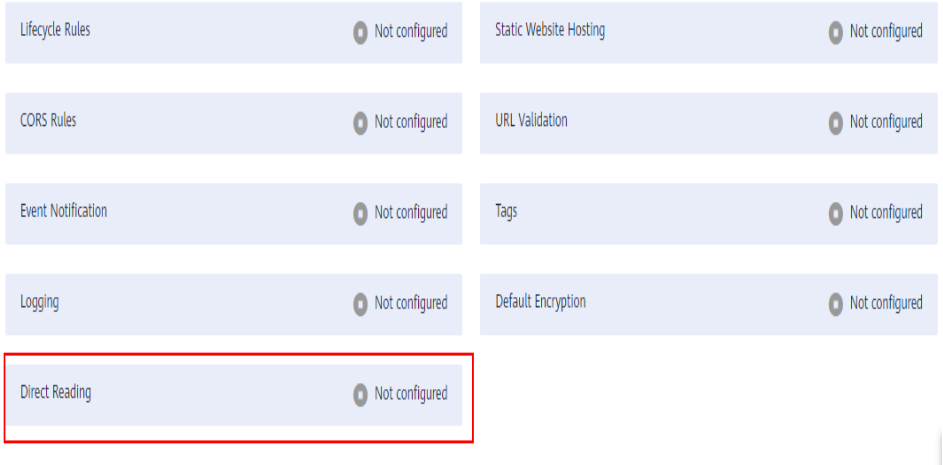
Lifecycle Rules Not configured
Static Website Hosting Not configured
CORS Rules Not configured
URL Validation Not configured
Event Notification Not configured
Tags Not configured
Logging Not configured
Default Encryption Not configured
Direct Reading Not configured

- Check whether the direct reading function of archived data is disabled.

a. Go to the OBS management console, select the OBS bucket used by the ExeML project, and click the bucket name to go to the **Overview** page.

b. Ensure that the direct reading function is disabled for the archived data in the OBS bucket. If this function is enabled, click **Direct Reading** and disable it.

Figure 2-4 Disabled direct reading

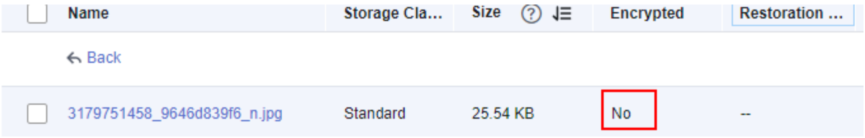


Lifecycle Rules	Not configured	Static Website Hosting	Not configured
CORS Rules	Not configured	URL Validation	Not configured
Event Notification	Not configured	Tags	Not configured
Logging	Not configured	Default Encryption	Not configured
Direct Reading	Not configured		

- Ensure that files in OBS are not encrypted.

  Do not select KMS encryption when uploading images or files. Otherwise, the dataset fails to read data. File encryption cannot be canceled. In this case, cancel bucket encryption and upload images or files again.

Figure 2-5 File encryption status



□	Name	Storage Cla...	Size	Encrypted	Restoration ...
	Back				
□	3179751458_9646d839f6_n.jpg	Standard	25.54 KB	No	--

Checking Whether the Images Meet the Requirements

Currently, ExeML does not support four-channel images. Check your data and exclude or delete this format of images.

Checking Whether the Marking Boxes Meet the Object Detection Requirements

Currently, object detection supports only rectangular labeling boxes. Ensure that the labeling boxes of all images are rectangular ones.

If a non-rectangle labeling box is used, the following error message may be displayed:

```
Error bandbox.
```

For other types of projects (such as image classification and sound classification), skip this checking item.

Troubleshooting of a Predictive Analytics Job Failure

1. Check whether the data used for predictive analytics meets the following requirements.

   The predictive analytics task releases datasets without using the data management function. If the data does not meet the requirements of the training job, the job will fail to run.

   Check whether the data used for training meets the requirements of the predictive analytics job. The following lists the requirements. If the requirements are met, go to the next step. If the requirements are not met, adjust the data based on the requirements and then perform the training again.

   – The name of files in a dataset consists of letters, digits, hyphens (-), and underscores (_), and the file name suffix is **.csv**. The files cannot be stored in the root directory of an OBS bucket, but in a folder in the OBS bucket, for example, **/obs-xxx/data/input.csv**.

   – The files are saved in **CSV** format. Use newline characters (**\n** or LF) to separate lines and commas (,) to separate columns of the file content. The file content cannot contain Chinese characters. The column content cannot contain special characters such as commas (,) and newline characters. The quotation marks are not supported. It is recommended that the column content consist of letters and digits.

   – The number of training columns is the same. There are at least 100 different data records (a feature with different values is considered as different data) in total. The training columns cannot contain data of the timestamp format (such as *yy-mm-dd* or *yyyy-mm-dd*). Ensure that there are at least two values in the specified label column and no data is missing. In addition to the label column, the dataset must contain at least two valid feature columns. Ensure that there are at least two values in each feature column and that the percentage of missing data must be lower than 10%. The training data CSV file cannot contain the table header. Otherwise, the training fails. Due to the limitation of the feature filtering algorithm, place the label column in the last column of the dataset. Otherwise, the training may fail.

2. ModelArts automatically filters data and then starts the training job. If the preprocessed data does not meet the training requirements, the training job fails to be executed.

   Filter policies for columns in a dataset:

   – If the vacancy rate of a column is greater than the threshold (0.9) set by the system, the data in this column will be deleted during training.

   – If a column has only one value (that is, the data in each row is the same), the data in this column will be deleted during training.

   – For a non-numeric column, if the number of values in this column is equal to the number of rows (that is, the values in each row are different), the data in this column will be deleted during training.

   After the preceding filtering, if the data in the dataset does not meet the training requirements in Item 1, the training fails or cannot be executed. Complete the data before starting the training.

3. Restrictions for a dataset file:

a. If you use the 2U8G flavor (2 vCPUs and 8 GB of memory), it is recommended that the size of the dataset file be less than 10 MB. If the file size meets the requirements but the data volume (product of the number of rows and the number of columns) is extremely large, the training may still fail. It is recommended that the product be less than 10,000.

   If you use the 8U32G flavor (8 vCPUs and 32 GB of memory), it is recommended that the size of the dataset file be less than 100 MB. If the file size meets the requirements but the data volume (product of the number of rows and the number of columns) is extremely large, the training may still fail. It is recommended that the product be less than 1,000,000.

4. If the fault persists, contact **Huawei Cloud technical support**.

2.2.2 Failed to Train a Model and Error KMS.0314 Occurred

Symptom

When a model is trained in an ExeML project, a message is displayed, indicating that the training failed.

NOTE

This issue applies only to users not of the Huawei Cloud Chinese Mainland website.

Possible Causes

This issue is caused by real-name authentication. When users not of the Huawei Cloud Chinese Mainland website attempt to purchase or use services of the Huawei Cloud Chinese Mainland website, they must be real-name authenticated. If they are not real-name authenticated, this issue occurs.

Solution

To ensure that your ExeML-based AI development project can be properly carried out, **complete real-name authentication** before performing other operations such as model training.

2.3 Deploying a Model

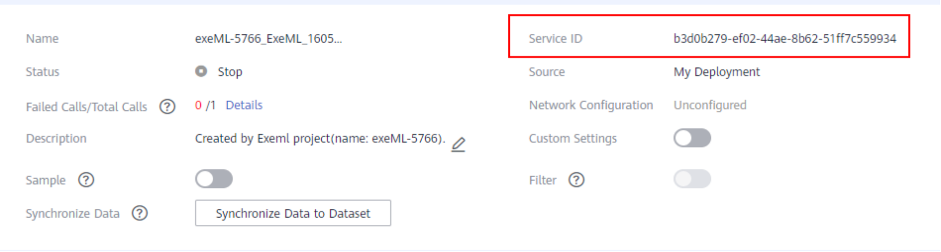
2.3.1 Failed to Deploy a Real-time Service

This fault is typically caused by a backend service failure. You are advised to redeploy the real-time service later. If the fault persists after three retries, obtain the following information and contact **HUAWEI CLOUD technical support**.

- Obtain a service ID.

  Go to the **Service Deployment > Real-Time Services** page. In the service list, find the real-time service deployed in the ExeML task. All the services of ExeML start with **exeML-** Click the service name to go to the service details page. In the basic information area, obtain **Service ID**.

Figure 2-6 Obtaining a service ID

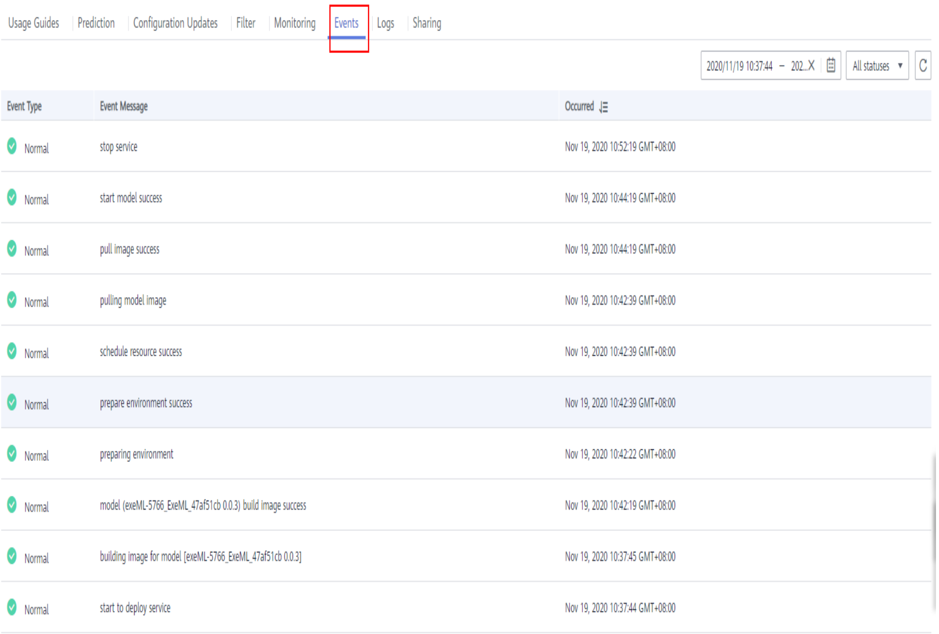


Name	exeML-5766_ExeML_1605...	Service ID	b3d0b279-ef02-44ae-8b62-51ff7c559934
Status	Stop	Source	My Deployment
Failed Calls/Total Calls	0 /1 Details	Network Configuration	Unconfigured
Description	Created by Exeml project(name: exeML-5766).	Custom Settings	
Sample		Filter	
Synchronize Data	Synchronize Data to Dataset		

- Obtain events about the real-time service.

  On the service details page, click the **Events** tab. Take a screenshot of the event information table, and send the screenshot to technical support personnel.

Figure 2-7 Obtaining events



Event Type	Event Message	Occurred
Normal	stop service	Nov 19, 2020 10:52:19 GMT+08:00
Normal	start model success	Nov 19, 2020 10:44:19 GMT+08:00
Normal	pull image success	Nov 19, 2020 10:44:19 GMT+08:00
Normal	pulling model image	Nov 19, 2020 10:42:39 GMT+08:00
Normal	schedule resource success	Nov 19, 2020 10:42:39 GMT+08:00
Normal	prepare environment success	Nov 19, 2020 10:42:39 GMT+08:00
Normal	preparing environment	Nov 19, 2020 10:42:22 GMT+08:00
Normal	model (exeML-5766_ExeML_47af51cb 0.0.3) build image success	Nov 19, 2020 10:42:19 GMT+08:00
Normal	building image for model [exeML-5766_ExeML_47af51cb 0.0.3]	Nov 19, 2020 10:37:45 GMT+08:00
Normal	start to deploy service	Nov 19, 2020 10:37:44 GMT+08:00

2.4 Publishing a Model

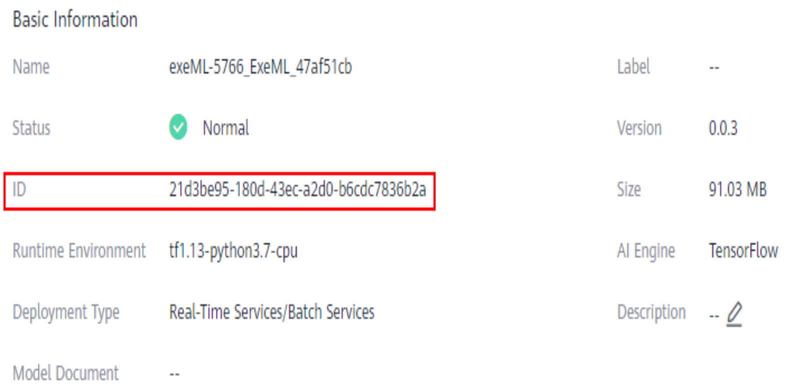
2.4.1 Failed to Publish a Model

Generally, a model publish task fails to be submitted or a model fails to be published due to a backend service fault. You are advised to wait for a period of time and re-create a training job. If the fault persists after three retries, obtain the following required information and contact **Huawei Cloud technical support**.

- Obtain a model ID.

  Choose **AI Application Management** > **AI Applications**. In the AI application list, find the applications automatically created in the ExeML task. All the AI applications generated by ExeML start with **exeML-**. Click the model name to go to the model details page. In the **Basic Information** area, obtain the value of **ID**.

Figure 2-8 Obtaining a model ID



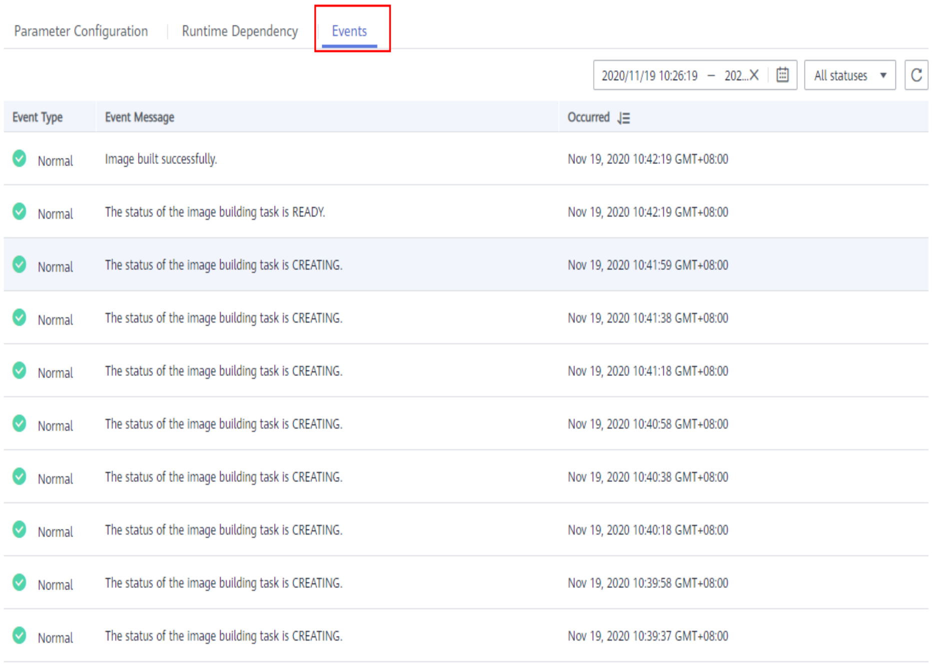
Basic Information

Name	exeML-5766_ExeML_47af51cb	Label	--
Status	✓ Normal	Version	0.0.3
ID	21d3be95-180d-43ec-a2d0-b6cdc7836b2a	Size	91.03 MB
Runtime Environment	tf1.13-python3.7-cpu	AI Engine	TensorFlow
Deployment Type	Real-Time Services/Batch Services	Description	--
Model Document	--		

- Obtain model events.

  On the model details page, click the **Events** tab. Take a screenshot of the event information table, and send the screenshot to technical support personnel.

Figure 2-9 Obtaining events



Event Type	Event Message	Occurred
✓ Normal	Image built successfully.	Nov 19, 2020 10:42:19 GMT+08:00
✓ Normal	The status of the image building task is READY.	Nov 19, 2020 10:42:19 GMT+08:00
✓ Normal	The status of the image building task is CREATING.	Nov 19, 2020 10:41:59 GMT+08:00
✓ Normal	The status of the image building task is CREATING.	Nov 19, 2020 10:41:38 GMT+08:00
✓ Normal	The status of the image building task is CREATING.	Nov 19, 2020 10:41:18 GMT+08:00
✓ Normal	The status of the image building task is CREATING.	Nov 19, 2020 10:40:58 GMT+08:00
✓ Normal	The status of the image building task is CREATING.	Nov 19, 2020 10:40:38 GMT+08:00
✓ Normal	The status of the image building task is CREATING.	Nov 19, 2020 10:40:18 GMT+08:00
✓ Normal	The status of the image building task is CREATING.	Nov 19, 2020 10:39:58 GMT+08:00
✓ Normal	The status of the image building task is CREATING.	Nov 19, 2020 10:39:37 GMT+08:00

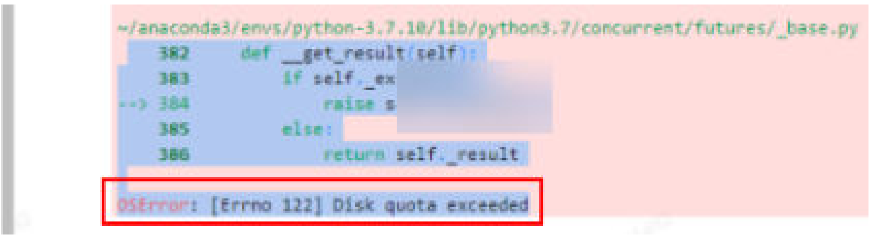
3 DevEnviron

3.1 Environment Configuration Faults

3.1.1 Disk Space Used Up

Symptom

- Error message "No Space left on Device" is displayed when a notebook instance is used.
- Error message "Disk quota exceeded" is displayed when code is executed in a notebook instance.



```
~/anaconda3/envs/python-3.7.10/lib/python3.7/concurrent/futures/_base.py
    382     def __get_result(self):
    383         if self._ex
--> 384             raise s
    385         else:
    386             return self._result

OSError: [Errno 122] Disk quota exceeded
```

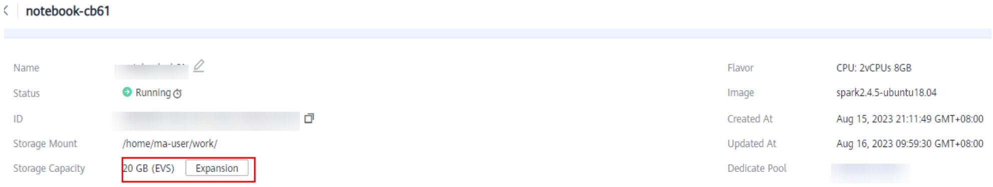
Possible Causes

- After a file is deleted from the navigation pane on the left of JupyterLab, the file is moved to the recycle bin by default. This occupies memory, leading to insufficient disk space.
- The disk quota is insufficient.

Solution

Check the storage space used by the VM, check the memory used by files in the recycle bin, and delete unnecessary large files from the recycle bin.

1. On the notebook instance details page, view the storage capacity of the instance.



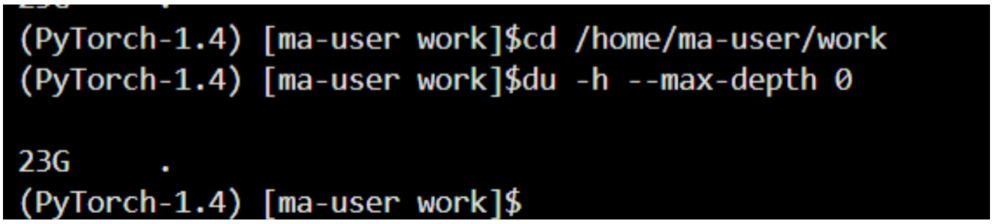
notebook-cb61

Name [redacted]
Status Running
ID [redacted]
Storage Mount /home/ma-user/work/
Storage Capacity 20 GB (EVS) Expansion

Flavor CPU: 2vCPUs 8GB
Image spark2.4.5-ubuntu18.04
Created At Aug 15, 2023 21:11:49 GMT+08:00
Updated At Aug 16, 2023 09:59:30 GMT+08:00
Dedicate Pool [redacted]

2. Check the storage space used by the VM. The storage space is typically close to the storage capacity.

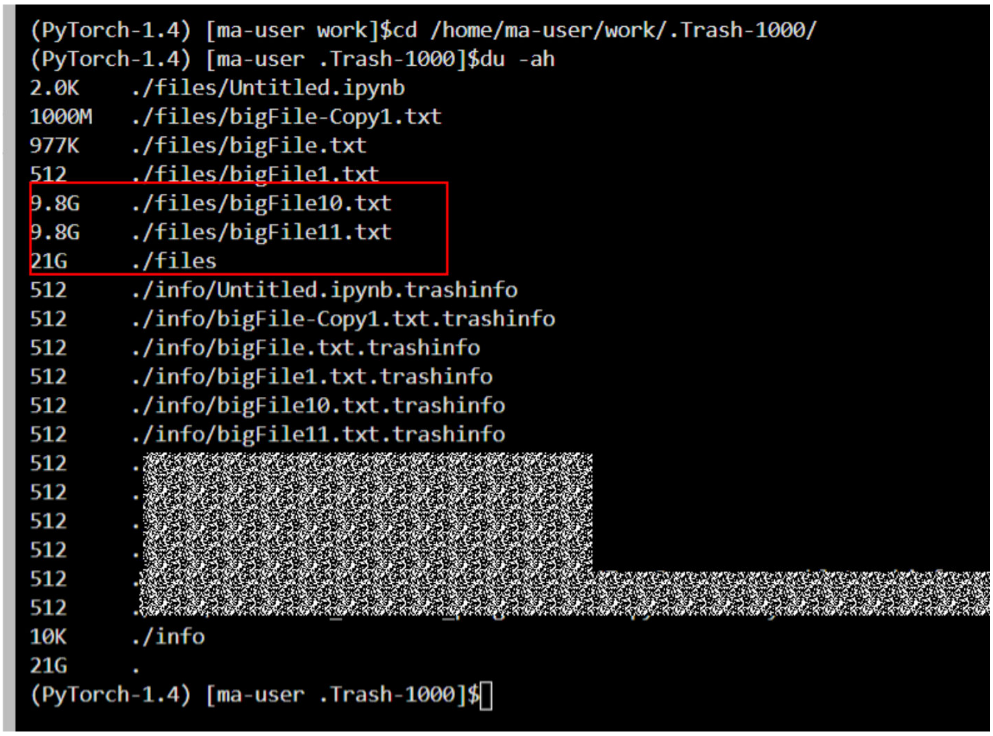
```
cd /home/ma-user/work
du -h --max-depth 0
```



```
(PyTorch-1.4) [ma-user work]$cd /home/ma-user/work
(PyTorch-1.4) [ma-user work]$du -h --max-depth 0

23G     .
(PyTorch-1.4) [ma-user work]$
```

3. Run the following commands to check the memory used by the recycle bin (recycle bin files are stored in **/home/ma-user/work/.Trash-1000/files** by default):

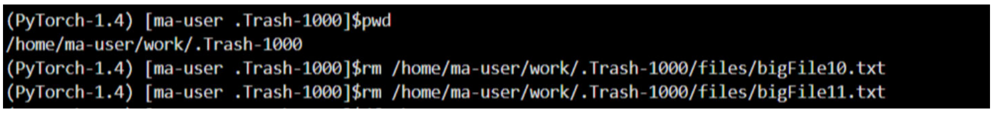
```
cd /home/ma-user/work/.Trash-1000/
du -ah
```



```
(PyTorch-1.4) [ma-user work]$cd /home/ma-user/work/.Trash-1000/
(PyTorch-1.4) [ma-user .Trash-1000]$du -ah
2.0K    ./files/Untitled.ipynb
1000M   ./files/bigFile-Copy1.txt
977K    ./files/bigFile.txt
512     ./files/bigFile1.txt
9.8G    ./files/bigFile10.txt
9.8G    ./files/bigFile11.txt
21G     ./files
512     ./info/Untitled.ipynb.trashinfo
512     ./info/bigFile-Copy1.txt.trashinfo
512     ./info/bigFile.txt.trashinfo
512     ./info/bigFile1.txt.trashinfo
512     ./info/bigFile10.txt.trashinfo
512     ./info/bigFile11.txt.trashinfo
512     .[redacted]
512     .
512     .
512     .
512     .
512     .
10K     ./info
21G     .
(PyTorch-1.4) [ma-user .Trash-1000]$
```

4. Delete unnecessary large files from the recycle bin. Deleted files cannot be restored.

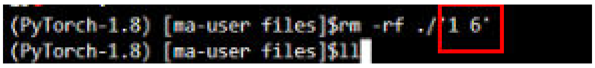
```
rm {File path}
```



```
(PyTorch-1.4) [ma-user .Trash-1000]$pwd
/home/ma-user/work/.Trash-1000
(PyTorch-1.4) [ma-user .Trash-1000]$rm /home/ma-user/work/.Trash-1000/files/bigFile10.txt
(PyTorch-1.4) [ma-user .Trash-1000]$rm /home/ma-user/work/.Trash-1000/files/bigFile11.txt
```

NOTE

If the name of the folder or file you want to delete contains spaces, add single quotation marks to the name.



```
(PyTorch-1.8) [ma-user files]$rm -rf ./'1 6'
(PyTorch-1.8) [ma-user files]$ll
```

5. Run the following commands to check the storage space used by the VM again:
```
cd /home/ma-user/work
du -h --max-depth 0
```
6. If the notebook instance uses an EVS disk for storage, expand the storage capacity on the notebook instance details page.

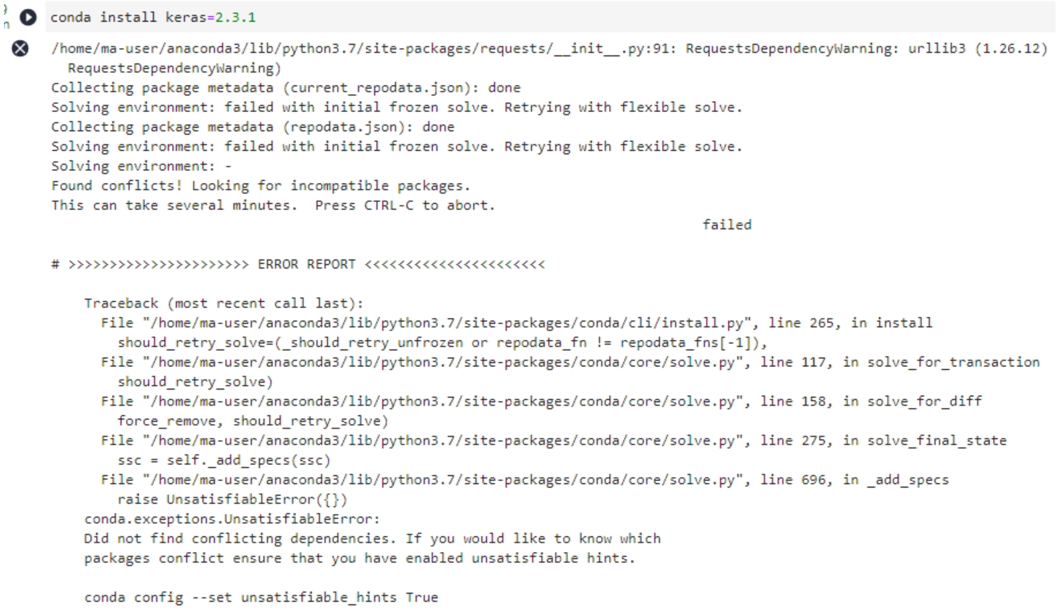
Summary and Suggestions

It is a good practice to delete unnecessary files when using a notebook instance to prevent a training failure caused by insufficient disk space.

3.1.2 An Error Is Reported When Conda Is Used to Install Keras 2.3.1 in Notebook

Symptom

An error is reported when Conda is used to install Keras 2.3.1.



```
conda install keras=2.3.1
```

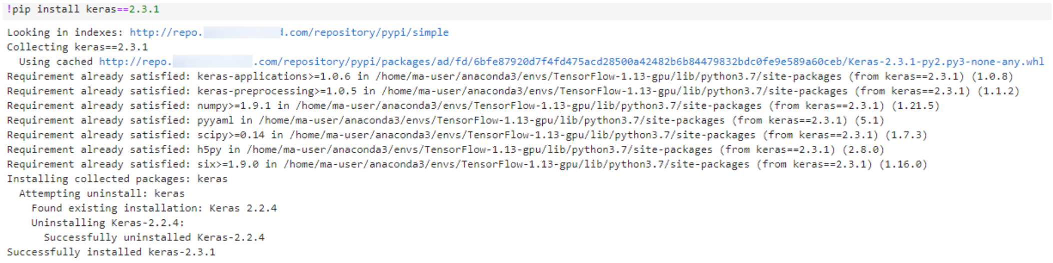
```
/home/ma-user/anaconda3/lib/python3.7/site-packages/requests/__init__.py:91: RequestsDependencyWarning: urllib3 (1.26.12)
  RequestsDependencyWarning)
Collecting package metadata (current_repodata.json): done
Solving environment: failed with initial frozen solve. Retrying with flexible solve.
Collecting package metadata (repodata.json): done
Solving environment: failed with initial frozen solve. Retrying with flexible solve.
Solving environment: -
Found conflicts! Looking for incompatible packages.
This can take several minutes.  Press CTRL-C to abort.
                                                                               failed

# >>>>>>>>>>>>>>>>>>>>>> ERROR REPORT <<<<<<<<<<<<<<<<<<<<<<

    Traceback (most recent call last):
      File "/home/ma-user/anaconda3/lib/python3.7/site-packages/conda/cli/install.py", line 265, in install
        should_retry_solve=(_should_retry_unfrozen or repodata_fn != repodata_fns[-1]),
      File "/home/ma-user/anaconda3/lib/python3.7/site-packages/conda/core/solve.py", line 117, in solve_for_transaction
        should_retry_solve)
      File "/home/ma-user/anaconda3/lib/python3.7/site-packages/conda/core/solve.py", line 158, in solve_for_diff
        force_remove, should_retry_solve)
      File "/home/ma-user/anaconda3/lib/python3.7/site-packages/conda/core/solve.py", line 275, in solve_final_state
        ssc = self._add_specs(ssc)
      File "/home/ma-user/anaconda3/lib/python3.7/site-packages/conda/core/solve.py", line 696, in _add_specs
        raise UnsatisfiableError({})
    conda.exceptions.UnsatisfiableError:
    Did not find conflicting dependencies. If you would like to know which
    packages conflict ensure that you have enabled unsatisfiable hints.

    conda config --set unsatisfiable_hints True
```

Possible Cause

There are network issues with Conda. Run the **pip install** command to install Keras 2.3.1.

Solution

Run the **!pip install keras==2.3.1** command to install Keras.

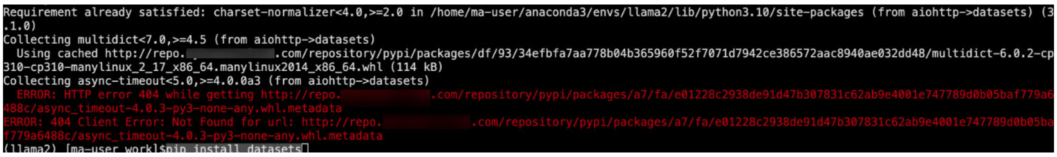


```
!pip install keras==2.3.1

Looking in indexes: http://repo.[redacted].com/repository/pypi/simple
Collecting keras==2.3.1
  Using cached http://repo.[redacted].com/repository/pypi/packages/ad/fd/6bfe87920d7f4fd475acd28500a42482b6b84479832bdc0fe9e589a60ceb/Keras-2.3.1-py2.py3-none-any.whl
Requirement already satisfied: keras-applications>=1.0.6 in /home/ma-user/anaconda3/envs/TensorFlow-1.13-gpu/lib/python3.7/site-packages (from keras==2.3.1) (1.0.8)
Requirement already satisfied: keras-preprocessing>=1.0.5 in /home/ma-user/anaconda3/envs/TensorFlow-1.13-gpu/lib/python3.7/site-packages (from keras==2.3.1) (1.1.2)
Requirement already satisfied: numpy>=1.9.1 in /home/ma-user/anaconda3/envs/TensorFlow-1.13-gpu/lib/python3.7/site-packages (from keras==2.3.1) (1.21.5)
Requirement already satisfied: pyyaml in /home/ma-user/anaconda3/envs/TensorFlow-1.13-gpu/lib/python3.7/site-packages (from keras==2.3.1) (5.1)
Requirement already satisfied: scipy>=0.14 in /home/ma-user/anaconda3/envs/TensorFlow-1.13-gpu/lib/python3.7/site-packages (from keras==2.3.1) (1.7.3)
Requirement already satisfied: h5py in /home/ma-user/anaconda3/envs/TensorFlow-1.13-gpu/lib/python3.7/site-packages (from keras==2.3.1) (2.8.0)
Requirement already satisfied: six>=1.9.0 in /home/ma-user/anaconda3/envs/TensorFlow-1.13-gpu/lib/python3.7/site-packages (from keras==2.3.1) (1.16.0)
Installing collected packages: keras
  Attempting uninstall: keras
    Found existing installation: Keras 2.2.4
    Uninstalling Keras-2.2.4:
      Successfully uninstalled Keras-2.2.4
Successfully installed keras-2.3.1
```

3.1.3 Error "HTTP error 404 while getting xxx" Is Reported During Dependency Installation in a Notebook

Symptom

An error is reported during dependency installation in a notebook instance. The following shows the error.



```
Requirement already satisfied: charset-normalizer<4.0,>=2.0 in /home/ma-user/anaconda3/envs/llama2/lib/python3.10/site-packages (from aiohttp->datasets) (3
.1.0)
Collecting multidict<7.0,>=4.5 (from aiohttp->datasets)
  Using cached http://repo.[redacted].com/repository/pypi/packages/df/93/34efbfa7aa778b04b365960f52f7071d7942ce386572aac8940ae032dd48/multidict-6.0.2-cp
310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (114 kB)
Collecting async-timeout<5.0,>=4.0.0a3 (from aiohttp->datasets)
  ERROR: HTTP error 404 while getting http://repo.[redacted].com/repository/pypi/packages/a7/fa/e01228c2938de91d47b307831c62ab9e4001e747789d0b05baf779a6
488c/async_timeout-4.0.3-py3-none-any.whl.metadata
ERROR: 404 Client Error: Not Found for url: http://repo.[redacted].com/repository/pypi/packages/a7/fa/e01228c2938de91d47b307831c62ab9e4001e747789d0b05ba
f779a6488c/async_timeout-4.0.3-py3-none-any.whl.metadata
(llama2) [ma-user work]$pip install datasets
```

Possible Causes

The dependency is not in the PyPI source or the source is unavailable.

Solution

Run the following command to download the dependency from another source:

pip install -i *Source address Dependency name*

3.1.4 The numba Library Has Been Installed in a Notebook Instance and Error "import numba ModuleNotFoundError: No module named 'numba'" Is Reported

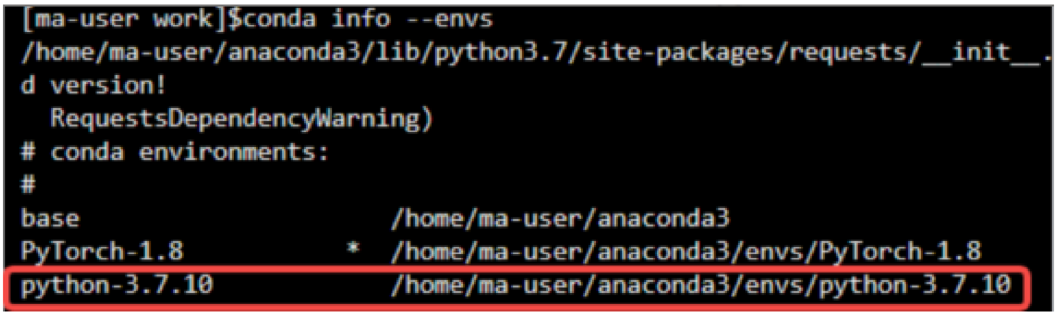
Symptom

After you install the **numba** library in a notebook instance by running the **!pip install numba** command, the library is running properly and is saved as a custom image. However, an error is reported indicating that the library does not exist when you run the script in DataArts Studio.

Possible Causes

Multiple virtual environments are created and the **numba** library is installed in python-3.7.10, as shown in **Figure 3-1**.

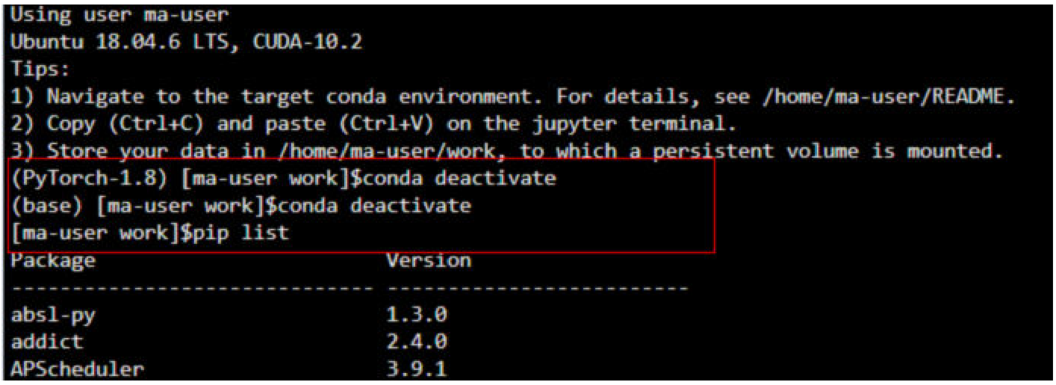
Figure 3-1 Querying virtual environments



```
[ma-user work]$conda info --envs
/home/ma-user/anaconda3/lib/python3.7/site-packages/requests/__init__.
d version!
  RequestsDependencyWarning)
# conda environments:
#
base                          /home/ma-user/anaconda3
PyTorch-1.8              *    /home/ma-user/anaconda3/envs/PyTorch-1.8
python-3.7.10                 /home/ma-user/anaconda3/envs/python-3.7.10
```

Solution

Run the **conda deactivate** command in Termina to exit the current virtual environment and enter the default base environment. Run the **pip list** command to query the installed packages. Install and save the required dependencies, switch to the specified virtual environment, and run the script.

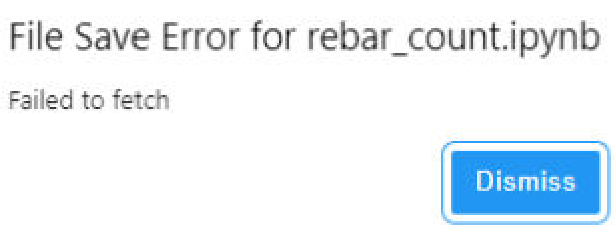


```
Using user ma-user
Ubuntu 18.04.6 LTS, CUDA-10.2
Tips:
1) Navigate to the target conda environment. For details, see /home/ma-user/README.
2) Copy (Ctrl+C) and paste (Ctrl+V) on the jupyter terminal.
3) Store your data in /home/ma-user/work, to which a persistent volume is mounted.
(PyTorch-1.8) [ma-user work]$conda deactivate
(base) [ma-user work]$conda deactivate
[ma-user work]$pip list
Package                        Version
------------------------------ ------------------------
absl-py                        1.3.0
addict                         2.4.0
APScheduler                    3.9.1
```

3.1.5 What Do I Do If Files Fail to Be Saved in JupyterLab?

Symptom

When a file is saved in JupyterLab, an error message is displayed.



File Save Error for rebar_count.ipynb

Failed to fetch

Possible Cause

- A third-party plug-in has been installed on the browser, and the proxy intercepts the request. As a result, the file cannot be saved.
- The runtime file in the notebook is too large.
- You have stayed on the Jupyter page for too long.

- There is a network error. Check whether a network proxy is connected.

Solution

- Disable the plug-in and save the file again.
- Reduce the file size.
- Open the Jupyter page again.
- Check the network.

3.2 Instance Faults

3.2.1 Failed to Create a Notebook Instance and JupyterProcessKilled Is Displayed in Events

Symptom

A user failed to create a notebook instance, and **JupyterProcessKilled** was displayed in **Events**.

Possible Causes

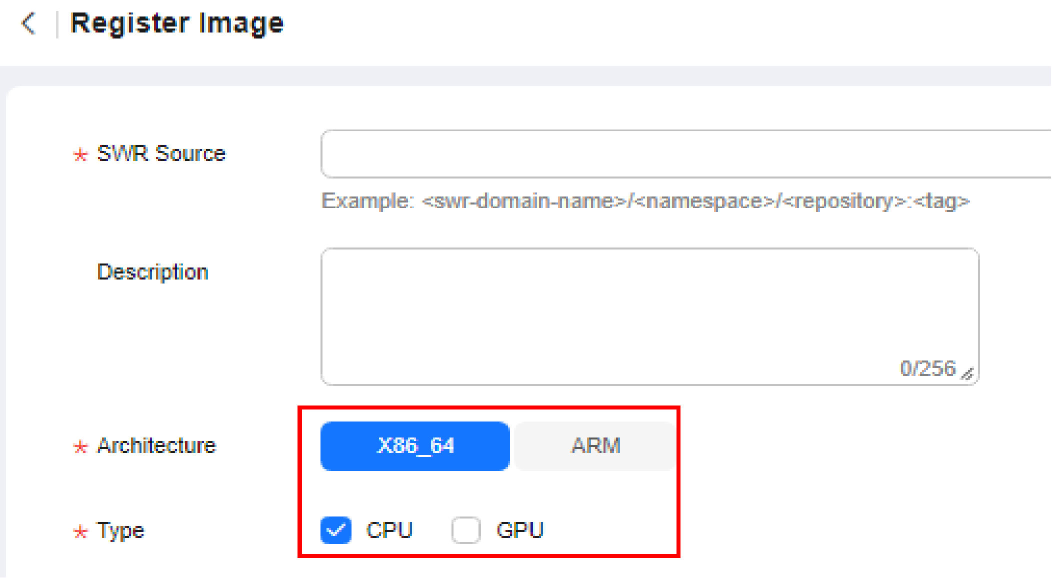
This fault occurs because the Jupyter process is killed. Generally, the notebook instance automatically restarts. If it does not restart, its creation fails. Check whether the failure is caused by the custom image issue.

Solution

Check whether the custom image is correct.

When registering a custom image on the ModelArts console after it is created, ensure that its architecture and type are the same as those of the source image.

Figure 3-2 Registering an image



Register Image

* SWR Source

Example: <swr-domain-name>/<namespace>/<repository>:<tag>

Description

0/256

* Architecture: X86_64 | ARM

* Type: ☑ CPU □ GPU

3.2.2 ModelArts.6333 Error Occurs

Symptom

When you use a notebook instance, the ModelArts.6333 error is displayed.

Possible Cause

The fault may be caused by instance overload. The notebook instance automatically restores. Refresh the page and wait for several minutes. The common cause is that the memory is used up.

Solution

When this error occurs, the notebook instance automatically restores. You can refresh the page and wait for several minutes.

The common cause is that the memory is used up. You can use the following methods to rectify the fault.

- Method 1: Replace the notebook instance with a resource with higher specifications.
- Method 2: Adjust the parameters in the code to reduce memory occupation. If the memory is still insufficient after the code is modified, use method 1.
  a. Call the sklearn method **silhouette_score(addr_1,siteskmeans.labels)** and specify the **sample_size** parameter to reduce memory occupation.
  b. When calling the **train** method, you can try to decrease the value of **batch_size**.

3.2.3 What Can I Do If a Message Is Displayed Indicating that the Token Does Not Exist or Is Lost When I Open a Notebook Instance?

Symptom

You shared your notebook URL with others, but they receive an error message "... lost token or incorrect token...." when attempting to access the URL.

Possible Cause

They do not have the token of the account.

Solution

Add the token of the notebook owner to the end of the URL.

3.3 Code Running Failures

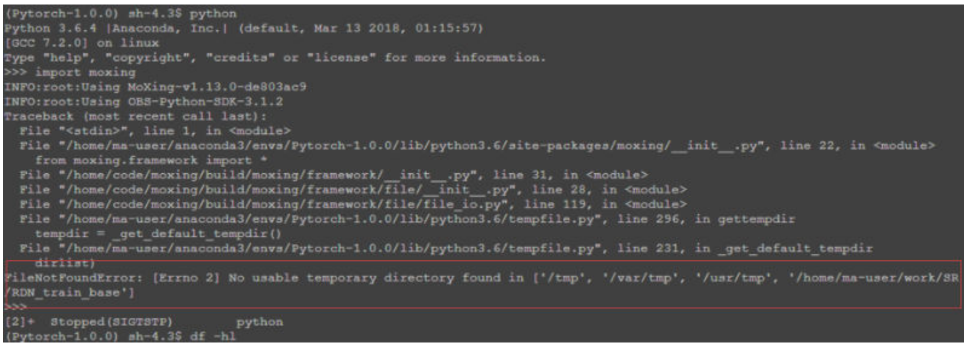
3.3.1 Error Occurs When Using a Notebook Instance to Run Code, Indicating That No File Is Found in /tmp

Symptom

When the a notebook instance is used to run code, the following error occurs:

```
FileNotFoundError: [Error 2] No usable temporary directory found in ['/tmp', '/var/tmp', '/usr/tmp',
'home/ma-user/work/SR/RDN_train_base']
```

Figure 3-3 Code running error



```
(Pytorch-1.0.0) sh-4.3$ python
Python 3.6.4 |Anaconda, Inc.| (default, Mar 13 2018, 01:15:57)
[GCC 7.2.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> import moxing
INFO:root:Using MoXing-v1.13.0-de803ac9
INFO:root:Using OBS-Python-SDK-3.1.2
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
  File "/home/ma-user/anaconda3/envs/Pytorch-1.0.0/lib/python3.6/site-packages/moxing/__init__.py", line 22, in <module>
    from moxing.framework import *
  File "/home/code/moxing/build/moxing/framework/__init__.py", line 31, in <module>
  File "/home/code/moxing/build/moxing/framework/file/__init__.py", line 28, in <module>
  File "/home/code/moxing/build/moxing/framework/file/file_io.py", line 119, in <module>
  File "/home/ma-user/anaconda3/envs/Pytorch-1.0.0/lib/python3.6/tempfile.py", line 296, in gettempdir
    tempdir = _get_default_tempdir()
  File "/home/ma-user/anaconda3/envs/Pytorch-1.0.0/lib/python3.6/tempfile.py", line 231, in _get_default_tempdir
    dirlist)
FileNotFoundError: [Errno 2] No usable temporary directory found in ['/tmp', '/var/tmp', '/usr/tmp', '/home/ma-user/work/SR
/RDN_train_base']
>>>
[2]+  Stopped(SIGTSTP)        python
(Pytorch-1.0.0) sh-4.3$ df -hl
```

Possible Cause

Check whether a large amount of data is saved in **/tmp**.

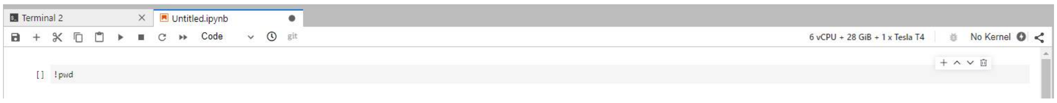
Solution

1. Go to the **Terminal** page. In the **/tmp** directory, run the **du -sh *** command to check the space usage of the directory.
   ```
   sh-4.3$cd /tmp
   sh-4.3$du -sh *
   4.0K    core-js-banners
   0       npm-19-41ed4c62
   6.7M    v8-compile-cache-1000
   ```
2. Delete unnecessary large files.
   1. Delete the sample file **test.txt**: **rm -f /home/ma-user/work/data/test.txt**
   2. Delete the sample folder **data**: **rm -rf /home/ma-user/work/data/**

3.3.2 What Do I Do If No Kernel Is Displayed After a Notebook File Is Created?

Symptom

After a notebook file is created, "No Kernel" is displayed in the upper right corner of the page.



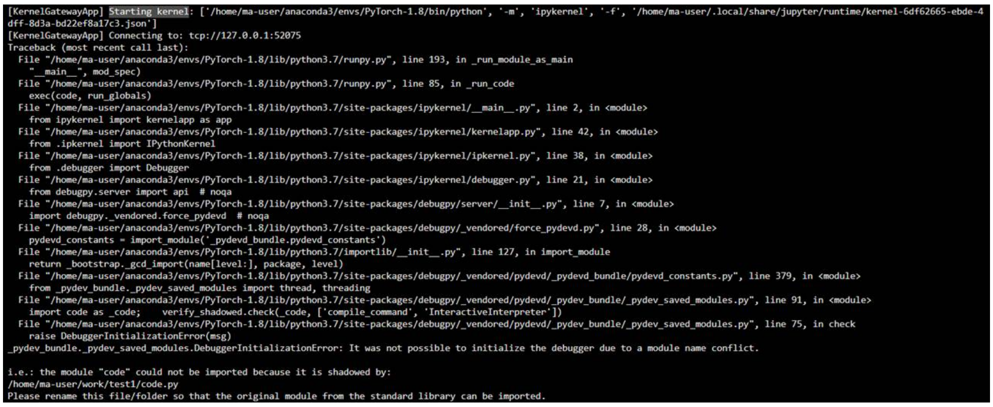
```
[ ] !pwd
```

Possible Causes

The **code.py** file in the work directory conflicts with the name of the import code file on which the kernel depends.

Solution

1. View the latest log file starting with **kernelgateway** in **/home/ma-user/log/** and search for the logs near **Starting kernel**. If the stack similar to the following is displayed, the possible cause is that the name of the **code.py** file in the work directory conflicts with the name of the import code file on which the kernel depends.



```
[KernelGatewayApp] Starting kernel: ['/home/ma-user/anaconda3/envs/PyTorch-1.8/bin/python', '-m', 'ipykernel', '-f', '/home/ma-user/.local/share/jupyter/runtime/kernel-6df62665-ebde-4
dff-8d3a-bd22ef8a17c3.json']
[KernelGatewayApp] Connecting to: tcp://127.0.0.1:52075
Traceback (most recent call last):
  File "/home/ma-user/anaconda3/envs/PyTorch-1.8/lib/python3.7/runpy.py", line 193, in _run_module_as_main
    "__main__", mod_spec)
  File "/home/ma-user/anaconda3/envs/PyTorch-1.8/lib/python3.7/runpy.py", line 85, in _run_code
    exec(code, run_globals)
  File "/home/ma-user/anaconda3/envs/PyTorch-1.8/lib/python3.7/site-packages/ipykernel/__main__.py", line 2, in <module>
    from ipykernel import kernelapp as app
  File "/home/ma-user/anaconda3/envs/PyTorch-1.8/lib/python3.7/site-packages/ipykernel/kernelapp.py", line 42, in <module>
    from .ipkernel import IPythonKernel
  File "/home/ma-user/anaconda3/envs/PyTorch-1.8/lib/python3.7/site-packages/ipykernel/ipkernel.py", line 38, in <module>
    from .debugger import Debugger
  File "/home/ma-user/anaconda3/envs/PyTorch-1.8/lib/python3.7/site-packages/ipykernel/debugger.py", line 21, in <module>
    from debugpy.server import api  # noqa
  File "/home/ma-user/anaconda3/envs/PyTorch-1.8/lib/python3.7/site-packages/debugpy/server/__init__.py", line 7, in <module>
    import debugpy._vendored.force_pydevd  # noqa
  File "/home/ma-user/anaconda3/envs/PyTorch-1.8/lib/python3.7/site-packages/debugpy/_vendored/force_pydevd.py", line 28, in <module>
    pydevd_constants = import_module('_pydevd_bundle.pydevd_constants')
  File "/home/ma-user/anaconda3/envs/PyTorch-1.8/lib/python3.7/importlib/__init__.py", line 127, in import_module
    return _bootstrap._gcd_import(name[level:], package, level)
  File "/home/ma-user/anaconda3/envs/PyTorch-1.8/lib/python3.7/site-packages/debugpy/_vendored/pydevd/_pydevd_bundle/pydevd_constants.py", line 379, in <module>
    from _pydev_bundle._pydev_saved_modules import thread, threading
  File "/home/ma-user/anaconda3/envs/PyTorch-1.8/lib/python3.7/site-packages/debugpy/_vendored/pydevd/_pydev_bundle/_pydev_saved_modules.py", line 91, in <module>
    import code as _code;    verify_shadowed.check(_code, ['compile_command', 'InteractiveInterpreter'])
  File "/home/ma-user/anaconda3/envs/PyTorch-1.8/lib/python3.7/site-packages/debugpy/_vendored/pydevd/_pydev_bundle/_pydev_saved_modules.py", line 75, in check
    raise DebuggerInitializationError(msg)
_pydev_bundle._pydev_saved_modules.DebuggerInitializationError: It was not possible to initialize the debugger due to a module name conflict.

i.e.: the module "code" could not be imported because it is shadowed by:
/home/ma-user/work/test1/code.py
Please rename this file/folder so that the original module from the standard library can be imported.
```

2. To resolve this issue, rename the **code.py** file in the work directory.

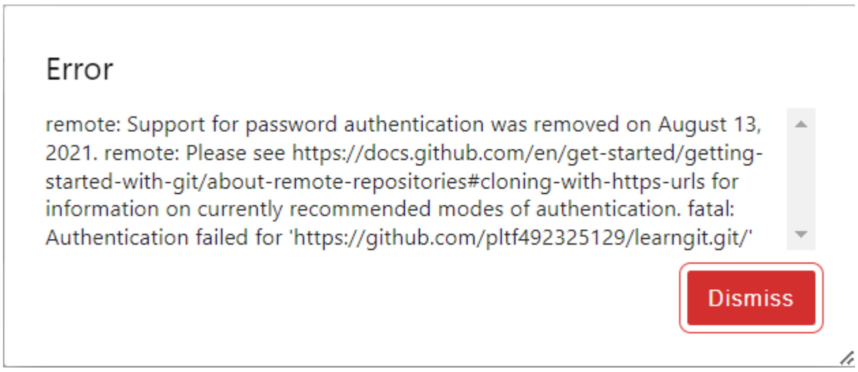
   code.py and **select.py** are typically prone to conflict.

3.4 JupyterLab Plug-in Faults

3.4.1 What Do I Do If the Git Plug-in Password Is Invalid?

Symptom

If the Git plug-in is used in JupyterLab, when a private repository is cloned or a file is pushed, an error occurs.



Error

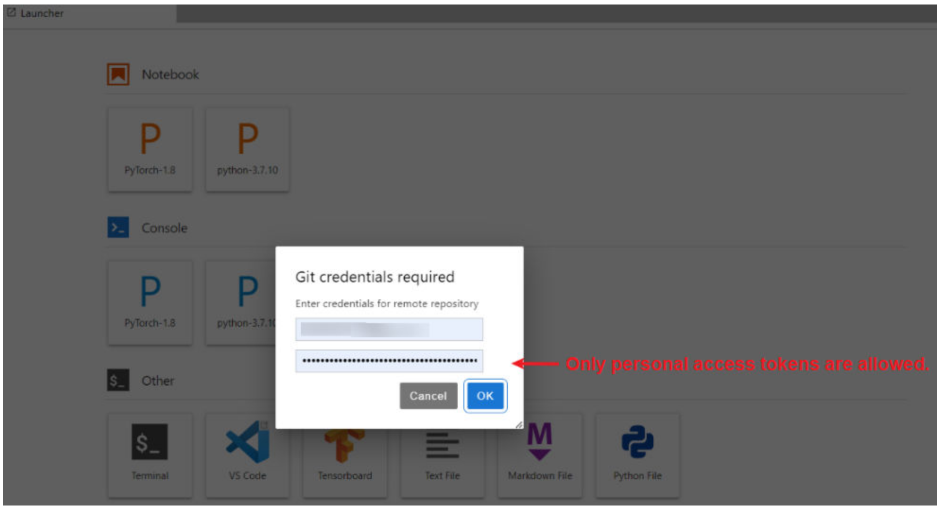
remote: Support for password authentication was removed on August 13, 2021. remote: Please see https://docs.github.com/en/get-started/getting-started-with-git/about-remote-repositories#cloning-with-https-urls for information on currently recommended modes of authentication. fatal: Authentication failed for 'https://github.com/pltf492325129/learngit.git/'

Possible Causes

The authorization using a password has been canceled in GitHub. When cloning a private repository or pushing a file, you are required to enter a token in the authorization text box.

Solution

Use a token for authorization. When cloning a private repository or pushing a file, enter the token in the authorization text box. For details about how to obtain a token, see **Using the Git Plug-in**.



Git credentials required

Enter credentials for remote repository

Only personal access tokens are allowed.

3.5 Failures to Access the Development Environment Through VS Code

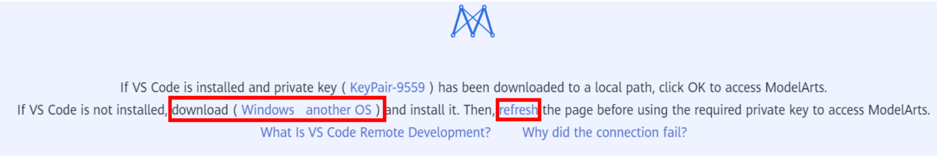
3.5.1 What Do I Do If the VS Code Window Is Not Displayed?

Possible Cause

VS Code is not installed or the installed version is outdated.

Solution

Download and install VS Code. (Windows users click **Windows**. Users of other operating systems click **another OS**.) After the installation, click **refresh** to complete the connection.



If VS Code is installed and private key (KeyPair-9559) has been downloaded to a local path, click OK to access ModelArts.

If VS Code is not installed, download (Windows another OS) and install it. Then, refresh the page before using the required private key to access ModelArts.

What Is VS Code Remote Development? Why did the connection fail?

3.5.2 What Do I Do If a Remote Connection Failed After VS Code Is Opened?

NOTICE

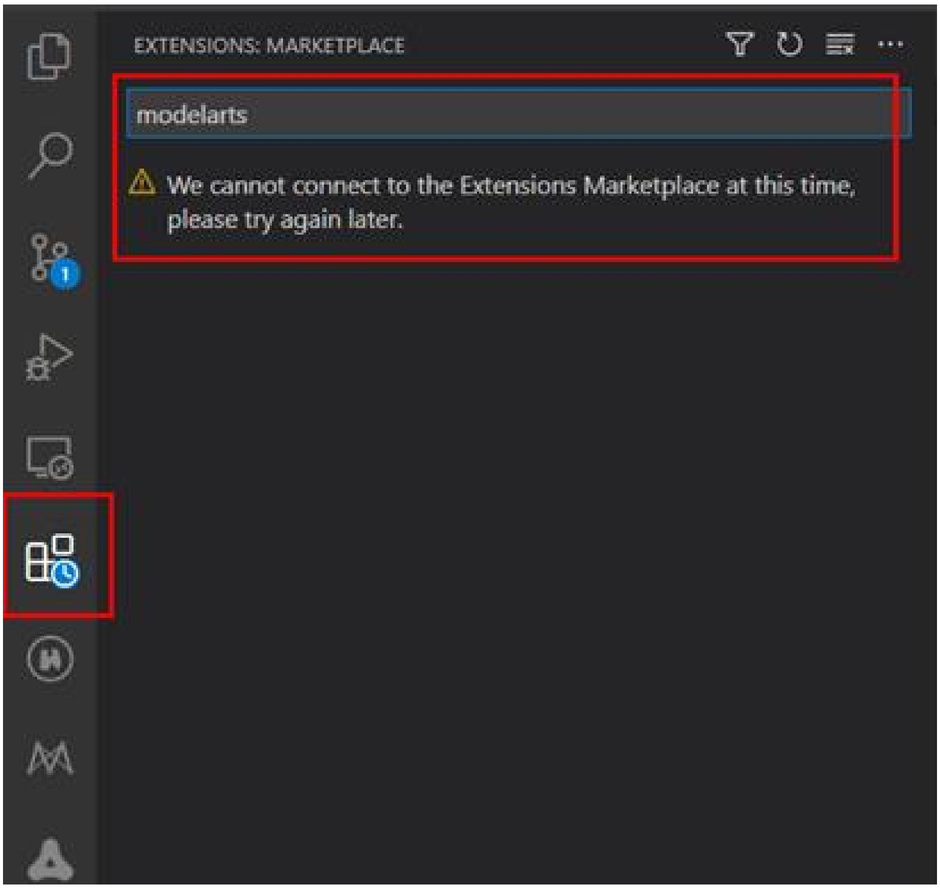
If your local PC runs Linux, see possible cause 2.

Possible Cause 1

Automatically installing the VS Code plug-in ModelArts-HuaweiCloud failed.

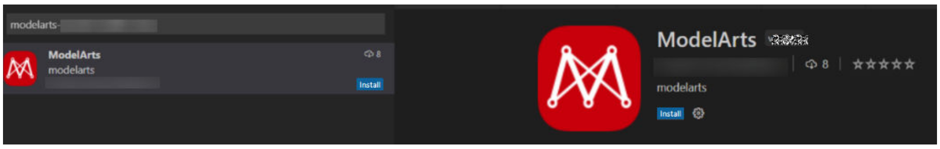
Solution 1

Method 1: Verify that the VS Code network is accessible. Search for **ModelArts-HuaweiCloud** in the VS Code marketplace. If the following information is displayed, a network error occurred. In this case, switch to another proxy or use another network.

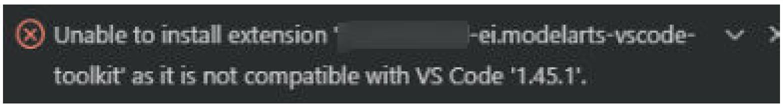


We cannot connect to the Extensions Marketplace at this time, please try again later.

Search for the plug-in again. If the following information is displayed, the network is normal. Then, switch back to the ModelArts console and try to access VS Code again.



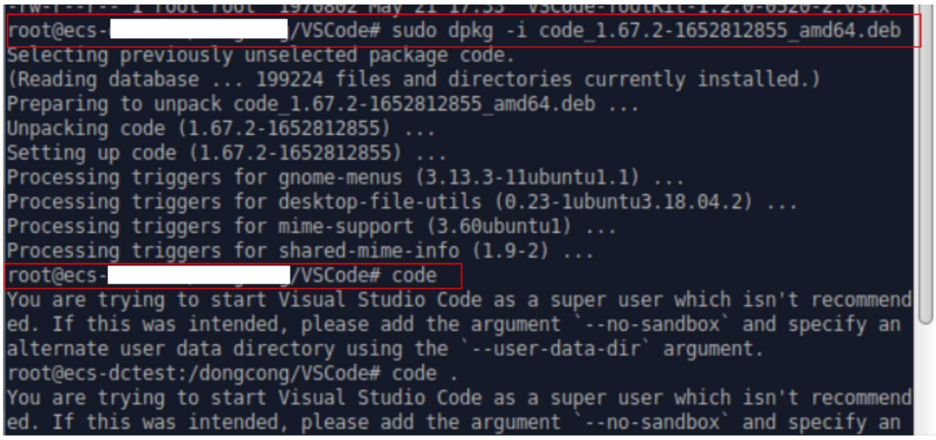
Method 2: If the error message shown in the following figure is displayed, the VS Code version is outdated. Upgrade the VS Code to 1.57.1 or the latest version.



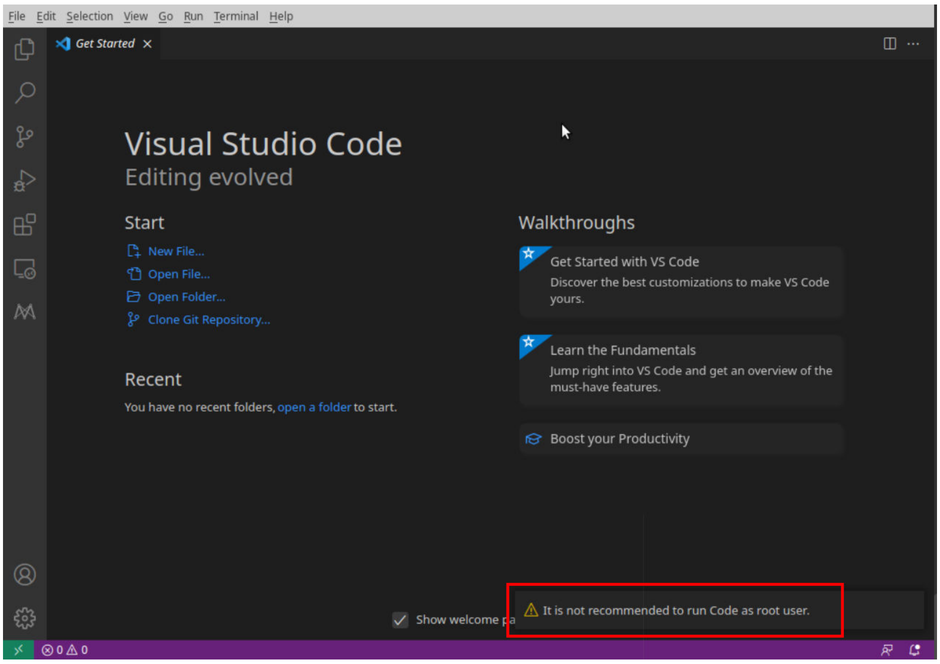
Unable to install extension '[redacted]-ei.modelarts-vscode-toolkit' as it is not compatible with VS Code '1.45.1'.

Possible Cause 2

The local PC runs Linux, and VS Code is installed as user **root**. When you access VS Code, the information "It is not recommended to run Code as root user" is displayed.



```
-rw-r--r-- 1 root root 1970802 May 21 17:33 vscode-toolkit-1.2.0-0520-2.vsix
root@ecs-[redacted]/VSCode# sudo dpkg -i code_1.67.2-1652812855_amd64.deb
Selecting previously unselected package code.
(Reading database ... 199224 files and directories currently installed.)
Preparing to unpack code_1.67.2-1652812855_amd64.deb ...
Unpacking code (1.67.2-1652812855) ...
Setting up code (1.67.2-1652812855) ...
Processing triggers for gnome-menus (3.13.3-1ubuntu1.1) ...
Processing triggers for desktop-file-utils (0.23-1ubuntu3.18.04.2) ...
Processing triggers for mime-support (3.60ubuntu1) ...
Processing triggers for shared-mime-info (1.9-2) ...
root@ecs-[redacted]/VSCode# code
You are trying to start Visual Studio Code as a super user which isn't recommend
ed. If this was intended, please add the argument `--no-sandbox` and specify an
alternate user data directory using the `--user-data-dir` argument.
root@ecs-dctest:/dongcong/VSCode# code .
You are trying to start Visual Studio Code as a super user which isn't recommend
ed. If this was intended, please add the argument `--no-sandbox` and specify an
```



You have no recent folders, open a folder to start.

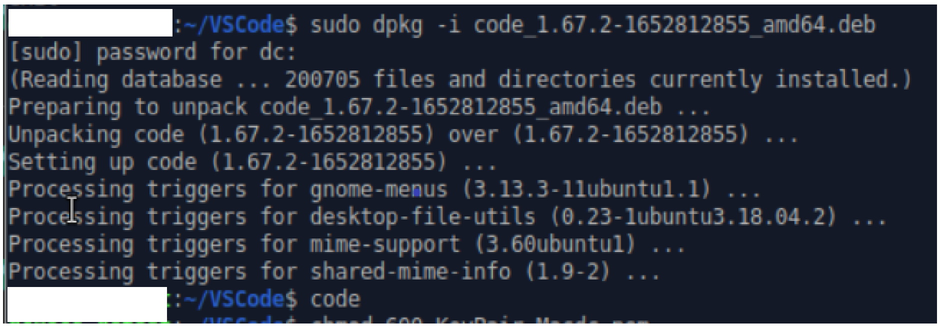
Discover the best customizations to make VS Code yours.

Jump right into VS Code and get an overview of the must-have features.

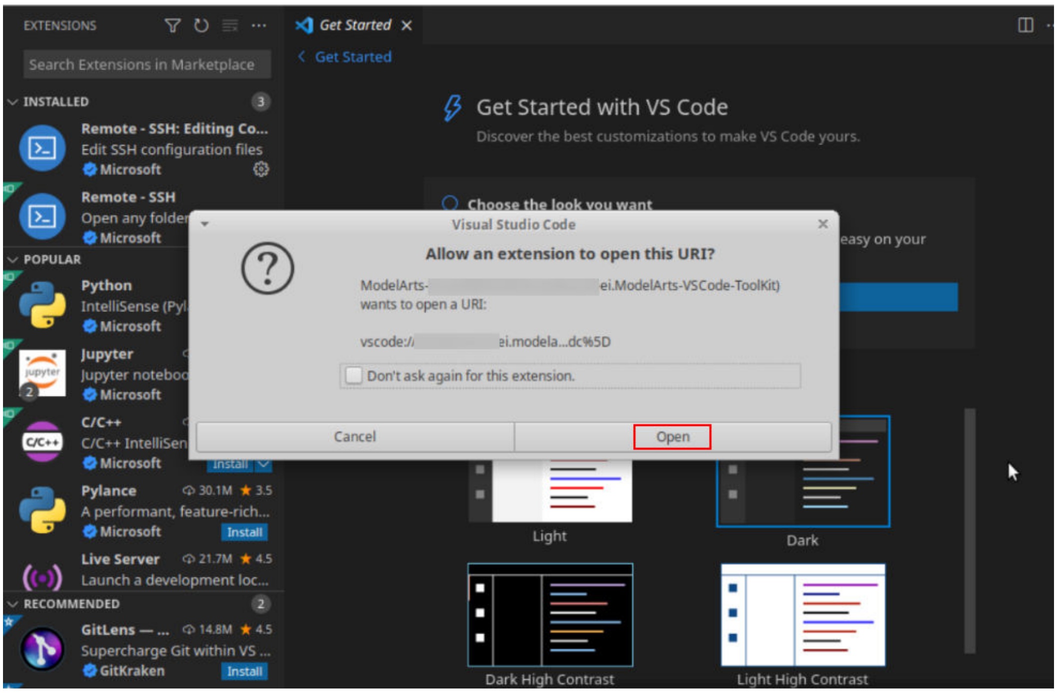
⚠ It is not recommended to run Code as root user.

Solution 2

Install VS Code as a non-**root** user, return to the ModelArts management console, and click **Access VS Code**.



```
[redacted]:~/VSCode$ sudo dpkg -i code_1.67.2-1652812855_amd64.deb
[sudo] password for dc:
(Reading database ... 200705 files and directories currently installed.)
Preparing to unpack code_1.67.2-1652812855_amd64.deb ...
Unpacking code (1.67.2-1652812855) over (1.67.2-1652812855) ...
Setting up code (1.67.2-1652812855) ...
Processing triggers for gnome-menus (3.13.3-11ubuntu1.1) ...
Processing triggers for desktop-file-utils (0.23-1ubuntu3.18.04.2) ...
Processing triggers for mime-support (3.60ubuntu1) ...
Processing triggers for shared-mime-info (1.9-2) ...
[redacted]:~/VSCode$ code
```



Visual Studio Code

Allow an extension to open this URI?

ModelArts-[redacted]ei.ModelArts-VSCode-ToolKit) wants to open a URI:

vscode://[redacted]ei.modela...dc%5D

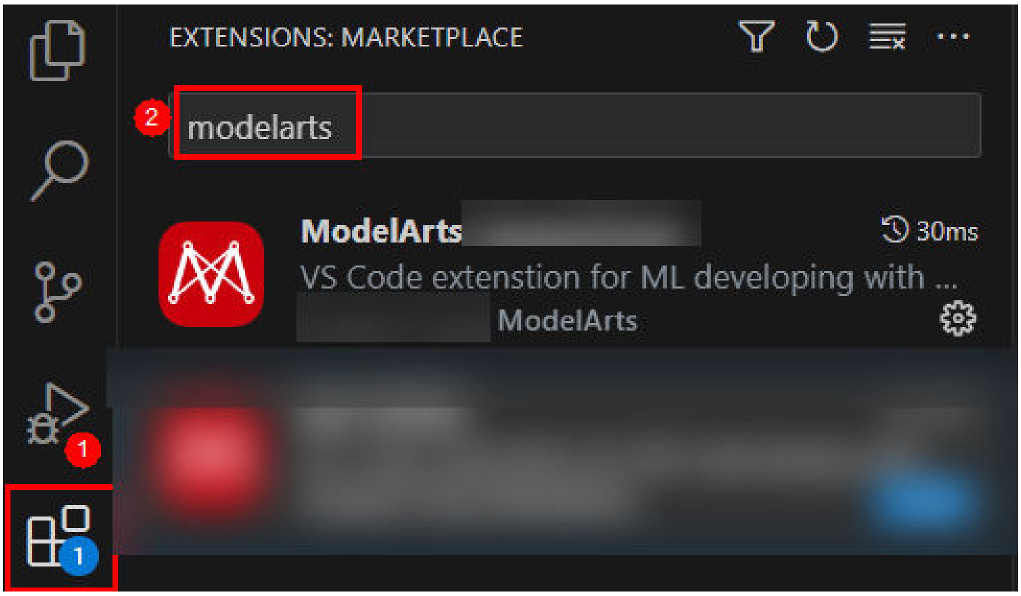
□ Don't ask again for this extension.

Cancel | Open

3.5.3 What Do I Do If I Failed to Access the Development Environment Through VS Code?

If the VS Code fails to connect to the development environment, perform the following steps:

Step 1 Check whether the plug-in package is of the latest version. Search for the plug-in in extensions and check whether it needs to be upgraded.



Step 2 Check whether the instance is running. If yes, go to the next step.

Step 3 Run the following command in VS Code's Terminal to connect to the remote development environment:

```
ssh -tt -o StrictHostKeyChecking=no -i ${IdentityFile} ${User}@${HostName} -p ${Port}
```

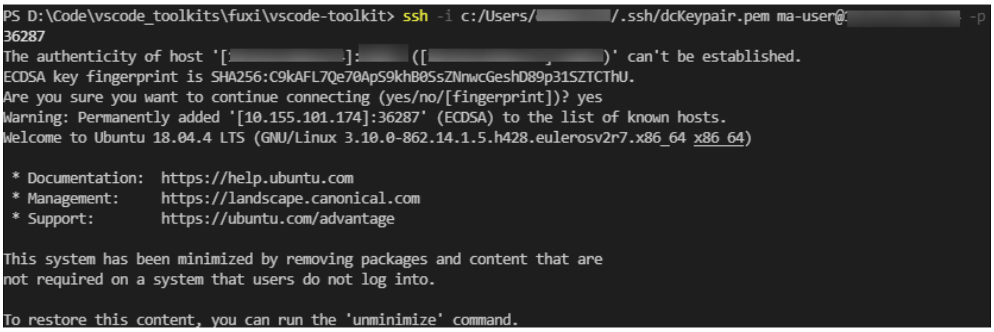
Parameters:

- **IdentityFile**: path to the local key

- **User**: username, for example, **ma-user**

- **HostName**: IP address

- **Port**: port number

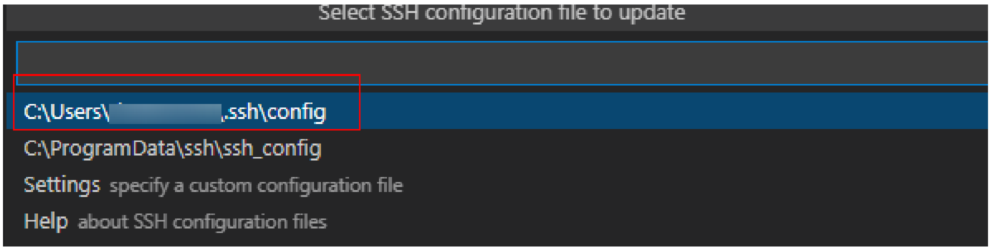


```
PS D:\Code\vscode_toolkits\fuxi\vscode-toolkit> ssh -i c:/Users/[redacted]/.ssh/dcKeypair.pem ma-user@[redacted] -p
36287
The authenticity of host '[[redacted]]:[redacted] ([[redacted])' can't be established.
ECDSA key fingerprint is SHA256:C9kAFL7Qe70ApS9khB0SsZNnwcGeshD89p31SZTCThU.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '[10.155.101.174]:36287' (ECDSA) to the list of known hosts.
Welcome to Ubuntu 18.04.4 LTS (GNU/Linux 3.10.0-862.14.1.5.h428.eulerosv2r7.x86_64 x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

This system has been minimized by removing packages and content that are
not required on a system that users do not log into.

To restore this content, you can run the 'unminimize' command.
```

If the connection is successful, go to the next step.

Step 4 Check whether the configuration is correct. If yes, go to the next step.

Check the **config** file.


Select SSH configuration file to update
C:\Users\[redacted].ssh\config
C:\ProgramData\ssh\ssh_config
Settings specify a custom configuration file
Help about SSH configuration files

```
HOST remote-dev
    hostname <instance connection host>
    port <instance connection port>
    user ma-user
    IdentityFile ~/.ssh/test.pem
    StrictHostKeyChecking no
    UserKnownHostsFile /dev/null
    ForwardAgent yes
```

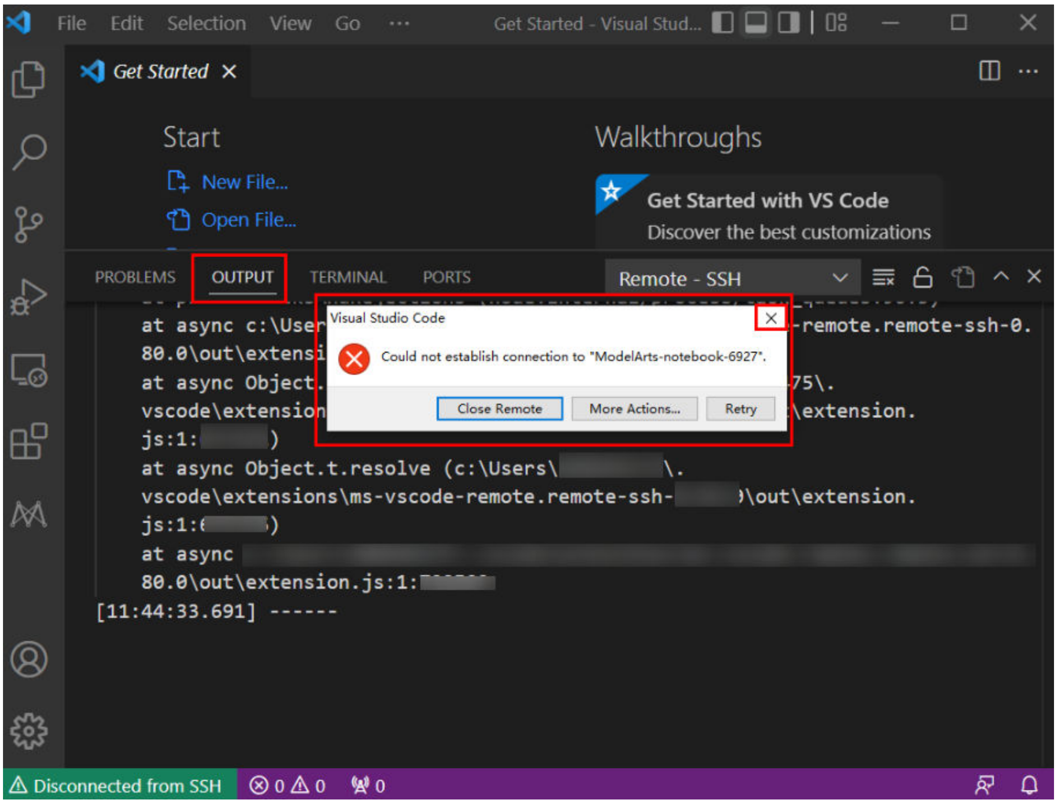
Step 5 Check the key file. You are advised to save the key file in **C:\Users\xx.ssh** and ensure that the file does not contain Chinese characters.

Step 6 If the fault persists, rectify it by referring to the FAQs in **follow-up sections**.

----End

3.5.4 What Do I Do If Error Message "Could not establish connection to xxx" Is Displayed During a Remote Connection?

Symptom



Visual Studio Code

Could not establish connection to "ModelArts-notebook-6927".

```
    at async c:\User                                   -remote.remote-ssh-0.
    80.0\out\extensi
    at async Object.                                   75\.
    vscode\extension                                   \extension.
    js:1:[redacted])
    at async Object.t.resolve (c:\Users\[redacted]\.
    vscode\extensions\ms-vscode-remote.remote-ssh-[redacted]\out\extension.
    js:1:[redacted])
    at async [redacted]
    80.0\out\extension.js:1:[redacted]
[11:44:33.691] ------
```

Possible Cause

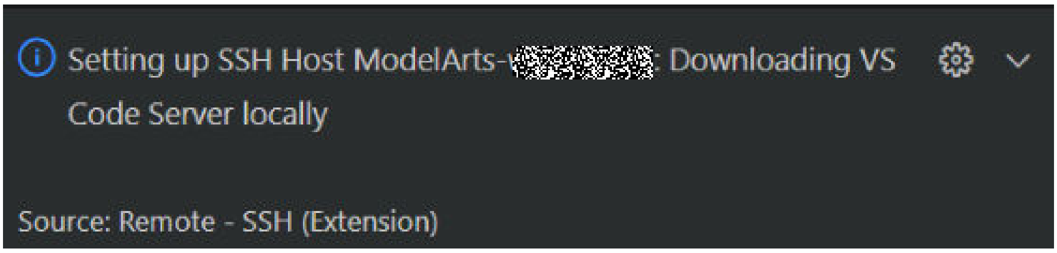
Establishing a remote SSH connection to an instance through VS Code failed.

Solution

Close the displayed dialog box, view the error information in **OUTPUT**, and rectify the fault by referring to the troubleshooting methods provided in the following sections.

3.5.5 What Do I Do If the Connection to a Remote Development Environment Remains in "Setting up SSH Host xxx: Downloading VS Code Server locally" State for More Than 10 Minutes?

Symptom



Setting up SSH Host ModelArts-[redacted]: Downloading VS Code Server locally

Source: Remote - SSH (Extension)

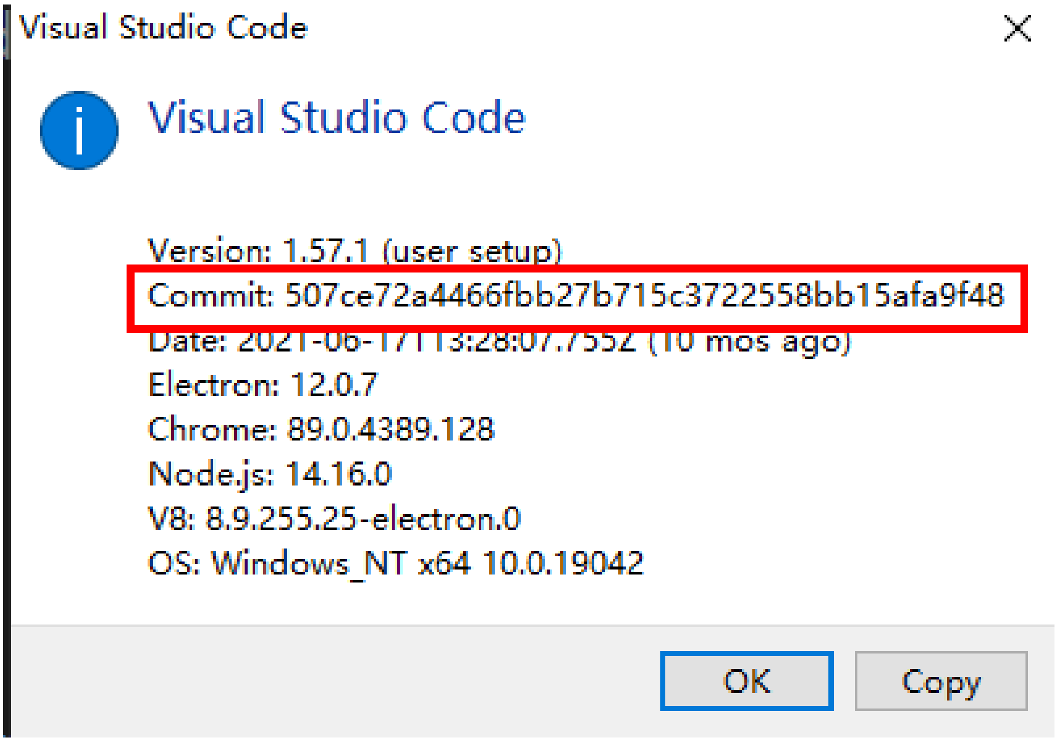
Possible Cause

The local network is faulty. As a result, it takes a long time to automatically install the VS Code server remotely.

Solution

Manually install the VS Code server.

Step 1 Obtain the VS Code commit ID.



Visual Studio Code

Visual Studio Code

Version: 1.57.1 (user setup)
Commit: 507ce72a4466fbb27b715c3722558bb15afa9f48
Date: 2021-06-17T13:28:07.755Z (10 mos ago)
Electron: 12.0.7
Chrome: 89.0.4389.128
Node.js: 14.16.0
V8: 8.9.255.25-electron.0
OS: Windows_NT x64 10.0.19042

Step 2 Download the VS Code server package of the required version. Select Arm or x86 based on the CPU architecture of the development environment.

NOTE

Replace *${commitID}* in the following link with the commit ID obtained in **Step 1**.

- For Arm, download **vscode-server-linux-arm64.tar.gz**.

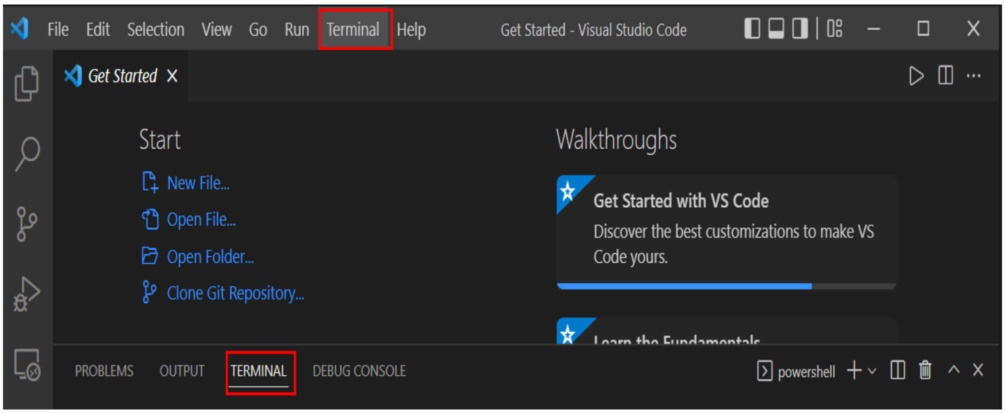
  https://update.code.visualstudio.com/commit:${commitID}/server-linux-arm64/stable

- For x86, download **vscode-server-linux-x64.tar.gz**.

  https://update.code.visualstudio.com/commit:${commitID}/server-linux-x64/stable

Step 3 Access the remote environment.

Switch to **Terminal** in VS Code.



Run the following command in VS Code Terminal to access the remote development environment:

```
ssh -tt -o StrictHostKeyChecking=no -i ${IdentityFile} ${User}@${HostName} -p ${Port}
```

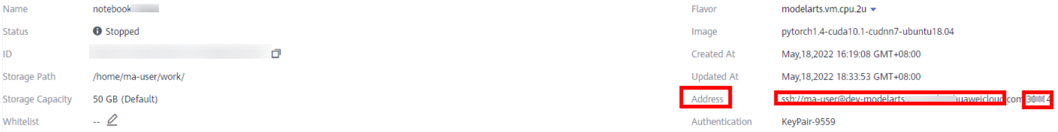
Parameters:

- **IdentityFile**: Path to the local key

- **User**: Username, for example, **ma-user**

- **HostName**: IP address

- **Port**: Port number



Name	notebook[redacted]	Flavor	modelarts.vm.cpu.2u ▾
Status	❶ Stopped	Image	pytorch1.4-cuda10.1-cudnn7-ubuntu18.04
ID	[redacted]	Created At	May,18,2022 16:19:08 GMT+08:00
Storage Path	/home/ma-user/work/	Updated At	May,18,2022 18:33:53 GMT+08:00
Storage Capacity	50 GB (Default)	Address	ssh://ma-user@dev-modelarts[redacted]uaweicloud.com[redacted]
Whitelist	--	Authentication	KeyPair-9559

Step 4 Manually install the VS Code server.

Run the following commands on the VS Code terminal to clear the residual data (replace *${commitID}* in the commands with the commit ID obtained in **Step 1**):

```
rm -rf /home/ma-user/.vscode-server/bin/${commitID}/*
mkdir -p /home/ma-user/.vscode-server/bin/${commitID}
```

Upload the VS Code server package to the development environment.

```
exit
scp -i xxx.pem -P 31205 Local path to the VS Code server package ma-user@xxx:/home/ma-user/.vscode-server/bin
ssh -tt -o StrictHostKeyChecking=no -i ${IdentityFile} ${User}@${HostName} -p ${Port}
```

Parameters:

- **IdentityFile**: Path to the local key

- **User**: Username, for example, **ma-user**

- **HostName**: IP address

- **Port**: Port number

Take Arm as an example. Decompress the VS Code server package to **$HOME/.vscode-server/bin**. Replace *${commitID}* in the command with the commit ID obtained in **Step 1**.

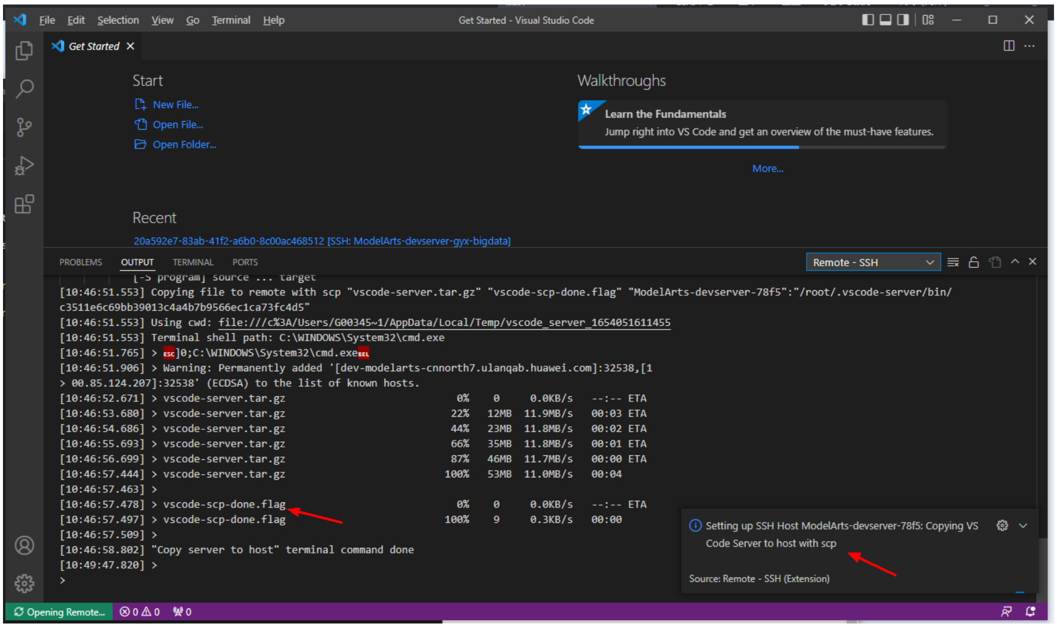
```
cd /home/ma-user/.vscode-server/bin
tar -zxf vscode-server-linux-arm64.tar.gz
mv vscode-server-linux-arm64/* ${commitID}
```

Step 5 Establish the remote connection again.

----End

3.5.6 What Do I Do If the Connection to a Remote Development Environment Remains in the State of "Setting up SSH Host xxx: Downloading VS Code Server locally" for More Than 10 Minutes?

Symptom



```
    [-S program] source ... target
[10:46:51.553] Copying file to remote with scp "vscode-server.tar.gz" "vscode-scp-done.flag" "ModelArts-devserver-78f5":"/root/.vscode-server/bin/
c3511e6c69bb39013c4a4b7b9566ec1ca73fc4d5"
[10:46:51.553] Using cwd: file:///c%3A/Users/G00345~1/AppData/Local/Temp/vscode_server_1654051611455
[10:46:51.553] Terminal shell path: C:\WINDOWS\System32\cmd.exe
[10:46:51.765] > ESC]0;C:\WINDOWS\System32\cmd.exeBEL
[10:46:51.906] > Warning: Permanently added '[dev-modelarts-cnnorth7.ulanqab.huawei.com]:32538,[1
> 00.85.124.207]:32538' (ECDSA) to the list of known hosts.
[10:46:52.671] > vscode-server.tar.gz                          0%    0     0.0KB/s   --:-- ETA
[10:46:53.680] > vscode-server.tar.gz                         22%   12MB  11.9MB/s   00:03 ETA
[10:46:54.686] > vscode-server.tar.gz                         44%   23MB  11.8MB/s   00:02 ETA
[10:46:55.693] > vscode-server.tar.gz                         66%   35MB  11.8MB/s   00:01 ETA
[10:46:56.699] > vscode-server.tar.gz                         87%   46MB  11.7MB/s   00:00 ETA
[10:46:57.444] > vscode-server.tar.gz                        100%   53MB  11.0MB/s   00:04
[10:46:57.463] >
[10:46:57.478] > vscode-scp-done.flag                          0%    0     0.0KB/s   --:-- ETA
[10:46:57.497] > vscode-scp-done.flag                        100%    9     0.3KB/s   00:00
[10:46:57.509] >
[10:46:58.802] "Copy server to host" terminal command done
[10:49:47.820] >
>
```

Setting up SSH Host ModelArts-devserver-78f5: Copying VS Code Server to host with scp

Source: Remote - SSH (Extension)

Possible Cause

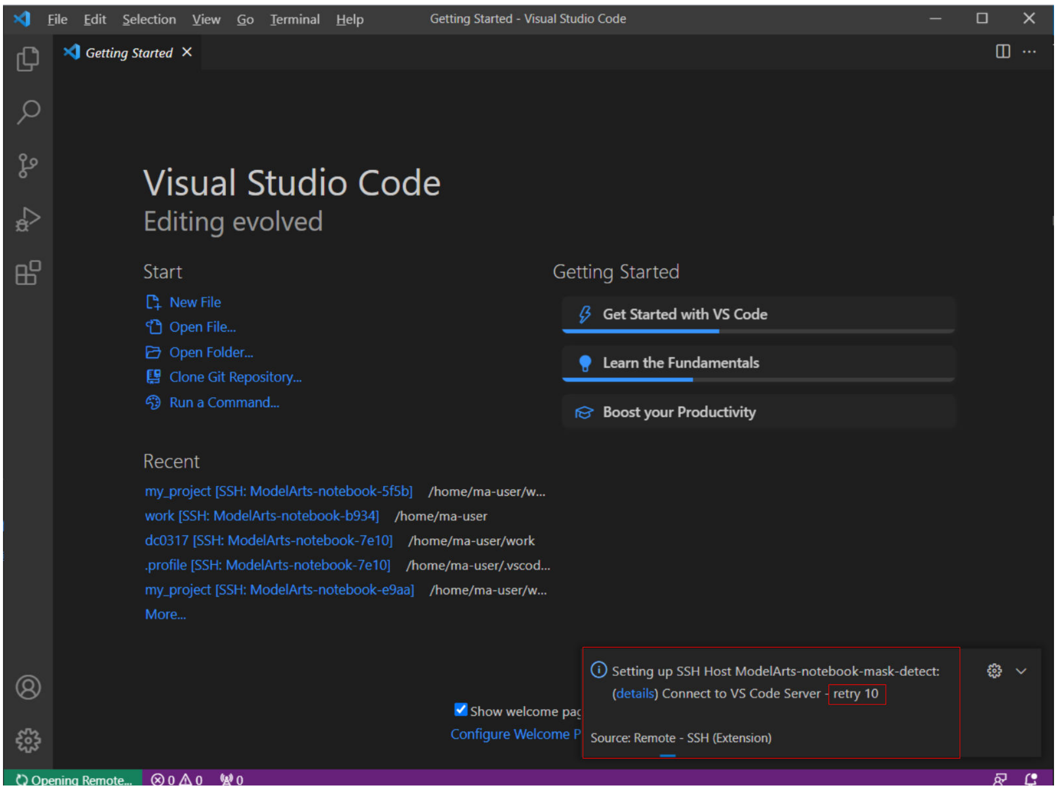
Logs show that **vscode-scp-done.flag** has been uploaded locally, but it is not received on the remote end.

Solution

Close all VS Code windows, return to the ModelArts management console, and click **Access VS Code**.

3.5.7 What Do I Do If a Remote Connection Is in the Retry State?

Symptom


File Edit Selection View Go Terminal Help
Getting Started - Visual Studio Code
Getting Started
Visual Studio Code
Editing evolved
Start
New File
Open File...
Open Folder...
Clone Git Repository...
Run a Command...
Getting Started
Get Started with VS Code
Learn the Fundamentals
Boost your Productivity
Recent
my_project [SSH: ModelArts-notebook-5f5b] /home/ma-user/w...
work [SSH: ModelArts-notebook-b934] /home/ma-user
dc0317 [SSH: ModelArts-notebook-7e10] /home/ma-user/work
.profile [SSH: ModelArts-notebook-7e10] /home/ma-user/.vscod...
my_project [SSH: ModelArts-notebook-e9aa] /home/ma-user/w...
More...
Show welcome pag
Configure Welcome P
Opening Remote...
⊗ 0 ⚠ 0 0

Setting up SSH Host ModelArts-notebook-mask-detect: (details) Connect to VS Code Server - retry 10

Source: Remote - SSH (Extension)

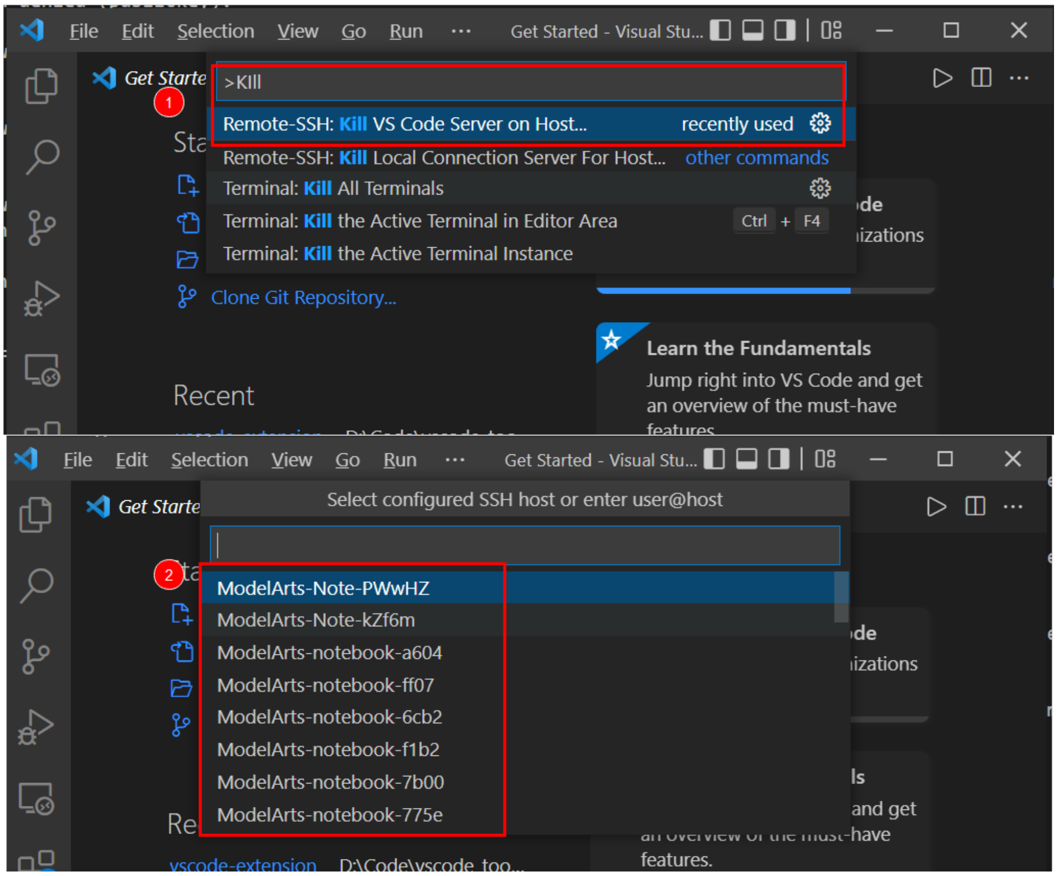
Possible Cause

Downloading the VS Code server failed before, leading to residual data. As a result, new download cannot be performed.

Solution

Method 1 (performed locally): Open the command panel (**Ctrl+Shift+P** for Windows and **Cmd+Shift+P** for macOS), search for **Kill VS Code Server on Host**, and locate the affected instance, which will be automatically cleared. Then, establish the connection again.

Figure 3-4 Clearing the affected instance


File Edit Selection View Go Run ···
Get Started - Visual Stu...
Get Starte
1
>Kill
Remote-SSH: Kill VS Code Server on Host... recently used
Remote-SSH: Kill Local Connection Server For Host... other commands
Terminal: Kill All Terminals
Terminal: Kill the Active Terminal in Editor Area Ctrl + F4
Terminal: Kill the Active Terminal Instance
Clone Git Repository...
Recent
Learn the Fundamentals
Jump right into VS Code and get an overview of the must-have features
2
Select configured SSH host or enter user@host
ModelArts-Note-PWwHZ
ModelArts-Note-kZf6m
ModelArts-notebook-a604
ModelArts-notebook-ff07
ModelArts-notebook-6cb2
ModelArts-notebook-f1b2
ModelArts-notebook-7b00
ModelArts-notebook-775e
vscode-extension D:\Code\vscode_too...

Method 2 (performed remotely): Delete the files that are being used in **/home/ma-user/.vscode-server/bin/** on the VS Code terminal. Then, establish the connection again.

```
ssh -tt -o StrictHostKeyChecking=no -i ${IdentityFile} ${User}@${HostName} -p ${Port}
rm -rf /home/ma-user/.vscode-server/bin/
```

Parameters:

- **IdentityFile**: Path to the local key

- **User**: Username, for example, **ma-user**

- **HostName**: IP address

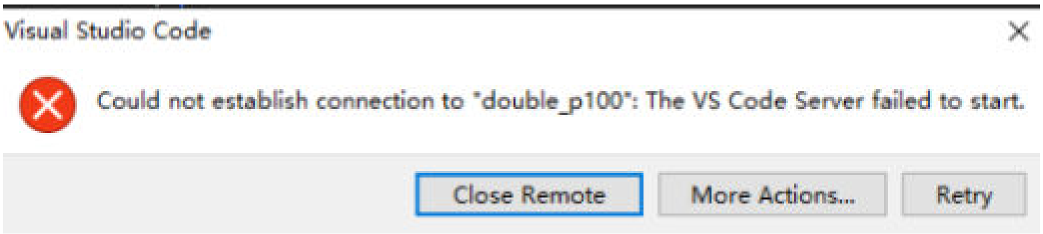
- **Port**: Port number

NOTE

The preceding methods can also be used to resolve issues related to the VS Code server.

3.5.8 What Do I Do If Error Message "The VS Code Server failed to start" Is Displayed?

Symptom

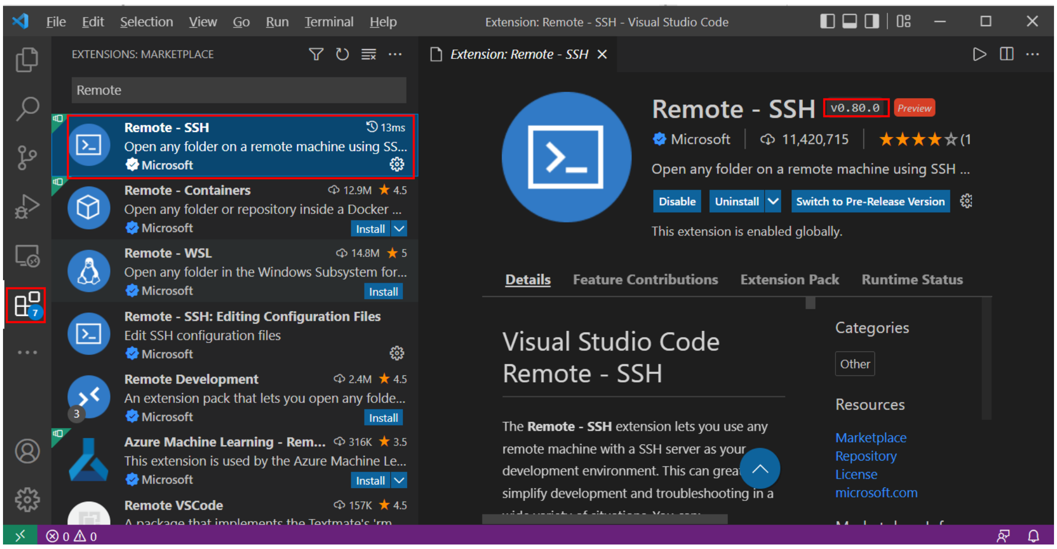


Visual Studio Code

Could not establish connection to "double_p100": The VS Code Server failed to start.

Solution

Step 1 Check whether the VS Code version is 1.65.0 or later. If so, check the Remote-SSH version. If the version is earlier than 0.76.1, upgrade Remote-SSH.

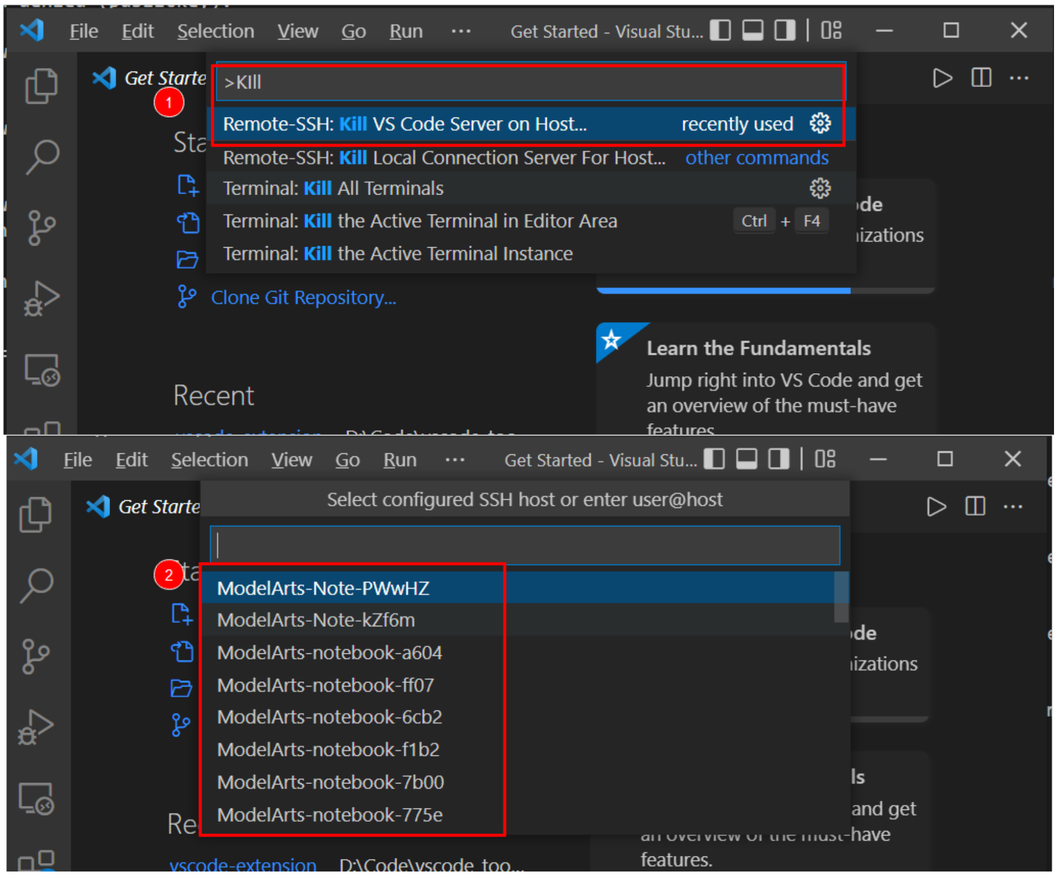


File
Edit
Selection
View
Go
Run
Terminal
Help
Extension: Remote - SSH - Visual Studio Code
EXTENSIONS: MARKETPLACE
Remote
Extension: Remote - SSH
Remote - SSH
13ms
Open any folder on a remote machine using SS...
Microsoft
Remote - Containers
12.9M
4.5
Open any folder or repository inside a Docker ...
Microsoft
Install
Remote - WSL
14.8M
5
Open any folder in the Windows Subsystem for...
Microsoft
Install
Remote - SSH: Editing Configuration Files
Edit SSH configuration files
Microsoft
Remote Development
2.4M
4.5
An extension pack that lets you open any folde...
Microsoft
Install
Azure Machine Learning - Rem...
316K
3.5
This extension is used by the Azure Machine Le...
Microsoft
Install
Remote VSCode
157K
4.5
Remote - SSH
v0.80.0
Preview
Microsoft
11,420,715
Open any folder on a remote machine using SSH ...
Disable
Uninstall
Switch to Pre-Release Version
This extension is enabled globally.
Details
Feature Contributions
Extension Pack
Runtime Status
Visual Studio Code Remote - SSH
Categories
Other
Resources
Marketplace
Repository
License
microsoft.com
0
0

The **Remote - SSH** extension lets you use any remote machine with a SSH server as your development environment. This can grea simplify development and troubleshooting in a

Step 2 Open the command panel (**Ctrl+Shift+P** for Windows and **Cmd+Shift+P** for macOS), search for **Kill VS Code Server on Host**, and locate the affected instance, which will be automatically cleared. Then, establish the connection again.

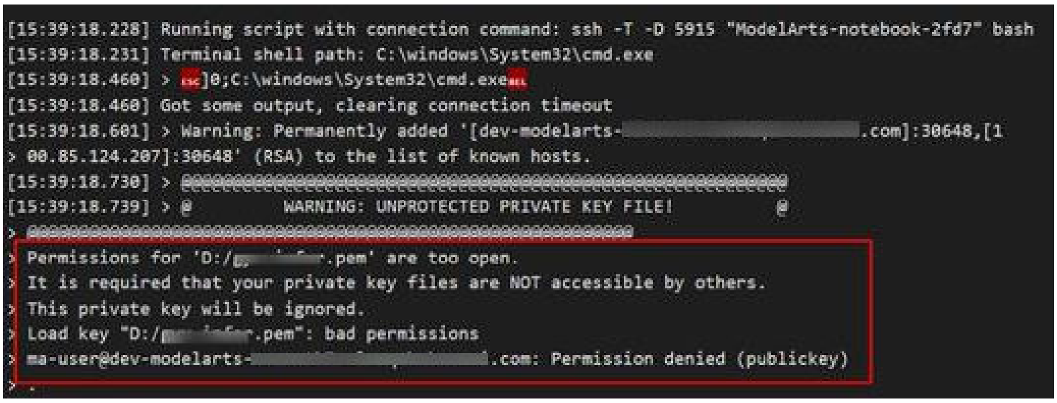
Figure 3-5 Clearing the affected instance


File Edit Selection View Go Run ··· Get Started - Visual Stu...
>Kill
1
Remote-SSH: Kill VS Code Server on Host... recently used
Remote-SSH: Kill Local Connection Server For Host... other commands
Terminal: Kill All Terminals
Terminal: Kill the Active Terminal in Editor Area Ctrl + F4
Terminal: Kill the Active Terminal Instance
Clone Git Repository...
Recent
Learn the Fundamentals
Jump right into VS Code and get an overview of the must-have features.
Select configured SSH host or enter user@host
2
ModelArts-Note-PWwHZ
ModelArts-Note-kZf6m
ModelArts-notebook-a604
ModelArts-notebook-ff07
ModelArts-notebook-6cb2
ModelArts-notebook-f1b2
ModelArts-notebook-7b00
ModelArts-notebook-775e
vscode-extension D:\Code\vscode_too...

----End

3.5.9 What Do I Do If Error Message "Permissions for 'x:/xxx.pem' are too open" Is Displayed?

Symptom



```
[15:39:18.228] Running script with connection command: ssh -T -D 5915 "ModelArts-notebook-2fd7" bash
[15:39:18.231] Terminal shell path: C:\windows\System32\cmd.exe
[15:39:18.460] > ESC]0;C:\windows\System32\cmd.exeBEL
[15:39:18.460] Got some output, clearing connection timeout
[15:39:18.601] > Warning: Permanently added '[dev-modelarts-[redacted].com]:30648,[1
> 00.85.124.207]:30648' (RSA) to the list of known hosts.
[15:39:18.730] > @@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
[15:39:18.739] > @         WARNING: UNPROTECTED PRIVATE KEY FILE!          @
> @@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
> Permissions for 'D:/[redacted].pem' are too open.
> It is required that your private key files are NOT accessible by others.
> This private key will be ignored.
> Load key "D:/[redacted].pem": bad permissions
> ma-user@dev-modelarts-[redacted].com: Permission denied (publickey)
> .
```

Possible Cause

Possible cause 1: The key file is not stored in the specified path. For details, see the **security restrictions** or **VS Code document**. Resolve this issue by referring to solution 1.

Possible cause 2: For macOS or Linux, the permission on the key file or the folder where the key is stored may be incorrect. Resolve this issue by referring to solution 2.

Solution

Solution 1:

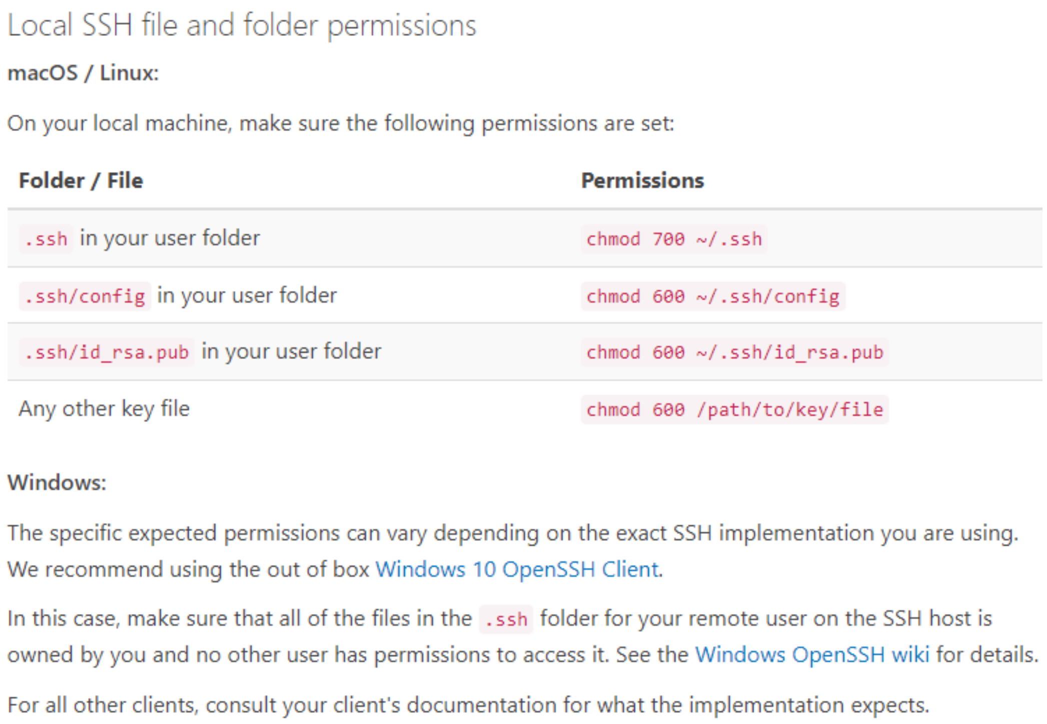
Place the key file in a specified path or its sub-path:

Windows: **C:\Users\{{user}}**

macOS or Linux: **Users/{{user}}**

Solution 2:

Check the file and folder permissions.



Local SSH file and folder permissions

macOS / Linux:

On your local machine, make sure the following permissions are set:

Folder / File	Permissions
`.ssh` in your user folder	`chmod 700 ~/.ssh`
`.ssh/config` in your user folder	`chmod 600 ~/.ssh/config`
`.ssh/id_rsa.pub` in your user folder	`chmod 600 ~/.ssh/id_rsa.pub`
Any other key file	`chmod 600 /path/to/key/file`

Windows:

The specific expected permissions can vary depending on the exact SSH implementation you are using. We recommend using the out of box Windows 10 OpenSSH Client.

In this case, make sure that all of the files in the `.ssh` folder for your remote user on the SSH host is owned by you and no other user has permissions to access it. See the Windows OpenSSH wiki for details.

For all other clients, consult your client's documentation for what the implementation expects.

3.5.10 Error Message "Bad owner or permissions on C:\Users\Administrator/.ssh/config" Is Displayed

Symptom

Error message "Bad owner or permissions on C:\Users\Administrator/.ssh/config" is displayed when VS Code is connecting to a development environment.

Possible Causes

The permission to the SSH folder has been granted to other users, not only to the current Windows user, or the current user does not have the permission. In these cases, you only need to modify the permission.

Solution

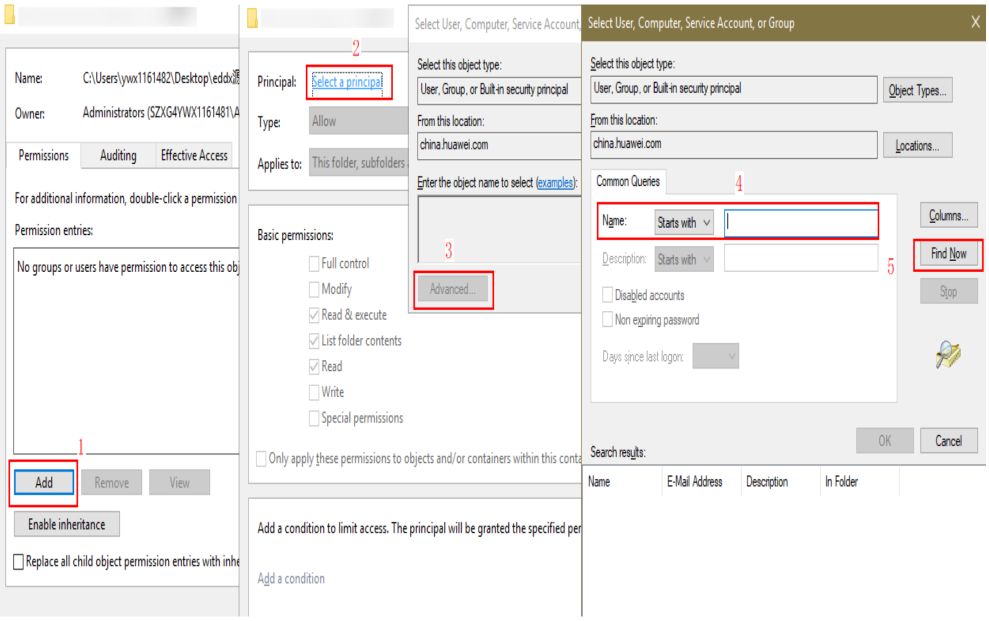
1. Find the SSH folder, which is typically located in **C:\Users**, for example, **C:\Users\xxx**.

   NOTE

   The file name in **C:\Users** must be the same as the Windows login username.

2. Right-click the folder and choose **Properties**. Then, click the **Security** tab.
3. Click **Advanced**. In the displayed window, click **Disable inheritance**. Then, in the **Block Inheritance** dialog box, click **Remove all inherited permissions from this object**. In this case, all users will be deleted.
4. Add an owner. In the same window, click **Add**. In the displayed window, click **Select a principal** next to **Principal**. In the displayed **Select User, Computer, Service Account, or Group** dialog box, click **Advanced**, enter the username, and click **Find Now**. Then, the search results will be displayed. Select your account and click **OK** to close all windows.

Figure 3-6 Adding an owner



Name: C:\Users\ywx1161482\Desktop\eddx
Owner: Administrators (SZXG4YWX1161481\A
For additional information, double-click a permission
Permission entries:
No groups or users have permission to access this obj
□ Replace all child object permission entries with inhe

Principal: Select a principal
Type: Allow
Applies to: This folder, subfolders
Basic permissions:
□ Full control
□ Modify
☑ Read & execute
☑ List folder contents
☑ Read
□ Write
□ Special permissions
□ Only apply these permissions to objects and/or containers within this conta
Add a condition to limit access. The principal will be granted the specified per
Add a condition

Select User, Computer, Service Account
Select this object type: User, Group, or Built-in security principal
From this location: china.huawei.com
Enter the object name to select (examples):

Select User, Computer, Service Account, or Group
Select this object type: User, Group, or Built-in security principal
From this location: china.huawei.com
Name: Starts with
Description: Starts with
□ Disabled accounts
□ Non expiring password
Days since last logon:
Search results:

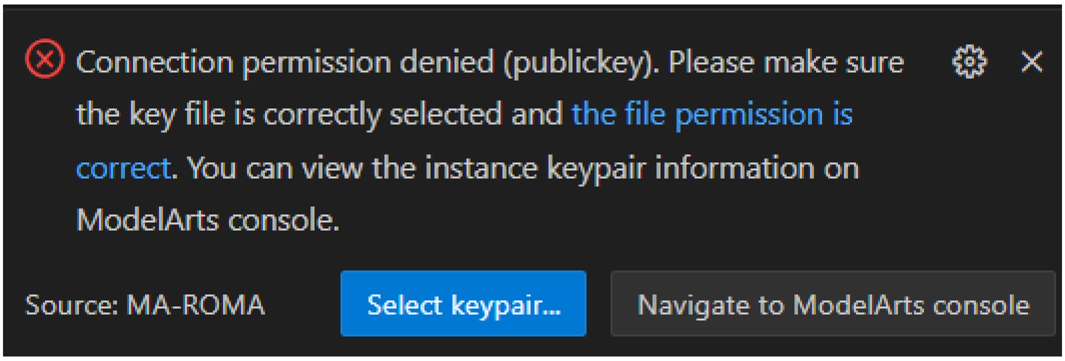
Name	E-Mail Address	Description	In Folder

5. Close and open VS Code again and try to remotely access the SSH host. Ensure that the target key is stored in the SSH folder.

3.5.11 Error Message "Connection permission denied (publickey)" Is Displayed

Symptom

Error message "Connection permission denied (publickey)" is displayed when VS Code is connecting to a development environment. Please make sure the key file is correctly selected and the file permission is correct. You can view the instance keypair information on ModelArts console."



Connection permission denied (publickey). Please make sure the key file is correctly selected and the file permission is correct. You can view the instance keypair information on ModelArts console.

Source: MA-ROMA

Possible Causes

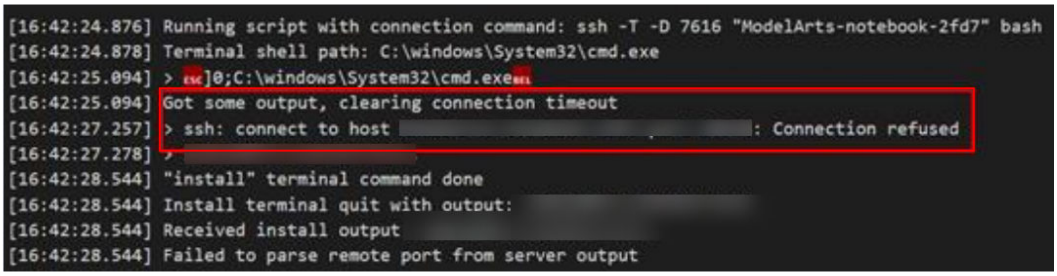
The permission on the key file or the folder where the key is stored is incorrect, or the key is incorrect.

Solution

1. Change the permission for the **/home/ma-user** directory. You are advised to set the permission to **755** or **750** to ensure user isolation and security.
   ```
   chomd 755 /home/ma-user
   chomd 750 /home/ma-user
   ```
2. Check whether the key is the same as that bound to the instance.
   a. Stop the instance and go to the instance details page.
   b. Update the key. Click the **Edit** icon next to **Authentication**, and then click **Create** to create a key and then select it.
   c. Use VS Code to connect to the instance again and select the new key.

3.5.12 What Do I Do If Error Message "ssh: connect to host xxx.pem port xxxxx: Connection refused" Is Displayed?

Symptom



```
[16:42:24.876] Running script with connection command: ssh -T -D 7616 "ModelArts-notebook-2fd7" bash
[16:42:24.878] Terminal shell path: C:\windows\System32\cmd.exe
[16:42:25.094] > ␛]0;C:\windows\System32\cmd.exe␇
[16:42:25.094] Got some output, clearing connection timeout
[16:42:27.257] > ssh: connect to host [redacted]: Connection refused
[16:42:27.278] > [redacted]
[16:42:28.544] "install" terminal command done
[16:42:28.544] Install terminal quit with output: [redacted]
[16:42:28.544] Received install output [redacted]
[16:42:28.544] Failed to parse remote port from server output
```

Possible Cause

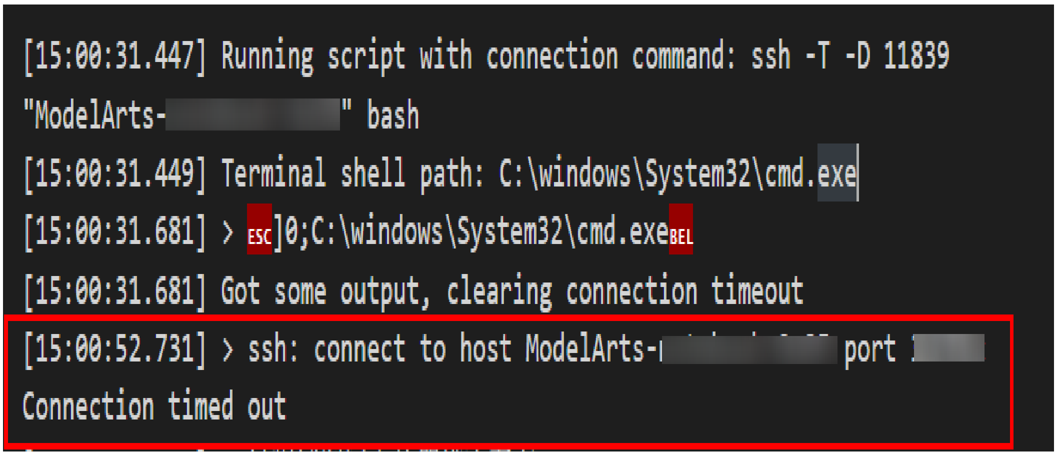
The target instance is not running.

Solution

Log in to the ModelArts management console and check the status of the instance. If the instance is stopped, start it. If the instance is in other states, such as **Error**, stop and then start it. After the instance status changes to **Running**, establish the remote connection again.

3.5.13 What Do I Do If Error Message "ssh: connect to host ModelArts-xxx port xxx: Connection timed out" Is Displayed?

Symptom



```
[15:00:31.447] Running script with connection command: ssh -T -D 11839
"ModelArts-[redacted]" bash
[15:00:31.449] Terminal shell path: C:\windows\System32\cmd.exe
[15:00:31.681] > ESC]0;C:\windows\System32\cmd.exeBEL
[15:00:31.681] Got some output, clearing connection timeout
[15:00:52.731] > ssh: connect to host ModelArts-[redacted] port [redacted]
Connection timed out
```

Possible Cause

Possible cause 1: The whitelisted IP addresses configured for the instance are different from the ones used in the local network.

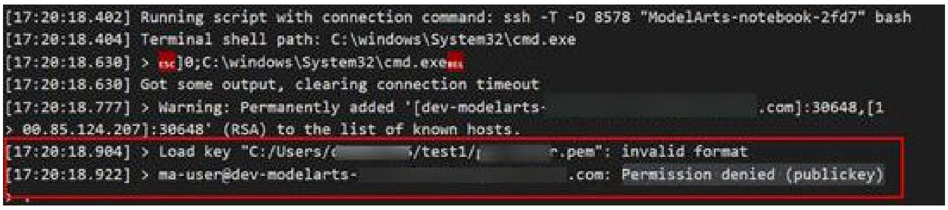
Change the whitelist so that the whitelisted IP addresses are the same as those used in the local network or disable the whitelist.

Possible cause 2: The local network is inaccessible.

Solution: Check the local network and network restrictions.

3.5.14 What Do I Do If Error Message "Load key "C:/Users/xx/test1/xxx.pem": invalid format" Is Displayed?

Symptom



```
[17:20:18.402] Running script with connection command: ssh -T -D 8578 "ModelArts-notebook-2fd7" bash
[17:20:18.404] Terminal shell path: C:\windows\System32\cmd.exe
[17:20:18.630] > ESC]0;C:\windows\System32\cmd.exeBEL
[17:20:18.630] Got some output, clearing connection timeout
[17:20:18.777] > Warning: Permanently added '[dev-modelarts-[redacted].com]:30648,[1
> 00.85.124.207]:30648' (RSA) to the list of known hosts.
[17:20:18.904] > Load key "C:/Users/[redacted]/test1/[redacted].pem": invalid format
[17:20:18.922] > ma-user@dev-modelarts-[redacted].com: Permission denied (publickey)
```

Possible Cause

The content or format of the key file is incorrect.

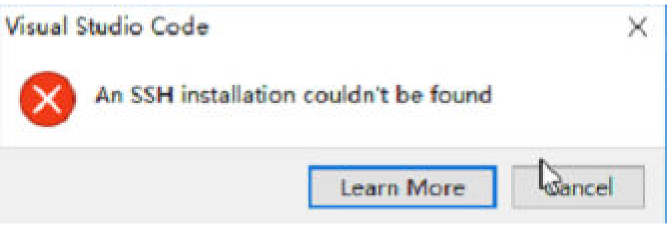
Solution

Use the correct key file for remote access. If there is no correct key file locally or the file is damaged, perform the following operations:

1. Log in to the console, search for **DEW**. On the DEW console, choose **Key Pair Service** and click **Account Key Pairs**. Then, view and download the correct key file.
2. If the key cannot be downloaded and the originally downloaded key was lost, create a new development environment instance and a new key file.

3.5.15 What Do I Do If Error Message "An SSH installation couldn't be found" or "Could not establish connection to instance xxx: 'ssh' ..." Is Displayed?

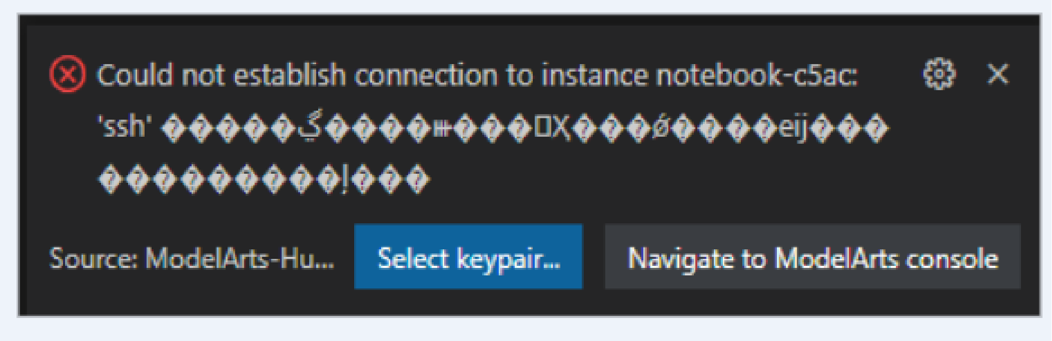
Symptom



Visual Studio Code

An SSH installation couldn't be found

Or



Could not establish connection to instance notebook-c5ac: 'ssh' �����گ����ш���□X����ő�����eij��� ���������!���

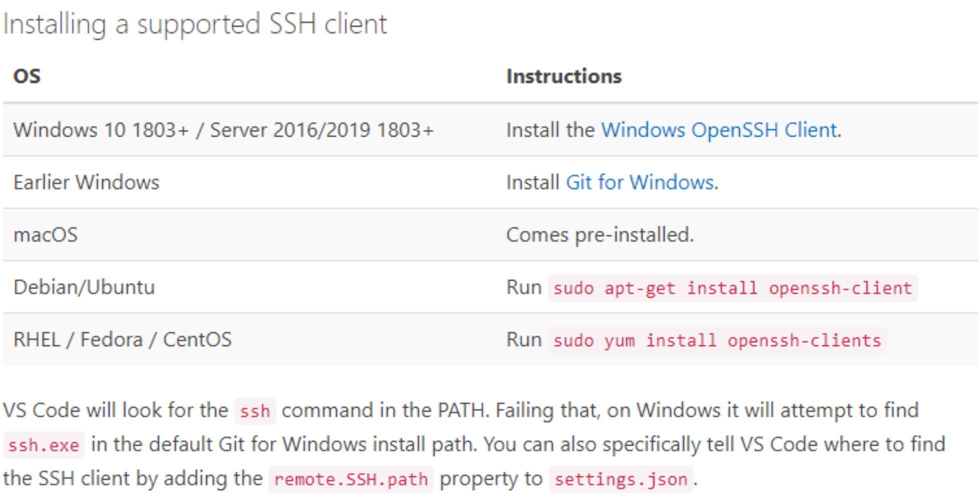
When VS Code attempts to access a notebook instance, the system always prompts you to select a certificate, and the message, excepting the title, consists of garbled characters. After the certificate is selected, the system still does not respond and the connection failed.

Possible Cause

OpenSSH is not installed in the current environment or is not installed in the default path. For details, see the **VS Code document**.

Solution

- If OpenSSH is not installed in the current environment, **download and install it**.



Installing a supported SSH client

OS	Instructions
Windows 10 1803+ / Server 2016/2019 1803+	Install the Windows OpenSSH Client.
Earlier Windows	Install Git for Windows.
macOS	Comes pre-installed.
Debian/Ubuntu	Run `sudo apt-get install openssh-client`
RHEL / Fedora / CentOS	Run `sudo yum install openssh-clients`

VS Code will look for the `ssh` command in the PATH. Failing that, on Windows it will attempt to find `ssh.exe` in the default Git for Windows install path. You can also specifically tell VS Code where to find the SSH client by adding the `remote.SSH.path` property to `settings.json`.

If OpenSSH fails to be installed, manually **download the OpenSSH installation package** and perform the following operations:

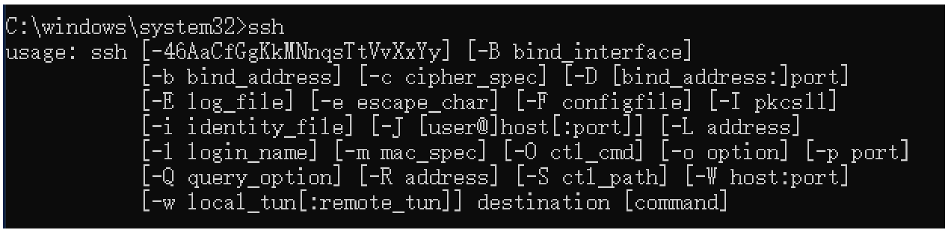
Step 1 Download the .zip package and decompress it into **C:\Windows\System32**.

Step 2 In **C:\Windows\System32\OpenSSH-xx**, open CMD as the administrator and run the following command:

```
powershell.exe -ExecutionPolicy Bypass -File install-sshd.ps1
```

Step 3 Add **C:\Program Files\OpenSSH-xx** (in which the SSH executable .exe file is stored) to environment system variables.

Step 4 Open CMD again and run **ssh**. If the following information is displayed, the installation is successful. Otherwise, go to **Step 5** and **Step 6**.



```
C:\windows\system32>ssh
usage: ssh [-46AaCfGgKkMNnqsTtVvXxYy] [-B bind_interface]
           [-b bind_address] [-c cipher_spec] [-D [bind_address:]port]
           [-E log_file] [-e escape_char] [-F configfile] [-I pkcs11]
           [-i identity_file] [-J [user@]host[:port]] [-L address]
           [-l login_name] [-m mac_spec] [-O ctl_cmd] [-o option] [-p port]
           [-Q query_option] [-R address] [-S ctl_path] [-W host:port]
           [-w local_tun[:remote_tun]] destination [command]
```

Step 5 Enable port 22 (default OpenSSH port) on the firewall and run the following command in Command Prompt:

```
netsh advfirewall firewall add rule name=sshd dir=in action=allow protocol=TCP localport=22
```

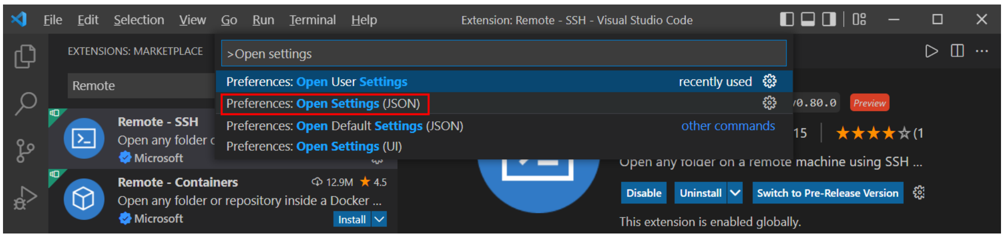
Step 6 Run the following command to start OpenSSH:

```
Start-Service sshd
```

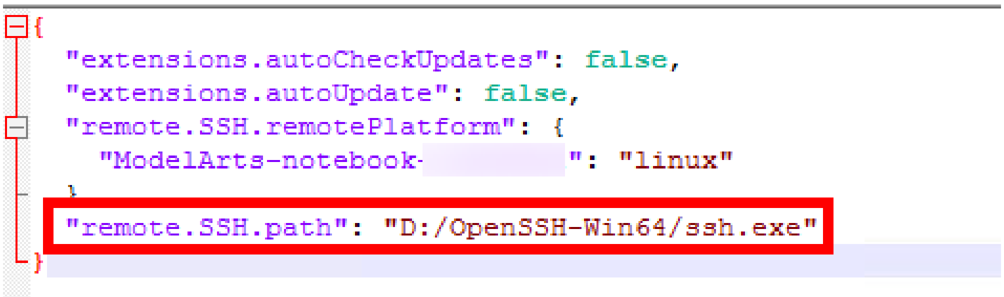
----End

- If OpenSSH is not installed in the default path, open the command panel (**Ctrl+Shift+P** for Windows and **Cmd+Shift+P** for macOS).

  Search for **Open settings**.


File Edit Selection View Go Run Terminal Help
Extension: Remote - SSH - Visual Studio Code
EXTENSIONS: MARKETPLACE
Remote
>Open settings
Preferences: Open User Settings
recently used
Preferences: Open Settings (JSON)
Preferences: Open Default Settings (JSON)
other commands
Preferences: Open Settings (UI)
Remote - SSH
Open any folder c
Microsoft
Remote - Containers
12.9M ★ 4.5
Open any folder or repository inside a Docker ...
Microsoft
Install
v0.80.0
Preview
15 ★★★★☆ (1
Open any folder on a remote machine using SSH ...
Disable
Uninstall
Switch to Pre-Release Version
This extension is enabled globally.

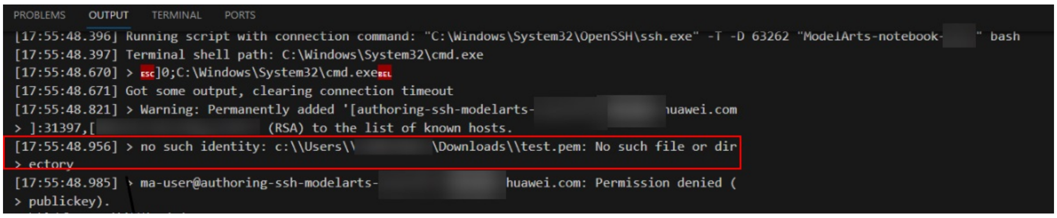
Add **remote.SSH.path** to **settings.json**, for example, **"remote.SSH.path":** "***Installation path of the local OpenSSH***".



```
{
    "extensions.autoCheckUpdates": false,
    "extensions.autoUpdate": false,
    "remote.SSH.remotePlatform": {
      "ModelArts-notebook-[redacted]": "linux"
    },
    "remote.SSH.path": "D:/OpenSSH-Win64/ssh.exe"
}
```

3.5.16 What Do I Do If Error Message "no such identity: C:/ Users/xx /test.pem: No such file or directory" Is Displayed?

Symptom



```
[17:55:48.396] Running script with connection command: "C:\Windows\System32\OpenSSH\ssh.exe" -T -D 63262 "ModelArts-notebook-[redacted]" bash
[17:55:48.397] Terminal shell path: C:\Windows\System32\cmd.exe
[17:55:48.670] > ESC]0;C:\Windows\System32\cmd.exeBEL
[17:55:48.671] Got some output, clearing connection timeout
[17:55:48.821] > Warning: Permanently added '[authoring-ssh-modelarts-[redacted]uawei.com
> ]:31397,[[redacted] (RSA) to the list of known hosts.
[17:55:48.956] > no such identity: c:\\Users\\[redacted]\Downloads\\test.pem: No such file or dir
> ectory
[17:55:48.985] > ma-user@authoring-ssh-modelarts-[redacted]huawei.com: Permission denied (
> publickey).
```

Possible Cause

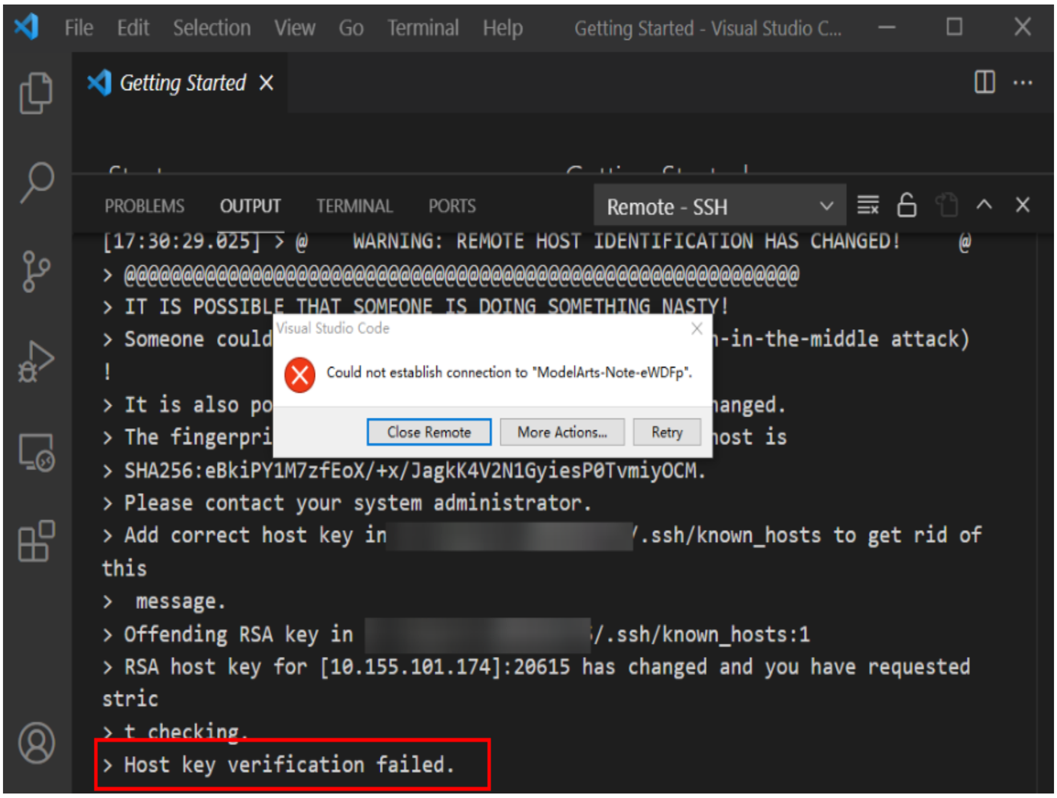
The key file is not in the path, or the name of the key file in the path has been changed.

Solution

Select the key path again.

3.5.17 What Do I Do If Error Message "Host key verification failed" or "Port forwarding is disabled" Is Displayed?

Symptom

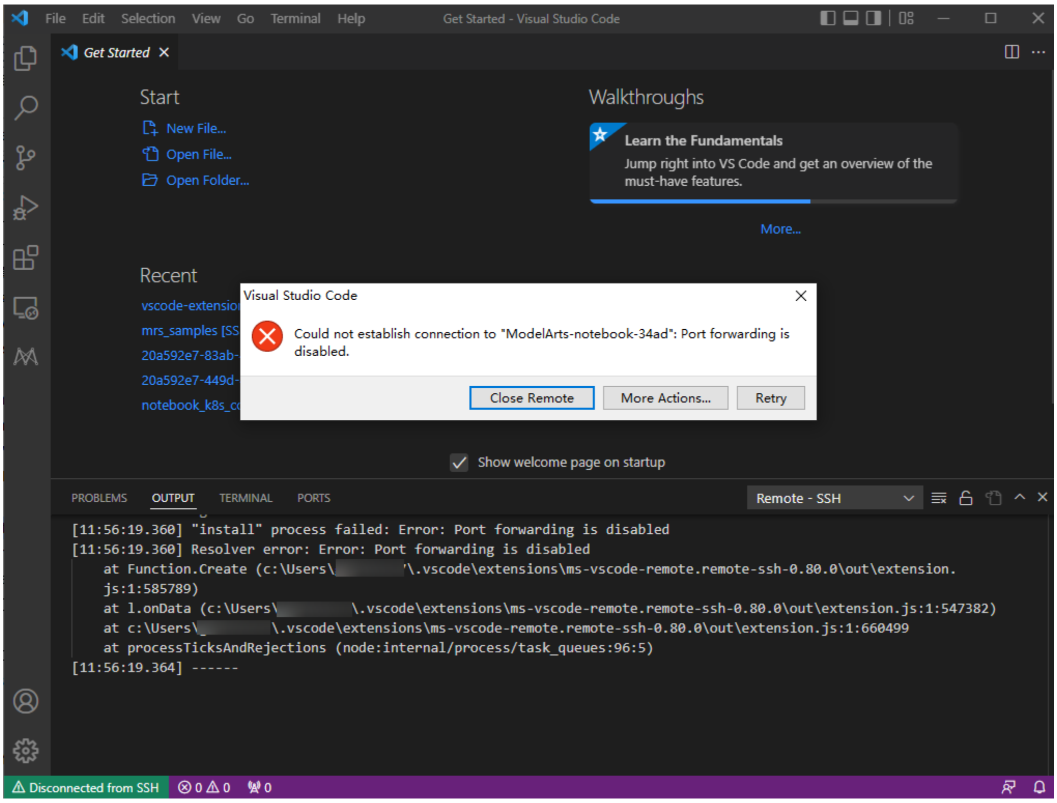


```
[17:30:29.025] > @    WARNING: REMOTE HOST IDENTIFICATION HAS CHANGED!     @
> @@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
> IT IS POSSIBLE THAT SOMEONE IS DOING SOMETHING NASTY!
> Someone could                                        n-in-the-middle attack)
!
> It is also po                                        anged.
> The fingerpri                                        host is
> SHA256:eBkiPY1M7zfEoX/+x/JagkK4V2N1GyiesP0TvmiyOCM.
> Please contact your system administrator.
> Add correct host key in [redacted]/.ssh/known_hosts to get rid of
this
>  message.
> Offending RSA key in [redacted]/.ssh/known_hosts:1
> RSA host key for [10.155.101.174]:20615 has changed and you have requested
stric
> t checking.
> Host key verification failed.
```

Visual Studio Code

Could not establish connection to "ModelArts-Note-eWDFp".

Or



Could not establish connection to "ModelArts-notebook-34ad": Port forwarding is disabled.

```
[11:56:19.360] "install" process failed: Error: Port forwarding is disabled
[11:56:19.360] Resolver error: Error: Port forwarding is disabled
    at Function.Create (c:\Users\[redacted]'\.vscode\extensions\ms-vscode-remote.remote-ssh-0.80.0\out\extension.
    js:1:585789)
    at l.onData (c:\Users\[redacted]\.vscode\extensions\ms-vscode-remote.remote-ssh-0.80.0\out\extension.js:1:547382)
    at c:\Users\[redacted]\.vscode\extensions\ms-vscode-remote.remote-ssh-0.80.0\out\extension.js:1:660499
    at processTicksAndRejections (node:internal/process/task_queues:96:5)
[11:56:19.364] ------
```

Possible Cause

After the notebook instance is restarted, its public key changes. The alarm is generated when OpenSSH detected the key change.

Solution

- Add **-o StrictHostKeyChecking=no** for remote access through the CLI in VS Code.

  ```
  ssh -tt -o StrictHostKeyChecking=no -i ${IdentityFile} ${User}@${HostName} -p ${Port}
  ```

  Parameters:

  - **IdentityFile**: path to the local key

  - **User**: username, for example, **ma-user**

  - **HostName**: IP address

  - **Port**: port number

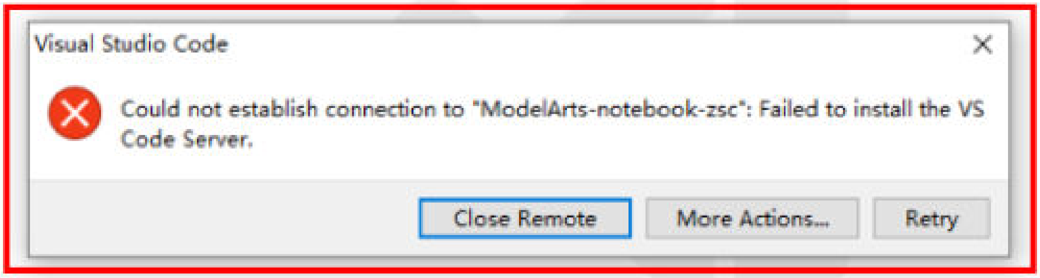
- Add **StrictHostKeyChecking no** and **UserKnownHostsFile=/dev/null** to the local **ssh config** file for manual configuration of remote access in VS Code.

  ```
  Host xxx
     HostName x.x.x.x # IP address
     Port 22522
     User ma-user
     IdentityFile C:/Users/my.pem
     StrictHostKeyChecking no
     UserKnownHostsFile=/dev/null
     ForwardAgent yes
  ```

Note that SSH logins will be insecure after the preceding parameters are added because the **known_hosts** file will be ignored during the logins.

3.5.18 What Do I Do If Error Message "Failed to install the VS Code Server" or "tar: Error is not recoverable: exiting now" Is Displayed?

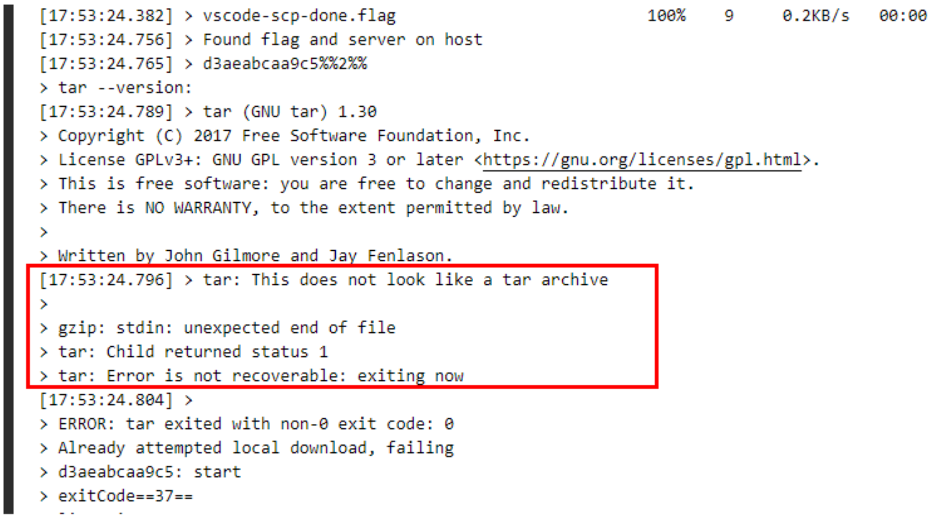
Symptom



Visual Studio Code

Could not establish connection to "ModelArts-notebook-zsc": Failed to install the VS Code Server.

Or



```
[17:53:24.382] > vscode-scp-done.flag                          100%    9     0.2KB/s   00:00
[17:53:24.756] > Found flag and server on host
[17:53:24.765] > d3aeabcaa9c5%%2%%
> tar --version:
[17:53:24.789] > tar (GNU tar) 1.30
> Copyright (C) 2017 Free Software Foundation, Inc.
> License GPLv3+: GNU GPL version 3 or later <https://gnu.org/licenses/gpl.html>.
> This is free software: you are free to change and redistribute it.
> There is NO WARRANTY, to the extent permitted by law.
>
> Written by John Gilmore and Jay Fenlason.
[17:53:24.796] > tar: This does not look like a tar archive
>
> gzip: stdin: unexpected end of file
> tar: Child returned status 1
> tar: Error is not recoverable: exiting now
[17:53:24.804] >
> ERROR: tar exited with non-0 exit code: 0
> Already attempted local download, failing
> d3aeabcaa9c5: start
> exitCode==37==
```

Possible Cause

The disk space of **/home/ma-user/work** is insufficient.

Solution

Delete unnecessary files in **/home/ma-user/work**.

3.5.19 What Do I Do If Error Message "XHR failed" Is Displayed When a Remote Notebook Instance Is Accessed Through VS Code?

Possible Cause

The error message "XHR failed" is displayed when the VS Code connects to the remote notebook.

Cause Analysis

The VS Code Server cannot be automatically downloaded because the network in the environment is faulty. Install the VS Code Server manually.

Solution

1. Open VS Code, choose Help > About, and record the ID of Commit.
2. Check the system architecture of the image used for creating a notebook instance. You can open Terminal in the notebook instance and run the uname -m command to view the system architecture.
3. Download vscode-server of the corresponding version based on the commit code and notebook instance image architecture.

   NOTE

   If the error message "Not Found" is displayed, download another version of VS Code and install it locally. Currently, Vscode-1.86.2 is recommended.

   – If the instance architecture is x86_64, click the following link to manually change the commit code (delete angle brackets when replacing the commit code), and download the vscode-server-linux-x64.tar.gz file using a browser.
   ```
   https://update.code.visualstudio.com/commit:<Commit code>/server-linux-x64/stable
   ```
   – If the instance architecture is aarch, click the following link to manually change the comment-id (remove the angle brackets when replacing the commit-id), and download the vscode-server-linux-arm64.tar.gz file using a browser. After the download is complete, rename the downloaded vscode-server-linux-arm64.tar.gz file vscode-server-linux-x64.tar.gz.
   ```
   https://update.code.visualstudio.com/commit:<Submitted ID Code>/server-linux-arm64/stable
   ```

   For example, if the commit-id is 863d2581ecda6849923a2118d93a088b0745d9d6 and the OS architecture is x86_64, run the following command:

   ```
   https://update.code.visualstudio.com/commit:863d2581ecda6849923a2118d93a088b0745d9d6/server-linux-x64/stable
   ```
4. Upload the downloaded vscode-server-linux-x64.tar.gz file to the /home/ma-user/work directory of the ModelArts instance.

   Run the following command and specify commitId: (Note: Run the command in Terminal of Notebook. Delete angle brackets when replacing commit-id.)

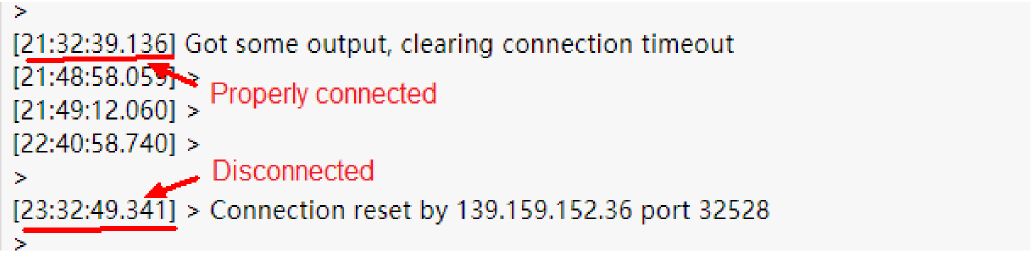
   ```
   commitId=<Submitted ID Code>
   mkdir -p /home/ma-user/.vscode-server/bin/$commitId
   tar -zxvf vscode-server-linux-x64.tar.gz -C /home/ma-user/.vscode-server/bin/$commitId  --strip=1
   chmod 750 -R /home/ma-user/.vscode-server/bin/$commitId
   ```
5. Close the VS Code and open the VS Code again on the notebook instance list page. (Note: You need to close the local vscode. Otherwise, a message indicating that multiple installation processes are running may be displayed.)

3.5.20 What Do I Do for an Automatically Disconnected VS Code Connection If No Operation Is Performed for a Long Time?

Symptom

After an SSH connection is set up through VS Code, no operation is performed for a long time and the window retains open. When the connection is used again, it is found that the connection is disconnected and no error message is displayed.

According to VS Code Remote-SSH logs, the connection was disconnected about two hours after the setup.



```
>
[21:32:39.136] Got some output, clearing connection timeout
[21:48:58.059] >
[21:49:12.060] >
[22:40:58.740] >
>
[23:32:49.341] > Connection reset by 139.159.152.36 port 32528
>
```

Properly connected

Disconnected

Possible Cause

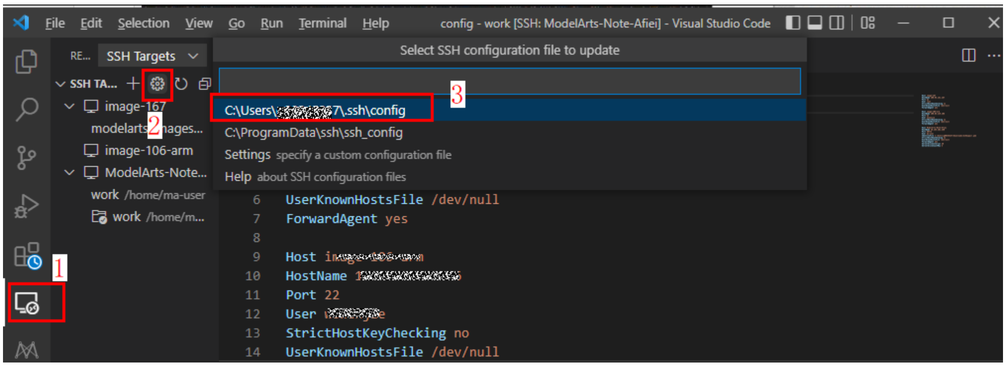
After SSH interaction stops for a period of time, the firewall disconnects idle connections (http://bluebiu.com/blog/linux-ssh-session-alive.html). The default SSH configuration does not lead to a proactive disconnection upon timeout. Since the instance runs stably on the backend, set up the connection again to resolve this issue.

Solution

To retain connections if no operation is performed for a long time, configure periodic message sending through SSH. In this way, the connection will not become idle on the firewall.

- Configure the client as needed. If the client is not configured, no heartbeat packet will be sent to the server by default.

Figure 3-7 Opening the VS Code SSH configuration file

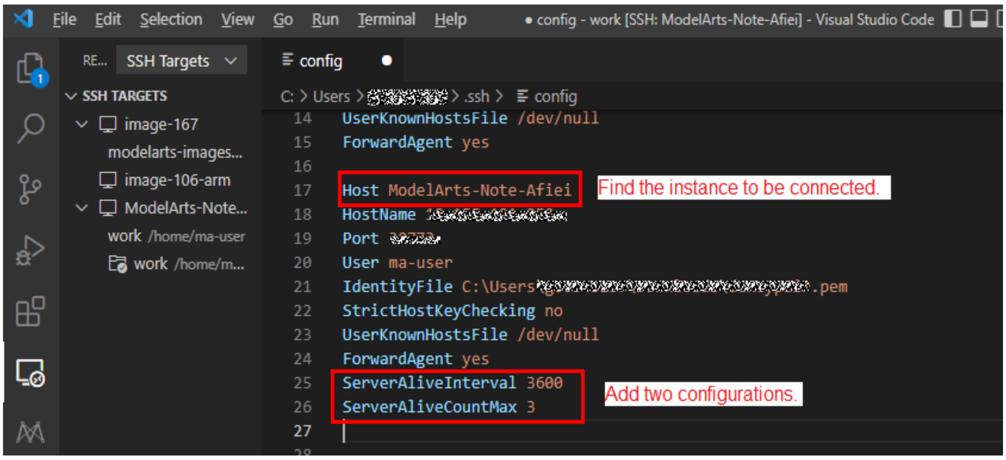


Select SSH configuration file to update

C:\Users\[redacted]7\.ssh\config
C:\ProgramData\ssh\ssh_config
Settings specify a custom configuration file
Help about SSH configuration files

```
UserKnownHostsFile /dev/null
ForwardAgent yes

Host [redacted]
HostName [redacted]
Port 22
User [redacted]
StrictHostKeyChecking no
UserKnownHostsFile /dev/null
```

Figure 3-8 Adding configurations



File Edit Selection View Go Run Terminal Help
● config - work [SSH: ModelArts-Note-Afiei] - Visual Studio Code
RE... SSH Targets
SSH TARGETS
image-167
modelarts-images...
image-106-arm
ModelArts-Note...
work /home/ma-user
work /home/m...
config
C: > Users > [redacted] > .ssh > config

```
UserKnownHostsFile /dev/null
ForwardAgent yes

Host ModelArts-Note-Afiei
HostName [redacted]
Port [redacted]
User ma-user
IdentityFile C:\Users[redacted].pem
StrictHostKeyChecking no
UserKnownHostsFile /dev/null
ForwardAgent yes
ServerAliveInterval 3600
ServerAliveCountMax 3
```

Find the instance to be connected.

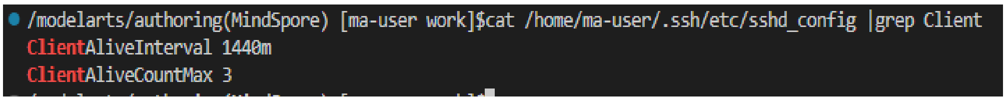
Add two configurations.

The configuration is as follows:

```
Host ModelArts-xx
   ...
   ServerAliveInterval 3600  # Add this configuration in the unit of second, indicating that the client will actively send a heartbeat packet to the server every hour.
   ServerAliveCountMax 3  # Add this configuration, indicating that if the server does not respond after the heartbeat packet is sent for three times, the connection will be disconnected.
```

For example, if the firewall is configured to disconnect a connection if the connection is idle for two hours, set **ServerAliveInterval** to a value less than two hours (for example, one hour) on the client to prevent the firewall from disconnecting the connection.

- Configure the server in **/home/ma-user/.ssh/etc/sshd_config**. (Notebook has been configured, and 24 hours is longer than the time configured on the firewall for disconnecting connections. This configuration does not need to be manually modified. It is only used to help understand the SSH configuration.)



```
/modelarts/authoring(MindSpore) [ma-user work]$cat /home/ma-user/.ssh/etc/sshd_config |grep Client
ClientAliveInterval 1440m
ClientAliveCountMax 3
```

The preceding configuration shows that the server actively sends a heartbeat packet to the client every 24 hours, and the connection will be disconnected if the client does not respond after the heartbeat packet is sent for three times.

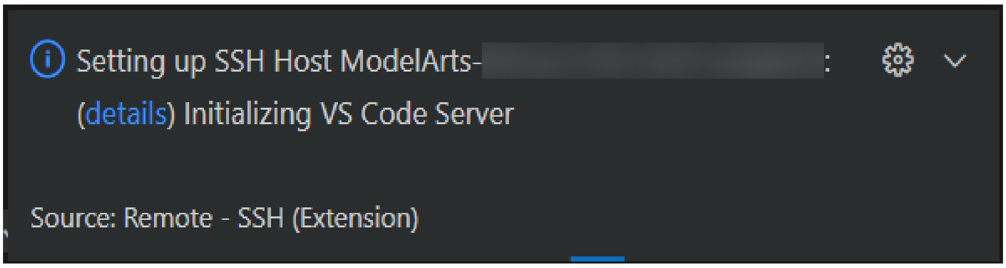
For details, see https://unix.stackexchange.com/questions/3026/what-do-options-serveraliveinterval-and-clientaliveinterval-in-sshd-config-d.

- If a connection must be consistently retained, it is a good practice to write logs in a separate log file and run the script on the backend. For example:

```
nohup train.sh > output.log 2>&1 & tail -f output.log
```

3.5.21 What Do I Do If It Takes a Long Time to Set Up a Remote Connection After VS Code Is Automatically Upgraded?

Symptom



Setting up SSH Host ModelArts-[redacted]: (details) Initializing VS Code Server

Source: Remote - SSH (Extension)

Possible Cause

VS Code is automatically upgraded. As a result, download the new VS Code server to set up a new connection.

Solution

Disable automatic VS Code upgrade. To do so, click **Settings** in the lower left corner, search for **Update: Mode**, and set it to **none**.

Figure 3-9 Settings

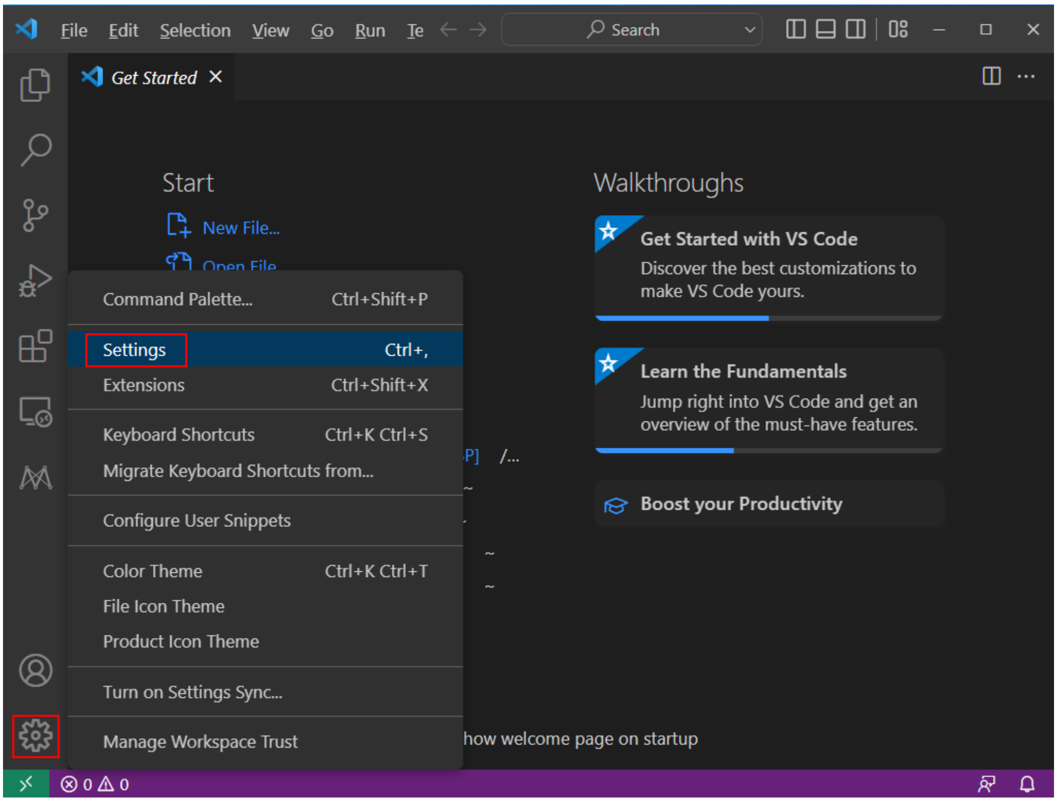
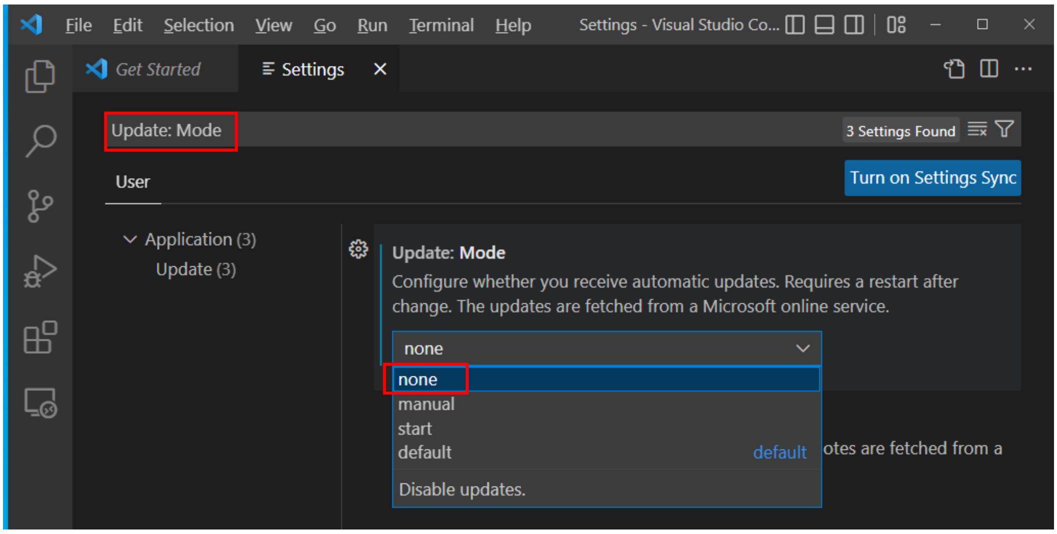


Figure 3-10 Setting the update mode to none



Update: Mode

Update: Mode

Configure whether you receive automatic updates. Requires a restart after change. The updates are fetched from a Microsoft online service.

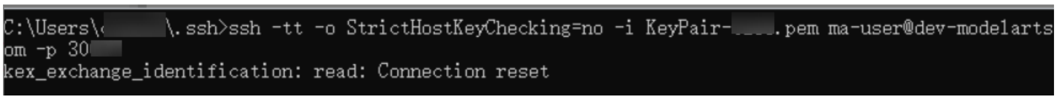
none

- none
- manual
- start
- default — default

Disable updates.

3.5.22 What Do I Do If Error Message "Connection reset" Is Displayed During an SSH Connection?

Symptom



```
C:\Users\[redacted]\.ssh>ssh -tt -o StrictHostKeyChecking=no -i KeyPair-[redacted].pem ma-user@dev-modelarts
om -p 30[redacted]
kex_exchange_identification: read: Connection reset
```

Possible Causes

The user network is restricted. For example, SSH is disabled by default on some enterprise networks.

Solution

Apply for the SSH permission.

3.5.23 What Can I Do If a Notebook Instance Is Frequently Disconnected or Stuck After I Use MobaXterm to Connect to the Notebook Instance in SSH Mode?

Symptom

After MobaXterm is connected to a development environment, it is disconnected after a period of time.

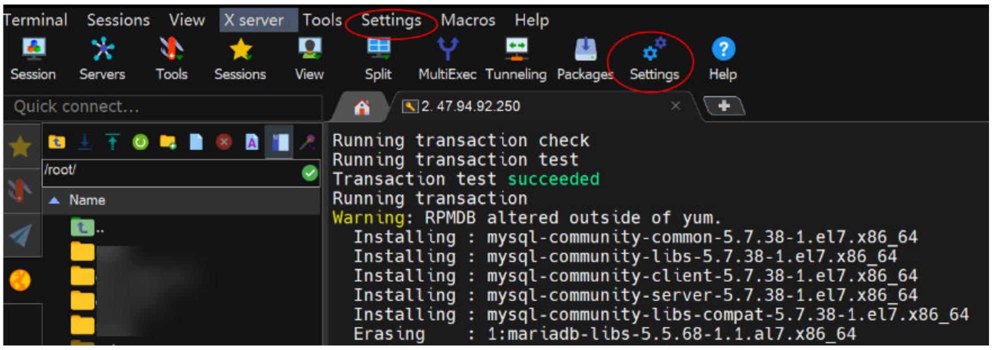
Possible Cause

When MobaXterm is configured, **SSH keepalive** is not selected or **Stop server after** of MobaXterm Professional is set to a value that is too small.

Solution

Step 1 Open MobaXterm and click **Settings** on the menu bar.

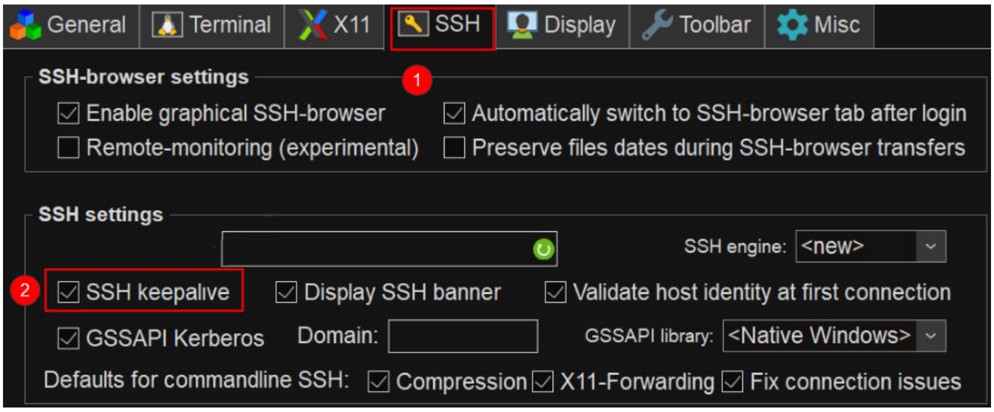
Figure 3-11 Settings



```
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
Warning: RPMDB altered outside of yum.
  Installing : mysql-community-common-5.7.38-1.el7.x86_64
  Installing : mysql-community-libs-5.7.38-1.el7.x86_64
  Installing : mysql-community-client-5.7.38-1.el7.x86_64
  Installing : mysql-community-server-5.7.38-1.el7.x86_64
  Installing : mysql-community-libs-compat-5.7.38-1.el7.x86_64
  Erasing    : 1:mariadb-libs-5.5.68-1.1.al7.x86_64
```

Step 2 On the MobaXterm configuration page, click the **SSH** tab and select **SSH keepalive**.

Figure 3-12 Selecting SSH keepalive



SSH-browser settings

☑ Enable graphical SSH-browser ☑ Automatically switch to SSH-browser tab after login

□ Remote-monitoring (experimental) □ Preserve files dates during SSH-browser transfers

SSH settings

SSH engine: <new>

☑ SSH keepalive ☑ Display SSH banner ☑ Validate host identity at first connection

☑ GSSAPI Kerberos Domain: GSSAPI library: <Native Windows>

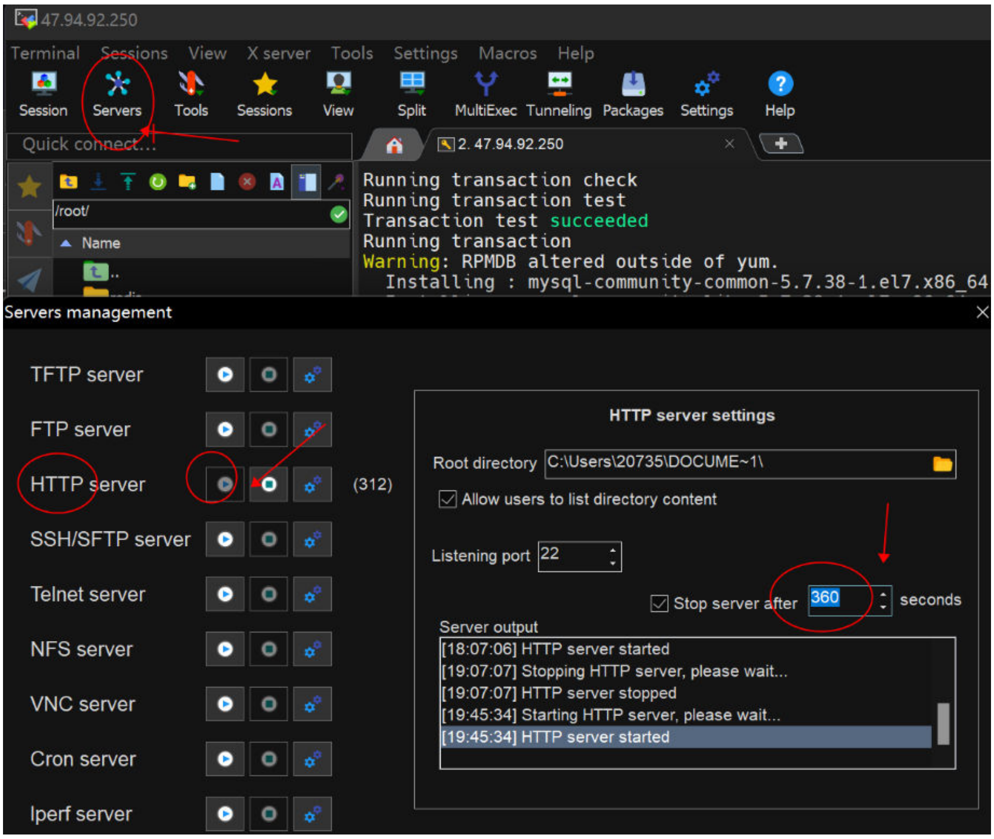
Defaults for commandline SSH: ☑ Compression ☑ X11-Forwarding ☑ Fix connection issues

NOTE

If MobaXterm Professional is used, go to **step 3**.

Step 3 Change the default value **360 seconds** to **3600 seconds** or a larger value for **Stop server after**.

Figure 3-13 Setting Stop server after



```
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
Warning: RPMDB altered outside of yum.
  Installing : mysql-community-common-5.7.38-1.el7.x86_64
```

HTTP server settings

Root directory C:\Users\20735\DOCUME~1\

☑ Allow users to list directory content

Listening port 22

☑ Stop server after 360 seconds

Server output

```
[18:07:06] HTTP server started
[19:07:07] Stopping HTTP server, please wait...
[19:07:07] HTTP server stopped
[19:45:34] Starting HTTP server, please wait...
[19:45:34] HTTP server started
```

----End

3.5.24 What Do I Do If Error Message "Missing GLIBC, Missing required dependencies" Is Displayed When I Access the Development Environment Through VS Code?

Symptom

You encounter the error message below when you access the development environment through VS Code.

```
Warning: Missing GLIBC >= 2.28! from /lib/x86_64-linux-gnu/libc-2.27.so Error: Missing required dependencies. Please refer to our FAQ https://aka.ms/vscode-remote/faq/old-linux for additional information.
```

Possible Causes

You are using VS Code 1.86.

Solution

Use VS Code 1.85. Download URL: **https://code.visualstudio.com/updates/v1_85**.

3.5.25 What Do I Do If an Error Message Is Displayed Indicating That ms-vscode-remote.remot-sdh Is Uninstalled Due To a Reported Issue When Using VSCode-huawei?

Symptom

You encounter this error message when using Huawei-developed VS Code.

Possible Causes

You can use Remote SSH only in open-source VS Code.

Solution

Use open-source VS Code.

3.5.26 Instance Directory in VS Code Does Not Match That on the Cloud When VS Code Is Used to Connect to an Instance

Symptom

When a user uses VS Code to connect to an instance, the instance directory in VS Code does not match that on the cloud.

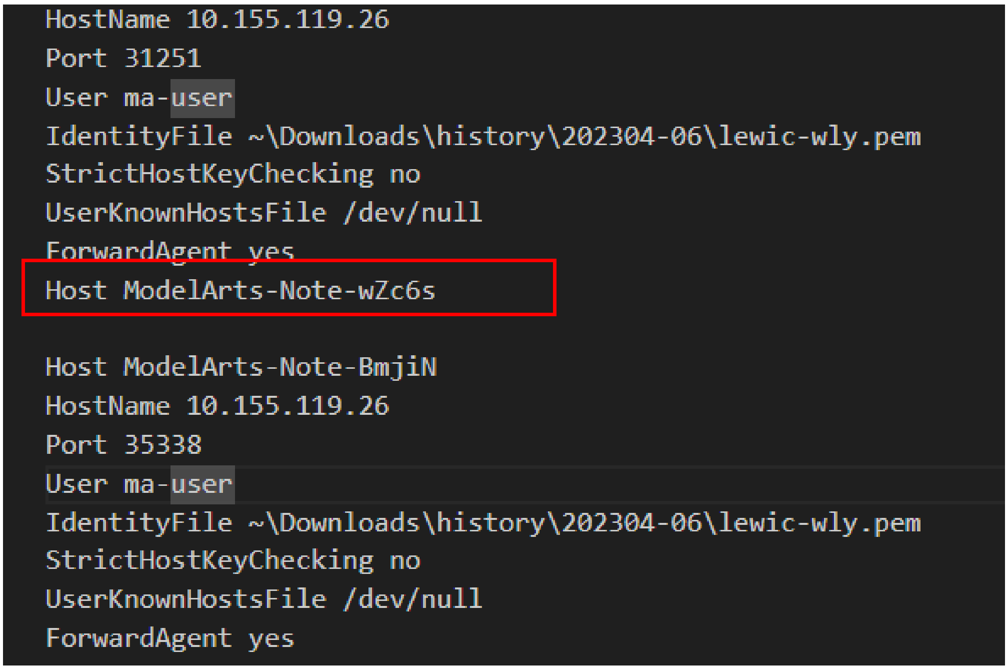
Possible Causes

The instance connection is incorrect. The possible cause is that the configuration file is not properly written.

Solution

1. Check the **.ssh** configuration file (generally in the **C:\Users\{User}\.ssh\config** directory) and check whether each group of configuration is standard. **Host** must be placed in the first line of each group of configuration as the unique ID.

   As shown in the following figure, **Host** is placed in the last line of the first group of configuration. The user wants to connect to the **Host ModelArts-Note-BmjiN** instance. However, the SSH connection identifies and connects to the **Host ModelArts-Note-wZc6s** instance based on the **Host** field.



```
HostName 10.155.119.26
Port 31251
User ma-user
IdentityFile ~\Downloads\history\202304-06\lewic-wly.pem
StrictHostKeyChecking no
UserKnownHostsFile /dev/null
ForwardAgent yes
Host ModelArts-Note-wZc6s

Host ModelArts-Note-BmjiN
HostName 10.155.119.26
Port 35338
User ma-user
IdentityFile ~\Downloads\history\202304-06\lewic-wly.pem
StrictHostKeyChecking no
UserKnownHostsFile /dev/null
ForwardAgent yes
```

2. Update the configurations according to the standard format of **ssh-config**. **Host** is the unique ID of each group of configuration. It is mandatory and must be placed in the first line of the configuration file.

```
Host ModelArts-notebook-xxx
HostName authoring-ssh-modelarts-example.huawei.com
Port 31215
User ma-user
IdentityFile c:\Users\xxx\KeyPair-xxx.pem
StrictHostKeyChecking no
UserKnownHostsFile /dev/null
ForwardAgent yes
```

3.6 Save an Image Failures

3.6.1 Troubleshooting for Custom Images in Notebook Instances

If a fault occurs when using your custom image, check the symptom by referring to the following:

- The custom image does not belong to user **ma-user** or user group **ma-group**.
- The **/home/ma-user** directory that stores the custom image does not belong to user **ma-user** or user group **ma-group**.
- The directory permissions of **/home/ma-user** must be set to **750** for the custom image.
- If the remote SSH is used, the OpenSSH muster be compatible with or later than 8.0
- The created custom image cannot run properly by running the **docker run** command in the local host.

- The fault may be caused by the installation of JupyterLab. In this case, run commands in local JupyterLab to list related static file paths, and delete and uninstall JupyterLab.
- The user service uses ports **8888** and **8889** of the official development environment. In this case, modify the process port number.
- **PYTHONPATH** and **sys.path** are specified by the user image. In this case, the fault is caused by the service startup invoking conflict. You need to start the instance before specifying **PYTHONPATH** and **sys.path**.
- The dedicated resource pool with SUDO permissions is enabled, while SUDO is not installed or installed incorrectly.
- The used cann and CUDA environments are not compatible.
- The docker image configuration is incorrect, there is a restriction on network and firewall, or the image is incorrectly created (file permissions, dependencies, and build commands).

3.6.2 What If the Error Message "there are processes in 'D' status, please check process status using'ps -aux' and kill all the 'D' status processes" or "Buildimge,False,Error response from daemon,Cannot pause container xxx" Is Displayed When I Save an Image?

Symptom

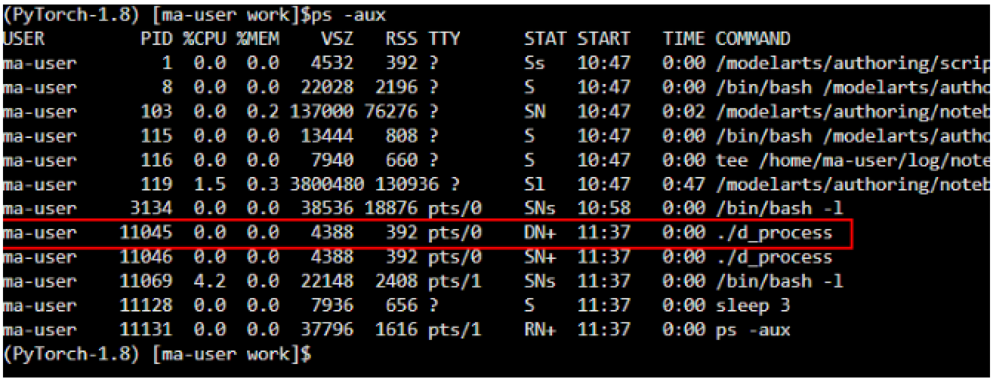
- When an image is saved in a notebook instance, error "there are processes in 'D' status, please check process status using 'ps -aux' and kill all the 'D' status processes" is displayed.
- When an image is saved in a notebook instance, error "Buildimge,False,Error response from daemon: Cannot pause container xxx" is displayed.

Possible Causes

If there is a process in the **D** state in the notebook instance, saving an image will fail.

Solution

1. Run the **ps -aux** on the terminal to check the process.



```
(PyTorch-1.8) [ma-user work]$ps -aux
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
ma-user        1  0.0  0.0   4532   392 ?        Ss   10:47   0:00 /modelarts/authoring/scrip
ma-user        8  0.0  0.0  22028  2196 ?        S    10:47   0:00 /bin/bash /modelarts/autho
ma-user      103  0.0  0.2 137000 76276 ?        SN   10:47   0:02 /modelarts/authoring/noteb
ma-user      115  0.0  0.0  13444   808 ?        S    10:47   0:00 /bin/bash /modelarts/autho
ma-user      116  0.0  0.0   7940   660 ?        S    10:47   0:00 tee /home/ma-user/log/note
ma-user      119  1.5  0.3 3800480 130936 ?      Sl   10:47   0:47 /modelarts/authoring/noteb
ma-user     3134  0.0  0.0  38536 18876 pts/0    SNs  10:58   0:00 /bin/bash -l
ma-user    11045  0.0  0.0   4388   392 pts/0    DN+  11:37   0:00 ./d_process
ma-user    11046  0.0  0.0   4388   392 pts/0    SN+  11:37   0:00 ./d_process
ma-user    11069  4.2  0.0  22148  2408 pts/1    SNs  11:37   0:00 /bin/bash -l
ma-user    11128  0.0  0.0   7936   656 ?        S    11:37   0:00 sleep 3
ma-user    11131  0.0  0.0  37796  1616 pts/1    RN+  11:37   0:00 ps -aux
(PyTorch-1.8) [ma-user work]$
```

2. Run the **kill -9 <pid>** command to stop the process. Then, save the image again.

3.6.3 What Do I Do If Error "container size %dG is greater than threshold %dG" Is Displayed When I Save an Image?

Symptom

When an image is saved in a notebook instance, error "container size %dG is greater than threshold %dG" is displayed.

Possible Causes

The size of the notebook container exceeded the threshold.

Solution

Reduce the container size. The size of a notebook container consists of the image size and the size of the files newly installed in the container. To resolve this issue, use either of the following methods:

- Reduce the size of the files newly installed in the container.
  a. Delete the files newly installed in a notebook instance. For example, if a large number of files have been downloaded to the notebook instance, delete them. This method applies only to directories other than the **/home/ma-user/work** and **/cache** directories. The persistent storage data in **home/ma-user/work** will not be stored in the created container image, and the temporary files stored in **/cache** do not consume the container storage space.
  b. If no file can be deleted or it is unknown which files can be deleted, use the same image to create a notebook instance. When using the new notebook instance, minimize software package installations or file downloads to reduce the container size.
- Reduce the size of the image file.

  If you are not sure which packages or files do not need to be installed, use a small image to create a notebook instance and install the required software or files in it. Among all the public images, **mindspore1.7.0-py3.7-ubuntu18.04** takes the minimum size.

3.6.4 What Do I Do If Error "too many layers in your image" Is Displayed When I Save an Image?

Symptom

When an image is saved, error "too many layers in your image" is displayed.

Possible Causes

The image selected for creating the target notebook instance is a bring-your-own image or a custom image that has been saved for multiple times. No image can be saved for the notebook instance that is created using such an image.

Solution

Use a public image or another custom image to create a notebook instance and save the image.

3.6.5 What Do I Do If Error "The container size (xG) is greater than the threshold (25G)" Is Reported When I Save an Image?

Symptom

The error **The container size (30G) is greater than the threshold (25G)** is reported when an image is saved, and the image fails to be created.

Possible Causes

To save an image, you need to run the **docker commit** command on the agent of a resource cluster node. Administrative data will be uploaded and updated automatically. Each time you run the command, the image becomes larger. After the image is saved for multiple times, its actual size is larger than it shows. If the image is too large, various problems may occur. You can rebuild the original image environment and save the image to solve the problem.

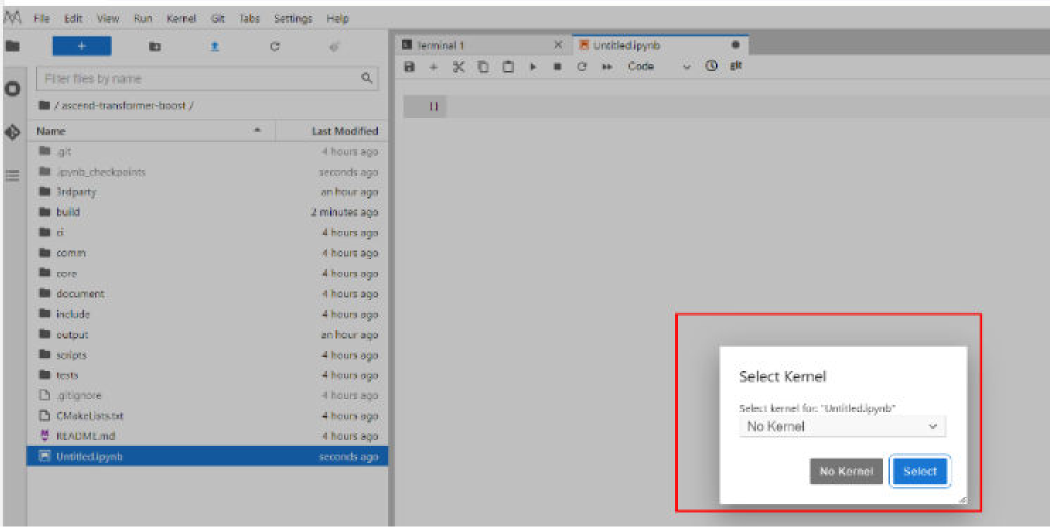
Solution

Rebuild the original image environment. You can use a base image with minimized installation and run the dependencies. Clear the installation cache and save the image.

3.6.6 No Kernel Is Displayed After a Notebook Instance Created Using a Custom Image Is Started

Symptom

After an instance created using a custom image is started, no kernel is available when a user opens JupyterLab to create a notebook instance.



/ ascend-transformer-boost /

Name	Last Modified
.git	4 hours ago
.ipynb_checkpoints	seconds ago
3rdparty	an hour ago
build	2 minutes ago
ci	4 hours ago
comm	4 hours ago
core	4 hours ago
document	4 hours ago
include	4 hours ago
output	an hour ago
scripts	4 hours ago
tests	4 hours ago
.gitignore	4 hours ago
CMakeLists.txt	4 hours ago
README.md	4 hours ago
Untitled.ipynb	seconds ago

Select Kernel

Select kernel for: "Untitled.ipynb"

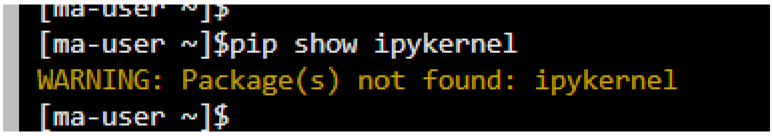
No Kernel

Possible Causes

The Python environment of the custom image is not registered.

Solution

1. Run the following command on the Terminal to check the number of Conda environments of the instance:
   ```
   conda env list
   ```
2. Run the following commands to switch to the corresponding environment and check whether the **ipykernel** package exists:
   ```
   conda activate base # Replace base with the actual Python environment.
   pip show ipykernel
   ```
3. If **ipykernel** does not exist in the Conda environment, **add a custom IPython kernel in a notebook instance** and install it.

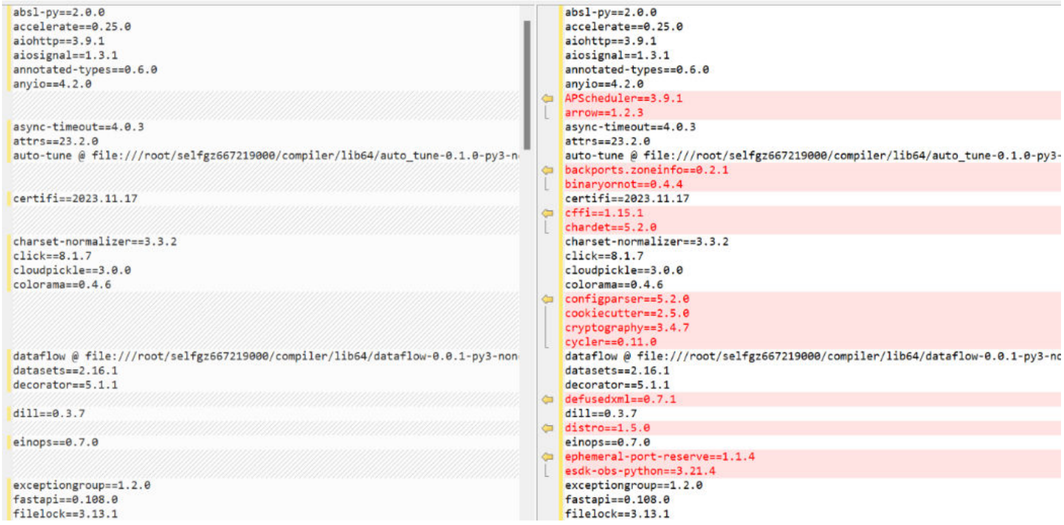


```
[ma-user ~]$
[ma-user ~]$pip show ipykernel
WARNING: Package(s) not found: ipykernel
[ma-user ~]$
```

3.6.7 Some Extra Packages Are Found in the Conda Environment Built Using a Custom Image

Symptom

Some extra pip packages are found when a custom image is running in a notebook instance. As shown in the following figure, the part in the left pane shows the custom image running in the local environment, and the part in the right pane shows the custom image running in the notebook instance.



```
absl-py==2.0.0
accelerate==0.25.0
aiohttp==3.9.1
aiosignal==1.3.1
annotated-types==0.6.0
anyio==4.2.0


async-timeout==4.0.3
attrs==23.2.0
auto-tune @ file:///root/selfgz667219000/compiler/lib64/auto_tune-0.1.0-py3-n


certifi==2023.11.17


charset-normalizer==3.3.2
click==8.1.7
cloudpickle==3.0.0
colorama==0.4.6




dataflow @ file:///root/selfgz667219000/compiler/lib64/dataflow-0.0.1-py3-non
datasets==2.16.1
decorator==5.1.1

dill==0.3.7

einops==0.7.0


exceptiongroup==1.2.0
fastapi==0.108.0
filelock==3.13.1
```

```
absl-py==2.0.0
accelerate==0.25.0
aiohttp==3.9.1
aiosignal==1.3.1
annotated-types==0.6.0
anyio==4.2.0
APScheduler==3.9.1
arrow==1.2.3
async-timeout==4.0.3
attrs==23.2.0
auto-tune @ file:///root/selfgz667219000/compiler/lib64/auto_tune-0.1.0-py3-
backports.zoneinfo==0.2.1
binaryornot==0.4.4
certifi==2023.11.17
cffi==1.15.1
chardet==5.2.0
charset-normalizer==3.3.2
click==8.1.7
cloudpickle==3.0.0
colorama==0.4.6
configparser==5.2.0
cookiecutter==2.5.0
cryptography==3.4.7
cycler==0.11.0
dataflow @ file:///root/selfgz667219000/compiler/lib64/dataflow-0.0.1-py3-nc
datasets==2.16.1
decorator==5.1.1
defusedxml==0.7.1
dill==0.3.7
distro==1.5.0
einops==0.7.0
ephemeral-port-reserve==1.1.4
esdk-obs-python==3.21.4
exceptiongroup==1.2.0
fastapi==0.108.0
filelock==3.13.1
```

Possible Causes

Notebook provides functions such as MoXing and ModelArts SDKs, which are embedded in the Conda environment.

Solution

If you do not need to use functions such as MoXing and SDKs, delete the **modelarts.pth** file temporarily.

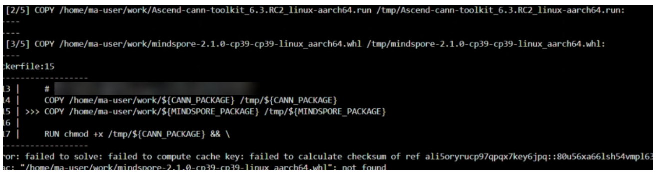
1. Search for **modelarts.pth** in the Conda environment.
   ```
   # /home/ma-user/anaconda3 indicates the user's Python environment.
   find /home/ma-user/anaconda3 -name modelarts.pth
   ```
2. Run the following command to delete the **modelarts.pth** file from the Python environment:
   ```
   # /xxx/modelarts.pth indicates the file path obtained in step 1.
   rm -rf /xxx/modelarts.pth
   ```

3.6.8 Failed to Create a Custom Image Using ma-cli and an Error Is Displayed Indicating that the File Does Not Exist

Symptom

A user fails to create a custom image using ma-cli, and an error message is displayed, indicating that the file directory does not exist.

Figure 3-14 Error message "xxx not found"

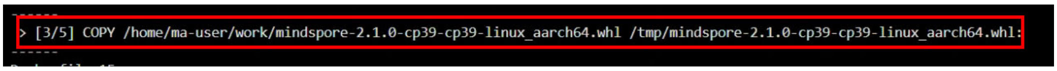


```
[2/5] COPY /home/ma-user/work/Ascend-cann-toolkit_6.3.RC2_linux-aarch64.run /tmp/Ascend-cann-toolkit_6.3.RC2_linux-aarch64.run:
----
----
[3/5] COPY /home/ma-user/work/mindspore-2.1.0-cp39-cp39-linux_aarch64.whl /tmp/mindspore-2.1.0-cp39-cp39-linux_aarch64.whl:
----
kerfile:15
-----------------
3 |     # [redacted]
4 |     COPY /home/ma-user/work/${CANN_PACKAGE} /tmp/${CANN_PACKAGE}
5 | >>> COPY /home/ma-user/work/${MINDSPORE_PACKAGE} /tmp/${MINDSPORE_PACKAGE}
6 |
7 |     RUN chmod +x /tmp/${CANN_PACKAGE} && \
-----------------
ror: failed to solve: failed to compute cache key: failed to calculate checksum of ref ali5oryrucp97qpqx7key6jpq::80u56xa66lsh54vmpl63
ac: "/home/ma-user/work/mindspore-2.1.0-cp39-cp39-linux_aarch64.whl": not found
```

Possible Causes

The copied file must be placed at the same folder level as the Dockerfile or in the subdirectory.

Figure 3-15 Incorrect file path

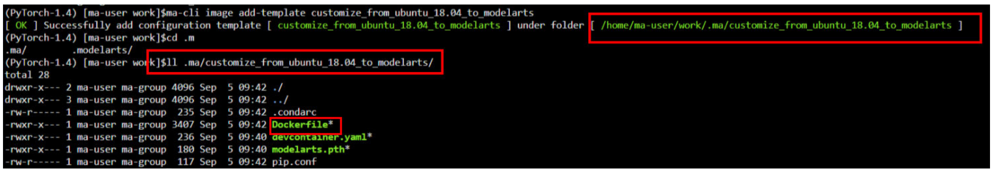


```
------
> [3/5] COPY /home/ma-user/work/mindspore-2.1.0-cp39-cp39-linux_aarch64.whl /tmp/mindspore-2.1.0-cp39-cp39-linux_aarch64.whl:
------
```

Solution

1. Check the file path in the COPY command of the Dockerfile. Place the file to be copied in the same-level directory as the Dockerfile or in the subdirectory. As shown in the following figure, the Dockerfile is in the **./.ma/customize_from_ubuntu_18.04_to_modelarts/** directory. Place the file to be copied in **/home/ma-user/work/.ma/customize_from_ubuntu_18.04_to_modelarts**.

   Figure 3-16 Obtaining the Dockerfile path

   ```
   (PyTorch-1.4) [ma-user work]$ma-cli image add-template customize_from_ubuntu_18.04_to_modelarts
   [ OK ] Successfully add configuration template [ customize_from_ubuntu_18.04_to_modelarts ] under folder [ /home/ma-user/work/.ma/customize_from_ubuntu_18.04_to_modelarts ]
   (PyTorch-1.4) [ma-user work]$cd .m
   .ma/        .modelarts/
   (PyTorch-1.4) [ma-user work]$ll .ma/customize_from_ubuntu_18.04_to_modelarts/
   total 28
   drwxr-x--- 2 ma-user ma-group 4096 Sep  5 09:42 ./
   drwxr-x--- 3 ma-user ma-group 4096 Sep  5 09:42 ../
   -rw-r----- 1 ma-user ma-group  235 Sep  5 09:42 .condarc
   -rwxr-x--- 1 ma-user ma-group 3407 Sep  5 09:42 Dockerfile*
   -rwxr-x--- 1 ma-user ma-group  236 Sep  5 09:40 devcontainer.yaml*
   -rwxr-x--- 1 ma-user ma-group  180 Sep  5 09:40 modelarts.pth*
   -rw-r----- 1 ma-user ma-group  117 Sep  5 09:42 pip.conf
   ```

2. Change the Dockerfile command to a relative path. The following is an example:

   ```
   COPY ./mindspore-2.1.0-cp39-cp39-linux_aarch64.whl /tmp/mindspore-2.1.0-cp39-cp39 -
   linux_aarch64.whl
   ```

3.6.9 Error Message "Unexpected error from cudaGetDeviceCount" Is Displayed When Torch Is Used

Symptom

When a GPU-compatible script is executed on a notebook instance, an error message is displayed, indicating that the script is incompatible. However, the **nvcc --version** command output shows that the script is compatible.

```
import torch
import sys
print('A', sys.version)
print('B', torch.__version__)
print('C', torch.cuda.is_available())
print('D', torch.backends.cudnn.enabled)
device = torch.device('cuda')
print('E', torch.cuda.get_device_properties(device))
print('F', torch.tensor([1.0, 2.0]).cuda())
```

The error information is as follows:

```
Traceback (most recent call last):
File "test.py", line 8, in <module>
print('E', torch.cuda.get_device_properties(device))
File "/opt/conda/lib/python3.7/site-packages/torch/cuda/__init__.py", line 356, in get_device_properties
_lazy_init() # will define _get_device_properties
File "/opt/conda/lib/python3.7/site-packages/torch/cuda/__init__.py", line 214, in _lazy_init
torch._C._cuda_init()
RuntimeError: Unexpected error from cudaGetDeviceCount(). Did you run some cuda functions before
calling NumCudaDevices() that might have already set an error? Error 803: system has unsupported display
driver / cuda driver combination</module>
```

Solution

1. Check whether the CUDA version is compatible with the Torch version.

   ```
   # CUDA version
   nvcc --version
   # nvidia-smi version
   nvidia-smi

   # Torch version (Determine the Python version of the Conda used.)
   python -c "import torch;print(torch.__version__)"
   ```

   You can query compatible versions at the PyTorch official website **https://pytorch.org/get-started/previous-versions/**.

2. If multiple CUDA versions are installed in the environment, check the CUDA priority in **LD_LIBRARY_PATH** and manually adjust the priority.

   For example, if CUDA is compatible only with CUDA 9.1, *LD_LIBRARY_PATH=/usr/local/cuda-11.8/lib64:/usr/local/cuda-9.1/lib64* is queried.

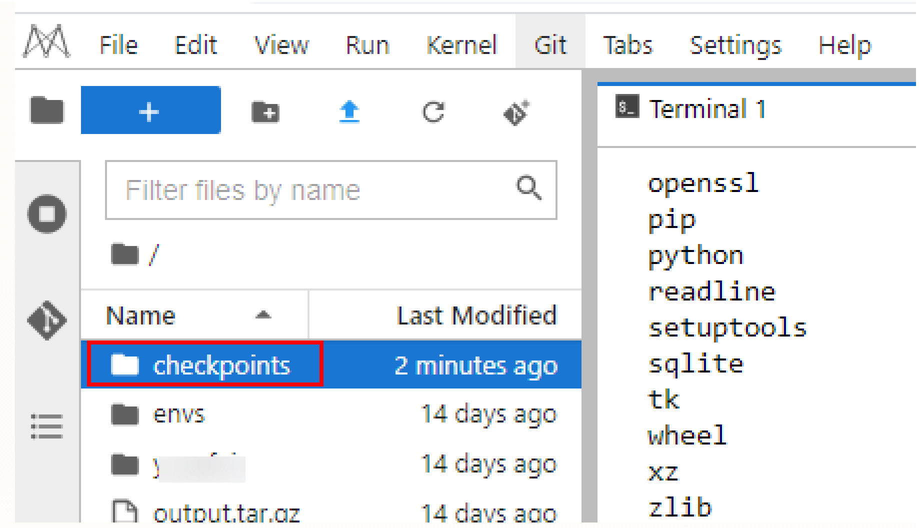
   Run the **export LD_LIBRARY_PATH=/usr/local/cuda-9.1/lib64:$LD_LIBRARY_PATH** command to manually adjust the priority.

3.7 Other Faults

3.7.1 Failed to Open the checkpoints Folder in Notebook

checkpoints is a keyword in notebook. If a created folder is named **checkpoints**, the folder will not be opened, renamed, or deleted on JupyterLab. To access **checkpoints**, you have two options: either execute the command line in the terminal to load the checkpoint files, or create a folder and transfer the checkpoint data to that folder.

Figure 3-17 Unavailable checkpoints in the JupyterLab navigation pane



Name	Last Modified
checkpoints	2 minutes ago
envs	14 days ago
[redacted]	14 days ago
output.tar.gz	14 days ago

```
openssl
pip
python
readline
setuptools
sqlite
tk
wheel
xz
zlib
```

Procedure

Open the terminal and perform operations using the CLI.

Method 1: Run the **cd checkpoints** command to open the **checkpoints** folder.

Method 2: Create a folder and move the data in the **checkpoints** folder to that folder.

1. Run the **mkdir** *xxx* command to create a folder, in which *xxx* is the folder name. Do not use **checkpoints** to name the folder.
2. Move the data in the **checkpoints** folder to the new folder and delete the **checkpoints** folder in the root directory.

```
mv checkpoints/* xxx
rm -r checkpoints
```

3.7.2 Failed to Use a Purchased Dedicated Resource Pool to Create New-Version Notebook Instances

Symptom

A dedicated resource pool that has been purchased cannot be selected for creating a notebook instance, resulting in the creation failure.

A message is displayed, indicating that the development environment has not been initialized in the dedicated resource pool.

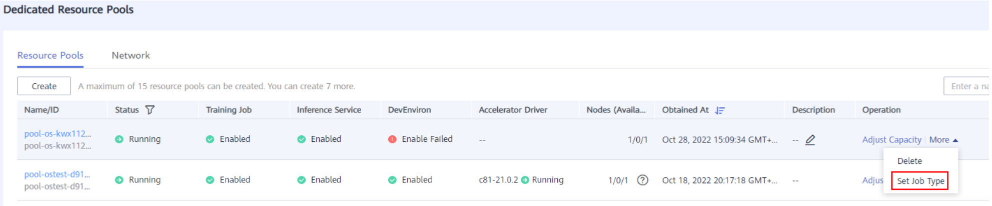
Possible Causes

A newly purchased dedicated resource pool can be used to create notebook instances only after its development environment is initialized.

Solution

Initialize the development environment on the dedicated resource pool page.

Step 1 Go to the **Dedicated Resource Pools** page and choose **More** > **Set Job Type** in the **Operation** column.



Dedicated Resource Pools

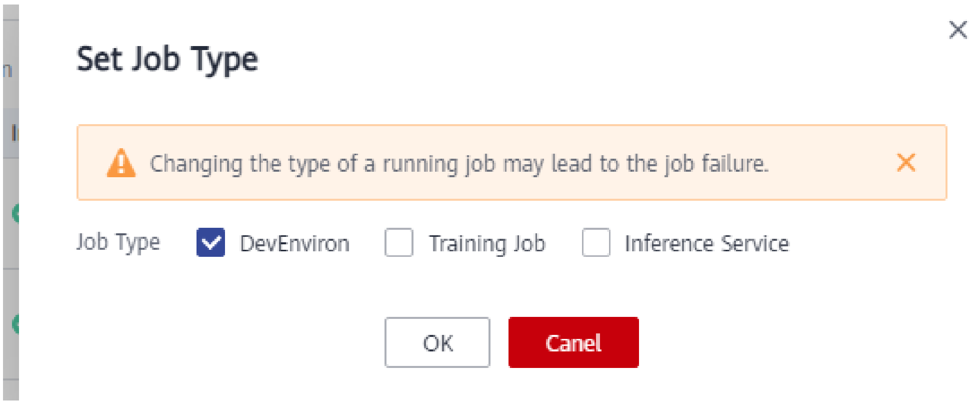
Resource Pools Network

Create A maximum of 15 resource pools can be created. You can create 7 more. Enter a na

Name/ID	Status	Training Job	Inference Service	DevEnviron	Accelerator Driver	Nodes (Availa...	Obtained At	Description	Operation
pool-os-kwx112... pool-os-kwx112...	Running	Enabled	Enabled	Enable Failed	--	1/0/1	Oct 28, 2022 15:09:34 GMT+...	--	Adjust Capacity More
pool-ostest-d91... pool-ostest-d91...	Running	Enabled	Enabled	Enabled	c81-21.0.2 Running	1/0/1	Oct 18, 2022 20:17:18 GMT+...	--	Adjus

Step 2 In the **Set Job Type** dialog box, select **DevEnviron** and click **OK**. Then, the development environment is being initialized. After its status changes to **Running**, the newly purchased dedicated resource pool can be used to create notebook instances.

Figure 3-18 Setting job type to DevEnviron

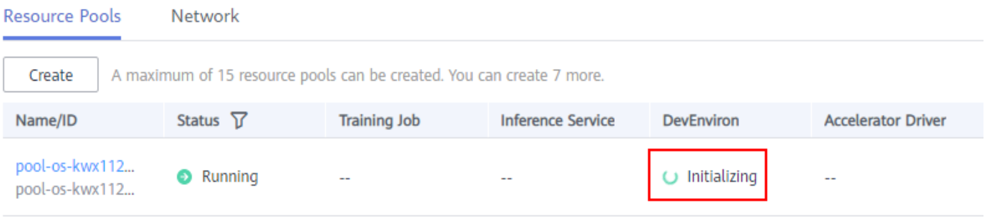


Set Job Type

Changing the type of a running job may lead to the job failure.

Job Type ☑ DevEnviron □ Training Job □ Inference Service

Figure 3-19 Initializing the development environment



Resource Pools Network

Create A maximum of 15 resource pools can be created. You can create 7 more.

Name/ID	Status	Training Job	Inference Service	DevEnviron	Accelerator Driver
pool-os-kwx112... pool-os-kwx112...	Running	--	--	Initializing	--

----End

4 Training Jobs

4.1 OBS Operation Issues

4.1.1 Error in File Reading

Symptom

- How to read the **json** and **npy** files when creating a training job.
- How the training job uses the cv2 library to read files.
- How to use the torch package in the MXNet environment.
- The following error occurs when the training job reads the file:
  ```
  NotFoundError (see above for traceback): Unsucessful TensorSliceReader constructor: Failed to find any matching files for xxx://xxx
  ```

Possible Cause

In ModelArts, user's data is stored in OBS buckets, but training jobs are running in containers. Therefore, users cannot access files in OBS buckets by accessing local paths.

Solution

If an error occurs when you read a file, you can use MoXing to copy data to a container and then access the data in the container. For details, see **1**.

You can also read files based on the file type. For details, see **Reading .json files**, **Reading .npy files**, and **Using the cv2 library to read files**, and **Using the torch package in the MXNet environment**.

1. If an error occurs when you read a file, you can use MoXing to copy data to a container and then access the data in the container as follows:
   ```
   import moxing as mox
   mox.file.make_dirs('/cache/data_url')
   mox.file.copy_parallel('obs://bucket-name/data_url', '/cache/data_url')
   ```
2. To **read .json files**, run the following code:
   ```
   json.loads(mox.file.read(json_path, binary=True))
   ```

3. To **use numpy.load to read .npy files**, run the following code:
   - Using the MoXing API to read files from OBS
     ```
     np.load(mox.file.read(_SAMPLE_PATHS['rgb'], binary=True))
     ```
   - Using the file module of MoXing to read and write OBS files
     ```
     with mox.file.File(_SAMPLE_PATHS['rgb'], 'rb') as f:
     np.load(f)
     ```
4. To **use the cv2 library to read files**, run the following code:
   ```
   cv2.imdecode(np.fromstring(mox.file.read(img_path), np.uint8), 1)
   ```
5. To **use the torch package in the MXNet environment**, run the following code:
   ```
   import os
   os.sysytem('pip install torch')
   import torch
   ```

4.1.2 Error Message Is Displayed Repeatedly When a TensorFlow-1.8 Job Is Connected to OBS

Symptom

After a training job is started based on TensorFlow-1.8 and the **tf.gfile** module is used to connect to OBS in code, the following log information is frequently printed:

```
Connection has been released. Continuing.
Found secret key
```

Possible Cause

This problem occurs in TensorFlow-1.8. This log is of the INFO level and is not error information. You can set an environment variable to shield logs of the INFO level. The environment variable must be set before the **import tensorflow** or **import moxing** command is executed.

Solution

Set the environment variable **TF_CPP_MIN_LOG_LEVEL** in code to shield logs of the INFO level. Detailed operations are as follows:

```
import os

os.environ['TF_CPP_MIN_LOG_LEVEL'] = '2'

import tensorflow as tf
import moxing.tensorflow as mox
```

The mapping between **TF_CPP_MIN_LOG_LEVEL** and log levels is as follows:

```
import os
os.environ["TF_CPP_MIN_LOG_LEVEL"]='1'     # Default level of logs to be displayed. All information is
displayed.
os.environ["TF_CPP_MIN_LOG_LEVEL"]='2'     # Only warning and error information is displayed.
os.environ["TF_CPP_MIN_LOG_LEVEL"]='3'     # Only error information is displayed.
```

4.1.3 TensorFlow Stops Writing TensorBoard to OBS When the Size of Written Data Reaches 5 GB

Symptom

The following error message is displayed for a ModelArts training job:

```
Encountered Unknown Error EntityTooLarge
Your proposed upload exceeds the maximum allowed object size.:
If the signature check failed. This could be because of a time skew. Attempting to adjust the signer
```

Possible Cause

The size of files to be uploaded at a time is limited to 5 GB in OBS. TensorFlow may save the summary file in local cache. Therefore, when flush is triggered each time, the summary file overwrites the original file on OBS. If the size of the file exceeds 5 GB, the file stops being written.

Solution

If this problem occurs during the running of a training job, use the following method for troubleshooting.

1. You are advised to use the following local cache method:
   ```
   import moxing.tensorflow as mox
   mox.cache()
   ```

4.1.4 Error "Unable to connect to endpoint" Error Occurs When a Model Is Saved

Symptom

An error occurs in the log when a model is saved in a training job. The error details are as follows:

InternalError (see above for traceback): : Unable to connect to endpoint

Possible Cause

When OBS connections are unstable, the following error may occur: **Unable to connect to endpoint**

Solution

Add code to solve the problem of unstable OBS connections. You can add the following code at the beginning of the existing code so that TensorFlow can read and write ckpt and summary information in local cache mode:

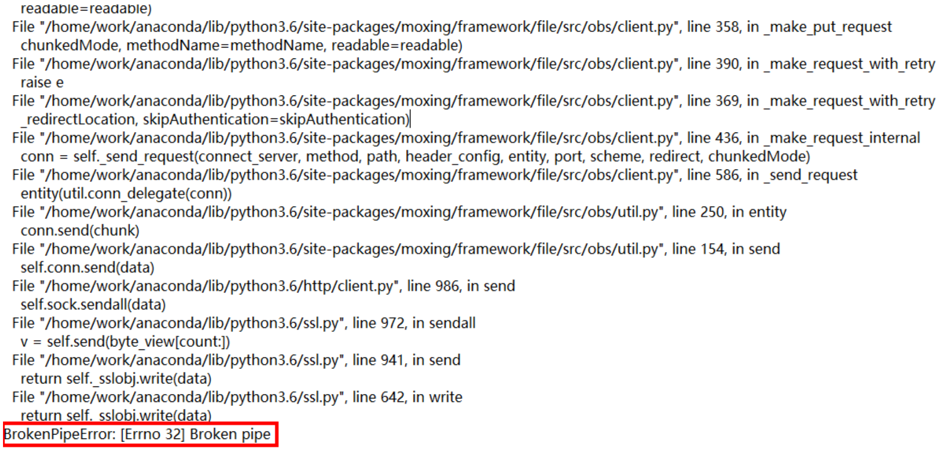
```
import moxing.tensorflow as mox

mox.cache()
```

4.1.5 Error Message "BrokenPipeError: Broken pipe" Displayed When OBS Data Is Copied

Symptom

The error message is displayed when MoXing is used to copy data for a training job.

Figure 4-1 Error log



```
    readable=readable)
  File "/home/work/anaconda/lib/python3.6/site-packages/moxing/framework/file/src/obs/client.py", line 358, in _make_put_request
    chunkedMode, methodName=methodName, readable=readable)
  File "/home/work/anaconda/lib/python3.6/site-packages/moxing/framework/file/src/obs/client.py", line 390, in _make_request_with_retry
    raise e
  File "/home/work/anaconda/lib/python3.6/site-packages/moxing/framework/file/src/obs/client.py", line 369, in _make_request_with_retry
    _redirectLocation, skipAuthentication=skipAuthentication)
  File "/home/work/anaconda/lib/python3.6/site-packages/moxing/framework/file/src/obs/client.py", line 436, in _make_request_internal
    conn = self._send_request(connect_server, method, path, header_config, entity, port, scheme, redirect, chunkedMode)
  File "/home/work/anaconda/lib/python3.6/site-packages/moxing/framework/file/src/obs/client.py", line 586, in _send_request
    entity(util.conn_delegate(conn))
  File "/home/work/anaconda/lib/python3.6/site-packages/moxing/framework/file/src/obs/util.py", line 250, in entity
    conn.send(chunk)
  File "/home/work/anaconda/lib/python3.6/site-packages/moxing/framework/file/src/obs/util.py", line 154, in send
    self.conn.send(data)
  File "/home/work/anaconda/lib/python3.6/http/client.py", line 986, in send
    self.sock.sendall(data)
  File "/home/work/anaconda/lib/python3.6/ssl.py", line 972, in sendall
    v = self.send(byte_view[count:])
  File "/home/work/anaconda/lib/python3.6/ssl.py", line 941, in send
    return self._sslobj.write(data)
  File "/home/work/anaconda/lib/python3.6/ssl.py", line 642, in write
    return self._sslobj.write(data)
BrokenPipeError: [Errno 32] Broken pipe
```

Possible Causes

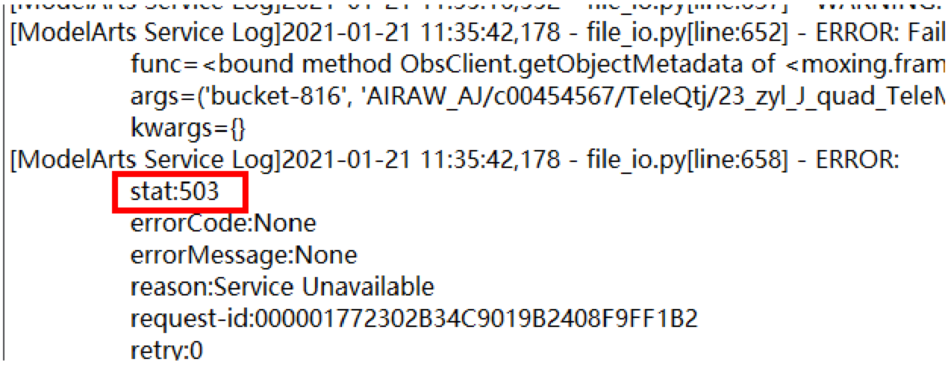
The possible causes are as follows:

- In a large-scale distributed job, multiple nodes are concurrently copying files in the same bucket, leading to traffic control in the OBS bucket.
- There is a large number of OBS client connections. During the polling between processes or threads, an OBS client connection timed out if the server does not respond to it within 30 seconds. As a result, the server released the connection.

Solution

1. If the issue is caused by traffic control, the error code shown in the following figure is displayed. In this case, submit a service ticket. For details about OBS error codes, see **OBS Server-Side Error Codes**.

   Figure 4-2 Error log



```
[ModelArts Service Log]2021-01-21 11:35:42,178 - file_io.py[line:652] - ERROR: Fail
                func=<bound method ObsClient.getObjectMetadata of <moxing.fram
                args=('bucket-816', 'AIRAW_AJ/c00454567/TeleQtj/23_zyl_J_quad_TeleN
                kwargs={}
[ModelArts Service Log]2021-01-21 11:35:42,178 - file_io.py[line:658] - ERROR:
                stat:503
                errorCode:None
                errorMessage:None
                reason:Service Unavailable
                request-id:000001772302B34C9019B2408F9FF1B2
                retry:0
```

2. If the issue is caused by the large number of client connections, especially for files larger than 5 GB, OBS APIs cannot be directly called. In this case, use multiple threads to copy data. The timeout duration set on the OBS server is 30s. Run the following commands to reduce the number of processes:

```
# Configure the number of processes.
os.environ['MOX_FILE_LARGE_FILE_TASK_NUM']=1
import moxing as mox

# Copy files.
mox.file.copy_parallel(src_url=your_src_dir, dst_url=your_target_dir, threads=0, is_processing=False)
```

NOTE

When creating a training job, you can use the environment variable **_PARTIAL_MAXIMUM_SIZE** to configure the threshold (in bytes) for downloading large files in multiple parts. If the size of a file exceeds the threshold, the file will be downloaded in multiple parts concurrently.

Summary and Suggestions

Before creating a training job, use the ModelArts development environment to debug the training code to maximally eliminate errors in code migration.

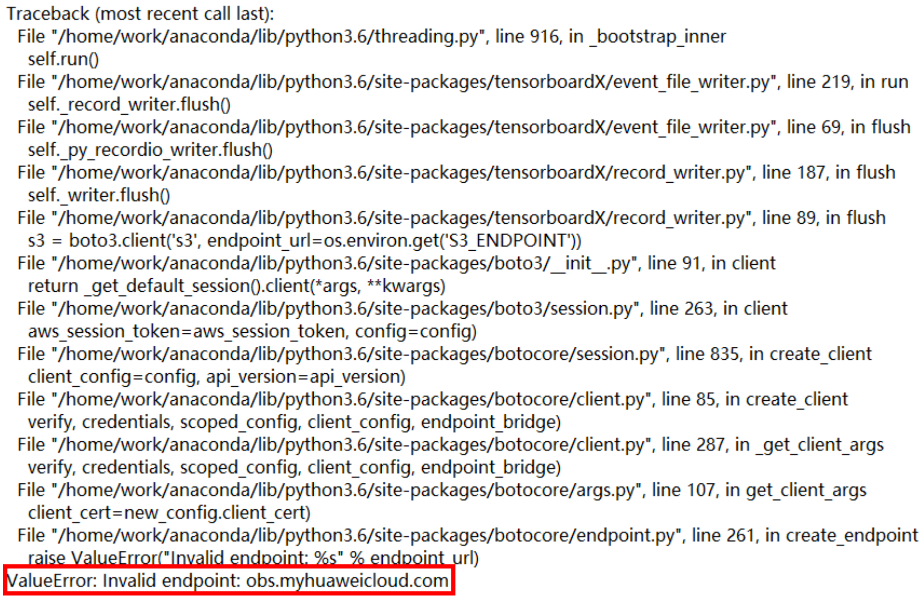
- Use the online notebook environment for debugging. For details, see **Using JupyterLab to Develop a Model**.
- Use the local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Using the Local IDE to Develop a Model**.

4.1.6 Error Message "ValueError: Invalid endpoint: obs.xxxx.com" Displayed in Logs

Symptom

When TensorBoard is used to directly write data in an OBS path for a training job, an error is displayed.

Figure 4-3 Error log



```
Traceback (most recent call last):
  File "/home/work/anaconda/lib/python3.6/threading.py", line 916, in _bootstrap_inner
    self.run()
  File "/home/work/anaconda/lib/python3.6/site-packages/tensorboardX/event_file_writer.py", line 219, in run
    self._record_writer.flush()
  File "/home/work/anaconda/lib/python3.6/site-packages/tensorboardX/event_file_writer.py", line 69, in flush
    self._py_recordio_writer.flush()
  File "/home/work/anaconda/lib/python3.6/site-packages/tensorboardX/record_writer.py", line 187, in flush
    self._writer.flush()
  File "/home/work/anaconda/lib/python3.6/site-packages/tensorboardX/record_writer.py", line 89, in flush
    s3 = boto3.client('s3', endpoint_url=os.environ.get('S3_ENDPOINT'))
  File "/home/work/anaconda/lib/python3.6/site-packages/boto3/__init__.py", line 91, in client
    return _get_default_session().client(*args, **kwargs)
  File "/home/work/anaconda/lib/python3.6/site-packages/boto3/session.py", line 263, in client
    aws_session_token=aws_session_token, config=config)
  File "/home/work/anaconda/lib/python3.6/site-packages/botocore/session.py", line 835, in create_client
    client_config=config, api_version=api_version)
  File "/home/work/anaconda/lib/python3.6/site-packages/botocore/client.py", line 85, in create_client
    verify, credentials, scoped_config, client_config, endpoint_bridge)
  File "/home/work/anaconda/lib/python3.6/site-packages/botocore/client.py", line 287, in _get_client_args
    verify, credentials, scoped_config, client_config, endpoint_bridge)
  File "/home/work/anaconda/lib/python3.6/site-packages/botocore/args.py", line 107, in get_client_args
    client_cert=new_config.client_cert)
  File "/home/work/anaconda/lib/python3.6/site-packages/botocore/endpoint.py", line 261, in create_endpoint
    raise ValueError("Invalid endpoint: %s" % endpoint_url)
ValueError: Invalid endpoint: obs.myhuaweicloud.com
```

Possible Causes

It is unstable to use TensorBoard to directly write data in OBS.

Solution

Locally write data and then copy it back to OBS.

Summary and Suggestions

Before creating a training job, use the ModelArts development environment to debug the training code to maximally eliminate errors in code migration.

- Use the online notebook environment for debugging. For details, see **Using JupyterLab to Develop a Model**.
- Use the local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Using the Local IDE to Develop a Model**.

4.1.7 Error Message "errorMessage:The specified key does not exist" Displayed in Logs

Symptom

When MoXing is used to access an OBS path, the following error is displayed:

```
ERROR:root:
stat:404
errorCode:NoSuchKey
errorMessage:The specified key does not exist.
```

Possible Causes

The possible causes are as follows:

The object is unavailable in the bucket. For details about OBS error codes, see **OBS Server-Side Error Codes**.

Solution

1. Check whether the OBS path and object are in correct format.
2. Use the local PyCharm to remotely access notebook for debugging.

Summary and Suggestions

Before creating a training job, use a ModelArts development environment to debug training code. This maximally eliminates errors in code migration.

- Use in-cloud notebook for debugging. For details, see **Using JupyterLab to Develop a Model**.
- Use the local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Using the Local IDE to Develop a Model**.

4.2 In-Cloud Migration Adaptation Issues

4.2.1 Failed to Import a Module

Symptom

The following error occurs in the log when a module is imported to a ModelArts training job:

```
Traceback (most recent call last):File "project_dir/main.py", line 1, in <module>from module_dir import
module_file
ImportError: No module named module_dir
ImportError: No module named xxx
```

Possible Cause

- When a training job is imported to the module, the previous two error messages are displayed in the log. The possible causes are as follows:

  Before running code locally, you need to add **project_dir** to **PYTHONPATH** or install **project_dir** in **site-package**. However, on ModelArts, you can add **project_dir** to **sys.path** to solve this problem.

  Use **from module_dir import module_file** to import a package. The code structure is as follows:

  ```
  project_dir
  |- main.py
  |- module_dir
  |  |- __init__.py
  |  |- module_file.py
  ```

- When a training job is imported to the module, the error message **"ImportError: No module named xxx"** is displayed in the log. It can be determined that the environment does not contain the Python package on which the user depends.

Solution

- When a training job is imported to the module, the previous two error messages are displayed in the log. The solution is as follows:

  a. Ensure that the imported module contains **__init__.py** used for creating **module_dir**. Possible Cause provides the code structure.

  b. Because the location of **project_dir** in the container is unknown, use an absolute path by adding **project_dir** to **sys.path** in file **main.py**, and import the following information:

     ```
     import os
     import sys
     # __file__ is the absolute path of the main.py script.
     # os.path.dirname(__file__) is the parent directory of main.py, that is, the absolute path of
     project_dir.
     current_path = os.path.dirname(__file__)
     sys.path.append(current_path)
     # Import other modules after sys.path.append is executed.
     from module_dir import module_file
     ```

- When a training job is imported to the module, the error message **"ImportError: No module named xxx"** is displayed in the log. Add the following code to install the dependency package:

  ```
  import os
  os.system('pip install xxx')
  ```

4.2.2 Error Message "No module named .*" Displayed in Training Job Logs

Perform the following operations to locate the fault:

1. **Checking Whether the Dependency Package Is Available**
2. **Checking Whether the Dependency Package Path Can Be Detected**
3. **Checking Whether the Selected Resource Flavor Is Correct**
4. **Summary and Suggestions**

Checking Whether the Dependency Package Is Available

If the dependency package is unavailable, use either of the following methods to install it:

- Method 1 (recommended): **When you create an algorithm**, place the required file or installation package in the code directory.

  The required file varies depending on the dependency package type.

  – **If the dependency package is an open-source installation package**

    Create a file named **pip-requirements.txt** in the code directory, and specify the dependency package name and version in the format of *Package name*==*Version* in the file.

    For example, the OBS path specified by **Code Directory** contains model files and the **pip-requirements.txt** file. The code directory structure is as follows:

```
|---OBS path to the model boot file
     |---model.py               # Model boot file
     |---pip-requirements.txt   # Customized configuration file, which specifies the name and
version of the dependency package
```

    The following shows the content of the **pip-requirements.txt** file:

```
alembic==0.8.6
bleach==1.4.3
click==6.6
```

  – **If the dependency package is a WHL package**

    If the training backend does not support the download of open-source installation packages or the use of custom WHL packages, the system cannot automatically download and install the package. In this case, place the WHL package in the code directory, create a file named **pip-requirements.txt**, and specify the name of the WHL package in the file. The dependency package must be in WHL format.

    For example, the OBS path specified by **Code Directory** contains model files, the WHL file, and the **pip-requirements.txt** file. The code directory structure is as follows:

```
|---OBS path to the model boot file
     |---model.py               # Model boot file
     |---XXX.whl                # Dependency package. If multiple dependencies are required, place
all of them here.
     |---pip-requirements.txt   # Customized configuration file, which specifies the name of the
dependency package
```

    The following shows the content of the **pip-requirements.txt** file:

```
numpy-1.15.4-cp36-cp36m-manylinux1_x86_64.whl
tensorflow-1.8.0-cp36-cp36m-manylinux1_x86_64.whl
```

- Method 2: Add the following code to the boot file to install the dependency package:

  ```
  import os
  os.system('pip install xxx')
  ```

In method 1, the dependency package can be downloaded and installed before the training job is started. In method 2, the dependency package is downloaded and installed during the running of the boot file.

Checking Whether the Dependency Package Path Can Be Detected

Before executing code locally, add **project_dir** to **PYTHONPATH** or install **project_dir** in **site-package**. ModelArts enables you to add **project_dir** to **sys.path** to resolve this issue.

Run **from module_dir import module_file** to import a package. The code structure is as follows:

```
project_dir
|- main.py
|- module_dir
|  |- __init__.py
|  |- module_file.py
```

Checking Whether the Selected Resource Flavor Is Correct

Error message "No module named npu_bridge.npu_init" is displayed for a training job.

```
from npu_bridge.npu_init import *
ImportError: No module named npu_bridge.npu_init
```

Check whether the flavor used by the training job supports NPUs. The possible cause is that the job selected a non-NPU flavor, for example, a GPU flavor. As a result, an error occurs when NPUs are used.

Summary and Suggestions

Before creating a training job, use the ModelArts development environment to debug the training code to maximally eliminate errors in code migration.

- Use the in-cloud notebook environment for debugging. For details, see **Using JupyterLab to Develop a Model**.
- Use the local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Using the Local IDE to Develop a Model**.

4.2.3 Failed to Install a Third-Party Package

Symptom

- **How to install custom library functions** for ModelArts, for example, **apex**.
- The following error occurs when a third-party package is installed in the ModelArts training environment:

  ```
  xxx.whl is not a supported wheel on this platform
  ```

Possible Cause

Error **xxx.whl is not a supported wheel on this platform** occurs, because the format of the name of the installed file is not supported. For details about the solution, see 2.

Solution

1. **Installing the third-party package**
   1. For an existing package in **pip**, run the following code to install it:
      ```
      import os
      os.system('pip install xxx')
      ```
   2. For a package that do not exist in **pip**, for example, **apex**, use the following method to upload the installation package to an OBS bucket. In this example, the installation package has been uploaded to **obs://cnnorth4-test/codes/mox_benchmarks/apex-master/**. Add the following code to the boot file to install the package:
      ```
      try:
          import apex
      except Exception:
          import os
          import moxing as mox
          mox.file.copy_parallel('obs://cnnorth4-test/codes/mox_benchmarks/apex-master/', '/cache/
      apex-master')
          os.system('pip --default-timeout=100 install -v --no-cache-dir --global-option="--cpp_ext" --
      global-option="--cuda_ext" /cache/apex-master')
      ```
2. **Installation error**

   If the **xxx.whl** file fails to be installed, perform the following steps to solve the problem:
   1. If the **xxx.whl** file fails to be installed, add the following code to the boot file to check the file name and version supported by the **pip** command.
      ```
      import pip
      print(pip.pep425tags.get_supported())
      ```
      The supported file names and versions are as follows:
      ```
      [('cp36', 'cp36m', 'manylinux1_x86_64'), ('cp36', 'cp36m', 'linux_x86_64'), ('cp36', 'abi3',
      'manylinux1_x86_64'), ('cp36', 'abi3', 'linux_x86_64'), ('cp36', 'none', 'manylinux1_x86_64'),
      ('cp36', 'none', 'linux_x86_64'), ('cp35', 'abi3', 'manylinux1_x86_64'), ('cp35', 'abi3',
      'linux_x86_64'), ('cp34', 'abi3', 'manylinux1_x86_64'), ('cp34', 'abi3', 'linux_x86_64'), ('cp33',
      'abi3', 'manylinux1_x86_64'), ('cp33', 'abi3', 'linux_x86_64'), ('cp32', 'abi3', 'manylinux1_x86_64'),
      ('cp32', 'abi3', 'linux_x86_64'), ('py3', 'none', 'manylinux1_x86_64'), ('py3', 'none', 'linux_x86_64'),
      ('cp36', 'none', 'any'), ('cp3', 'none', 'any'), ('py36', 'none', 'any'), ('py3', 'none', 'any'), ('py35',
      'none', 'any'), ('py34', 'none', 'any'), ('py33', 'none', 'any'), ('py32', 'none', 'any'), ('py31', 'none',
      'any'), ('py30', 'none', 'any')]
      ```
   2. Change **faiss_gpu-1.5.3-cp36-cp36m-manylinux2010_x86_64.whl** to **faiss_gpu-1.5.3-cp36-cp36m-manylinux1_x86_64.whl**, and run the following code to install the package:
      ```
      import moxing as mox
      import os

      mox.file.copy('obs://wolfros-net/zp/AI/code/faiss_gpu-1.5.3-cp36-cp36m-
      manylinux2010_x86_64.whl','/cache/faiss_gpu-1.5.3-cp36-cp36m-manylinux1_x86_64.whl')
      os.system('pip install /cache/faiss_gpu-1.5.3-cp36-cp36m-manylinux1_x86_64.whl')
      ```

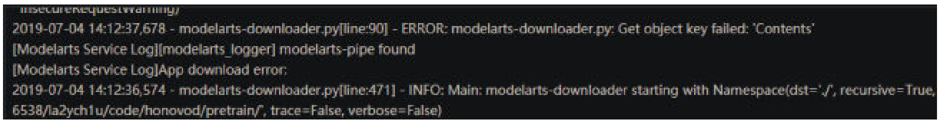
4.2.4 Failed to Download the Code Directory

Symptom

The code directory fails to be downloaded during training job running, and the following error message is displayed. See **Figure 4-4**.

```
ERROR: modelarts-downloader.py: Get object key failed: 'Contents'
```

Figure 4-4 Failure of getting content



```
 InsecureRequestWarning)
2019-07-04 14:12:37,678 - modelarts-downloader.py[line:90] - ERROR: modelarts-downloader.py: Get object key failed: 'Contents'
[Modelarts Service Log][modelarts_logger] modelarts-pipe found
[Modelarts Service Log]App download error:
2019-07-04 14:12:36,574 - modelarts-downloader.py[line:471] - INFO: Main: modelarts-downloader starting with Namespace(dst='./', recursive=True,
6538/la2ych1u/code/honovod/pretrain/', trace=False, verbose=False)
```

Possible Cause

The code directory specified during training job creation does not exist. As a result, the training fails.

Solution

Check whether the code directory specified during training job creation, that is, the OBS bucket path, is correct based on the error cause. There are two methods to check whether it exists.

- Log in to the OBS console using the current account, and search for the OBS buckets, folders, and files in the path to check whether the code directory exists.
- Using APIs to check whether the directory exists: Run the following command in code to check whether the directory exists:
  ```
  import moxing as mox
  mox.file.exists('obs://obs-test/ModelArts/examples/')
  ```

4.2.5 Error Message "No such file or directory" Displayed in Training Job Logs

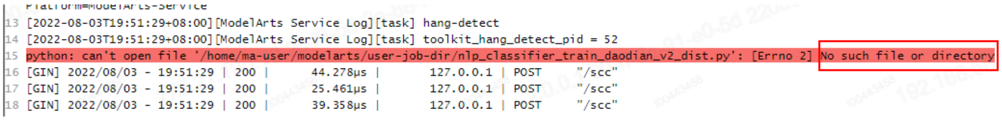
Symptom

If a training job failed, error message "No such file or directory" is displayed in logs.

If a training input path is unreachable, error message "No such file or directory" is displayed.

If a training boot file is unavailable, error message "No such file or directory" is displayed.

Figure 4-5 Example log for an unavailable training boot file



```
Platform=ModelArts-Service
[2022-08-03T19:51:29+08:00][ModelArts Service Log][task] hang-detect
[2022-08-03T19:51:29+08:00][ModelArts Service Log][task] toolkit_hang_detect_pid = 52
python: can't open file '/home/ma-user/modelarts/user-job-dir/nlp_classifier_train_daodian_v2_dist.py': [Errno 2] No such file or directory
[GIN] 2022/08/03 - 19:51:29 | 200 |      44.278µs |       127.0.0.1 | POST     "/scc"
[GIN] 2022/08/03 - 19:51:29 | 200 |      25.461µs |       127.0.0.1 | POST     "/scc"
[GIN] 2022/08/03 - 19:51:29 | 200 |      39.358µs |       127.0.0.1 | POST     "/scc"
```

Possible Causes

- If the training input path is unreachable, the path is incorrect. Perform the following operations to locate the fault:
  a. **Checking Whether the Affected Path Is an OBS Path**
  b. **Checking Whether the Affected Path Is Available**
- If the training boot file is unavailable, the path to the training job boot command is incorrect. Rectify the fault by referring to **Checking the File Boot Path of a Training Job Created Using a Custom Image**.
- Multiple processes or workers read and write the same file. If SFS is used, check whether multiple nodes concurrently write the same file. Analyze the code and check whether multiple processes write the same file. It is a good practice to prevent multiple processes or nodes from concurrently reading and writing the same file.

Checking Whether the Affected Path Is an OBS Path

When using ModelArts, store data in an OBS bucket. However, the OBS path cannot be used to read data during the execution of the training code.

The reason is as follows:

After a training job is created, the training performance is poor if the running container is directly connected to OBS. To prevent this issue, the system automatically downloads the training data to the local path of the running container. Therefore, an error occurs if an OBS path is used in training code. For example, if the OBS path to the training code is **obs://bucket-A/training/**, the training code will be automatically downloaded to **${MA_JOB_DIR}/training/**.

For example, the OBS path to the training code is **obs://bucket-A/XXX/{training-project}/**, where **{training-project}** is the name of the folder where the training code is stored. During training, the system will automatically download the data from OBS **{training-project}** to the local path of the training container (**$MA_JOB_DIR/{training-project}/**).

If the affected path is to the training data, perform the following operations to resolve this issue (see **Parsing Input and Output Paths** for details):

1. When creating an algorithm, **set the code path parameter**, which defaults to **data_url**, in the input path mapping configuration.
2. Add a hyperparameter, which defaults to **data_url**, to the training code. Use **data_url** as the local path for inputting the training data.

Checking Whether the Affected Path Is Available

The code developed locally needs to be uploaded to the ModelArts backend. It is likely to incorrectly set the path to a dependency file in training code.

You are suggested to use the following general solution to obtain the absolute path to a dependency file through the OS API.

Example:

```
|---project_root                # Root directory for code
   |---BootfileDirectory        # Directory where the boot file is located
```

```
  |---bootfile.py          # Boot file
|---otherfileDirectory      # Directory where other dependency files are located
  |---otherfile.py         # Other dependency files
```

Do as follows to obtain the path to a dependency file, **otherfile_path** in this example, in the boot file:

```
import os
current_path = os.path.dirname(os.path.realpath(__file__)) # Directory where the boot file is located
project_root = os.path.dirname(current_path) # Root directory of the project, which is the code directory set
on the ModelArts training console
otherfile_path = os.path.join(project_root, "otherfileDirectory", "otherfile.py")
```

Checking the File Boot Path of a Training Job Created Using a Custom Image

Take OBS path **obs://obs-bucket/training-test/demo-code** as an example. The training code in this path will be automatically downloaded to **${MA_JOB_DIR}/demo-code** in the training container, where **demo-code** is the last-level directory of the OBS path and can be customized.

If you use a custom image to create a training job, the system will automatically run the image boot command after the code directory is downloaded. The boot command must comply with the following rules:

- If the training startup script is a .py file, **train.py** for example, the boot command can be **python ${MA_JOB_DIR}/demo-code/train.py**.
- If the training startup script is an .sh file, **main.sh** for example, the boot command can be **bash ${MA_JOB_DIR}/demo-code/main.sh**,

where **demo-code** is the last-level directory of the OBS path and can be customized.

Summary and Suggestions

Before creating a training job, use the ModelArts development environment to debug the training code to maximally eliminate errors in code migration.

- Use in-cloud notebook for debugging. For details, see **JupyterLab Overview and Common Operations**.
- Use a local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Operation Process in a Local IDE**.

4.2.6 Failed to Find the .so File During Training

Symptom

During the execution of a ModelArts training job, the following error message is displayed in the log and the training failed:

```
libcudart.so.9.0 cannot open shared object file no such file or directory
```

Possible Cause

The CUDA version of the .so file generated during compilation is different from that of the training job.

Solution

If the CUDA version in the compilation environment is different from that in the training environment, an error will occur when a training job runs. For example, this error occurs if the .so file generated in the TensorFlow 1.13 development environment of CUDA version 10 is used in the TensorFlow 1.12 training environment of CUDA version 9.0.

To resolve this issue, perform the following operations:

1. Add the following command before executing a training job to check whether the .so file is available. If the .so file is available, go to 2. Otherwise, go to 3.
   ```
   import os;
   os.system(find /usr -name *libcudart.so*);
   ```
2. Configure the environment variable **LD_LIBRARY_PATH** and issue the training job again.

   For example, if the path for storing the .so file is **/use/local/cuda/lib64**, configure **LD_LIBRARY_PATH** as follows:
   ```
   export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/usr/local/cuda/lib64
   ```
3. Run the following command to check whether the CUDA version of the training environment supports the .so file:
   ```
   os.system("cat /usr/local/cuda/version.txt")
   ```
   a. If so, import an external .so file (download it from the browser) and configure **LD_LIBRARY_PATH** in 2.

   b. If not, replace the engine and issue the training job again. Alternatively, use a custom image to create a job. For details, see **Using a Custom Image to Train Models**.

4.2.7 ModelArts Training Job Failed to Parse Parameters and an Error Is Displayed in the Log

Symptom

The ModelArts training job failed to parse parameters, and the following error occurs:

```
error: unrecognized arguments: --data_url=xxx://xxx/xxx
error: unrecognized arguments: --init_method=tcp://job
absl.flags._exceptions.UnrecognizedFlagError:Unknown command line flag 'task_index'
```

Possible Cause

- The parameters are not defined.
- In the training environment, the system may input parameters that are not defined in the Python script. As a result, the parameters cannot be parsed, and an error is displayed in the log.

Solution

1. Define the parameters. The following is a code sample for reference:
   ```
   parser.add_argument('--init_method', default='tcp://xxx',help="init-method")
   ```
2. Replace **args = parser.parse_args()** with **args, unparsed = parser.parse_known_args()**. The following is a code sample:

```
import argparse
parser = argparse.ArgumentParser()
parser.add_argument('--data_url', type=str, default=None, help='obs path of dataset')
args, unparsed = parser.parse_known_args()
```

4.2.8 Training Output Path Is Used by Another Job

Symptom

The following error message is displayed when a training job is created: Operation failed. Other running job contain train_url: /bucket-20181114/code_hxm/

Possible Cause

According to the error information, the same training output path is used by another job when a training job is created.

Solution

A training output path can be used by only one job in the running, queuing, or initializing state.

If this error occurs, check and re-set the training output path of the training job to avoid the job creation failure.

4.2.9 Error Message "RuntimeError: std::exception" Displayed for a PyTorch 1.0 Engine

Symptom

When a PyTorch 1.0 image is used, the following error message is displayed:

```
"RuntimeError: std::exception"
```

Possible Causes

The soft link of libmkldnn in the PyTorch 1.0 image conflicts with that of the native Torch. For details, see **conv1d fails in PyTorch 1.0**.

Solution

1. This issue is caused by library conflict in the environment. To resolve this issue, add the following code at the very beginning of the boot script:
```
import os
os.system("rm /home/work/anaconda3/lib/libmkldnn.so")
os.system("rm /home/work/anaconda3/lib/libmkldnn.so.0")
```
2. Use the local PyCharm to remotely access notebook for debugging.

Summary and Suggestions

Before creating a training job, use the ModelArts development environment to debug the training code to maximally eliminate errors in code migration.

- Use the online notebook environment for debugging. For details, see **Using JupyterLab to Develop a Model**.

- Use the local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Using the Local IDE to Develop a Model**.

4.2.10 Error Message "retCode=0x91, [the model stream execute failed]" Displayed in MindSpore Logs

Symptom

When MindSpore is used for training, the following error message is displayed:

```
[ERROR] RUNTIME(3002)model execute error, retCode=0x91, [the model stream execute failed]
```

Possible Causes

The speed of reading data cannot keep up with the model iteration speed.

Solution

1. Reduce shuffle operations during preprocessing.
   ```
   dataset = dataset.shuffle(buffer_size=x)
   ```
2. Disable data preprocessing, which may affect system performance.
   ```
   NPURunConfig(enable_data_pre_proc=false)
   ```

Summary and Suggestions

Before creating a training job, use the ModelArts development environment to debug the training code to maximally eliminate errors in code migration.

- Use the online notebook environment for debugging. For details, see **Using JupyterLab to Develop a Model**.
- Use the local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Using the Local IDE to Develop a Model**.

4.2.11 Error Occurred When Pandas Reads Data from an OBS File If MoXing Is Used to Adapt to an OBS Path

Symptom

If MoXing is used to adapt to an OBS path, an error occurs when pandas of a later version reads data from an OBS file.

```
1. 'can't decode byte xxx in position xxx'
2. 'OSError:File isn't open for writing'
```

Possible Causes

MoXing does not support Pandas of a later version.

Solution

1. After the OBS path is adapted, change the file access mode from **r** to **rb** and change the **_write_check_passed** value in **mox.file.File** to **True**, as shown in the following is sample code:
   ```
   import pandas as pd
   import moxing as mox
   ```

```
mox.file.shift('os', 'mox')  # Replace the open operation of the operating system with the operation
for adapting the mox.file.File to the OBS path.

param = {'encoding': 'utf-8'}
path = 'xxx.csv'
with open(path, 'rb') as f:
    f._wirte_check_passed = True
    df = pd.read_csv(ff, **param)
```

2. Use the local PyCharm to remotely access notebook for debugging.

Summary and Suggestions

Before creating a training job, use the ModelArts development environment to debug the training code to maximally eliminate errors in code migration.

- Use the online notebook environment for debugging. For details, see **Using JupyterLab to Develop a Model**.
- Use the local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Using the Local IDE to Develop a Model**.

4.2.12 Error Message "Please upgrade numpy to >= xxx to use this pandas version" Displayed in Logs

Symptom

Dependency conflicts occur when other packages are installed. There are special requirements on the NumPy library. However, NumPy cannot be uninstalled. The error message similar to the following is displayed:

```
your numpy version is 1.14.5.Please upgrade numpy to >= 1.15.4 to use this pandas version
```

Possible Causes

Both Conda and pip packages are installed. Some packages cannot be uninstalled.

Solution

Perform the following operations to resolve this issue:

1. Uninstall the components that can be uninstalled in NumPy.
2. Delete the NumPy folder in the **site-packages** directory.
3. Install the required version again.

```
import os
os.system("pip uninstall -y numpy")
os.system('rm -rf /home/work/anaconda/lib/python3.6/site-packages/numpy/')
os.system("pip install numpy==1.15.4")
```

Summary and Suggestions

Before creating a training job, use the ModelArts development environment to debug the training code to maximally eliminate errors in code migration.

- Use the online notebook environment for debugging. For details, see **Using JupyterLab to Develop a Model**.
- Use the local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Using the Local IDE to Develop a Model**.

4.2.13 Reinstalled CUDA Version Does Not Match the One in the Target Image

Symptom

An error occurs after the engine version is reinstalled or a new CUDA package is compiled based on the existing image.

```
1. "RuntimeError: cuda runtime error (11) : invalid argument at /pytorch/aten/src/THC/
THCCachingHostAllocator.cpp:278"
2. "libcudart.so.9.0 cannot open shared object file no such file or directory"
3. "Make sure the device specification refers to a valid device. The requested device appears to be a
GPU,but CUDA is not enabled"
```

Possible Causes

The possible cause is as follows:

The CUDA version of the newly installed package does not match the CUDA version in the image.

Solution

Use the local PyCharm to remotely access notebook for debugging and installation.

1. Remotely log in to the selected image and run **nvcc -V** to obtain the CUDA version of the image.
2. Reinstall Torch. Ensure that the version matches the one obtained in the previous step.

Summary and Suggestions

Before creating a training job, use the ModelArts development environment to debug the training code to maximally eliminate errors in code migration.

- Use the online notebook environment for debugging. For details, see **JupyterLab Overview and Common Operations**.
- Use a local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Operation Process in a Local IDE**.

4.2.14 Error ModelArts.2763 Occurred During Training Job Creation

Symptom

When a training job is created, error code ModelArts.2763 is displayed, indicating that the selected instance is invalid.

Possible Causes

The selected training flavor does not match the algorithm.

For example, the algorithm supports GPUs, but Ascend flavor is selected for creating the training job.

Solution

1. Check the training resource flavor configured in the algorithm code.
2. Check whether the resource flavor selected during training job creation is correct. If not, create a training job with the correct resource flavor.

4.2.15 Error Message "AttributeError: module '***' has no attribute '***'" Displayed Training Job Logs

Symptom

Error message "AttributeError: module '***' has no attribute '***'" is displayed in the logs of a training job, for example, "AttributeError: module 'torch' has no attribute 'concat'".

Possible Causes

The possible causes are as follows:

- The Python package is incorrectly used. There is no required variable or method in the Python package.
- The Python package version in the third-party pip source has been updated. As a result, the version of the Python package installed in the training job may also change. If a training job ran properly originally, but this issue occurs in the training job later, consider this cause.

Solution

- Use notebook for debugging.
- Specify a version for installation, for example, **pip install xxx==***1.x.x*.
- The third-party pip source may be updated at any time. To prevent this issue from occurring, create a custom image. For details, see **Using a Custom Image to Train Models (Model Training)**.

Summary and Suggestions

Before creating a training job, use the ModelArts development environment to debug the training code to maximally eliminate errors in code migration.

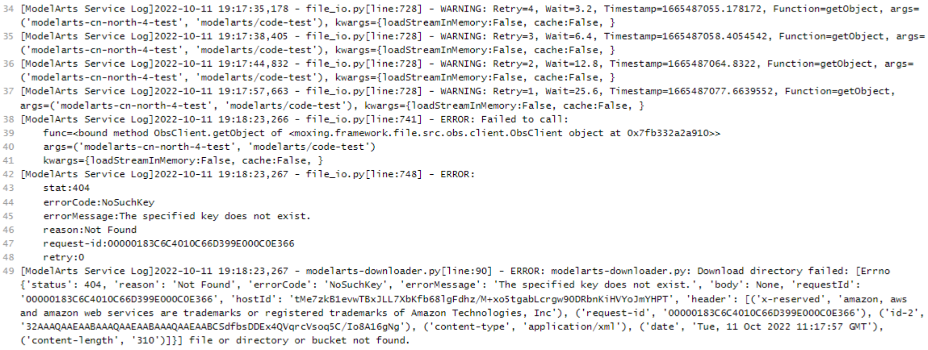
- Use the online notebook environment for debugging. For details, see **Using JupyterLab to Develop a Model**.
- Use the local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Using the Local IDE to Develop a Model**.

4.2.16 System Container Exits Unexpectedly

Symptom

After a training job is created, the system container exits unexpectedly.

Figure 4-6 Error logs



```
[ModelArts Service Log]2022-10-11 19:17:35,178 - file_io.py[line:728] - WARNING: Retry=4, Wait=3.2, Timestamp=1665487055.178172, Function=getObject, args=
('modelarts-cn-north-4-test', 'modelarts/code-test'), kwargs={loadStreamInMemory:False, cache:False, }
[ModelArts Service Log]2022-10-11 19:17:38,405 - file_io.py[line:728] - WARNING: Retry=3, Wait=6.4, Timestamp=1665487058.4054542, Function=getObject, args=
('modelarts-cn-north-4-test', 'modelarts/code-test'), kwargs={loadStreamInMemory:False, cache:False, }
[ModelArts Service Log]2022-10-11 19:17:44,832 - file_io.py[line:728] - WARNING: Retry=2, Wait=12.8, Timestamp=1665487064.8322, Function=getObject, args=
('modelarts-cn-north-4-test', 'modelarts/code-test'), kwargs={loadStreamInMemory:False, cache:False, }
[ModelArts Service Log]2022-10-11 19:17:57,663 - file_io.py[line:728] - WARNING: Retry=1, Wait=25.6, Timestamp=1665487077.6639552, Function=getObject,
args=('modelarts-cn-north-4-test', 'modelarts/code-test'), kwargs={loadStreamInMemory:False, cache:False, }
[ModelArts Service Log]2022-10-11 19:18:23,266 - file_io.py[line:741] - ERROR: Failed to call:
    func=<bound method ObsClient.getObject of <moxing.framework.file.src.obs.client.ObsClient object at 0x7fb332a2a910>>
    args=('modelarts-cn-north-4-test', 'modelarts/code-test')
    kwargs={loadStreamInMemory:False, cache:False, }
[ModelArts Service Log]2022-10-11 19:18:23,267 - file_io.py[line:748] - ERROR:
    stat:404
    errorCode:NoSuchKey
    errorMessage:The specified key does not exist.
    reason:Not Found
    request-id:00000183C6C4010C66D399E000C0E366
    retry:0
[ModelArts Service Log]2022-10-11 19:18:23,267 - modelarts-downloader.py[line:90] - ERROR: modelarts-downloader.py: Download directory failed: [Errno
{'status': 404, 'reason': 'Not Found', 'errorCode': 'NoSuchKey', 'errorMessage': 'The specified key does not exist.', 'body': None, 'requestId':
'00000183C6C4010C66D399E000C0E366', 'hostId': 'tMe7zkB1evwTBxJLL7XbKfb68lgFdhz/M+xo5tgabLcrgw90DRbnKiHVYoJmYHPT', 'header': [('x-reserved', 'amazon, aws
and amazon web services are trademarks or registered trademarks of Amazon Technologies, Inc'), ('request-id', '00000183C6C4010C66D399E000C0E366'), ('id-2',
'32AAAQAAEAABAAAQAAEAABAAAQAAEAABCSdfbsDDEx4QVqrcVsoq5C/Io8A16gNg'), ('content-type', 'application/xml'), ('date', 'Tue, 11 Oct 2022 11:17:57 GMT'),
('content-length', '310')]}] file or directory or bucket not found.
```

Possible Causes

The possible causes are as follows:

1. An error occurred in OBS.
   a. Unavailable file: The specified key does not exist.
   b. Insufficient OBS permissions
   c. OBS traffic limiting
   d. Others
2. The disk space is insufficient.

Solution

1. For an OBS error:
   a. Unavailable file: The specified key does not exist.

      For details, see **Error Message "errorMessage:The specified key does not exist" Displayed in Logs**.

   b. Insufficient OBS permissions

      For details, see **What Should I Do If Error "stat:403 reason:Forbidden" Is Displayed in Logs When a Training Job Accesses OBS**.

   c. OBS traffic limiting

      For details, see **Error Message "BrokenPipeError: Broken pipe" Displayed When OBS Data Is Copied**.

   d. Others

      For details, see **OBS Server-Side Error Codes**. Alternatively, obtain the request ID and contact OBS customer service.

2. For insufficient disk space:

   For details, see **Common Issues Related to Insufficient Disk Space and Solutions**.

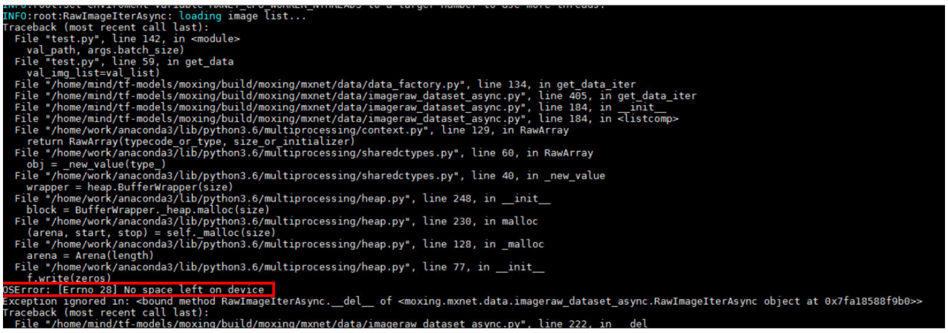
4.3 Hard Faults Due to Space Limit

4.3.1 Downloading Files Timed Out or No Space Left for Reading Data

Symptom

When data, code, or model is copied during training, the error message "No space left on device" is displayed.

Figure 4-7 Error log



```
INFO:root:Set enviroment variable MXNET_CPU_WORKER_NTHREADS to a larger number to use more threads.
INFO:root:RawImageIterAsync: loading image list...
Traceback (most recent call last):
  File "test.py", line 142, in <module>
    val_path, args.batch_size)
  File "test.py", line 59, in get_data
    val_img_list=val_list)
  File "/home/mind/tf-models/moxing/build/moxing/mxnet/data/data_factory.py", line 134, in get_data_iter
  File "/home/mind/tf-models/moxing/build/moxing/mxnet/data/imageraw_dataset_async.py", line 405, in get_data_iter
  File "/home/mind/tf-models/moxing/build/moxing/mxnet/data/imageraw_dataset_async.py", line 184, in __init__
  File "/home/mind/tf-models/moxing/build/moxing/mxnet/data/imageraw_dataset_async.py", line 184, in <listcomp>
  File "/home/work/anaconda3/lib/python3.6/multiprocessing/context.py", line 129, in RawArray
    return RawArray(typecode_or_type, size_or_initializer)
  File "/home/work/anaconda3/lib/python3.6/multiprocessing/sharedctypes.py", line 60, in RawArray
    obj = _new_value(type_)
  File "/home/work/anaconda3/lib/python3.6/multiprocessing/sharedctypes.py", line 40, in _new_value
    wrapper = heap.BufferWrapper(size)
  File "/home/work/anaconda3/lib/python3.6/multiprocessing/heap.py", line 248, in __init__
    block = BufferWrapper._heap.malloc(size)
  File "/home/work/anaconda3/lib/python3.6/multiprocessing/heap.py", line 230, in malloc
    (arena, start, stop) = self._malloc(size)
  File "/home/work/anaconda3/lib/python3.6/multiprocessing/heap.py", line 128, in _malloc
    arena = Arena(length)
  File "/home/work/anaconda3/lib/python3.6/multiprocessing/heap.py", line 77, in __init__
    f.write(zeros)
OSError: [Errno 28] No space left on device
Exception ignored in: <bound method RawImageIterAsync.__del__ of <moxing.mxnet.data.imageraw_dataset_async.RawImageIterAsync object at 0x7fa18588f9b0>>
Traceback (most recent call last):
  File "/home/mind/tf-models/moxing/build/moxing/mxnet/data/imageraw_dataset_async.py", line 222, in __del__
```

Possible Causes

The possible causes are as follows:

- The disk space is insufficient.
- When a distributed job is executed, the **docker base size** configuration does not take effect on certain nodes. As a result, the storage space of the **/** root directory in the container is only the default value of 10 GB, which should be 50 GB, leading to the job training failure.
- The storage space is sufficient, but the error message "No Space left on device" is still displayed.

  If there are a large number of files in the same directory, the kernel creates an index table to accelerate file retrieval. If a large number of files are created in a short period of time, the number of indexes reaches the upper limit, and an error occurs.

  NOTE

  The issue occurs depending on the following factors:

  - A longer file name leads to a smaller upper limit for the number of files.
  - A smaller block size leads to a smaller upper limit for the number of files. (There are three block sizes, 1024 bytes, 2048 bytes, and 4096 bytes. The default size is 4096 bytes.)
  - The issue is more likely to occur if files are created in a shorter period of time. The reason is as follows: There is a cache, the size of which is determined based on the preceding two factors. When the number of files in the directory is large, the cache is enabled. The resources are released if they are not used.

Solution

1. Rectify the fault by following the operations described in **Error Message "write line error" Displayed in Logs**.

2. If the issue occurs only on certain nodes used by the distributed job, submit a service ticket to isolate the faulty nodes.
3. If the issue is caused by EulerOS restrictions, take the following measures:
   - Reduce the number of files in a single directory.
   - Slow down the file creation speed.
   - Disable the **dir_index** attribute of the Ext4 file system, which may affect the file retrieval performance. For details, see https://access.redhat.com/solutions/29894.

Summary and Suggestions

Before creating a training job, use the ModelArts development environment to debug the training code to maximally eliminate errors in code migration.

- Use the online notebook environment for debugging. For details, see **Using JupyterLab to Develop a Model**.
- Use the local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Using the Local IDE to Develop a Model**.

4.3.2 Insufficient Container Space for Copying Data

Symptom

When a ModelArts training job was running, the error below was printed in the log. As a result, data failed to be copied to the container.

```
OSError:[Errno 28] No space left on device
```

Possible Causes

The container space is insufficient for downloading data.

Solution

1. Check if data is downloaded to the **/cache** directory. Each GPU node has a **/cache** directory with 4 TB of storage. Check if the directory is experiencing an excessive creation of files simultaneously, which will run out of inodes, leading to a shortage of space.
2. Check whether GPU resources are used. If CPU resources are used, **/cache** and the code directory share 10 GB of memory. As a result, the memory is insufficient. In this case, use GPU resources instead.
3. Add the following environment variable to the code:
```
import os
os.system('export TMPDIR=/cache')
```

4.3.3 Error Message "No space left" Displayed When a TensorFlow Multi-node Job Downloads Data to /cache

Symptom

During training job creation, error message "No space left" is displayed when a TensorFlow multi-node job downloads data to **/cache**.

Possible Cause

In a TensorFlow multi-node job, the **parameter server** (ps) and **worker** roles are started. The **ps** and **worker** roles are scheduled to the same machine. Training data is useless for **ps**. Therefore, the ps-related logic in code does not need to download the training data. If **ps** also downloads data to **/cache**, the actually downloaded data will be doubled. For example, if 2.5 TB data has been downloaded, the program displays a message indicating that space is insufficient because **/cache** has only 4 TB available space.

Solution

When a TensorFlow multi-node job is used to download data, the correct download logic is as follows:

```
import argparse
parser = argparse.ArgumentParser()
parser.add_argument("--job_name", type=str, default="")
args = parser.parse_known_args()

if args[0].job_name != "ps":
    copy..............................
```

4.3.4 Size of the Log File Has Reached the Limit

Symptom

An error occurs during the running of a ModelArts training job, indicating that the size of the log file has reached the limit.

```
modelarts-pope: log length overflow(max:1073741824; already: 107341771; new:90), process will continue
running silently
```

Possible Cause

Error information indicates that the size of the log file has reached the limit. After this error occurs, the volume of logs does not increase and the background continues to run.

Solution

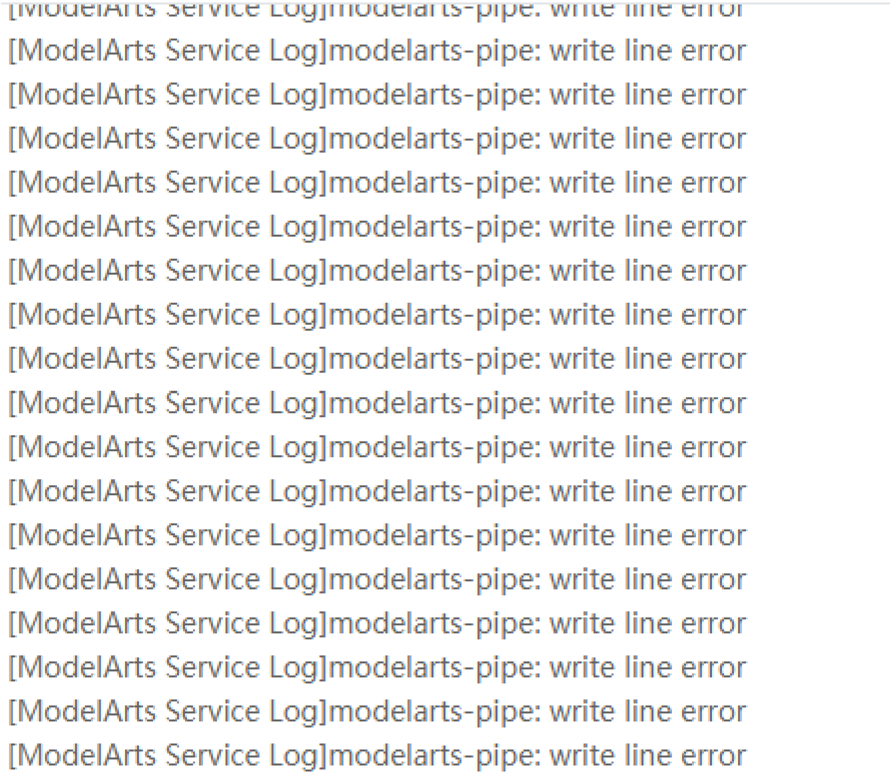
Reduce unnecessary log output from the boot file.

4.3.5 Error Message "write line error" Displayed in Logs

Symptom

During program running, a large number of error messages "write line error" are generated. This issue recurs each time the program runs at a specific progress.

Figure 4-8 Error log



```
[ModelArts Service Log]modelarts-pipe: write line error
[ModelArts Service Log]modelarts-pipe: write line error
[ModelArts Service Log]modelarts-pipe: write line error
[ModelArts Service Log]modelarts-pipe: write line error
[ModelArts Service Log]modelarts-pipe: write line error
[ModelArts Service Log]modelarts-pipe: write line error
[ModelArts Service Log]modelarts-pipe: write line error
[ModelArts Service Log]modelarts-pipe: write line error
[ModelArts Service Log]modelarts-pipe: write line error
[ModelArts Service Log]modelarts-pipe: write line error
[ModelArts Service Log]modelarts-pipe: write line error
[ModelArts Service Log]modelarts-pipe: write line error
[ModelArts Service Log]modelarts-pipe: write line error
[ModelArts Service Log]modelarts-pipe: write line error
[ModelArts Service Log]modelarts-pipe: write line error
[ModelArts Service Log]modelarts-pipe: write line error
[ModelArts Service Log]modelarts-pipe: write line error
[ModelArts Service Log]modelarts-pipe: write line error
```

Possible Causes

The possible causes are as follows:

- Core files are generated during the program running and exhaust the storage space in the **/** root directory.
- The 3.5 TB of storage space in the **/cache** directory is used up by the local data and files stored in it.

NOTE

The disk space for in-cloud training consists of the space from the following directories:

1. The **/** root directory, which is specified by **base size** in Docker. The default value is 10 GB. On the cloud, the value has been changed to 50 GB.
2. The **/cache** directory, which is 3.5 TB typically.

Solution

1. If core files are generated in the training job's work directory, add the code below at the beginning of the boot script to disable the generation of the core files.
   ```
   import os
   os.system("ulimit -c 0")
   ```
2. Check whether the dataset and checkpoint file have used up the storage space of the **/cache** directory.
3. Use the local PyCharm to remotely access notebook for debugging.

Summary and Suggestions

Before creating a training job, use the ModelArts development environment to debug the training code to maximally eliminate errors in code migration.

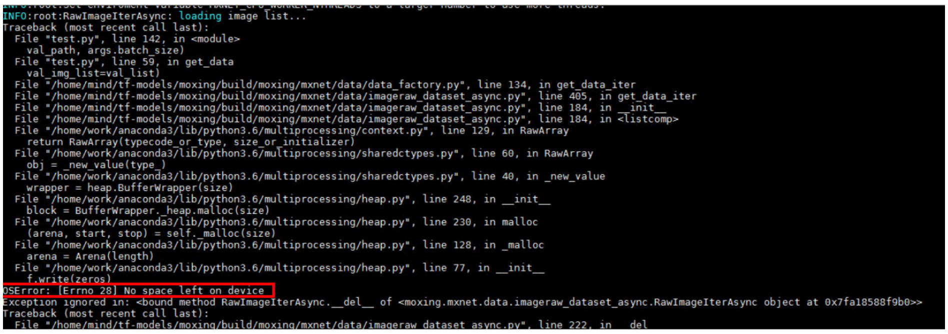
- Use the online notebook environment for debugging. For details, see **JupyterLab Overview and Common Operations**.
- Use a local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Operation Process in a Local IDE**.

4.3.6 Error Message "No space left on device" Displayed in Logs

Symptom

During training, you encounter the error message "No space left on device" when copying data, code, or models.

Figure 4-9 Error log



```
INFO:root:Set enviroment variable MXNET_CPU_WORKER_NTHREADS to a larger number to use more threads.
INFO:root:RawImageIterAsync: loading image list...
Traceback (most recent call last):
  File "test.py", line 142, in <module>
    val_path, args.batch_size)
  File "test.py", line 59, in get_data
    val_img_list=val_list)
  File "/home/mind/tf-models/moxing/build/moxing/mxnet/data/data_factory.py", line 134, in get_data_iter
  File "/home/mind/tf-models/moxing/build/moxing/mxnet/data/imageraw_dataset_async.py", line 405, in get_data_iter
  File "/home/mind/tf-models/moxing/build/moxing/mxnet/data/imageraw_dataset_async.py", line 184, in __init__
  File "/home/mind/tf-models/moxing/build/moxing/mxnet/data/imageraw_dataset_async.py", line 184, in <listcomp>
  File "/home/work/anaconda3/lib/python3.6/multiprocessing/context.py", line 129, in RawArray
    return RawArray(typecode_or_type, size_or_initializer)
  File "/home/work/anaconda3/lib/python3.6/multiprocessing/sharedctypes.py", line 60, in RawArray
    obj = _new_value(type_)
  File "/home/work/anaconda3/lib/python3.6/multiprocessing/sharedctypes.py", line 40, in _new_value
    wrapper = heap.BufferWrapper(size)
  File "/home/work/anaconda3/lib/python3.6/multiprocessing/heap.py", line 248, in __init__
    block = BufferWrapper._heap.malloc(size)
  File "/home/work/anaconda3/lib/python3.6/multiprocessing/heap.py", line 230, in malloc
    (arena, start, stop) = self._malloc(size)
  File "/home/work/anaconda3/lib/python3.6/multiprocessing/heap.py", line 128, in _malloc
    arena = Arena(length)
  File "/home/work/anaconda3/lib/python3.6/multiprocessing/heap.py", line 77, in __init__
    f.write(zeros)
OSError: [Errno 28] No space left on device
Exception ignored in: <bound method RawImageIterAsync.__del__ of <moxing.mxnet.data.imageraw_dataset_async.RawImageIterAsync object at 0x7fa18588f9b0>>
Traceback (most recent call last):
  File "/home/mind/tf-models/moxing/build/moxing/mxnet/data/imageraw_dataset_async.py", line 222, in __del__
```

Possible Causes

- The disk space is insufficient.
- In distributed jobs, the docker base size configuration is not effective on all nodes. Sometimes, the storage space in the container's root directory **/** defaults to 10 GB instead of the required 50 GB, causing training failures.
- If there are many files in the same directory, the kernel creates an index table for faster file retrieval. Rapidly creating numerous files can hit the index limit, resulting in the error.

  NOTE

  Factors affecting this include:

  - Longer file names
  - Smaller block sizes (There are three block sizes, 1024 bytes, 2048 bytes, and 4096 bytes. The default size is 4096 bytes.)
  - More rapid file creation

Solution

1. Rectify the issue by referring to **Error Message "write line error" Displayed in Logs**.

2. If the problem persists on specific nodes, submit a service ticket to isolate those nodes.
3. For EulerOS restrictions, do as follows:
   - Reduce files in a single directory.
   - Slow down file creation.
   - Disable the **dir_index** attribute of the Ext4 file system, which may affect the file retrieval performance. For details, see https://access.redhat.com/solutions/29894.

Summary and Suggestions

Debug your training code in the ModelArts development environment before creating a job.

- Use the online notebook environment. For details, see **JupyterLab Overview and Common Operations**.
- Use a local IDE (PyCharm or VS Code) to access the cloud environment. For details, see **Operation Process in a Local IDE**.

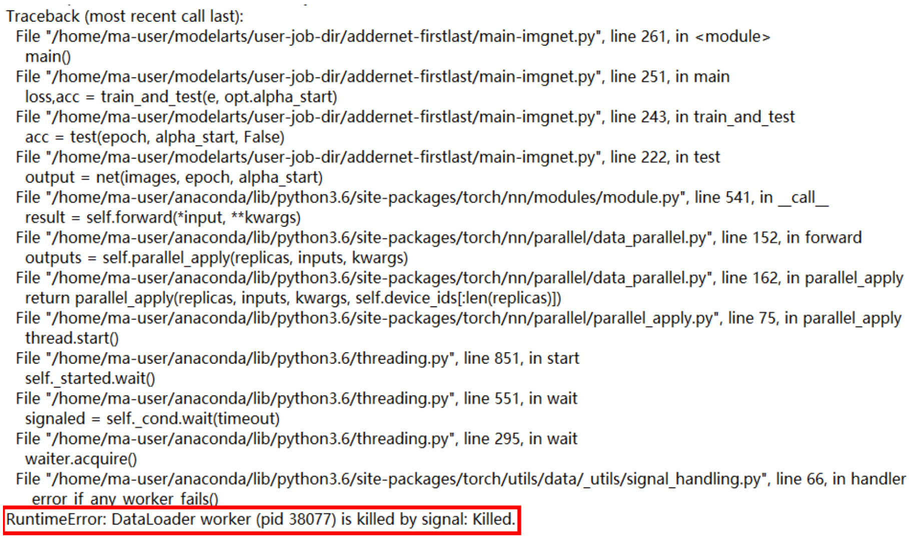
4.3.7 Training Job Failed Due to OOM

Symptom

If a training job failed due to out of memory (OOM), possible symptoms as as follows:

1. Error code 137 is returned.
2. The log file contains error information with keyword **killed**.

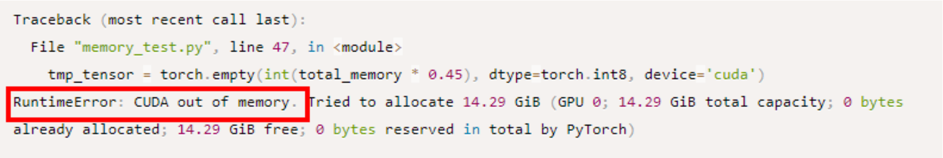
Figure 4-10 Error log



```
Traceback (most recent call last):
  File "/home/ma-user/modelarts/user-job-dir/addernet-firstlast/main-imgnet.py", line 261, in <module>
    main()
  File "/home/ma-user/modelarts/user-job-dir/addernet-firstlast/main-imgnet.py", line 251, in main
    loss,acc = train_and_test(e, opt.alpha_start)
  File "/home/ma-user/modelarts/user-job-dir/addernet-firstlast/main-imgnet.py", line 243, in train_and_test
    acc = test(epoch, alpha_start, False)
  File "/home/ma-user/modelarts/user-job-dir/addernet-firstlast/main-imgnet.py", line 222, in test
    output = net(images, epoch, alpha_start)
  File "/home/ma-user/anaconda/lib/python3.6/site-packages/torch/nn/modules/module.py", line 541, in __call__
    result = self.forward(*input, **kwargs)
  File "/home/ma-user/anaconda/lib/python3.6/site-packages/torch/nn/parallel/data_parallel.py", line 152, in forward
    outputs = self.parallel_apply(replicas, inputs, kwargs)
  File "/home/ma-user/anaconda/lib/python3.6/site-packages/torch/nn/parallel/data_parallel.py", line 162, in parallel_apply
    return parallel_apply(replicas, inputs, kwargs, self.device_ids[:len(replicas)])
  File "/home/ma-user/anaconda/lib/python3.6/site-packages/torch/nn/parallel/parallel_apply.py", line 75, in parallel_apply
    thread.start()
  File "/home/ma-user/anaconda/lib/python3.6/threading.py", line 851, in start
    self._started.wait()
  File "/home/ma-user/anaconda/lib/python3.6/threading.py", line 551, in wait
    signaled = self._cond.wait(timeout)
  File "/home/ma-user/anaconda/lib/python3.6/threading.py", line 295, in wait
    waiter.acquire()
  File "/home/ma-user/anaconda/lib/python3.6/site-packages/torch/utils/data/_utils/signal_handling.py", line 66, in handler
     error_if_any_worker_fails()
RuntimeError: DataLoader worker (pid 38077) is killed by signal: Killed.
```

3. Error message "RuntimeError: CUDA out of memory." is displayed in logs.

Figure 4-11 Error log



```
Traceback (most recent call last):
  File "memory_test.py", line 47, in <module>
    tmp_tensor = torch.empty(int(total_memory * 0.45), dtype=torch.int8, device='cuda')
RuntimeError: CUDA out of memory. Tried to allocate 14.29 GiB (GPU 0; 14.29 GiB total capacity; 0 bytes
already allocated; 14.29 GiB free; 0 bytes reserved in total by PyTorch)
```

4. Error message "Dst tensor is not initialized" is displayed in TensorFlow logs.

Possible Causes

The possible causes are as follows:

- GPU memory is insufficient.
- OOM occurred on certain nodes. This issue is typically caused by the node fault.

Solution

1. Modify hyperparameter settings to release unnecessary tensors.
   a. Modify network parameters, such as **batch_size**, **hide_layer**, and **cell_nums**.
   b. Release unnecessary tensors.
   ```
   del tmp_tensor
   torch.cuda.empty_cache()
   ```
2. Use the local PyCharm to remotely access notebook for debugging.
3. If the fault persists, submit a service ticket to locate the fault or even isolate the affected node.

Summary and Suggestions

Before creating a training job, use the ModelArts development environment to debug the training code to maximally eliminate errors in code migration.

- Use the online notebook environment for debugging. For details, see **Using JupyterLab to Develop a Model**.
- Use the local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Using the Local IDE to Develop a Model**.

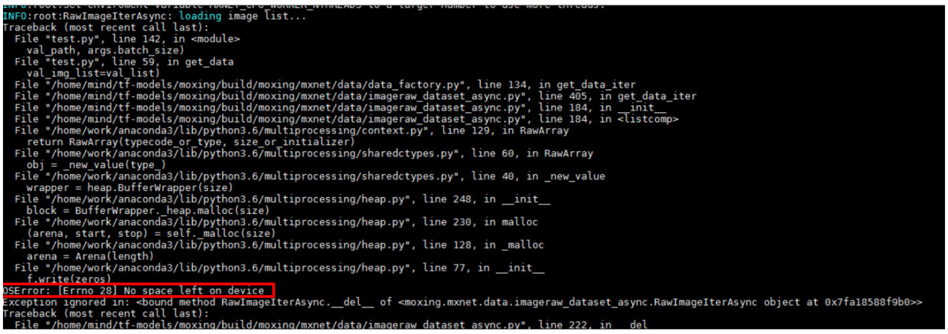
4.3.8 Common Issues Related to Insufficient Disk Space and Solutions

This section centrally describes common issues related to insufficient disk space and solutions to these issues.

Symptom

When data, code, or model is copied during training, error message "No space left on device" is displayed.

Figure 4-12 Error log



```
INFO:root:Set environment variable MXNET_CPU_WORKER_NTHREADS to a larger number to use more threads.
INFO:root:RawImageIterAsync: loading image list...
Traceback (most recent call last):
  File "test.py", line 142, in <module>
    val_path, args.batch_size)
  File "test.py", line 59, in get_data
    val_img_list=val_list)
  File "/home/mind/tf-models/moxing/build/moxing/mxnet/data/data_factory.py", line 134, in get_data_iter
  File "/home/mind/tf-models/moxing/build/moxing/mxnet/data/imageraw_dataset_async.py", line 405, in get_data_iter
  File "/home/mind/tf-models/moxing/build/moxing/mxnet/data/imageraw_dataset_async.py", line 184, in __init__
  File "/home/mind/tf-models/moxing/build/moxing/mxnet/data/imageraw_dataset_async.py", line 184, in <listcomp>
  File "/home/work/anaconda3/lib/python3.6/multiprocessing/context.py", line 129, in RawArray
    return RawArray(typecode_or_type, size_or_initializer)
  File "/home/work/anaconda3/lib/python3.6/multiprocessing/sharedctypes.py", line 60, in RawArray
    obj = _new_value(type_)
  File "/home/work/anaconda3/lib/python3.6/multiprocessing/sharedctypes.py", line 40, in _new_value
    wrapper = heap.BufferWrapper(size)
  File "/home/work/anaconda3/lib/python3.6/multiprocessing/heap.py", line 248, in __init__
    block = BufferWrapper._heap.malloc(size)
  File "/home/work/anaconda3/lib/python3.6/multiprocessing/heap.py", line 230, in malloc
    (arena, start, stop) = self._malloc(size)
  File "/home/work/anaconda3/lib/python3.6/multiprocessing/heap.py", line 128, in _malloc
    arena = Arena(length)
  File "/home/work/anaconda3/lib/python3.6/multiprocessing/heap.py", line 77, in __init__
    f.write(zeros)
OSError: [Errno 28] No space left on device
Exception ignored in: <bound method RawImageIterAsync.__del__ of <moxing.mxnet.data.imageraw_dataset_async.RawImageIterAsync object at 0x7fa18588f9b0>>
Traceback (most recent call last):
  File "/home/mind/tf-models/moxing/build/moxing/mxnet/data/imageraw_dataset_async.py", line 222, in __del__
```

Possible Causes

The possible causes are as follows:

- The storage space in the **/cache** directory is used up by the local data and files stored in it.
- Data is decompressed when being processed. As a result, the data volume increases, and finally the storage space in the **/cache** directory is used up.
- Data is not saved in **/cache** or **/home/ma-user/** (**/cache** will be softly connected to **/home/ma-user/**). As a result, the system directory is fully occupied. The system directory supports only basic running of system functions. It cannot be used to store large volumes of data.
- During the training of certain jobs, checkpoint files will be generated and updated. If historical checkpoint files are not deleted after an update, the **/cache** directory will be exhausted.
- The storage space is sufficient, but the error message "No Space left on device" is still displayed. This may be triggered by insufficient inodes or an error in the file index cache of the operating system. As a result, no file can be created in the system disk, and finally data disks are used up.

  NOTE

  The conditions for triggering an error in the file index cache are as follows:

  - A longer file name leads to a smaller upper limit for the number of files.
  - A smaller block size leads to a smaller upper limit for the number of files. (There are three block sizes, 1024 bytes, 2048 bytes, and 4096 bytes. The default size is 4096 bytes.)
  - This issue is more likely to occur if files are created in a shorter period of time. The reason is as follows: There is a cache, the size of which is determined based on the preceding two factors. When the number of files in the directory is large, the cache will be enabled and released with the files.
- Core files are generated during the program running and exhaust the storage space in the **/** root directory.

Solution

1. Obtain the sizes of the dataset, decompressed dataset, and checkpoint file and check whether they have exhausted the disk space.
2. If the volume of data exceeds the **/cache** size, use SFS to attach more data disks for expanding the storage size.

3. Save the data and checkpoint in **/cache** or **/home/ma-user/**.
4. Check the checkpoint logic and ensure that historical checkpoints are deleted so that they will not use up the storage space in **/cache**.
5. If the file size is smaller than the **/cache** size, and the number of files exceeds 500,000, the issue may be caused by insufficient inodes or an error in the file index cache of the operating system. In this case, do as follows to resolve this issue:
   - Reduce the number of files in a single directory.
   - Slow down the file creation speed. For example, during data decompression, add a sleep period of 5s before decompressing the next piece of data.
6. If core files are generated in the training job's work directory, add the code below at the beginning of the boot script to disable the generation of the core files. (debug code in a development environment before adding the code):

```
import os
os.system("ulimit -c 0")
```

Summary and Suggestions

Before creating a training job, use the ModelArts development environment to debug the training code to maximally eliminate errors in code migration.

- Use the online notebook environment for debugging. For details, see **Using JupyterLab to Develop a Model**.
- Use the local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Using the Local IDE to Develop a Model**.

4.4 Internet Access Issues

4.4.1 Error Message "Network is unreachable" Displayed in Logs

Symptom

When PyTorch is used, the following error message will be displayed in logs after **pretrained** in **torchvision.models** is set to **True**:

```
'OSError: [Errno 101] Network is unreachable'
```

Possible Causes

For security purposes, ModelArts internal training nodes are not allowed to access the Internet.

Solution

1. Change the **pretrained** value to **False**, download the pre-trained model, and load the path to this model.

```
import torch
import torchvision.models as models

model1 = models.resnet34(pretrained=False, progress=True)
```

```
checkpoint = '/xxx/resnet34-333f7ec4.pth'
state_dict = torch.load(checkpoint)
model1.load_state_dict(state_dict)
```

2. Use the local PyCharm to remotely access notebook for debugging.

Summary and Suggestions

Before creating a training job, use the ModelArts development environment to debug the training code to maximally eliminate errors in code migration.

- Use the online notebook environment for debugging. For details, see **Using JupyterLab to Develop a Model**.
- Use the local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Using the Local IDE to Develop a Model**.

4.4.2 URL Connection Timed Out in a Running Training Job

Symptom

In a running training job, a URL connection timeout error occurs.

```
urllib.error.URLERROR:<urlopen error [Errno 110] Connection timed out>
```

Possible Causes

For security purposes, ModelArts is not allowed to access the Internet to download data.

Solution

Download the required data to a local directory and upload it to OBS. Then, access the OBS path from ModelArts to obtain the data.

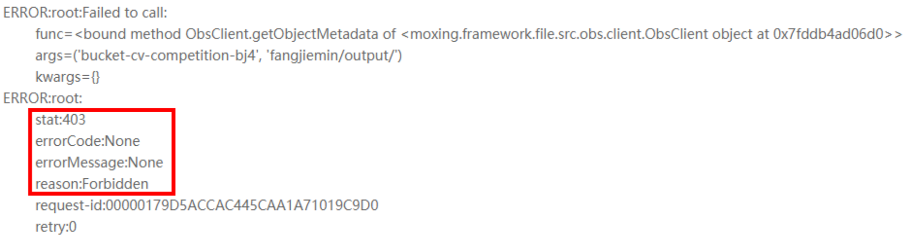
4.5 Permission Issues

4.5.1 What Should I Do If Error "stat:403 reason:Forbidden" Is Displayed in Logs When a Training Job Accesses OBS

Symptom

When a training job accesses OBS, an error occurs.

Figure 4-13 Error log



```
ERROR:root:Failed to call:
    func=<bound method ObsClient.getObjectMetadata of <moxing.framework.file.src.obs.client.ObsClient object at 0x7fddb4ad06d0>>
    args=('bucket-cv-competition-bj4', 'fangjiemin/output/')
    kwargs={}
ERROR:root:
    stat:403
    errorCode:None
    errorMessage:None
    reason:Forbidden
    request-id:00000179D5ACCAC445CAA1A71019C9D0
    retry:0
```

Possible Causes

The possible causes are as follows:

- The OBS permission is incorrect. As a result, data cannot be read.

Solution

Verify that OBS permissions are correctly assigned. If the problem persists, troubleshoot by following the instructions provided in **Why Can't I Access OBS (403 AccessDenied) After Being Granted with the OBS Access Permission?**.

Summary and Suggestions

Before creating a training job, use the ModelArts development environment to debug the training code to maximally eliminate errors in code migration.

- Use the online notebook environment for debugging. For details, see **Using JupyterLab to Develop a Model**.
- Use the local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Using the Local IDE to Develop a Model**.
- If an error occurred in OBS, identify the cause based on the error information, including the error code and message. For details about OBS error codes, see **OBS Server-Side Error Codes**.

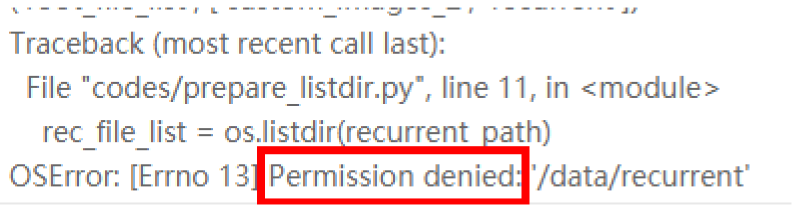
4.5.2 Error Message "Permission denied" Displayed in Logs

Symptom

When a training job accesses the attached EFS disks or executes the .sh boot script, an error occurs.

- [Errno 13]Permission denied: '/xxx/xxxx'

Figure 4-14 Error log



```
Traceback (most recent call last):
  File "codes/prepare_listdir.py", line 11, in <module>
    rec_file_list = os.listdir(recurrent_path)
OSError: [Errno 13] Permission denied: '/data/recurrent'
```

- bash: /bin/ln: Permission denied
- bash:/home/ma-user/.pip/pip.conf: Permission Denied (in a custom image)
- tee: /xxx/xxxx: Permission denied cp: cannot stat '' No such file or directory (in a custom image)

Possible Causes

The possible causes are as follows:

- [Errno 13]Permission denied: '/xxx/xxxx'

  - When data is uploaded, the ownership and permissions to the file are not changed. As a result, the work user group does not have the permission to access the training job.
  - After the .sh file in the code directory is copied to the container, the execution permission is not granted for the file.
- bash: /bin/ln: Permission denied

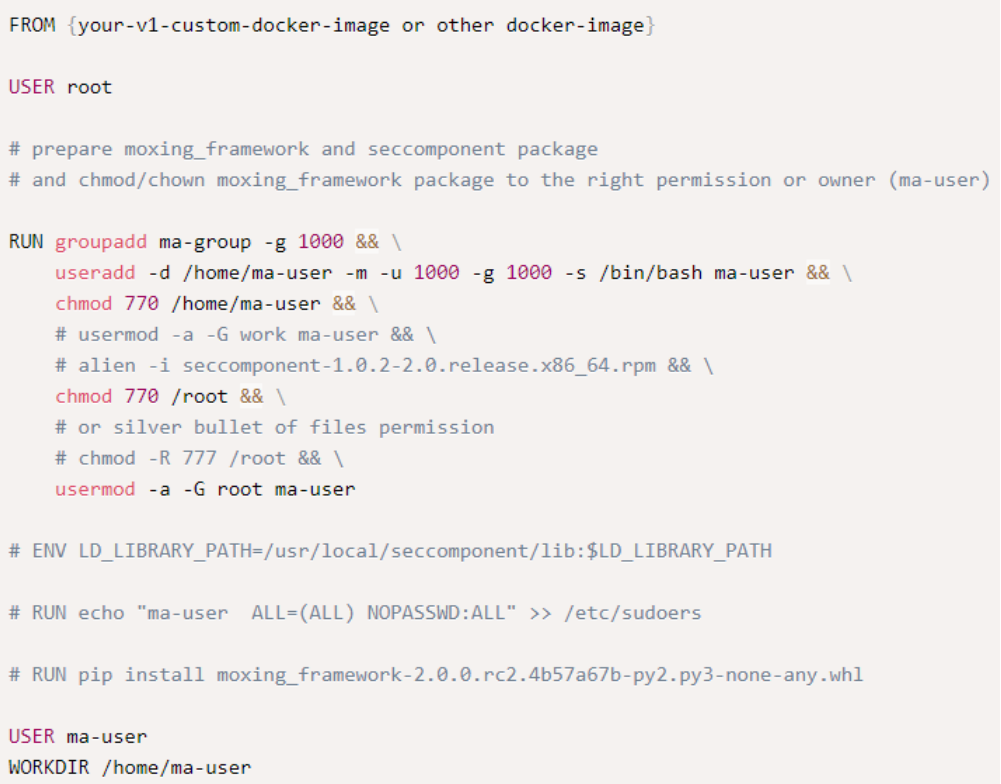
  For security purposes, the ln command is not supported.
- bash:/home/ma-user/.pip/pip.conf: Permission Denied

  After the version of training jobs is switched from V1 to V2, the UID of the **ma-user** user is still **1102**.
- tee: /xxx/xxxx: Permission denied cp: cannot stat '': No such file or directory

  The used startup script is **run_train.sh** of an earlier version. Some environment variables in the script are unavailable in the training jobs of the new version.
- The APIs using the Python file concurrently read and write the same file.

Solution

1. Add permissions to access the attached EFS disks so that the permissions are the same as those of user group (1000) used in the training container. For example, if the **/nas** disk is attached, run the following command:
   ```
   chown -R 1000: 1000 /nas
   Or
   chmod 777 -R /nas
   ```
2. If the execution permission has not been granted for the .sh file used by the custom image, run **chmod +x xxx.sh** to grant the permission before starting the script.
3. On the ModelArts console, if a training job is created using a custom image, a V2 container image is started using UID 1000 by default. In this case, change the UID of the **ma-user** user from 1102 to 1000. To obtain the sudo permission, comment out the sudoers line.



```
FROM {your-v1-custom-docker-image or other docker-image}

USER root

# prepare moxing_framework and seccomponent package
# and chmod/chown moxing_framework package to the right permission or owner (ma-user)

RUN groupadd ma-group -g 1000 && \
    useradd -d /home/ma-user -m -u 1000 -g 1000 -s /bin/bash ma-user && \
    chmod 770 /home/ma-user && \
    # usermod -a -G work ma-user && \
    # alien -i seccomponent-1.0.2-2.0.release.x86_64.rpm && \
    chmod 770 /root && \
    # or silver bullet of files permission
    # chmod -R 777 /root && \
    usermod -a -G root ma-user

# ENV LD_LIBRARY_PATH=/usr/local/seccomponent/lib:$LD_LIBRARY_PATH

# RUN echo "ma-user  ALL=(ALL) NOPASSWD:ALL" >> /etc/sudoers

# RUN pip install moxing_framework-2.0.0.rc2.4b57a67b-py2.py3-none-any.whl

USER ma-user
WORKDIR /home/ma-user
```

4. Migrate environment variables from V1 training jobs to V2 training jobs.
   - Use V2 **MA_NUM_HOSTS** (the number of selected training nodes) to replace V1 **DLS_TASK_NUMBER**.
   - Use V2 **VC_TASK_INDEX** (or **MA_TASK_INDEX** that will be available later) to replace V1 **DLS_TASK_INDEX**. Obtain the environment variable using the method provided in the demo script for compatibility.
   - Use V2 **${MA_VJ_NAME}-${MA_TASK_NAME}-0.${MA_VJ_NAME}:6666** to replace V1 **BATCH_CUSTOM0_HOSTS**.
   - Use V2 **${MA_VJ_NAME}-${MA_TASK_NAME}-{N}.${MA_VJ_NAME}:6666** to replace V1 **BATCH_CUSTOM{N}_HOSTS** generally.
5. Check whether there are settings that allow concurrent reading and writing of the same file in the code. If so, modify the settings to forbid this operation.

   If a job uses multiple cards, the same code for reading and writing data may be available on each card. In this case, do as follows to modify the code:

```
import moxing as mox
from mindspore.communication import init, get_rank, get_group_size
init()
rank_id = get_rank()
# Enable only card 0 to download data.
if rank_id % 8 == 0:
    mox.file.copy_parallel('obs://bucket-name/dir1/dir2/', '/cache')
```

Summary and Suggestions

Before creating a training job, use the ModelArts development environment to debug the training code to maximally eliminate errors in code migration.

- Use in-cloud notebook for debugging. For details, see **JupyterLab Overview and Common Operations**.

- Use a local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Operation Process in a Local IDE**.

4.6 GPU Issues

4.6.1 Error Message "No CUDA-capable device is detected" Displayed in Logs

Symptom

When running a program, you encounter an error similar to the following:

```
1. 'failed call to cuInit: CUDA_ERROR_NO_DEVICE:  no CUDA-capable device is detected'
2. 'No CUDA-capable device is detected although requirements are installed'
```

Possible Causes

The possible causes are as follows:

- Incorrectly set **CUDA_VISIBLE_DEVICES**.
- Performing CUDA operations on GPUs with IDs not specified by **CUDA_VISIBLE_DEVICES**.

Solution

1. Do not change the **CUDA_VISIBLE_DEVICES** value in your code; use its default value.
2. Ensure that the specified GPU IDs are within the available GPU IDs.
3. If the error persists, print the **CUDA_VISIBLE_DEVICES** value and debug it in the notebook. Alternatively, run the following commands to check if CUDA is available:

```
import torch
torch.cuda.is_available()
```

Summary and Suggestions

Debug your training code in the ModelArts development environment before creating a job.

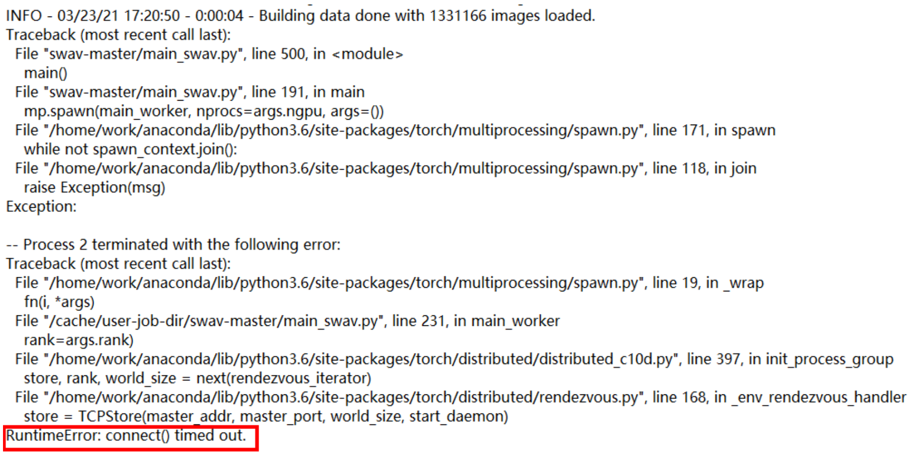
- Use the online notebook environment. For details, see **JupyterLab Overview and Common Operations**.
- Use a local IDE (PyCharm or VS Code) to access the cloud environment. For details, see **Operation Process in a Local IDE**.

4.6.2 Error Message "RuntimeError: connect() timed out" Displayed in Logs

Symptom

When PyTorch is used for distributed training, the following error occurs.

Figure 4-15 Error log



```
INFO - 03/23/21 17:20:50 - 0:00:04 - Building data done with 1331166 images loaded.
Traceback (most recent call last):
  File "swav-master/main_swav.py", line 500, in <module>
    main()
  File "swav-master/main_swav.py", line 191, in main
    mp.spawn(main_worker, nprocs=args.ngpu, args=())
  File "/home/work/anaconda/lib/python3.6/site-packages/torch/multiprocessing/spawn.py", line 171, in spawn
    while not spawn_context.join():
  File "/home/work/anaconda/lib/python3.6/site-packages/torch/multiprocessing/spawn.py", line 118, in join
    raise Exception(msg)
Exception:

-- Process 2 terminated with the following error:
Traceback (most recent call last):
  File "/home/work/anaconda/lib/python3.6/site-packages/torch/multiprocessing/spawn.py", line 19, in _wrap
    fn(i, *args)
  File "/cache/user-job-dir/swav-master/main_swav.py", line 231, in main_worker
    rank=args.rank)
  File "/home/work/anaconda/lib/python3.6/site-packages/torch/distributed/distributed_c10d.py", line 397, in init_process_group
    store, rank, world_size = next(rendezvous_iterator)
  File "/home/work/anaconda/lib/python3.6/site-packages/torch/distributed/rendezvous.py", line 168, in _env_rendezvous_handler
    store = TCPStore(master_addr, master_port, world_size, start_daemon)
RuntimeError: connect() timed out.
```

Possible Causes

The possible causes are as follows:

If data had been copied before this issue occurred, the data copy process for all nodes was not completed at the same time. If you executed **torch.distributed.init_process_group()** when data copy was still in progress on certain nodes, the execution timed out.

Solution

If the issue is caused by asynchronous data copy between nodes and no barrier occurs, perform **torch.distributed.init_process_group()** before copying data, copy data based on **local_rank()==0**, call **torch.distributed.barrier()**, and wait until data copy is complete on all nodes. For details, see the following code:

```
import moxing as mox
import torch

torch.distributed.init_process_group()
if local_rank == 0:
    mox.file.copy_parallel(src,dst)

torch.distributed.barrier()
```

Summary and Suggestions

Debug your training code in the ModelArts development environment before creating a job.

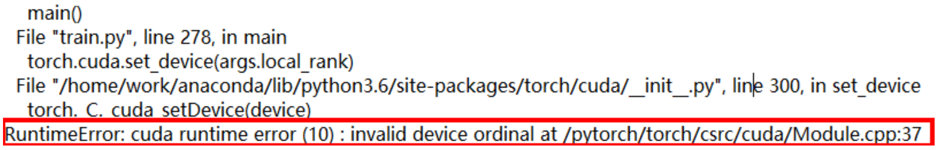
- Use the online notebook environment. For details, see **JupyterLab Overview and Common Operations**.
- Use a local IDE (PyCharm or VS Code) to access the cloud environment. For details, see **Operation Process in a Local IDE**.

4.6.3 Error Message "cuda runtime error (10) : invalid device ordinal at xxx" Displayed in Logs

Symptom

When a training job fails, you encounter the following error in the logs.

Figure 4-16 Error log



```
   main()
  File "train.py", line 278, in main
   torch.cuda.set_device(args.local_rank)
  File "/home/work/anaconda/lib/python3.6/site-packages/torch/cuda/__init__.py", line 300, in set_device
   torch._C._cuda_setDevice(device)
RuntimeError: cuda runtime error (10) : invalid device ordinal at /pytorch/torch/csrc/cuda/Module.cpp:37
```

Possible Causes

The issue may arise due to the following reasons:

- The **CUDA_VISIBLE_DEVICES** setting does not align with the job specifications. For instance, if you select a job with four GPUs (IDs 0, 1, 2, and 3), but perform CUDA operations specifying **tensor.to(device="cuda:7")**, it targets GPU 7, which exceeds the available GPU IDs.
- Damaged GPUs on resource nodes may result in fewer detected GPUs than the selected specifications.

Solution

1. Perform CUDA operations on GPUs with IDs specified by **CUDA_VISIBLE_DEVICES**.
2. If a GPU on a resource node is damaged, contact technical support.

Summary and Suggestions

Debug your training code in the ModelArts development environment before creating a job.

- Use the online notebook environment. For details, see **JupyterLab Overview and Common Operations**.
- Use a local IDE (PyCharm or VS Code) to access the cloud environment. For details, see **Operation Process in a Local IDE**.

4.6.4 Error Message "RuntimeError: Cannot re-initialize CUDA in forked subprocess" Displayed in Logs

Symptom

When PyTorch is used to start multiple processes, the following error message is displayed:

```
RuntimeError: Cannot re-initialize CUDA in forked subprocess
```

Possible Causes

The multi-processing startup mode is incorrect.

Solution

For details, see **Writing Distributed Applications with PyTorch**.

```
"""run.py:"""
#!/usr/bin/env python
import os
import torch
import torch.distributed as dist
import torch.multiprocessing as mp

def run(rank, size):
    """ Distributed function to be implemented later. """
    pass

def init_process(rank, size, fn, backend='gloo'):
    """ Initialize the distributed environment. """
    os.environ['MASTER_ADDR'] = '127.0.0.1'
    os.environ['MASTER_PORT'] = '29500'
    dist.init_process_group(backend, rank=rank, world_size=size)
    fn(rank, size)


if __name__ == "__main__":
    size = 2
    processes = []
    mp.set_start_method("spawn")
    for rank in range(size):
        p = mp.Process(target=init_process, args=(rank, size, run))
        p.start()
        processes.append(p)

    for p in processes:
        p.join()
```

Summary and Suggestions

Before creating a training job, use the ModelArts development environment to debug the training code to maximally eliminate errors in code migration.

- Use the online notebook environment for debugging. For details, see **Using JupyterLab to Develop a Model**.
- Use the local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Using the Local IDE to Develop a Model**.

4.6.5 No GPU Is Found for a Training Job

Symptom

The following error message is displayed during the running of a ModelArts training job:

```
failed call to cuInit: CUDA_ERROR_NO_DEVICE: no CUDA-capable device is detected
```

Possible Cause

According to error information, the error cause is that the training job running program cannot read the GPU.

Solution

Check whether the following configuration information is added to code and set the GPU visible to the program based on the error message:

```
os.environ['CUDA_VISIBLE_DEVICES'] = '0,1,2,3,4,5,6,7'
```

In the preceding information, **0** is a GPU ID of the server. The GPU ID can be 0, 1, 2, 3, or the like, indicating a GPU ID visible to the program. If the configuration information is not added, the GPU corresponding to the ID is unavailable.

4.7 Service Code Issues

4.7.1 Error Message "pandas.errors.ParserError: Error tokenizing data. C error: Expected .* fields" Displayed in Logs

Symptom

When pandas is used to read CSV data, the following error is displayed in logs, and the training job failed:

```
pandas.errors.ParserError: Error tokenizing data. C error: Expected 4 field
```

Possible Causes

The number of columns in each row of the CSV file is different.

Solution

Use either of the following methods to resolve this issue:

- Check the CSV file and delete the lines with extra columns.
- Run the following commands to ignore the lines with extra columns:
  ```
  import pandas as pd
  pd.read_csv(filePath,error_bad_lines=False)
  ```

Summary and Suggestions

Before creating a training job, use the ModelArts development environment to debug the training code to maximally eliminate errors in code migration.

- Use the online notebook environment for debugging. For details, see **Using JupyterLab to Develop a Model**.
- Use the local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Using the Local IDE to Develop a Model**.

4.7.2 Error Message "max_pool2d_with_indices_out_cuda_frame failed with error code 0" Displayed in Logs

Symptom

After PyTorch 1.3 is upgraded to 1.4, the following error message is displayed:

```
"RuntimeError:max_pool2d_with_indices_out_cuda_frame failed with error code 0"
```

Possible Causes

The possible causes are as follows:

The engine of PyTorch 1.4 is incompatible with that of PyTorch 1.3.

Solution

1. Run the following commands to add contiguous data:
   ```
   images = images.cuda()
   pred = model(images.permute(0, 3, 1, 2).contigous())
   ```
2. Roll back to PyTorch 1.3.
3. Use the local PyCharm to remotely access notebook for debugging.

Summary and Suggestions

Debug your training code in the ModelArts development environment before creating a job.

- Use the online notebook environment. For details, see **JupyterLab Overview and Common Operations**.
- Use a local IDE (PyCharm or VS Code) to access the cloud environment. For details, see **Operation Process in a Local IDE**.

4.7.3 Training Job Failed with Error Code 139

Symptom

The training job failed, and error code 139 is returned.

Possible Causes

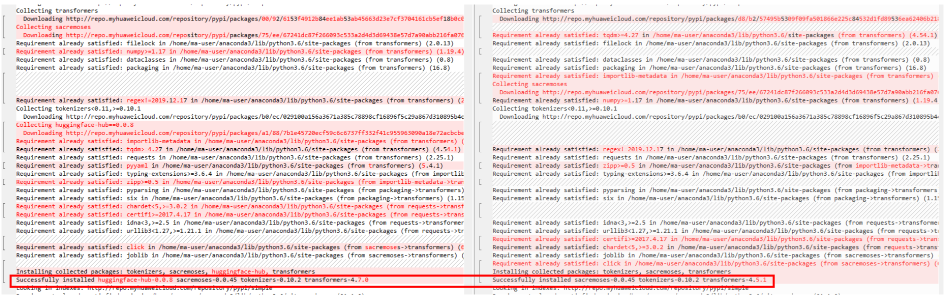
The possible causes are as follows:

- Certain pip packages in the pip source have been updated, leading to data incompatibility. For example, an error occurs when the transformers package is imported after the package update.
- The user code has a bug, leading to memory overwriting or unauthorized memory access.
- An unknown system error occurs. In this case, create the training job again. If the fault persists, submit a service ticket.

Solution

1. If the training job succeeded before and no modification has been made, compare the logs in the two cases and check whether any dependency package has been updated in the pip source.

Figure 4-17 Log comparison



```
Collecting transformers
  Downloading http://repo.myhuaweicloud.com/repository/pypi/packages/00/92/6153f4912b84ee1ab53ab45663d23e7cf3704161cb5ef18b0c0
Collecting sacremoses
  Downloading http://repo.myhuaweicloud.com/repository/pypi/packages/75/ee/67241dc87f266093c533a2d4d3d69438e57d7a90abb216fa076
Requirement already satisfied: filelock in /home/ma-user/anaconda3/lib/python3.6/site-packages (from transformers) (2.0.13)
Requirement already satisfied: numpy>=1.17 in /home/ma-user/anaconda3/lib/python3.6/site-packages (from transformers) (1.19.4)
Requirement already satisfied: dataclasses in /home/ma-user/anaconda3/lib/python3.6/site-packages (from transformers) (0.8)
Requirement already satisfied: packaging in /home/ma-user/anaconda3/lib/python3.6/site-packages (from transformers) (16.8)



Requirement already satisfied: regex!=2019.12.17 in /home/ma-user/anaconda3/lib/python3.6/site-packages (from transformers) (2
Collecting tokenizers<0.11,>=0.10.1
  Downloading http://repo.myhuaweicloud.com/repository/pypi/packages/b0/ec/029100a156a3671a385c78898cf16896f5c29a867d310895b4e
Collecting huggingface-hub==0.0.8
  Downloading http://repo.myhuaweicloud.com/repository/pypi/packages/a1/88/7b1e45720ecf59c6c6737ff332f41c955963090a18e72acbcbe
Requirement already satisfied: importlib-metadata in /home/ma-user/anaconda3/lib/python3.6/site-packages (from transformers) (
Requirement already satisfied: tqdm>=4.27 in /home/ma-user/anaconda3/lib/python3.6/site-packages (from transformers) (4.54.1)
Requirement already satisfied: requests in /home/ma-user/anaconda3/lib/python3.6/site-packages (from transformers) (2.25.1)
Requirement already satisfied: pyyaml in /home/ma-user/anaconda3/lib/python3.6/site-packages (from transformers) (5.4.1)
Requirement already satisfied: typing-extensions>=3.6.4 in /home/ma-user/anaconda3/lib/python3.6/site-packages (from importlib
Requirement already satisfied: zipp>=0.5 in /home/ma-user/anaconda3/lib/python3.6/site-packages (from importlib-metadata->tran
Requirement already satisfied: pyparsing in /home/ma-user/anaconda3/lib/python3.6/site-packages (from packaging->transformers)
Requirement already satisfied: six in /home/ma-user/anaconda3/lib/python3.6/site-packages (from packaging->transformers) (1.15
Requirement already satisfied: chardet<5,>=3.0.2 in /home/ma-user/anaconda3/lib/python3.6/site-packages (from requests->transf
Requirement already satisfied: certifi>=2017.4.17 in /home/ma-user/anaconda3/lib/python3.6/site-packages (from requests->trans
Requirement already satisfied: idna<3,>=2.5 in /home/ma-user/anaconda3/lib/python3.6/site-packages (from requests->transformer
Requirement already satisfied: urllib3<1.27,>=1.21.1 in /home/ma-user/anaconda3/lib/python3.6/site-packages (from requests->tr

Requirement already satisfied: click in /home/ma-user/anaconda3/lib/python3.6/site-packages (from sacremoses->transformers) (6
Requirement already satisfied: joblib in /home/ma-user/anaconda3/lib/python3.6/site-packages (from sacremoses->transformers) (

Installing collected packages: tokenizers, sacremoses, huggingface-hub, transformers
Successfully installed huggingface-hub-0.0.8 sacremoses-0.0.45 tokenizers-0.10.2 transformers-4.7.0
Looking in indexes: http://repo.myhuaweicloud.com/repository/pypi/simple
```

```
Collecting transformers
  Downloading http://repo.myhuaweicloud.com/repository/pypi/packages/d8/b2/57495b5309f09fa501866e225c84532d1fd89536ea62406b21

Requirement already satisfied: tqdm>=4.27 in /home/ma-user/anaconda3/lib/python3.6/site-packages (from transformers) (4.54.1)
Requirement already satisfied: filelock in /home/ma-user/anaconda3/lib/python3.6/site-packages (from transformers) (2.0.13)

Requirement already satisfied: dataclasses in /home/ma-user/anaconda3/lib/python3.6/site-packages (from transformers) (0.8)
Requirement already satisfied: packaging in /home/ma-user/anaconda3/lib/python3.6/site-packages (from transformers) (16.8)
Requirement already satisfied: importlib-metadata in /home/ma-user/anaconda3/lib/python3.6/site-packages (from transformers)
Collecting sacremoses
  Downloading http://repo.myhuaweicloud.com/repository/pypi/packages/75/ee/67241dc87f266093c533a2d4d3d69438e57d7a90abb216fa07
Requirement already satisfied: numpy>=1.17 in /home/ma-user/anaconda3/lib/python3.6/site-packages (from transformers) (1.19.4
Collecting tokenizers<0.11,>=0.10.1
  Downloading http://repo.myhuaweicloud.com/repository/pypi/packages/b0/ec/029100a156a3671a385c78898cf16896f5c29a867d310895b4



Requirement already satisfied: regex!=2019.12.17 in /home/ma-user/anaconda3/lib/python3.6/site-packages (from transformers) (
Requirement already satisfied: requests in /home/ma-user/anaconda3/lib/python3.6/site-packages (from transformers) (2.25.1)
Requirement already satisfied: zipp>=0.5 in /home/ma-user/anaconda3/lib/python3.6/site-packages (from importlib-metadata->tra
Requirement already satisfied: typing-extensions>=3.6.4 in /home/ma-user/anaconda3/lib/python3.6/site-packages (from importli

Requirement already satisfied: pyparsing in /home/ma-user/anaconda3/lib/python3.6/site-packages (from packaging->transformers
Requirement already satisfied: six in /home/ma-user/anaconda3/lib/python3.6/site-packages (from packaging->transformers) (1.1


Requirement already satisfied: idna<3,>=2.5 in /home/ma-user/anaconda3/lib/python3.6/site-packages (from requests->transforme
Requirement already satisfied: urllib3<1.27,>=1.21.1 in /home/ma-user/anaconda3/lib/python3.6/site-packages (from requests->t
Requirement already satisfied: certifi>=2017.4.17 in /home/ma-user/anaconda3/lib/python3.6/site-packages (from requests->tran
Requirement already satisfied: chardet<5,>=3.0.2 in /home/ma-user/anaconda3/lib/python3.6/site-packages (from requests->trans
Requirement already satisfied: joblib in /home/ma-user/anaconda3/lib/python3.6/site-packages (from sacremoses->transformers)
Requirement already satisfied: click in /home/ma-user/anaconda3/lib/python3.6/site-packages (from sacremoses->transformers) (
Installing collected packages: tokenizers, sacremoses, transformers
Successfully installed sacremoses-0.0.45 tokenizers-0.10.2 transformers-4.5.1
Looking in indexes: http://repo.myhuaweicloud.com/repository/pypi/simple
```

2. Use the local PyCharm to remotely access notebook for debugging.
3. If the fault persists, contact technical support engineers.

Summary and Suggestions

Before creating a training job, use the ModelArts development environment to debug the training code to maximally eliminate errors in code migration.

- Use the online notebook environment for debugging. For details, see **JupyterLab Overview and Common Operations**.
- Use a local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Operation Process in a Local IDE**.

4.7.4 Debugging Training Code in the Cloud Environment If a Training Job Failed

Before creating a training job, use the ModelArts development environment to debug the training code to maximally eliminate errors in code migration.

- Use the online notebook environment for debugging. For details, see **Using JupyterLab to Develop a Model**.
- Use the local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Using the Local IDE to Develop a Model**.

4.7.5 Error Message "'(slice(0, 13184, None), slice(None, None, None))' is an invalid key" Displayed in Logs

Symptom

The following error message is displayed during training:

```
TypeError: '(slice(0, 13184, None), slice(None, None, None))' is an invalid key
```

Possible Causes

The possible causes are as follows:

The data selected for segmentation is incorrect.

Solution

Run the following command to resolve the issue:

```
X = dataset.iloc[:,:-1].values
```

Summary and Suggestions

Debug your training code in the ModelArts development environment before creating a job.

- Use the online notebook environment. For details, see **JupyterLab Overview and Common Operations**.
- Use a local IDE (PyCharm or VS Code) to access the cloud environment. For details, see **Operation Process in a Local IDE**.

4.7.6 Error Message "DataFrame.dtypes for data must be int, float or bool" Displayed in Logs

Symptom

The following error message is displayed during training:

```
DataFrame.dtypes for data must be int, float or bool
```

Possible Causes

The possible cause is as follows:

The training data is not of the int, float, or bool type.

Solution

Run the following commands to convert the error column:

```
from sklearn import preprocessing
lbl = preprocessing.LabelEncoder()
train_x['acc_id1'] = lbl.fit_transform(train_x['acc_id1'].astype(str))
```

Summary and Suggestions

Before creating a training job, use the ModelArts development environment to debug the training code to maximally eliminate errors in code migration.

- Use the online notebook environment for debugging. For details, see **JupyterLab Overview and Common Operations**.
- Use a local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Operation Process in a Local IDE**.

4.7.7 Error Message "CUDNN_STATUS_NOT_SUPPORTED" Displayed in Logs

Symptom

During PyTorch training, you encounter the following error message:

```
RuntimeError: cuDNN error: CUDNN_STATUS_NOT_SUPPORTED. This error may appear if you passed in a
non-contiguous input.
```

Possible Causes

cuDNN does not support non-contiguous input data.

Solution

1. Disable cuDNN before training:
   ```
   torch.backends.cudnn.enabled = False
   ```
2. Convert the input data into contiguous format:
   ```
   images = images.cuda()
   images = images.permute(0, 3, 1, 2).contigous()
   ```

Summary and Suggestions

Debug your training code in the ModelArts development environment before creating a job.

- Use the online notebook environment. For details, see **JupyterLab Overview and Common Operations**.
- Use a local IDE (PyCharm or VS Code) to access the cloud environment. For details, see **Operation Process in a Local IDE**.

4.7.8 Error Message "Out of bounds nanosecond timestamp" Displayed in Logs

Symptom

When pandas.to_datetime is used to convert time, the following error message is displayed:

```
pandas._libs.tslibs.np_datetime.OutOfBoundsDatetime: Out of bounds nanosecond timestamp: 1-01-02
13:20:00
```

Possible Causes

The time is out of the permitted range. For details, see the **official document**.

Solution

Check the time. Timestamps in pandas are in the unit of nanosecond. Ensure that the time is within the following permitted range:

- Earliest time: 1677-09-22 00:12:43.145225
- Latest time: 2262-04-11 23:47:16.854775807

Summary and Suggestions

Before creating a training job, use the ModelArts development environment to debug the training code to maximally eliminate errors in code migration.

- Use the online notebook environment for debugging. For details, see **Using JupyterLab to Develop a Model**.
- Use the local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Using the Local IDE to Develop a Model**.

4.7.9 Error Message "Unexpected keyword argument passed to optimizer" Displayed in Logs

Symptom

After upgrading Keras to version 2.3.0 or later, you encounter the following error message:

```
TypeError: Unexpected keyword argument passed to optimizer: learning_rate
```

Possible Causes

Certain parameters have been renamed in **Keras 2.3.0**.

Solution

Rename **lr** in the training code to **learning_rate**.

Summary and Suggestions

Debug your training code in the ModelArts development environment before creating a job.

- Use the online notebook environment for debugging. For details, see **JupyterLab Overview and Common Operations**.
- Use a local IDE (PyCharm or VS Code) to access the cloud environment for debugging. For details, see **Operation Process in a Local IDE**.

4.7.10 Error Message "no socket interface found" Displayed in Logs

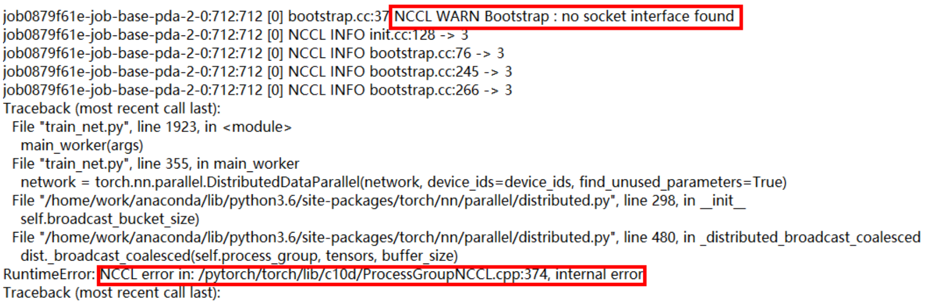
Symptom

An NCCL debug log level is set in a distributed job executed using a PyTorch image.

```
import os
os.environ["NCCL_DEBUG"] = "INFO"
```

The following error message is displayed.

Figure 4-18 Error log



```
job0879f61e-job-base-pda-2-0:712:712 [0] bootstrap.cc:37 NCCL WARN Bootstrap : no socket interface found
job0879f61e-job-base-pda-2-0:712:712 [0] NCCL INFO init.cc:128 -> 3
job0879f61e-job-base-pda-2-0:712:712 [0] NCCL INFO bootstrap.cc:76 -> 3
job0879f61e-job-base-pda-2-0:712:712 [0] NCCL INFO bootstrap.cc:245 -> 3
job0879f61e-job-base-pda-2-0:712:712 [0] NCCL INFO bootstrap.cc:266 -> 3
Traceback (most recent call last):
  File "train_net.py", line 1923, in <module>
    main_worker(args)
  File "train_net.py", line 355, in main_worker
    network = torch.nn.parallel.DistributedDataParallel(network, device_ids=device_ids, find_unused_parameters=True)
  File "/home/work/anaconda/lib/python3.6/site-packages/torch/nn/parallel/distributed.py", line 298, in __init__
    self.broadcast_bucket_size)
  File "/home/work/anaconda/lib/python3.6/site-packages/torch/nn/parallel/distributed.py", line 480, in _distributed_broadcast_coalesced
    dist._broadcast_coalesced(self.process_group, tensors, buffer_size)
RuntimeError: NCCL error in: /pytorch/torch/lib/c10d/ProcessGroupNCCL.cpp:374, internal error
Traceback (most recent call last):
```

Possible Causes

The environment variables **NCCL_IB_TC**, **NCCL_IB_GID_INDEX**, and **NCCL_IB_TIMEOUT** are not configured. As a result, the communication is slow and unstable, and the IB communication is interrupted.

Solution

Add environment variables to the code.

```
import os
os.environ["NCCL_IB_TC"] = "128"
os.environ["NCCL_IB_GID_INDEX"] = "3"
os.environ["NCCL_IB_TIMEOUT"] = "22"
```

4.7.11 Error Message "Runtimeerror: Dataloader worker (pid 46212) is killed by signal: Killed BP" Displayed in Logs

Symptom

During the running of a training job, error message "Runtimeerror: Dataloader worker (pid 46212) is killed by signal: Killed BP" is displayed in logs.

Possible Causes

The Dataloader process exits because the batch size is too large.

Solution

Decrease the batch size.

4.7.12 Error Message "AttributeError: 'NoneType' object has no attribute 'dtype'" Displayed in Logs

Symptom

Code can run properly in the notebook Keras image. When tensorflow.keras is used for training, error message "AttributeError: 'NoneType' object has no attribute 'dtype'" is displayed.

Possible Causes

The NumPy version of the training image is different from that in the notebook instance.

Solution

Print the NumPy version in the code and check whether the version is 1.18.5. If the version is not 1.18.5, run the following command at the beginning of the code:

```
import os
os.system('pip install numpy==1.18.5')
```

If the error persists, modify the preceding code as follows:

```
import os
os.system('pip install numpy==1.18.5')
os.system('pip install keras==2.6.0')
os.system('pip install tensorflow==2.6.0')
```

4.7.13 Error Message "No module name 'unidecode'" Displayed in Logs

Symptom

After the configuration file of the Tacotron 2 model downloaded from the master branch of MindSpore open-source Gitee is modified and then uploaded to ModelArts for training, error message "No module name 'unidecode'" is displayed in logs.

Possible Causes

The Unidecode name of the **requirements.txt** file is incorrect, where **U** should be lowercase. As a result, the Unidecode module is not installed in the training job environment.

Solution

Change **Unidecode** in **requirements.txt** to **unidecode**.

Summary and Suggestions

Add the following line to the training code:

```
os.system('pip list')
```

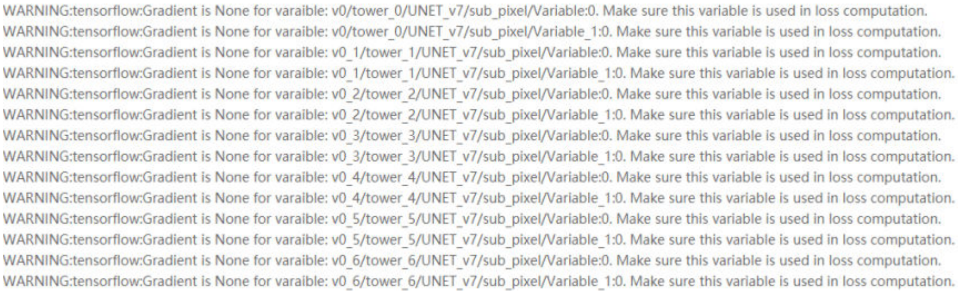
Run the training job and check whether the required module is available in logs.

4.7.14 Distributed Tensorflow Cannot Use tf.variable

Symptom

The following error occurs when **tf.variable** is used across multiple machines and multiple GPUs: **WARNING:tensorflow:Gradient is None for variable:v0/tower_0/UNET_v7/sub_pixel/Variable:0.Make sure this variable is used in loss computation**

Figure 4-19 Distributed Tensorflow unavailable



```
WARNING:tensorflow:Gradient is None for varaible: v0/tower_0/UNET_v7/sub_pixel/Variable:0. Make sure this variable is used in loss computation.
WARNING:tensorflow:Gradient is None for varaible: v0/tower_0/UNET_v7/sub_pixel/Variable_1:0. Make sure this variable is used in loss computation.
WARNING:tensorflow:Gradient is None for varaible: v0_1/tower_1/UNET_v7/sub_pixel/Variable:0. Make sure this variable is used in loss computation.
WARNING:tensorflow:Gradient is None for varaible: v0_1/tower_1/UNET_v7/sub_pixel/Variable_1:0. Make sure this variable is used in loss computation.
WARNING:tensorflow:Gradient is None for varaible: v0_2/tower_2/UNET_v7/sub_pixel/Variable:0. Make sure this variable is used in loss computation.
WARNING:tensorflow:Gradient is None for varaible: v0_2/tower_2/UNET_v7/sub_pixel/Variable_1:0. Make sure this variable is used in loss computation.
WARNING:tensorflow:Gradient is None for varaible: v0_3/tower_3/UNET_v7/sub_pixel/Variable:0. Make sure this variable is used in loss computation.
WARNING:tensorflow:Gradient is None for varaible: v0_3/tower_3/UNET_v7/sub_pixel/Variable_1:0. Make sure this variable is used in loss computation.
WARNING:tensorflow:Gradient is None for varaible: v0_4/tower_4/UNET_v7/sub_pixel/Variable:0. Make sure this variable is used in loss computation.
WARNING:tensorflow:Gradient is None for varaible: v0_4/tower_4/UNET_v7/sub_pixel/Variable_1:0. Make sure this variable is used in loss computation.
WARNING:tensorflow:Gradient is None for varaible: v0_5/tower_5/UNET_v7/sub_pixel/Variable:0. Make sure this variable is used in loss computation.
WARNING:tensorflow:Gradient is None for varaible: v0_5/tower_5/UNET_v7/sub_pixel/Variable_1:0. Make sure this variable is used in loss computation.
WARNING:tensorflow:Gradient is None for varaible: v0_6/tower_6/UNET_v7/sub_pixel/Variable:0. Make sure this variable is used in loss computation.
WARNING:tensorflow:Gradient is None for varaible: v0_6/tower_6/UNET_v7/sub_pixel/Variable_1:0. Make sure this variable is used in loss computation.
```

Possible Cause

Distributed TensorFlow needs to use **tf.get_variable** instead of **tf.variable**.

Solution

Replace **tf.variable** in the boot file with **tf.get_variable**.

4.7.15 When MXNet Creates kvstore, the Program Is Blocked and No Error Is Reported

Symptom

When **kv_store = mxnet.kv.create('dist_async')** is used to create **kvstore**, the program is blocked. For example, run the following code. If **end** is not displayed, the program is blocked.

```
print('start')
kv_store = mxnet.kv.create('dist_async')
print('end')
```

Possible Cause

The possible cause of a worker block is that the server cannot be connected.

Solution

Place the following code before **import mxnet** in **Boot File** to check the communication status between nodes. In addition, ps can be resent.

```
import os
os.environ['PS_VERBOSE'] = '2'
os.environ['PS_RESEND'] = '1'
```

In the preceding code, **os.environ['PS_VERBOSE'] = '2'** indicates that all communication information is printed. **os.environ['PS_RESEND'] = '1'** indicates that the Van instance resends the message if it does not receive the ACK message within the milliseconds set by **PS_RESEND_TIMEOUT**.

4.7.16 ECC Error Occurs in the Log, Causing Training Job Failure

Symptom

The following error occurs during the running of the training job log:
RuntimeError: CUDA error: uncorrectable ECC error encountered

Possible Cause

ECC errors

Solution

If there are more than 64 ECC errors, the system automatically isolates the faulty nodes. After the isolation, restart the training job to check whether the fault is rectified. If the training job fails again or is suspended due to an unisolated node, contact technical support.

4.7.17 Training Job Failed Because the Maximum Recursion Depth Is Exceeded

Symptom

An error occurs for a ModelArts training job.

```
RuntimeError: maximum recursion depth exceeded in __instancecheck__
```

Possible Causes

The training failed because the recursion depth exceeded the default recursion depth of Python.

Solution

If the maximum recursion depth is exceeded, increase the recursion depth in the boot file as follows:

```
import sys
sys.setrecursionlimit(1000000)
```

4.7.18 Training Using a Built-in Algorithm Failed Due to a bndbox Error

Symptom

When a training job is created using a built-in algorithm, the training failed with the following error message in the log:

```
KeyError: 'bndbox'
```

Possible Causes

Non-rectangles are used for labeling training sets. However, the built-in algorithm does not support datasets labeled by a non-rectangle.

Solution

This issue can be resolved in either of the following ways:

- Method 1: Use a common framework to develop a model that supports polygon-labeled datasets.
- Method 2: Use rectangles to label the datasets. Then, start the training job again.

4.7.19 Training Job Process Exits Unexpectedly

Symptom

Running a training job failed, and error information similar to the following is displayed in logs:

```
[Modelarts Service Log]Training end with return code: 137
```

Possible Causes

According to the log, the exit code of the training job is 137. The training process starts after the user code is executed. Therefore, the exit code mentioned in this section is generated after the code for training job is executed. Common error codes include codes 247 and 139.

- Exit code: 137 or 247

  The possible cause is that the memory overflows. To resolve this issue, you can reduce the data volume, decrease the **batch_size** value, optimize the code, or aggregate and replicate the data.

  > **NOTE**
  >
  > The size of data files is not equal to the memory usage. Therefore, evaluate the memory usage.

- Exit code: 139

  Check the version of the installation package. There may be a package conflict.

Troubleshooting

According to the error information, the error is caused by the user code.

You can use either of the following methods to locate the fault:

- Debug the code online (only available for the non-distributed code).
  a. Apply for a development environment instance with the same specifications in the development environment (notebook).
  b. Debug the user code in the notebook and find the improper code snippet.
  c. Find a solution by searching the key code snippet and exit code in a search engine.
- Locate the fault based on the training logs.
  a. Identify the improper code snippet based on the logs.
  b. Print the improper code snippet to obtain more detailed log information.
  c. Run the training job again to locate the improper code snippet.

4.7.20 Stopped Training Job Process

Symptom

The training job process is stopped and the logs are interrupted.

Possible Causes

- CPU soft lock

  The decompression of a large number of files may cause CPU soft lock and node restart. You can suspend the decompression for the specified amount of time by invoking sleep method when decompressing a large number of files. For example, every time 10,000 files are decompressed, the decompression stops for 1 second.

- Storage limitation

  Use data disks based on specifications. For details about a data disk size, see **What Are Sizes of the /cache Directories for Different Resource Specifications in the Training Environment?**

- CPU overload

  Reduce the number of threads.

Troubleshooting

According to the error information, the error is caused by the user code.

You can use either of the following methods to locate the fault:

- Debug the code online (only available for the non-distributed code).
  a. Apply for a development environment instance with the same specifications in the development environment (notebook).
  b. Debug the user code in the notebook and find the improper code snippet.
  c. Find a solution by searching the key code snippet and exit code in a search engine.
- Locate the fault based on the training logs.
  a. Identify the improper code snippet based on the logs.
  b. Print the improper code snippet to obtain more detailed log information.
  c. Run the training job again to locate the improper code snippet.

4.8 Running a Training Job Failed

4.8.1 Troubleshooting a Training Job Failure

Symptom

A training job is in **Failed** state.

Cause Analysis and Solution

- The error "MoxFileNotExistsException(resp, 'file or directory or bucket not found.')" is displayed in the training logs.
  - Cause: The **train_data_obs** directory is not found when MoXing copies files.

  - Solution: Correct the address of the **train_data_obs** directory and restart the training job.

  NOTICE

  Do not delete any objects from the OBS directory while MoXing is downloading them. This will cause the download to fail.

- The error **CUDA capability sm_80 is not compatible with the current PyTorch installation.The current PyTorch install supports CUDA capabilities sm_37 sm_50 sm_60 sm_70'** is displayed in the training logs.
  - Cause: The CUDA version of the image used by the training job supports only the sm_37, sm_50, sm_60, and sm_70 accelerator cards. The sm_80 accelerator card is not supported.
  - Solution: Use a custom image to create a training job and install the target CUDA and PyTorch versions.
- The error "ERROR:root:label_map.pbtxt cannot be found. It will take a long time to open every annotation files to generate a tmp label_map.pbtxt." is displayed in the training logs.
  - If you use an algorithm that you subscribed to from AI Gallery, make sure the data label is accurate.
  - If you use an object detection algorithm, make sure the label box of the data is non-rectangular.

    NOTE

    Object detection algorithms support only rectangular label boxes.
- The error "RuntimeError: The server socket has failed to listen on any local network address. The server socket has failed to bind to [::]:29500 (errno: 98 - Address already in use). The server socket has failed to bind to 0.0.0.0:29500 (errno: 98 - Address already in use)." is displayed in the training logs.
  - Cause: The port number of the training job is not unique.
  - Solution: Change the port number in the code and restart the training job.
- The error "WARNING: root: Retry=7, Wait=0.4, Times tamp=1697620658.6282516" is displayed in the training logs.
  - Cause: The MoXing version is too old.
  - Solution: Contact technical support engineers to upgrade MoXing to 2.1.6 or later.

4.8.2 An NCCL Error Occurs When a Training Job Fails to Be Executed

Symptom

The training job fails to be executed. The training job logs contain NCCL-related errors, such as "NCCL timeout", "RuntimeError: NCCL communicator was aborted on rank 7", "NCCL WARN Bootstrap: no socket interface found", and "NCCL INFO Call to connect returned Connection refused, retrying".

Possible Causes

NCCL is a library that provides primitives for communication between GPUs. It implements collective communication and point-to-point send/receive primitives. If a training job reports an NCCL error, you can adjust the NCCL environment variables to solve the problem.

Solution

1. Go to the details page of the training job, click the **Logs** tab, and view the NCCL error.
   - If the error message **NCCL timeout** or **RuntimeError: NCCL communicator was aborted on rank 7** is displayed, InfiniBand Verbs times out. Click **Rebuild** in the upper right corner to create a training job again. Set the environment variable **NCCL_IB_TIMEOUT** to **22**. Submit the training job and wait until the job is completed.
   - If the error message **NCCL WARN Bootstrap : no socket interface found** or **NCCL INFO Call to connect returned Connection refused, retrying** is displayed, NCCL cannot find the communication network adapter or access the IP address. Check whether the **NCCL_SOCKET_IFNAME** environment variable is set in the training code. This environment variable is automatically injected by the system and does not need to be set in the training code. After the **NCCL_SOCKET_IFNAME** environment variable is removed from the training code, click **Rebuild** in the upper right corner to create a training job again. After the training job is submitted, wait until the job is completed.
2. Wait and check whether the status of the training job changes to **Completed**.
   - If yes, no further action is required.
   - If no, contact technical support to check the node status.

Summary and Suggestions

- The **NCCL_SOCKET_IFNAME** environment variable is used to specify the name of the network adapter for communication. **NCCL_SOCKET_IFNAME=eth0** means that only the eth0 network adapter is used for communication. This environment variable is automatically injected by the system. Because the name of the communication network adapter is not fixed, this environment variable should not be set by default in the training code.
- The **NCCL_IB_TIMEOUT** environment variable is used to control InfiniBand Verbs timeout. The default value used by NCCL is **18**. The value ranges from 1 to 22.

4.8.3 Troubleshooting Process

Symptom

A training job using a custom image failed.

Locating Method

1. Determine the image source.
   - Check whether the base image of the custom image is from ModelArts. Use a base image provided by ModelArts to create a custom image. For details, see **Using a Base Image to Create a Training Image**.
   - If the image is from a third party, check with the creator of the custom image for how to use this image.
2. Determine the size of the custom image.

   Do not use a custom image larger than 15 GB. The size should not exceed half of the container engine space of the resource pool. Otherwise, the start time of the training job is affected.

   The container engine space of ModelArts public resource pool is 50 GB. By default, the container engine space of the dedicated resource pool is also 50 GB. You can customize the container engine space when creating a dedicated resource pool.
3. Determine the error type.
   - If an error message is displayed indicating that a file could not be found, see **Error Message "No such file or directory" Displayed in Training Job Logs**.
   - If an error message is displayed indicating that a package could not be found, see **Error Message "No module named .*" Displayed in Training Job Logs**.
   - An error occurred in the Ascend startup script or initialization script.

     Check whether the script is obtained from the official website and whether the script is used strictly following the instructions provided in official documents. For example, check whether the script name and path are correct.
   - The driver version is incompatible with the underlying driver.

     Before upgrading the driver of a custom image, check whether the upgraded version is supported by the underlying driver. **Obtain the supported driver versions**.
   - You are not allowed to access a file.

     The possible cause is that the user of the custom image is different from that of the job container. In this case, modify the Dockerfile.

     ```
     RUN if id -u ma-user > /dev/null 2>&1 ; \
     then echo 'The ModelArts user already exists.' ; \
     else echo 'The ModelArts user does not exist.' && \
     groupadd ma-group -g 1000 && \
     useradd -d /home/ma-user -m -u 1000 -g 1000 -s /bin/bash ma-user ; fi && \
     chmod 770 /home/ma-user && \
     chmod 770 /root && \
     usermod -a -G root ma-user
     ```
   - For other issues, search for solutions in **training failure cases**.

Summary and Suggestions

Before using a custom image for training jobs, create the image by following the **custom image specifications**. which also provides end-to-end examples for your reference.

4.8.4 A Training Job Created Using a Custom Image Is Always in the Running State

Symptom

A training job created using a custom image is always in the running state.

Cause Analysis and Solution

The log message below indicates that the CPU architecture of the custom image does not match that of the resource pool node.

```
standard_init_linux.go:215: exec user process caused "exec format error"
libcontainer: container start initialization failed: standard_init_linux.go:215: exec user process caused "exec format error"
```

This usually happens when the resource type and specifications are incorrectly set during job creation. For example, a custom image that uses the Arm CPU architecture should have NPU specifications, but x86 CPU or x86 GPU specifications are chosen instead.

4.8.5 Failed to Find the Boot File When a Training Job Is Created Using a Custom Image

Symptom

When a custom image is used to create a training job, error message "no such file or directory" is displayed.

Possible Causes

The directory of the boot file for running the command is incorrect.

Solution

Perform the following operations to check whether the boot file directory is correct:

When using a custom image to create a training job on ModelArts, set **Algorithm Type** to **Custom algorithm** and **Boot Mode** to **Custom image**.

If the OBS path to the boot script is **obs://bucket-name/app/code/train.py**, set the code directory to **/bucket-name/app/code/** when creating a job. After the code directory is set, run the following command so that the selected **code** folder can be downloaded to the **/home/ma-user/modelarts/user-job-dir** directory of the training container:

```
bash /home/ma-user/modelarts/user-job-dir/run_train.sh  # Training command (using custom images)
```

Run the following command:

```
bash /home/ma-user/modelarts/user-job-dir/run_train.sh python /home/ma-user/modelarts/user-job-dir/code/train.py {python_file_parameter}  # Training command (using custom images)
```

4.8.6 Running a Job Failed Due to Persistently Rising Memory Usage

Symptom

A training job is in the **Failed** state.

Possible Causes

The memory usage continues to rise, leading to the training job failure.

Solution

1. View the logs and monitoring data of the training job to check whether there are any OOM errors.
   - If yes, go to **2**.
   - If there are no OOM errors but the monitoring metrics show anomalies, go to **3**.
2. Check whether there is any code in the training script that keeps using resources and prevents them from being allocated efficiently.
   - If yes, optimize the code and wait until the job runs properly.
   - If no, either upgrade the resource specifications allocated to the training job or contact technical support.
3. Restart the training job. Use CloudShell to log in to the training container to check the memory metrics and see if the memory usage spikes.
   - If yes, check the training job logs generated when the memory usage spikes and improve the relevant code logic to lower the memory consumption.
   - If no, either upgrade the resource specifications allocated to the training job or contact technical support.

4.9 Training Jobs Created in a Dedicated Resource Pool

4.9.1 No Cloud Storage Name or Mount Path Displayed on the Page for Creating a Training Job

Symptom

On the page for creating a training job, there is no option for the cloud storage and mount path.

Possible Causes

The network of the target dedicated resource pool is not connected, or no SFS has been created.

Solution

In the dedicated resource pool list, click the ID or name of the target resource pool to go to its details page. Click **Configure NAS VPC** in the upper right corner to check whether NAS VPC has been enabled. If the NAS VPC name and NAS subnet ID on the details page are left blank, NAS VPC is not enabled. In this case, enable NAS VPC.

If an error message is displayed after you attempt to enable it, the possible cause is that a VPC peering connection has been created for the VPC. In this case, delete the VPC peering connection and try again.

4.9.2 Storage Volume Failed to Be Mounted to the Pod During Training Job Creation

Symptom

The training job remains in the **Creating** state. When you check the events of the training job, error message "Unable to mount volumes for pod xxx ... list of unmounted volumes=[nfs-x]" is displayed.

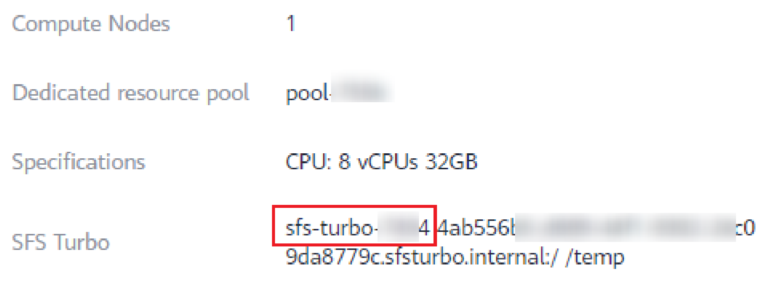
Possible Cause

For your SFS Turbo file system to function correctly, it must reside within a VPC network that is interconnected with the network of the dedicated resource pool. This connection is essential to ensure that the SFS can be successfully mounted to any training job executed within the dedicated resource pool. Disconnected network may lead to mounting failure.

Procedure

1. Go to the training job details page and obtain the SFS Turbo name.

   Figure 4-20 Obtaining SFS Turbo name



Compute Nodes	1
Dedicated resource pool	pool-[redacted]
Specifications	CPU: 8 vCPUs 32GB
SFS Turbo	sfs-turbo-[redacted]4 4ab556b[redacted]c0 9da8779c.sfsturbo.internal:/ /temp

2. Log in to the SFS console, locate the SFS Turbo mounted to the training job, and click it to go to the details page. Obtain the VPC, security group, and endpoint information.
   – VPC: value of **VPC**
   – Security group: value of **Security Group**
   – Endpoint: value of **Shared Path** excludes ":/", for example, the shared path is **4ab556b5-d689-44f1-9302-24c09daxxxxc.sfsturbo.internal:/**,

then the SFS Turbo endpoint is 4ab556b5-d689-44f1-9302-24c09daxxxxc.sfsturbo.internal.

3. Check whether the VPC CIDR block meets the following requirements:

   Requirement 1: To prevent CIDR block conflicts with the dedicated resource pool, the SFS Turbo CIDR block cannot overlap with 192.168.20.0/24 (default CIDR block of the dedicated resource pool). Go to the resource pool details page and check **Network** to obtain the actual CIDR block of the dedicated resource pool.

   Requirement 2: To prevent network conflicts with the container, the SFS Turbo CIDR block cannot overlap with 172 CIDR block (used by the container network).

   – If the requirements are not met, modify the VPC CIDR block of SFS Turbo. The recommended value is 10.*X.X.X*. For details, see **Modifying the CIDR Block of a VPC**.

   – If the requirements are met, go to the next step.

4. Check whether the VPC CIDR block of SFS Turbo is limited by a security group rule.

   Create a training job in the selected dedicated resource pool without mounting SFS Turbo. Once the job is in the **Running** state, access the **worker-0** instance via Cloud Shell. Execute the command **curl {sfs-turbo-endpoint}:{port}** to verify if the ports are open. The ports that SFS Turbo requires for inbound traffic are 111, 445, 2049, 2051, 2052, and 20048. For details, see **Security Group** in **Create a File System**. For details about how to use Cloud Shell, see **Logging In to a Training Container Using Cloud Shell**.

   – If yes, modify the security group configurations. For details, see **Modifying a Security Group Rule**.

   – If there is no such a security group rule, perform the following steps.

5. Check whether SFS Turbo is normal.

   Create an ECS that uses the same CIDR block as SFS Turbo and mount the SFS Turbo to the ECS. If mounting failed, SFS Turbo is abnormal.

   a. If SFS Turbo is abnormal, contact SFS technical support.

   b. If SFS Turbo is normal, contact ModelArts technical support.

4.10 Training Performance Issues

4.10.1 Training Performance Deteriorated

Symptom

When a ModelArts algorithm is used for training, it will take more time than expected for training.

Possible Causes

The possible causes are as follows:

1. The job code or training parameters have been modified.

2. The GPU hardware for training malfunctions.

Solution

1. Check whether the training code and parameters have been modified.
2. Check whether the allocation of the CPU, memory, GPU, snt9, or Infiniband resources complies with the expectation.
3. Use CloudShell to log in to the Linux and check the GPU working status.
   - Run the **nvidia-smi** command to check whether the GPU is working properly.
   - Run the **nvidia-smi -q -d TEMPERATURE** command to check the temperature. If the temperature is too high, the training performance deteriorates.

5 Inference Deployment

5.1 Model Management

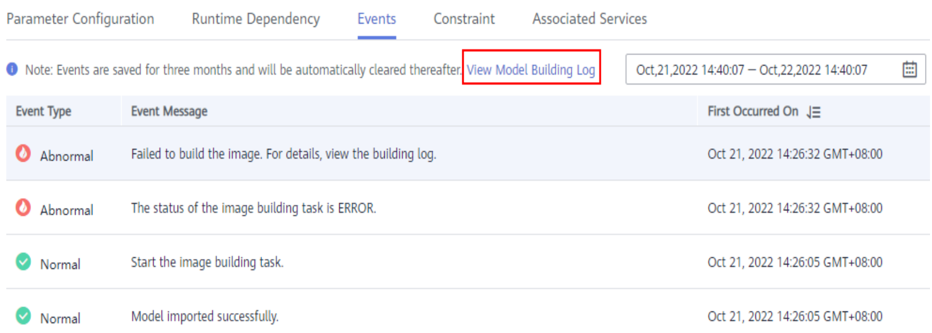
5.1.1 Failed to Create a Model

Fault Locating and Troubleshooting

There are two cases of model creation failures: An error occurred during the model creation or API calling; the request for creating a model was successfully issued, but the creation failed.

1. For case 1, the issue is generally caused by invalid input parameters. In this case, rectify the fault as prompted.
2. For case 2, do as follows to rectify the fault:
   - On the model details page, view the events on the **Events** tab page. Analyze the failure cause based on the events and rectify the fault.
   - If the model is in the state of a building failure, click **View Model Building Log** on the **Events** tab page on the model details page. The building log provides details about the failure. Rectify the fault based on the cause.

Figure 5-1 View Model Building Log



Note: Events are saved for three months and will be automatically cleared thereafter.

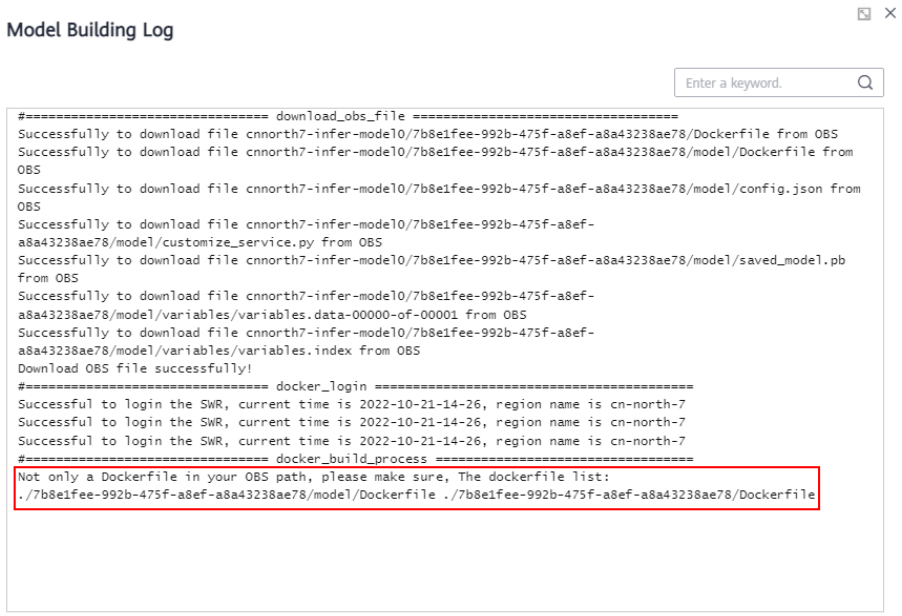
Event Type	Event Message	First Occurred On
Abnormal	Failed to build the image. For details, view the building log.	Oct 21, 2022 14:26:32 GMT+08:00
Abnormal	The status of the image building task is ERROR.	Oct 21, 2022 14:26:32 GMT+08:00
Normal	Start the image building task.	Oct 21, 2022 14:26:05 GMT+08:00
Normal	Model imported successfully.	Oct 21, 2022 14:26:05 GMT+08:00

Common Issues

1. Dockerfiles are not allowed in a model file directory.

   According to model building logs, "Not only a Dockerfile in your OBS path, please make sure, The dockerfile list" is displayed, indicating that the file directory is incorrect and that the file should be removed from the directory.

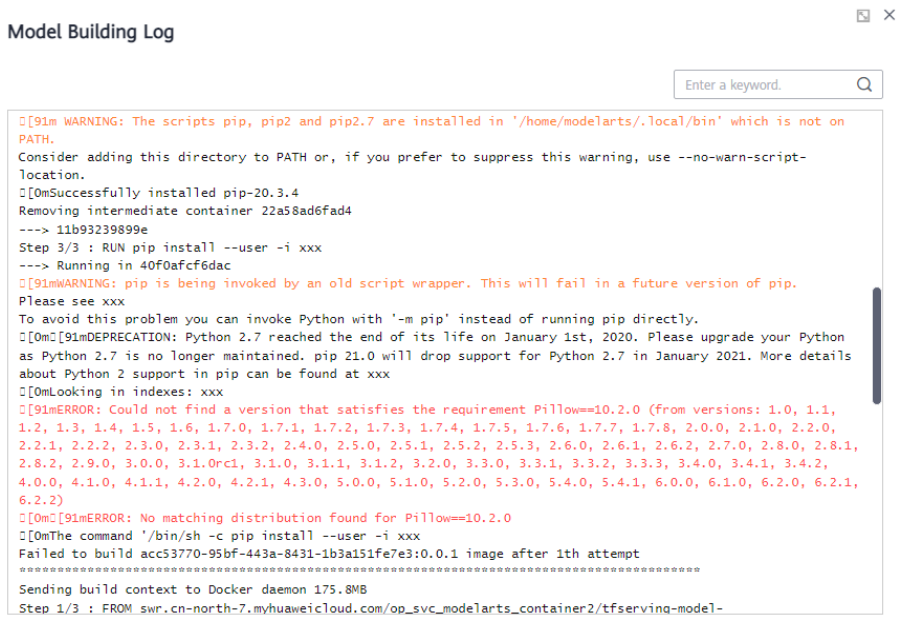
   Figure 5-2 Error message for an incorrect Dockerfile directory

   ```
   #================================ download_obs_file ==================================
   Successfully to download file cnnorth7-infer-model0/7b8e1fee-992b-475f-a8ef-a8a43238ae78/Dockerfile from OBS
   Successfully to download file cnnorth7-infer-model0/7b8e1fee-992b-475f-a8ef-a8a43238ae78/model/Dockerfile from
   OBS
   Successfully to download file cnnorth7-infer-model0/7b8e1fee-992b-475f-a8ef-a8a43238ae78/model/config.json from
   OBS
   Successfully to download file cnnorth7-infer-model0/7b8e1fee-992b-475f-a8ef-
   a8a43238ae78/model/customize_service.py from OBS
   Successfully to download file cnnorth7-infer-model0/7b8e1fee-992b-475f-a8ef-a8a43238ae78/model/saved_model.pb
   from OBS
   Successfully to download file cnnorth7-infer-model0/7b8e1fee-992b-475f-a8ef-
   a8a43238ae78/model/variables/variables.data-00000-of-00001 from OBS
   Successfully to download file cnnorth7-infer-model0/7b8e1fee-992b-475f-a8ef-
   a8a43238ae78/model/variables/variables.index from OBS
   Download OBS file successfully!
   #================================ docker_login ========================================
   Successful to login the SWR, current time is 2022-10-21-14-26, region name is cn-north-7
   Successful to login the SWR, current time is 2022-10-21-14-26, region name is cn-north-7
   Successful to login the SWR, current time is 2022-10-21-14-26, region name is cn-north-7
   #================================ docker_build_process ================================
   Not only a Dockerfile in your OBS path, please make sure, The dockerfile list:
   ./7b8e1fee-992b-475f-a8ef-a8a43238ae78/model/Dockerfile ./7b8e1fee-992b-475f-a8ef-a8a43238ae78/Dockerfile
   ```

2. The pip software package version is different from the version recorded in logs.

Figure 5-3 Incorrect pip software package version



```
□[91m WARNING: The scripts pip, pip2 and pip2.7 are installed in '/home/modelarts/.local/bin' which is not on
PATH.
Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-
location.
□[0mSuccessfully installed pip-20.3.4
Removing intermediate container 22a58ad6fad4
---> 11b93239899e
Step 3/3 : RUN pip install --user -i xxx
---> Running in 40f0afcf6dac
□[91mWARNING: pip is being invoked by an old script wrapper. This will fail in a future version of pip.
Please see xxx
To avoid this problem you can invoke Python with '-m pip' instead of running pip directly.
□[0m□[91mDEPRECATION: Python 2.7 reached the end of its life on January 1st, 2020. Please upgrade your Python
as Python 2.7 is no longer maintained. pip 21.0 will drop support for Python 2.7 in January 2021. More details
about Python 2 support in pip can be found at xxx
□[0mLooking in indexes: xxx
□[91mERROR: Could not find a version that satisfies the requirement Pillow==10.2.0 (from versions: 1.0, 1.1,
1.2, 1.3, 1.4, 1.5, 1.6, 1.7.0, 1.7.1, 1.7.2, 1.7.3, 1.7.4, 1.7.5, 1.7.6, 1.7.7, 1.7.8, 2.0.0, 2.1.0, 2.2.0,
2.2.1, 2.2.2, 2.3.0, 2.3.1, 2.3.2, 2.4.0, 2.5.0, 2.5.1, 2.5.2, 2.5.3, 2.6.0, 2.6.1, 2.6.2, 2.7.0, 2.8.0, 2.8.1,
2.8.2, 2.9.0, 3.0.0, 3.1.0rc1, 3.1.0, 3.1.1, 3.1.2, 3.2.0, 3.3.0, 3.3.1, 3.3.2, 3.3.3, 3.4.0, 3.4.1, 3.4.2,
4.0.0, 4.1.0, 4.1.1, 4.2.0, 4.2.1, 4.3.0, 5.0.0, 5.1.0, 5.2.0, 5.3.0, 5.4.0, 5.4.1, 6.0.0, 6.1.0, 6.2.0, 6.2.1,
6.2.2)
□[0m□[91mERROR: No matching distribution found for Pillow==10.2.0
□[0mThe command '/bin/sh -c pip install --user -i xxx
Failed to build acc53770-95bf-443a-8431-1b3a151fe7e3:0.0.1 image after 1th attempt
==========================================================================================
Sending build context to Docker daemon 175.8MB
Step 1/3 : FROM swr.cn-north-7.myhuaweicloud.com/op_svc_modelarts_container2/tfserving-model-
```

3. Error message "exec /usr/bin/sh: exec format error" is displayed in model building logs.

   This issue is generally due to the inconsistency between the used system engine and the system engine for creating the image. For example, an x86 image is used but it is displayed as Arm.

   View the configured system engine on the model details page.

5.1.2 Suspended Account or Insufficient Permission to Import Models

Symptom

When a model is imported, the system displays a message, indicating that the account has been suspended.

Possible Causes

Possible causes are as follows:

1. The account is frozen due to arrears.
2. The account does not have the permission to access the target workspace.
3. The operation is performed by an IAM user, who has not been granted with model permissions from the tenant account.

NOTICE

For details, see **Permissions Policies and Supported Actions**.

Solution

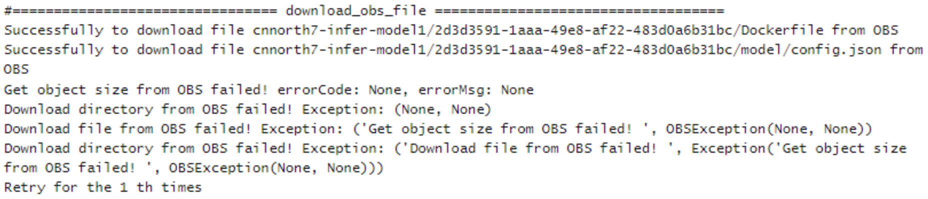
1. If the account is frozen due to arrears, top up the account and wait until the account is unfrozen.
2. If the issue is due to insufficient permissions, grant the permission for importing models to the account. For details, see **Creating a Custom Policy**.

5.1.3 Failed to Build an Image or Import a File During Model Creation

Symptom

- When a user creates a model, an image fails to be built, and the failure log indicates that the OBS file fails to be downloaded ("Get object size from OBS failed!").

Figure 5-4 Failed to download the OBS file



```
#================================ download_obs_file ==================================
Successfully to download file cnnorth7-infer-model1/2d3d3591-1aaa-49e8-af22-483d0a6b31bc/Dockerfile from OBS
Successfully to download file cnnorth7-infer-model1/2d3d3591-1aaa-49e8-af22-483d0a6b31bc/model/config.json from
OBS
Get object size from OBS failed! errorCode: None, errorMsg: None
Download directory from OBS failed! Exception: (None, None)
Download file from OBS failed! Exception: ('Get object size from OBS failed! ', OBSException(None, None))
Download directory from OBS failed! Exception: ('Download file from OBS failed! ', Exception('Get object size
from OBS failed! ', OBSException(None, None)))
Retry for the 1 th times
```

- When a user creates a model, error message "Failed to copy model file due to obs exception. Please Check your obs access right." or "User %s does not have obs:object:PutObjectAcl permission." is displayed.

Possible Causes

Using ModelArts requires OBS authorization. ModelArts users require OBS system permissions. The IAM permissions of an IAM user are configured by their tenants. If a tenant does not grant the OBS **putObjectAcl** permission to their IAM users, this issue occurs.

Solution

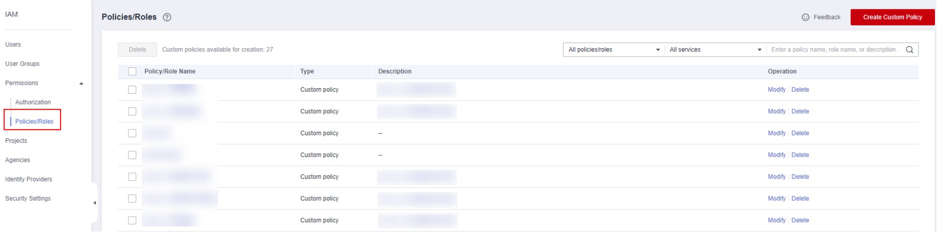
NOTE

For details about how to create a custom policy for OBS permissions on which ModelArts depends, see **Example Custom Policies of OBS**.

Assign custom policy permissions to the target user on the IAM console. For details, see **Creating a Custom Policy**.

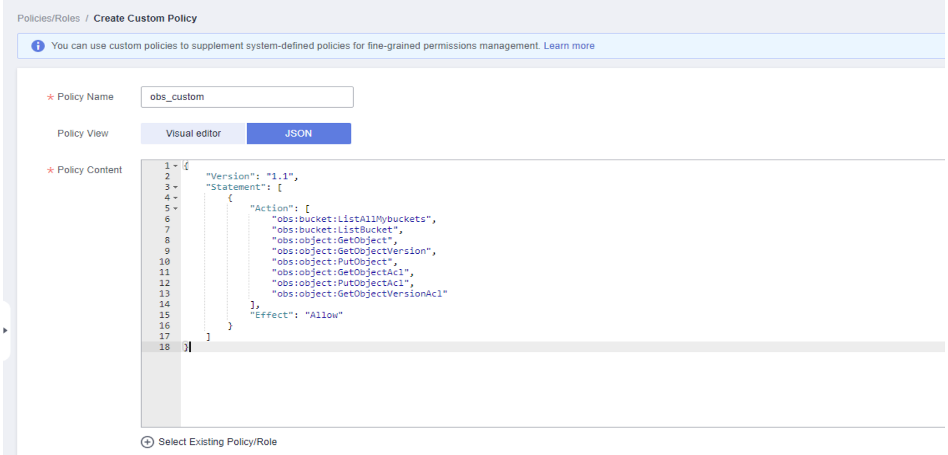
1. Log in to the IAM console, choose **Permissions** > **Policies/Roles**, and click **Create Custom Policy** in the upper right corner to create a custom policy.

Figure 5-5 Adding permissions on IAM



□ Policy/Role Name	Type	Description	Operation
□ [redacted]	Custom policy	[redacted]	Modify | Delete
□ [redacted]	Custom policy	[redacted]	Modify | Delete
□ [redacted]	Custom policy	--	Modify | Delete
□ [redacted]	Custom policy	--	Modify | Delete
□ [redacted]	Custom policy	[redacted]	Modify | Delete
□ [redacted]	Custom policy	[redacted]	Modify | Delete
□ [redacted]	Custom policy	[redacted]	Modify | Delete

Figure 5-6 Creating a custom policy



Policies/Roles / Create Custom Policy

You can use custom policies to supplement system-defined policies for fine-grained permissions management. Learn more

* Policy Name: obs_custom

Policy View: Visual editor | JSON

* Policy Content

```
{
    "Version": "1.1",
    "Statement": [
        {
            "Action": [
                "obs:bucket:ListAllMybuckets",
                "obs:bucket:ListBucket",
                "obs:object:GetObject",
                "obs:object:GetObjectVersion",
                "obs:object:PutObject",
                "obs:object:GetObjectAcl",
                "obs:object:PutObjectAcl",
                "obs:object:GetObjectVersionAcl"
            ],
            "Effect": "Allow"
        }
    ]
}
```

An example custom policy is as follows:

```
{
    "Version": "1.1",
    "Statement": [
        {
            "Action": [
                "obs:bucket:ListAllMybuckets",
                "obs:bucket:ListBucket",
                "obs:object:GetObject",
                "obs:object:GetObjectVersion",
                "obs:object:PutObject",
                "obs:object:GetObjectAcl",
                "obs:object:PutObjectAcl",
                "obs:object:GetObjectVersionAcl"
            ],
            "Effect": "Allow"
        }
    ]
}
```

2. Assign custom policy permissions to the user group to which the IAM user belongs.

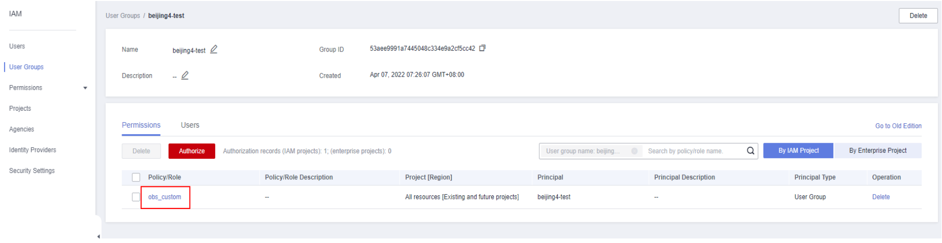
   Choose **User Groups** and click the user group to which the IAM user belongs to access the user group details page.

   On the **Permissions** tab page, click **Authorize** and select the custom policy and authorization scope.

   OBS is a global service and cannot be authorized by region. If you need to manage permissions by project, click **Enterprise projects** in **Select Scope**.

   After the authorization is successful, you can view the permission and authorization scope in **By Enterprise Project**.

Figure 5-7 Assigning permissions to an IAM user



Name: beijing4-test
Group ID: 53aee9991a7445048c334e9a2cf5cc42
Description: --
Created: Apr 07, 2022 07:26:07 GMT+08:00

Authorization records (IAM projects): 1; (enterprise projects): 0

Policy/Role	Policy/Role Description	Project [Region]	Principal	Principal Description	Principal Type	Operation
obs_custom	--	All resources [Existing and future projects]	beijing4-test	--	User Group	Delete

5.1.4 Obtaining the Directory Structure in the Target Image When Importing an AI Application Through OBS

Symptom

When I create an AI application, customized files and folders are stored in the OBS directory specified by a meta model source, and these files and folders will be copied to the target image. What is the path to the copied files and folders?

Possible Causes

When an AI application is imported through OBS, ModelArts copies all files and folders in the specified OBS directory to a path specified in the image. You can obtain the path in the image by using **self.model_path**.

Solution

For details about how to obtain the path in an image, see **Specifications for Model Inference Coding**.

5.1.5 Failed to Obtain Certain Logs on the ModelArts Log Query Page

Symptom

I used a base image to import AI applications through OBS and wrote some inference code for implementing the inference logic. After an error occurred, I attempted to use the fault logs to locate the fault. However, certain logs were not displayed on the log query page in ModelArts.

Possible Causes

To display the logs of an inference service, print the logs on the console through coding. Python logging used by inference base images allows the display of only warning logs. To display INFO logs, set the log level to INFO in the code.

Solution

In the PY file for the inference code, set the default level of logs output to the console to **INFO**. The example code is as follows:

```
import logging
logging.basicConfig(level=logging.INFO, format='%(asctime)s - %(name)s - %(levelname)s - %(message)s')
```

5.1.6 Failed to Download a pip Package When an AI Application Is Created Using OBS

Symptom

Creating an AI application using OBS failed. Logs showed that downloading the pip package failed, for example, downloading the NumPy 1.16 package failed.

Possible Causes

Possible causes are as follows:

1. The package is not available in the pip source. The default pip source is pypi.org. Check whether the package of the target version is available in pypi.org and check the package installation restrictions.
2. The downloaded package does not match the architecture in the base image. For example, an x86 package is downloaded for Arm, or a Python 3 package is downloaded for Python 2. For details about the runtime environment of a base image, see **Available Inference Base Images**.
3. The sequence of configuring package dependencies is incorrect.

Solution

1. Log in to pypi.org and check whether the required installation package is available. If the package is unavailable, use the WHL package and place it into the OBS directory where the model is stored.
2. Check whether the installation restrictions and dependencies of the package are met.
3. If there are package dependencies, configure the dependencies in a correct sequence. For details, see **How Do I Edit the Installation Package Dependency Parameters in a Model Configuration File When Importing a Model?**

5.1.7 Failed to Use a Custom Image to Create an AI application

Symptom

When I used a custom image to create an AI application, the creation failed.

Possible Causes

Possible causes are as follows:

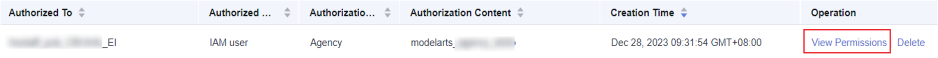
- The URL of the image used for importing the AI application is invalid or the image is unavailable.
- SWR operation permissions are not included in the agency authorization configured on ModelArts.
- The IAM user does not obtain SWR operation permissions from the tenant.
- The image used is from another account.
- The image used is a public image.

Solution

1. Go to the SWR console and check whether the target image is available and whether the URL of the image is the same as the actual one, including the spelling and letter cases in the URL.
2. Check whether SWR operation permissions are included in the agency authorization configured on ModelArts. To do so, go to the **Global**

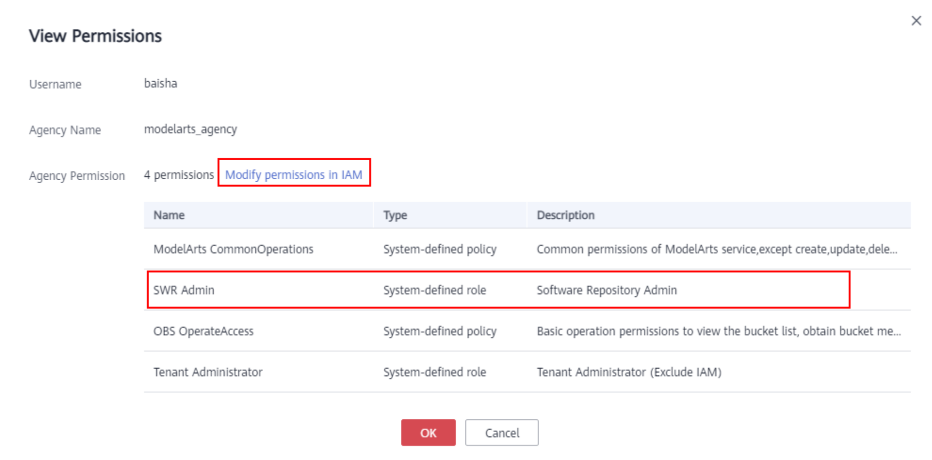
Configuration page on ModelArts and view the authorization details. If no SWR operation permissions are configured, go to the IAM console and grant the permissions to the target agency.

Figure 5-8 Global Configuration



Authorized To	Authorized ...	Authorizatio...	Authorization Content	Creation Time	Operation
[redacted]_EI	IAM user	Agency	modelarts_[redacted]	Dec 28, 2023 09:31:54 GMT+08:00	View Permissions Delete

Figure 5-9 Entrance to permissions modification in IAM



View Permissions

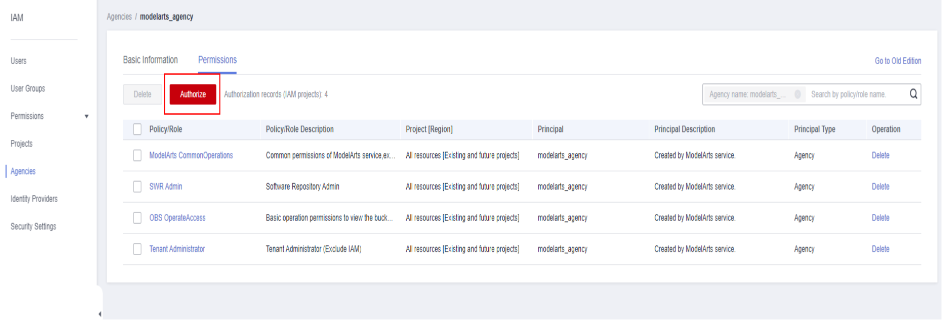
Username baisha

Agency Name modelarts_agency

Agency Permission 4 permissions Modify permissions in IAM

Name	Type	Description
ModelArts CommonOperations	System-defined policy	Common permissions of ModelArts service,except create,update,dele...
SWR Admin	System-defined role	Software Repository Admin
OBS OperateAccess	System-defined policy	Basic operation permissions to view the bucket list, obtain bucket me...
Tenant Administrator	System-defined role	Tenant Administrator (Exclude IAM)

Figure 5-10 Authorizing an agency



Authorization records (IAM projects): 4

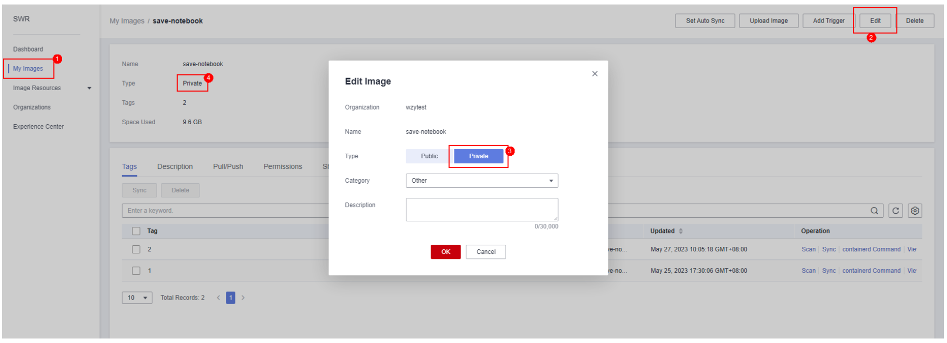
Agency name: modelarts_... Search by policy/role name.

Policy/Role	Policy/Role Description	Project [Region]	Principal	Principal Description	Principal Type	Operation
ModelArts CommonOperations	Common permissions of ModelArts service,ex...	All resources [Existing and future projects]	modelarts_agency	Created by ModelArts service.	Agency	Delete
SWR Admin	Software Repository Admin	All resources [Existing and future projects]	modelarts_agency	Created by ModelArts service.	Agency	Delete
OBS OperateAccess	Basic operation permissions to view the buck...	All resources [Existing and future projects]	modelarts_agency	Created by ModelArts service.	Agency	Delete
Tenant Administrator	Tenant Administrator (Exclude IAM)	All resources [Existing and future projects]	modelarts_agency	Created by ModelArts service.	Agency	Delete

3. Set a private image

   Log in to SWR, choose **My Images** in the navigation pane on the left to view image details. Click **Edit** in the upper right corner and set **Type** to **Private**.

Figure 5-11 Changing the image type to private



Name save-notebook

Type Private

Tags 2

Space Used 9.6 GB

Edit Image

Organization wzytest

Name save-notebook

Type Public Private

Category Other

Description

0/30,000

Tag		Updated	Operation
2	e-no...	May 27, 2023 10:05:18 GMT+08:00	Scan | Sync | containerd Command | Vie
1	e-no...	May 25, 2023 17:30:06 GMT+08:00	Scan | Sync | containerd Command | Vie

5.1.8 Insufficient Disk Space Is Displayed When a Service Is Deployed After an AI Application Is Imported

Symptom

After an AI application is imported, message "No space left on device" is displayed during service deployment.

Possible Causes

ModelArts uses containers to deploy services. There are size limitations for containers to run. If the size of your model file, custom file, or system file exceeds the Docker size, a message will be displayed, indicating that the image space is insufficient.

Solution

The maximum Docker size for a container in a public resource pool is 50 GB, and that for a container in a dedicated resource pool is also 50 GB.

If the AI application is imported from OBS or a training job, the total size of the base image, model files, code, data files, and software packages cannot exceed the limit.

If the AI application is imported from a custom image, the total size of the decompressed image and image dependencies cannot exceed the limit.

5.1.9 Error Occurred When a Created AI Application Is Deployed as a Service

Symptom

After an AI application is created, an error occurred when it is deployed as a service.

Possible Causes

When an AI application is imported using a custom or base image, many service logics are customized. Any error in the logics will result in a service deployment or prediction failure.

Solution

1. After deploying a service failed, go to the service details page and view deployment logs to identify the failure cause. (Ensure that standard input and output functions are used for code output. Otherwise, the output will not be displayed on the ModelArts console.) Find the code based on the error in the logs to locate the fault.

5.1.10 Invalid Runtime Dependency Configured in an Imported Custom Image

Symptom

When a custom image is imported through an API to create an AI application, the runtime dependency is configured, but the pip dependency package is not properly installed.

Possible Causes

An imported custom image does not support the runtime dependency. The system does not automatically install the required pip dependency package.

Solution

Create a custom image again.

Install the pip dependency package (for example, the Flask dependency package) in the Dockerfile file that is used to create the image.

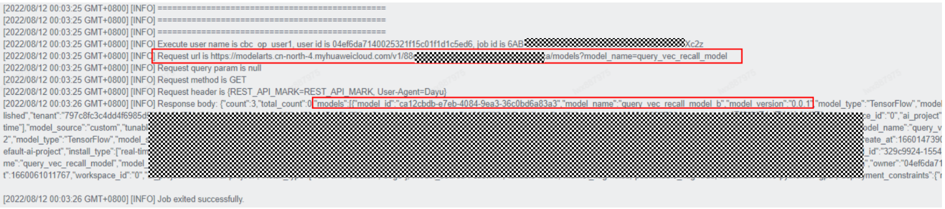
```
# Configure the Huawei Cloud source and install Python, Python3-PIP, and Flask.
RUN cp -a /etc/apt/sources.list /etc/apt/sources.list.bak && \
sed -i "s@http://.*security.ubuntu.com@http://repo.huaweicloud.comxxx@g" /etc/apt/sources.list && \
sed -i "s@http://.*archive.ubuntu.com@http://repo.huaweicloud.comxxx@g" /etc/apt/sources.list && \
apt-get update && \
apt-get install -y python3 python3-pip && \
pip3 install  --trusted-host https://repo.huaweicloud.comxxx -i https://repo.huaweicloud.comxxx/repository/
pypi/simple  Flask
```

5.1.11 Garbled Characters Displayed in an AI Application Name Returned When AI Application Details Are Obtained Through an API

Symptom

When details about an AI application are obtained through an API, garbled characters are displayed in a returned AI application name (**model_name**). For example, the AI application name (**model_name**) is **query_vec_recall_model**, but the name returned from the API is **query_vec_recall_model_b**.

Figure 5-12 Garbled characters in an AI application name



```
[2022/08/12 00:03:25 GMT+0800] [INFO] ================================================
[2022/08/12 00:03:25 GMT+0800] [INFO] ================================================
[2022/08/12 00:03:25 GMT+0800] [INFO] ================================================
[2022/08/12 00:03:25 GMT+0800] [INFO] Execute user name is cbc_op_user1, user id is 04ef6da7140025321f15c01f1d1c5ed6, job id is 6AB[redacted]Xc2z
[2022/08/12 00:03:25 GMT+0800] [INFO] Request url is https://modelarts.cn-north-4.myhuaweicloud.com/v1/88[redacted]a/models?model_name=query_vec_recall_model
[2022/08/12 00:03:25 GMT+0800] [INFO] Request query param is null
[2022/08/12 00:03:25 GMT+0800] [INFO] Request method is GET
[2022/08/12 00:03:25 GMT+0800] [INFO] Request header is {REST_API_MARK=REST_API_MARK, User-Agent=Dayu}
[2022/08/12 00:03:26 GMT+0800] [INFO] Response body: {"count":3,"total_count":0,"models":[{"model_id":"ca12cbdb-e7eb-4084-9ea3-36c0bd6a83a3","model_name":"query_vec_recall_model_b","model_version":"0.0.1","model_type":"TensorFlow","model
lished","tenant":"797c8fc3c4dd4f6985d[redacted]ce_id":"0","ai_project"
time"],"model_source":"custom","tunabl odel_name":"query_v
2","model_type":"TensorFlow","model_s reate_at":1660147390
efault-ai-project","install_type":["real-tim _id":"329c9924-1554
me":"query_vec_recall_model","model_ ","owner":"04ef6da71
t":1660061011767,"workspace_id":"0"," yment_constraints":{"r

[2022/08/12 00:03:26 GMT+0800] [INFO] Job exited successfully.
```

Possible Causes

If an AI application name contains underscores (_), these characters must be escaped.

Solution

Add the **exact_match** parameter to the request and set the parameter value to **true** to ensure that the returned value of **model_name** is correct.

5.1.12 The Model or Image Exceeded the Size Limit for AI Application Import

Symptom

When an AI application is imported, a prompt says that the model or image exceeds the limit.

Possible Causes

If the AI application is imported using OBS or training, the total size of the basic image, model files, code, data files, and downloaded software packages exceeds the limit.

If the AI application is imported using a custom image, the total size of the decompressed image and image dependencies exceeds the limit.

Solution

Downsize the model or image and import the AI application again.

5.1.13 A Single Model File to Be Imported Exceeds the Size Limit (5 GB)

Symptom

When a model is imported, a message is displayed, indicating that the size of a single model file exceeds 5 GB.

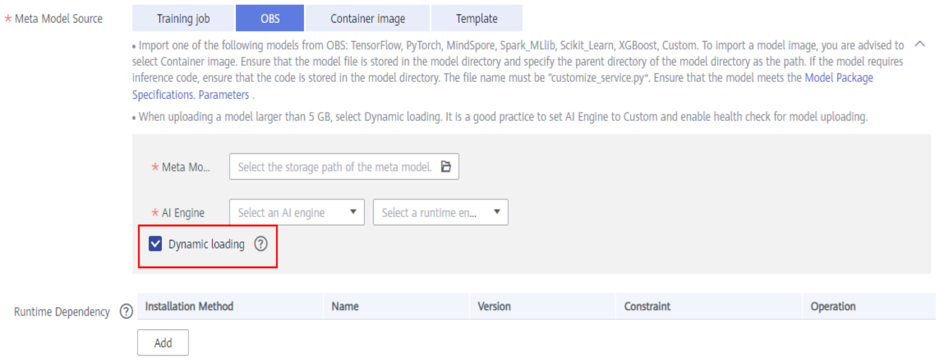
Possible Causes

If dynamic loading is not used, a single model file cannot exceed 5 GB. Otherwise, the model fails to be imported.

Solution

- Downsize the model file and import the model again.
- Use the dynamic loading function to import the model.

Figure 5-13 Using dynamic loading



* Meta Model Source: OBS

- Import one of the following models from OBS: TensorFlow, PyTorch, MindSpore, Spark_MLlib, Scikit_Learn, XGBoost, Custom. To import a model image, you are advised to select Container image. Ensure that the model file is stored in the model directory and specify the parent directory of the model directory as the path. If the model requires inference code, ensure that the code is stored in the model directory. The file name must be "customize_service.py". Ensure that the model meets the Model Package Specifications. Parameters .
- When uploading a model larger than 5 GB, select Dynamic loading. It is a good practice to set AI Engine to Custom and enable health check for model uploading.

* Meta Mo... Select the storage path of the meta model.

* AI Engine Select an AI engine ▾ Select a runtime en... ▾

☑ Dynamic loading

Runtime Dependency

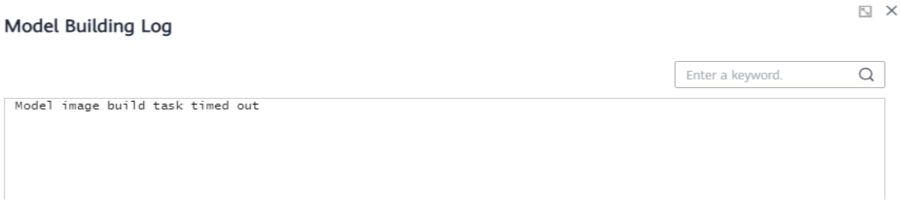
Installation Method	Name	Version	Constraint	Operation

5.1.14 Creating a Model Failed Due to Image Building Timeout

Symptom

A model fails to be created. Error message "Model image build task timed out" is displayed, and no detailed build log is generated.

Figure 5-14 Building the model image timed out



```
Model image build task timed out
```

Possible Causes

ImagePacker has a timeout limit when building images. The default value is 30 minutes (which may vary in different regions). If building a model image times out, the building task will fail. In this case, the message "Model image build task timed out" is displayed, and no detailed build log is generated.

Solution

- Prepare the dependency packages to be downloaded and built beforehand to save time. You can install the running environment dependency using an offline wheel package. When installing the offline wheel package, ensure that the wheel package and model file are stored in the same directory.
- Optimize the model code to improve the efficiency of building model images.

5.2 Service Deployment

5.2.1 Error Occurred When a Custom Image Model Is Deployed as a Real-Time Service

Symptom

A model fails to be deployed as a real-time service. On the real-time service details page, the message "failed to pull image, retry later" is displayed on the **Events** tab page while no information is displayed on the **Logs** tab page.

Solution

This fault is typically caused by the excessive size of the model you have deployed. Do the following:

- Simplify the model, re-import it, and deploy it as a real-time service.
- Purchase a dedicated resource pool and use it to deploy the model as a real-time service.

5.2.2 Alarm Status of a Deployed Real-Time Service

Symptom

A deployed real-time service is in the **Alarm** state.

Solution

The prediction using a real-time service that is in the **Alarm** state may fail. Perform the following operations to locate the fault and deploy the service again:

1. Check whether there are too many prediction requests on the backend.

   If you call APIs for prediction, check whether there are too many prediction requests. A large number of prediction requests lead to the alarm state of the real-time service.
2. Check whether the service memory is functional.

   Check whether memory overflow or leakage occurs in the inference code.
3. Check whether the model is running properly.

   If the model fails, for example, the associated resources are faulty, check inference logs.
4. Check whether there is an abnormal amount of instance pods.

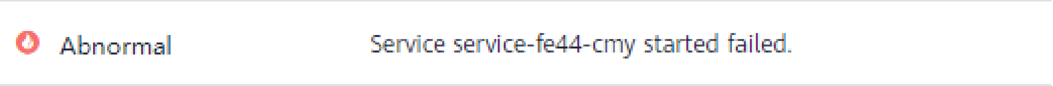
   If O&M engineers have deleted abnormal instance pods, the alarm "Service error. There are *XXX* abnormal instances." may occur in the event. Once the alarm is displayed, the service automatically starts a new normal instance to restore to the normal state. The process may take a while.

5.2.3 Failed to Start a Service

Symptom

After a service is started, the system displays a message, indicating a container startup failure.

Figure 5-15 Service startup failure



Abnormal Service service-fe44-cmy started failed.

Possible Causes

Possible causes are as follows:

- **The AI application is faulty and cannot be started.**
- **The port configured in the image is incorrect.**
- **The health check is incorrectly configured.**
- **The model inference code customize_service.py is incorrectly edited.**
- **The image fails to be pulled.**
- **Scheduling failed due to insufficient resources.**

Faulty Model

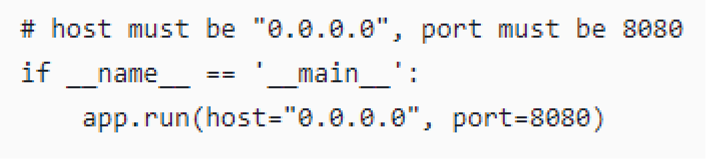
If the image used for creating a model is faulty, recreate the image by following the instructions provided in **Creating a Custom Image and Using It to Create an AI Application**. Ensure that the image can be started properly and the expected data can be returned through curl on the local host.

Incorrect Port in the Image

The port enabled in the image is not 8080, or the port enabled in the image is different from the port configured during model creation. As a result, the register-agent cannot communicate with the model during service deployment. After a certain period of time (20 minutes at most), it is considered that starting the model fails.

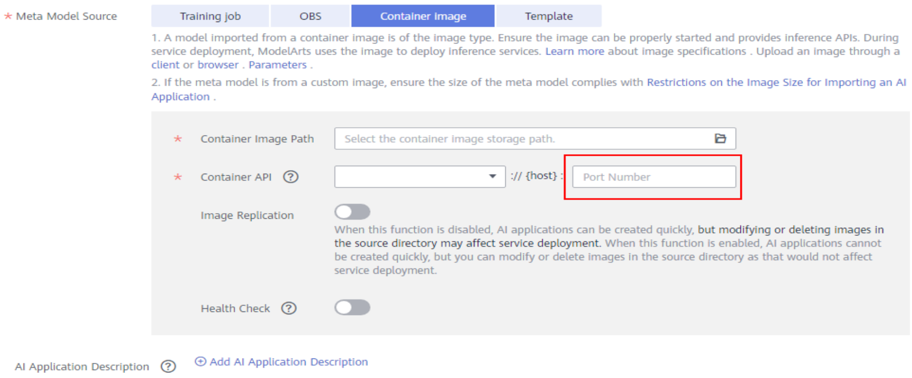
If this fault occurs, check the port enabled in the custom image code and the port configured during model creation. Ensure that the two ports are the same. If you do not specify a port during model creation, ModelArts will listen to port 8080 by default. In this case, the port enabled in the custom image code must be 8080.

Figure 5-16 Port enabled in the custom image code



```
# host must be "0.0.0.0", port must be 8080
if __name__ == '__main__':
    app.run(host="0.0.0.0", port=8080)
```

Figure 5-17 Port configured during model creation



* Meta Model Source: Container image

1. A model imported from a container image is of the image type. Ensure the image can be properly started and provides inference APIs. During service deployment, ModelArts uses the image to deploy inference services. Learn more about image specifications . Upload an image through a client or browser . Parameters .

2. If the meta model is from a custom image, ensure the size of the meta model complies with Restrictions on the Image Size for Importing an AI Application .

* Container Image Path: Select the container image storage path.

* Container API: :// {host} : Port Number

Image Replication

When this function is disabled, AI applications can be created quickly, but modifying or deleting images in the source directory may affect service deployment. When this function is enabled, AI applications cannot be created quickly, but you can modify or delete images in the source directory as that would not affect service deployment.

Health Check

AI Application Description: Add AI Application Description

Incorrect Health Check Configuration

If health check is enabled in the image, perform the following operations to locate the fault:

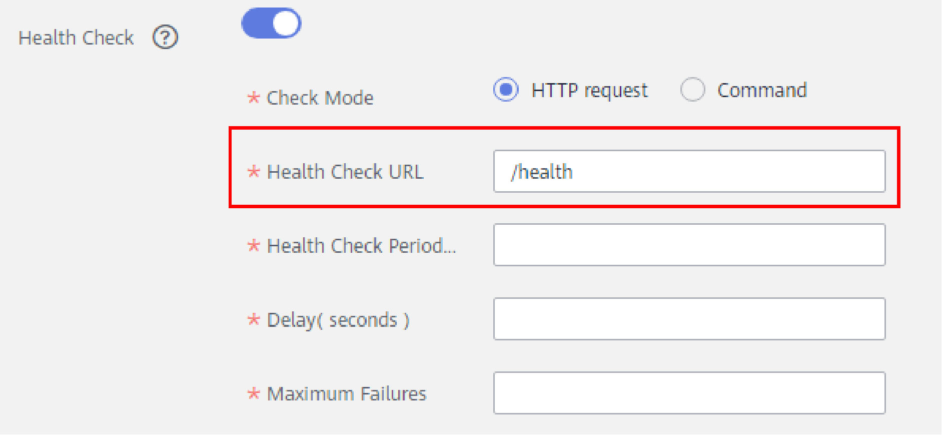
- Check whether the health check port runs properly.

  If health check is enabled in a custom image, check whether the health check API is functional during image test. For details about how to test an image locally, see **Building a Custom Image and Using It to Create an AI Application**.

- Check whether the health check address configured during model creation is the same as the actual one.

  If the model is created using a base image provided by ModelArts, the health check URL must be **/health** by default.

Figure 5-18 Configuring the health check URL



Health Check

* Check Mode: ● HTTP request ○ Command

* Health Check URL: /health

* Health Check Period...

* Delay(seconds)

* Maximum Failures

Incorrect customize_service.py

Check service runtime logs to locate the fault and rectify it.

Pulling an Image Failed

If the service fails to be started and a message is displayed indicating that the image fails to be pulled, see **What Do I Do If an Image Fails to Be Pulled When a Service Is Deployed, Started, Upgraded, or Modified?**

Scheduling Failed Due To Insufficient Resources

The service fails to be started, and a message is displayed indicating that resources are insufficient and service scheduling fails. For details, see **Resources Are Insufficient When a Service Is Deployed, Started, Upgraded, or Modified**.

Insufficient Memory

The service fails to be started, and a message is displayed indicating that the memory is insufficient. For details, see **What Can I Do if the Memory Is Insufficient?**.

5.2.4 Failed to Pull an Image When a Service Is Deployed, Started, Upgraded, or Modified

Symptom

Images fail to be pulled during service deployment, startup, upgrade, and modification.

Possible Causes

The available disk space of the node is smaller than the image size.

Solution

1. Reduce the image size.
2. If the problem persists after the image size is reduced, contact the system administrator.

5.2.5 Image Restarts Repeatedly When a Service Is Deployed, Started, Upgraded, or Modified

Symptom

The image restarts repeatedly during service deployment, startup, upgrade, and modification.

Possible Causes

There is a bug in the container image code.

Solution

Debug the container image code based on container logs, create the model again, and deploy the model as a service.

5.2.6 Container Health Check Fails When a Service Is Deployed, Started, Upgraded, or Modified

Symptom

The container health check fails during service deployment, startup, upgrade, or modification.

Possible Causes

Calling the container health check API failed. The possible causes are as follows:

- The health check is incorrectly configured for the image.
- The health check is incorrectly configured for the model.

Solution

Check container logs for the cause of the health check failure.

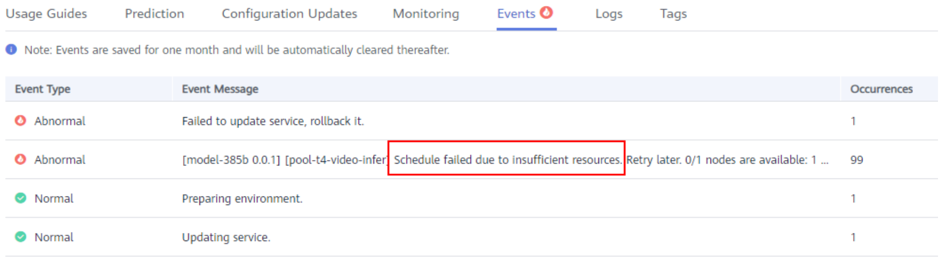
- If the health check is incorrectly configured for the image, debug the code, create an image again and then the model, and use the new model to deploy the service. For details about how to configure the image health API for an image, see parameter **health** in **Specifications for Editing a Model Configuration File**.
- If the health check is incorrectly configured for the model, create a new model or create a version of the existing model, correctly configure the health check, and use the new model or version to deploy the service. For details about the model health check, see parameter **Health Check** in **Importing a Meta Model from a Container Image**.

5.2.7 Resources Are Insufficient When a Service Is Deployed, Started, Upgraded, or Modified

Symptom

The service fails to be started, and an error message is displayed, indicating that resources are insufficient and service scheduling fails. ("Schedule failed due to insufficient resources. Retry later." or "ModelArts.3976: No resources are available for the selected specification.")

Figure 5-19 Schedule failed due to insufficient resources



Note: Events are saved for one month and will be automatically cleared thereafter.

Event Type	Event Message	Occurrences
Abnormal	Failed to update service, rollback it.	1
Abnormal	[model-385b 0.0.1] [pool-t4-video-infer] Schedule failed due to insufficient resources. Retry later. 0/1 nodes are available: 1 ...	99
Normal	Preparing environment.	1
Normal	Updating service.	1

Possible Causes

- The configured instance specifications are beyond the remaining CPU or memory resources. ("insufficient CPU" / "insufficient memory")
- The disk capacity cannot meet the requirements of the model. ("x node(s) had taint {node.kubernetes.io/disk-pressure: }" / "No space")

Solution

When resources are insufficient, ModelArts retries for three times. If resources are released during these retries, the service can be successfully deployed.

If resources are still insufficient after three retries, the service deployment fails. In this case, perform the following operations to resolve this issue:

- If the service is to be deployed in a public resource pool, wait until other users release resources.
- If the service is to be deployed in a dedicated resource pool, select lower container specifications or custom specifications to deploy the service on the premise that the model requirements are met.
- Expand the capacity of the current resource pool before deploying the service. To expand the capacity of the public resource pool, contact the system administrator. To expand the capacity of the dedicated resource pool, refer to **Resizing a Resource Pool**.
- If the disk space is insufficient, try again to schedule the instance to another node. If the disk space of a single instance is still insufficient, contact the system administrator to use proper specifications.

  NOTE

  If a model imported though a large model is used to deploy the service, ensure that the disk space of the dedicated resource pool is greater than 1 TB (1000 GB).

5.2.8 Error Occurred When a CV2 Model Package Is Used to Deploy a Real-Time Service

Symptom

An error occurred when a CV2 model package is used to deploy a real-time service.

Possible Causes

When a meta model is imported from OBS, the service base image is used. However, the base image does not provide the SO data on which CV2 depends. Therefore, ModelArts does not support the import of CV2 model packages from OBS.

Solution

Use the CV2 model package to create a custom image, upload the custom image to SWR, import a meta model from the container image, and deploy a real-time service. For details about how to create a custom image, see **Creating a Custom Image and Using It to Create an AI Application**.

5.2.9 Service Is Consistently Being Deployed

Symptom

A service retains in the **Deploying** state. No obvious error is found in model logs.

Possible Causes

The model port is typically incorrect. Check whether the port for creating the model is correct.

Solution

Check the model port. If you have changed the port number in the configuration file of the custom image, configure the correct port number when deploying the model.

For details, see **How Do I Change the Default Port to Create a Real-Time Service Using a Custom Image?**.

5.2.10 A Started Service Is Intermittently in the Alarm State

Symptom

The traffic for prediction is not heavy, but the following error frequently occurs:

- Backend service internal error. Backend service read timed out
- Send the request from gateway to the service failed due to connection refused, please confirm your service is connectable
- Send the request from gateway to the service failed due to connection timeout, please confirm your service is able to process the new request

Possible Causes

After a prediction request is sent, the service stops and then starts.

Solution

Check the image used by the service, identify the cause of the service stop, and rectify the fault. Re-create the model and use it to deploy a service.

5.2.11 Failed to Deploy a Service and Error "No Module named XXX" Occurred

Symptom

Deploying a service failed. The system displays error message "No Module named XXX".

Possible Causes

"No Module named XXX" indicates that the dependency module is not imported to the model.

Solution

Import the required dependency module to the model through inference code.

For example, when you attempt to deploy a PyTorch model as a real-time service, the system displays error message "ModuleNotFoundError: No module named 'model_service.tfserving_model_service'". In this case, configure "from model_service.pytorch_model_service import PTServingBaseService" in **customize_service.py**. Example code:

```
import log
from model_service.pytorch_model_service import PTServingBaseService
```

5.2.12 Insufficient Permission to or Unavailable Input/Output OBS Path of a Batch Service

Symptom

1. An input/output path is unavailable, and the following error message is displayed:
   ```
   "error_code": "ModelArts.3551",
   "error_msg": "OBS path xxxx does not exist."
   ```
2. When the access to an input/output path is denied, the following error message is displayed:
   ```
   "error_code": "ModelArts.3567",
   "error_msg": "OBS error occurs because Access Denied."
   ```

Possible Causes

ModelArts.3551: The OBS path for data input or output does not exist.

ModelArts.3567: The OBS path for data input or output is available, but the current account does not have the permission to access the path.

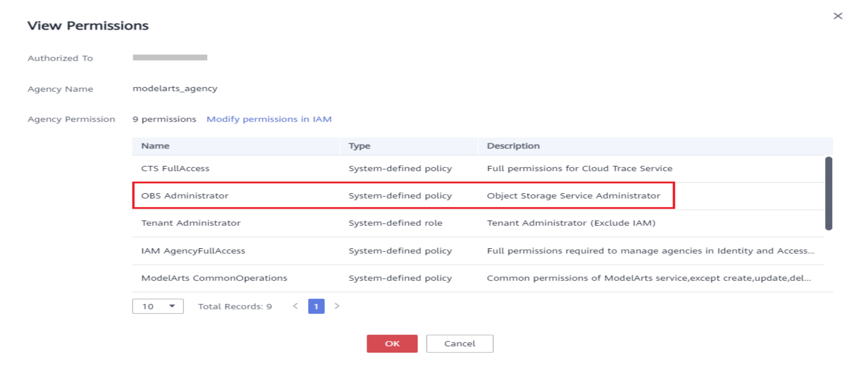
Solution

ModelArts.3551: Check whether the data input path is available in OBS. If not, create an OBS path as required. If the path is available but the error persists, submit a service ticket to apply for technical support.

ModelArts.3567: You can access only the OBS path under your own account. To read the OBS data of other users through ModelArts, configure an agency. Otherwise, the access is denied.

Log in to the ModelArts management console. In the navigation pane, choose **Settings**. Click **View Permissions** to check whether the OBS agency permission is configured.

Figure 5-20 Viewing permissions



View Permissions

Authorized To [redacted]

Agency Name modelarts_agency

Agency Permission 9 permissions Modify permissions in IAM

Name	Type	Description
CTS FullAccess	System-defined policy	Full permissions for Cloud Trace Service
OBS Administrator	System-defined policy	Object Storage Service Administrator
Tenant Administrator	System-defined role	Tenant Administrator (Exclude IAM)
IAM AgencyFullAccess	System-defined policy	Full permissions required to manage agencies in Identity and Access...
ModelArts CommonOperations	System-defined policy	Common permissions of ModelArts service,except create,update,del...

If an agency already exists but the error persists, submit a service ticket for technical support.

5.2.13 Error "No CUDA runtime is found" Occurred When a Real-Time Service Is Deployed

Symptom

When a real-time service is deployed, the following error occurred: No CUDA runtime is found, using CUDA_HOME='/usr/local/cuda'.

Possible Causes

According to the error "No CUDA runtime is found" in logs, CUDA runtime was not found.

Solution

Perform the following operations:

1. Check whether a GPU flavor is selected for deploying the real-time service.
2. Add **os.system('nvcc -V)** into **customize_service.py** to view the CUDA version of the image. For details about how to write **customize_service.py**, see **Specifications for Writing Model Inference Code**.
3. Check whether the CUDA version matches the installed MMCV version.

NOTE

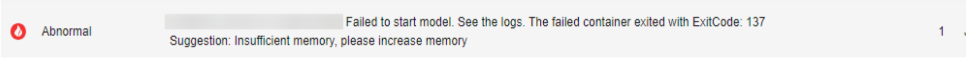
Selecting a GPU flavor if the model and inference script require GPUs.

5.2.14 What Can I Do if the Memory Is Insufficient?

Symptom

- The deployment or upgrade of a real-time service fails and information similar to the following is displayed in the event.

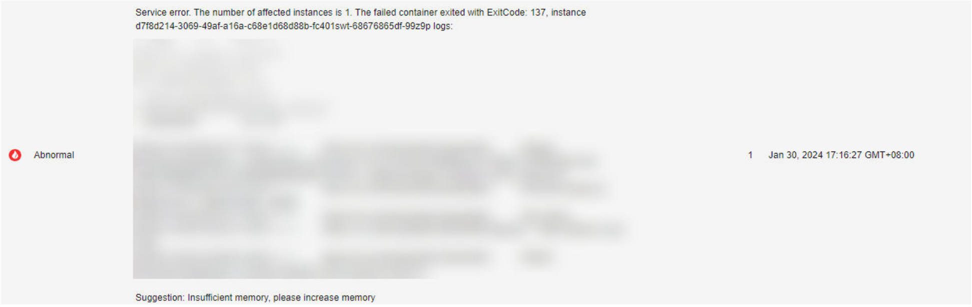
Figure 5-21 Example 1 of a message indicating insufficient memory



Abnormal [redacted] Failed to start model. See the logs. The failed container exited with ExitCode: 137
Suggestion: Insufficient memory, please increase memory 1

- An alarm is generated for a running service, and the following suggestion is displayed in the event: "Insufficient memory, please increase memory."

Figure 5-22 Example 2 of a message indicating insufficient memory



Abnormal

```
Service error. The number of affected instances is 1. The failed container exited with ExitCode: 137, instance
d7f8d214-3069-49af-a16a-c68e1d68d88b-fc401swt-68676865df-99z9p logs:
[redacted]
Suggestion: Insufficient memory, please increase memory
```

1 Jan 30, 2024 17:16:27 GMT+08:00

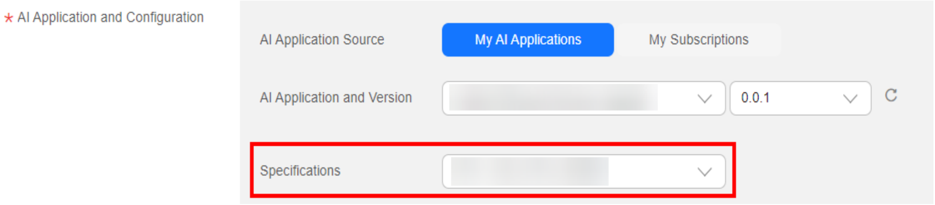
Possible Causes

- If this message is displayed during deployment or upgrade, the memory size of the chosen compute node is insufficient for the application deployment, and you need to increase the memory.
- If an alarm is generated for a running service, memory overflow occurs due to code problems, or the service usage is too large so the memory requirement increases.

Solution

- When deploying or upgrading a real-time service, select a compute node with larger memory.

Figure 5-23 Compute node specifications



* AI Application and Configuration

AI Application Source: My AI Applications | My Subscriptions

AI Application and Version: [redacted] 0.0.1

Specifications: [redacted]

- If an alarm is generated for a running service, check whether memory overflow occurs due to code problems, or more memory is required due to heavy service usage. If more memory is required, upgrade the real-time service and select a compute node with larger memory.

5.3 Service Prediction

5.3.1 Service Prediction Failed

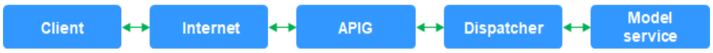
Symptom

After a real-time service is deployed and running, an inference request is sent to the service, but the inference failed.

Cause Analysis and Solution

Service prediction involves multiple phases, including the client, Internet, APIG, dispatcher, and model service. A fault in any phase may lead to a prediction failure.

Figure 5-24 Prediction process



1. If an "APIG.XXXX" error occurs, the request is intercepted on API Gateway due to a fault.

   Rectify the fault by referring to **Error "APIG.XXXX" Occurred in a Prediction Failure**.

   The following shows the other cases in which a request is intercepted on API Gateway:

   – **Method Not Allowed**

   – **Request Timed Out**

2. If a "ModelArts.XXXX" error occurs, the request is intercepted on the dispatcher due to a fault.

   Rectify the fault by referring to the methods provided in the following typical cases:

   – **Error ModelArts.4302 Occurred in Real-Time Service Prediction**

   – **Error ModelArts.4302 Occurred in Real-Time Service Prediction**

   – **Error ModelArts.4503 Occurred in Real-Time Service Prediction**

3. If an inference image is used and an "MR.XXXX" error occurs, the request has been sent to the model service, and the fault is generally due to a bug in model inference code.

   Identify the cause of the prediction failure based on the error information in logs, debug the model inference code, and import the model again for prediction.

   Rectify the fault by referring to **Error MR.0105 Occurred in Real-Time Service Prediction**.

4. In other cases, check whether the client and the Internet are accessible.

5. If the fault persists, contact the system administrator.

5.3.2 Error "APIG.XXXX" Occurred in a Prediction Failure

A request is intercepted on API Gateway due to a fault, and error "APIG.XXXX" occurs.

Rectify the fault by referring to the methods provided in the following typical cases:

- **APIG.0101 Incorrect Prediction URL**
- **APIG.0201 Request Body Oversized**
- **APIG.0301 Authentication Failed**
- **APIG.1009 Unmatched AppKey and AppSecret**

For more details about API Gateway error codes and solutions, see **API Error Codes**.

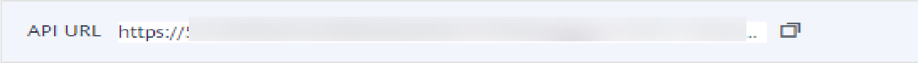
APIG.0101 Incorrect Prediction URL

If the prediction URL is incorrect, API Gateway intercepts the request and reports error message "APIG.0101:The API does not exist or has not been published in the environment". In this case, go to the real-time service details page and obtain the correct API address on the **Usage Guides** tab page.

NOTE

If you have specified a custom path in the configuration file, add this path to the called API path. For example, if you have specified custom path **/predictions/poetry**, the called API path will be *{API address}***/predictions/poetry**.

Figure 5-25 Obtaining an API address



API URL https://[redacted]..

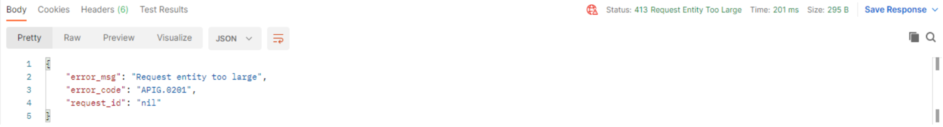
APIG.0201 Request Body Oversized

If a request body is oversized, API Gateway intercepts the request and reports error message "APIG.0201:Request entity too large". Reduce the prediction request body and try again.

If you perform prediction by calling an API address, the maximum size of the request body is 12 MB. If the size of the request body exceeds 12 MB, the request will be intercepted.

If you perform prediction on the **Prediction** tab of the service details page, the maximum size of the request body is 8 MB. The size limit varies between the two tab pages because they use different network links.

Figure 5-26 Request error APIG.0201



Status: 413 Request Entity Too Large Time: 201 ms Size: 295 B

```
{
    "error_msg": "Request entity too large",
    "error_code": "APIG.0201",
    "request_id": "nil"
}
```

APIG.0301 Authentication Failed

If an API is called for service prediction or a token is used for application authentication, a correct token must be obtained. If the token is invalid, API

Gateway intercepts the request and reports error message "APIG.0301:Incorrect IAM authentication information: decrypt token fail". Obtain the correct token and enter it in **X-Auth-Token** for prediction. For details about how to obtain a token, see **Obtaining a User Token Through Password Authentication**.

APIG.1009 Unmatched AppKey and AppSecret

If the AppKey and AppSecret used for service prediction do not match, error message "APIG.1009:AppKey or AppSecret is invalid" is displayed.

Obtain the AppKey and AppSecret and access the real-time service using application authentication. For details, see **Access Authenticated Using an Application**.

5.3.3 Error ModelArts.4206 Occurred in Real-Time Service Prediction

Symptom

After a real-time service is deployed and running, an inference request is sent to the service, but error ModelArts.4206 occurred.

Possible Causes

ModelArts.4206 indicates that the request traffic on an API exceeded the preset threshold. To ensure stable service running, ModelArts limits the inference request traffic on a single API.

Solution

Reduce the inference request traffic on an API. If ultra-high concurrency is required, submit a service ticket.

5.3.4 Error ModelArts.4302 Occurred in Real-Time Service Prediction

Symptom

After a real-time service is deployed and running, an inference request is sent to the service, but error ModelArts.4302 occurred.

Cause Analysis and Solution

Error ModelArts.4302 may occur in multiple scenarios. The following describes two typical scenarios:

1. "error_msg": "Gateway forwarding error. Failed to invoke backend service due to connection refused. "

   This error occurs in either of the following cases:

   - The traffic exceeded the threshold that can be processed by the model. In this case, reduce the traffic or increase the number of model instances.

   - The image is faulty. In this case, separately run the image and check whether it is functional.

2. "error_msg": "Due to self protection, the backend service is disconnected, please wait moment."

   This error occurs due to excessive number of model errors. A large number of model errors trigger dispatcher circuit breaker, leading to a prediction failure. In this case, check the result returned by the model and handle these errors. Adjust request parameters or reduce the request traffic for higher model calling success rate.

5.3.5 Error ModelArts.4503 Occurred in Real-Time Service Prediction

Symptom

After a real-time service is deployed and running, an inference request is sent to the service, but error ModelArts.4503 occurred.

Cause Analysis and Solution

Error ModelArts.4503 may occur in multiple scenarios. The following describes typical scenarios:

1. Communication error

   Request error: {"error_code":"ModelArts.4503","error_msg":"Failed to respond due to backend service not found or failed to respond"}

   To ensure high performance, ModelArts reuses the connections to the same model service. According to the TCP protocol, a disconnection can be initiated either by the client or server of a connection. Disconnecting a connection requires a four-way handshake. If the model service (server) initiates a disconnection, but the connection is being used by ModelArts (client), a communication error occurs and this error code is returned.

   If your model is imported from a custom image, set **keep-alive** of the web server used by the custom image to a larger value. This prevents a disconnection request initiated from the server. If you use Gunicorn as the web server, configure the **keep-alive** value by running the **Gunicorn** command. Models imported from other sources have been configured in the service.

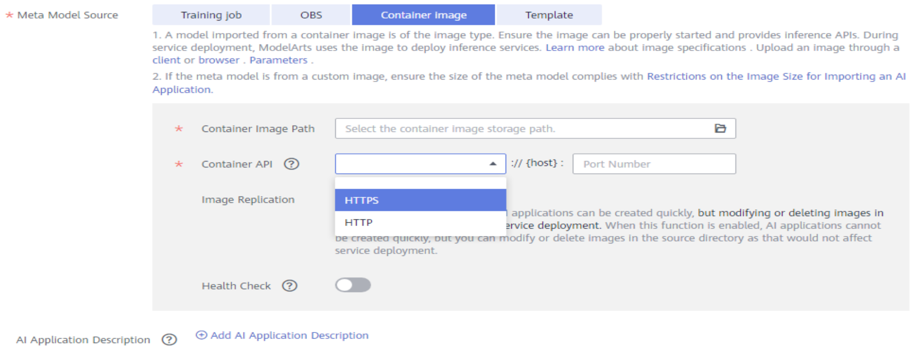
2. Protocol error

   Request error: {"error_code":"ModelArts.4503", "error_msg":"Failed to find backend service because SSL error in the backend service, please check the service is https"}

   If the model used for deploying a real-time service is imported from a container image, this error occurs when the protocol used by the container API is incorrectly configured.

   For security purposes, all ModelArts inference requests are HTTPS-compliant. When you import a model from a container image, ModelArts allows the image to use HTTPS or HTTP. However, you must specify the protocol used by the image in **Container API**.

Figure 5-27 Container API



* Meta Model Source

1. A model imported from a container image is of the image type. Ensure the image can be properly started and provides inference APIs. During service deployment, ModelArts uses the image to deploy inference services. Learn more about image specifications . Upload an image through a client or browser . Parameters .

2. If the meta model is from a custom image, ensure the size of the meta model complies with Restrictions on the Image Size for Importing an AI Application.

* Container Image Path: Select the container image storage path.

* Container API: :// {host} : Port Number

Image Replication

applications can be created quickly, but modifying or deleting images in ervice deployment. When this function is enabled, AI applications cannot be created quickly, but you can modify or delete images in the source directory as that would not affect service deployment.

Health Check

AI Application Description

If the **Container API** value is inconsistent with the value provided by your image, for example, **Container API** is set to **HTTPS** but your image actually uses HTTP, the preceding error occurs.

To resolve this issue, create a model version, select the correct protocol (HTTP or HTTPS), and deploy a real-time service again or update the existing real-time service.

3. Long prediction time

   The following error is reported: {"error_code": "ModelArts.4503", "error_msg": "Failed to find backend service because response timed out, please confirm your service is able to process the request without timeout. "}

   Due to the limitation of API Gateway, the prediction duration of each request does not exceed 40 seconds. A prediction is successful if the entire process takes a time not longer than the time limit. The process involves sending data to ModelArts, performing prediction, and sending the prediction result back. If a prediction takes a time longer than the time limit or ModelArts cannot respond to frequent prediction requests, this error occurs.

   Take the following measures to resolve this issue:

   – If a prediction request is oversized, the request times out due to slow data processing. In this case, optimize the prediction code to shorten the prediction time.

   – A complex model leads to slow inference. Optimize the model to shorten the prediction time.

   – Increase the number of instances or select a compute node flavor with better performance. For example, use GPUs instead of CPUs to improve the service processing performance.

4. Service error

   The following error is reported: {"error_code": "ModelArts.4503","error_msg": "Backend service respond timeout, please confirm your service is able to process the request without timeout. "}

   Service logs are as follows:

```
[2022-10-24 11:37:31 +0000] [897] [INFO] Booting worker with pid: 897
[2022-10-24 11:41:47 +0000] [1997] [INFO] Booting worker with pid: 1997
[2022-10-24 11:41:22 +0000] [1897] [INFO] Booting worker with pid: 1897
[2022-10-24 11:37:54 +0000] [997] [INFO] Booting worker with pid: 997
```

   The service malfunctions and restarts repeatedly. As a result, prediction requests cannot be sent to the service instance.

Take the following measures to resolve this issue:

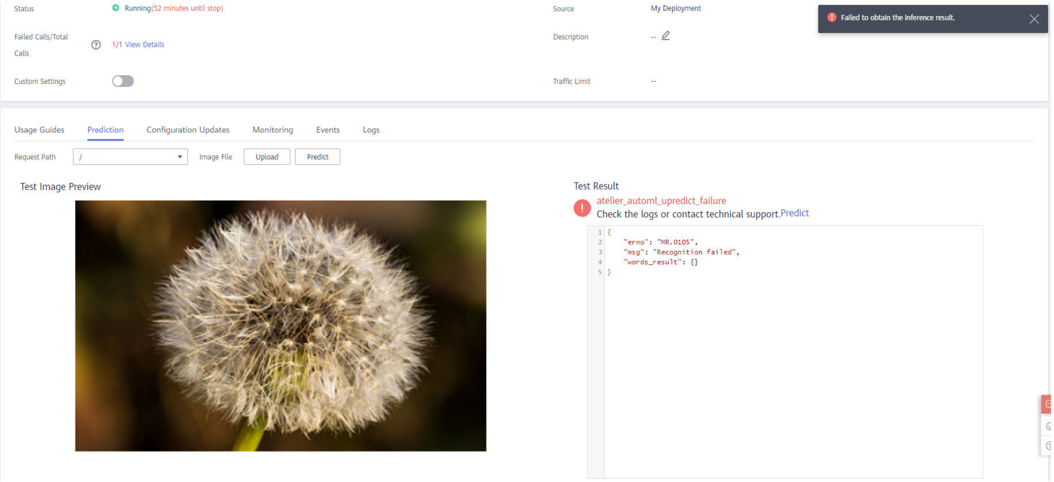
- Reduce the number of prediction requests and check whether the fault is resolved. If the fault does not recur, the service process exits due to heavy load. In this case, increase the number of instances or improve the instance specifications.
- The inference code is defective. Debug the code to rectify the fault.

5.3.6 Error MR.0105 Occurred in Real-Time Service Prediction

Symptom

During the prediction in a running real-time service, error { "erno": "MR.0105", "msg": "Recognition failed","words_result": {}} occurred.

Figure 5-28 Prediction failed



Status Running(52 minutes until stop)

Failed Calls/Total Calls 1/1 View Details

Custom Settings

Source My Deployment

Description --

Traffic Limit --

Failed to obtain the inference result.

Request Path /

Image File

Test Image Preview

Test Result

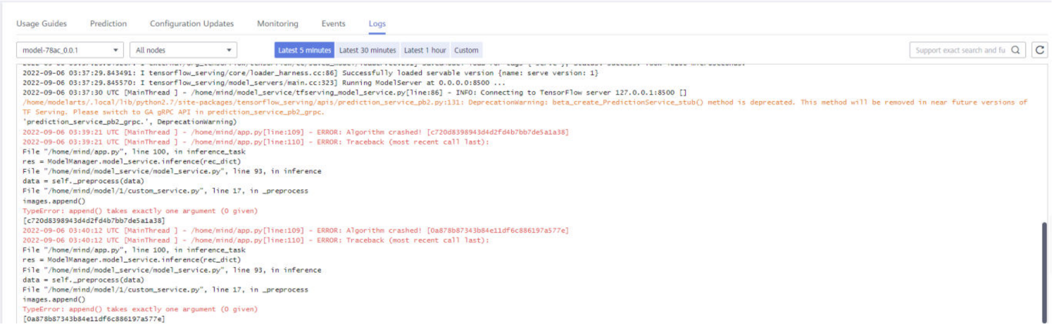
atelier_automl_upredict_failure
Check the logs or contact technical support.Predict

```
{
    "erno": "MR.0105",
    "msg": "Recognition failed",
    "words_result": {}
}
```

Possible Causes

Locate the fault by analyzing the error log on the **Logs** tab of the real-time service details page.

Figure 5-29 Error log



```
2022-09-06 03:37:29.843491: I tensorflow_serving/core/loader_harness.cc:86] Successfully loaded servable version {name: serve version: 1}
2022-09-06 03:37:29.845570: I tensorflow_serving/model_servers/main.cc:323] Running ModelServer at 0.0.0.0:8500 ...
2022-09-06 03:37:30 UTC [MainThread ] - /home/mind/model_service/tfserving_model_service.py[line:86] - INFO: Connecting to TensorFlow server 127.0.0.1:8500 []
/home/modelarts/.local/lib/python2.7/site-packages/tensorflow_serving/apis/prediction_service_pb2.py:131: DeprecationWarning: beta_create_PredictionService_stub() method is deprecated. This method will be removed in near future versions of
TF Serving. Please switch to GA gRPC API in prediction_service_pb2_grpc.
'prediction_service_pb2_grpc.', DeprecationWarning)
2022-09-06 03:39:21 UTC [MainThread ] - /home/mind/app.py[line:109] - ERROR: Algorithm crashed! [c720d8398943d4d2fd4b7bb7de5a1a38]
2022-09-06 03:39:21 UTC [MainThread ] - /home/mind/app.py[line:110] - ERROR: Traceback (most recent call last):
File "/home/mind/app.py", line 100, in inference_task
res = ModelManager.model_service.inference(rec_dict)
File "/home/mind/model_service/model_service.py", line 93, in inference
data = self._preprocess(data)
File "/home/mind/model/1/custom_service.py", line 17, in _preprocess
images.append()
TypeError: append() takes exactly one argument (0 given)
[c720d8398943d4d2fd4b7bb7de5a1a38]
2022-09-06 03:40:12 UTC [MainThread ] - /home/mind/app.py[line:109] - ERROR: Algorithm crashed! [0a878b87343b84e11df6c886197a577e]
2022-09-06 03:40:12 UTC [MainThread ] - /home/mind/app.py[line:110] - ERROR: Traceback (most recent call last):
File "/home/mind/app.py", line 100, in inference_task
res = ModelManager.model_service.inference(rec_dict)
File "/home/mind/model_service/model_service.py", line 93, in inference
data = self._preprocess(data)
File "/home/mind/model/1/custom_service.py", line 17, in _preprocess
images.append()
TypeError: append() takes exactly one argument (0 given)
[0a878b87343b84e11df6c886197a577e]
```

According to the error log shown in the preceding figure, the prediction failure is caused by the model inference code.

Solution

According to the error log, mandatory parameters are missing in the append() method. To rectify the fault, modify the code in the model inference code file **customize_service.py** to transfer proper parameters to the append() method.

For details about how to edit the model inference code, see **Specifications for Model Inference Coding**.

5.3.7 Method Not Allowed

Symptom

Error message "Method Not Allowed" is displayed during service prediction.

Possible Causes

The APIs registered by default for service prediction must be called using POST. If you use GET, API Gateway will intercept the request.

Solution

Use POST to call the API.

5.3.8 Request Timed Out

Symptom

The prediction request times out, and the error {"error_code": "ModelArts.4205","error_msg":"Connection time out."} is reported.

Possible Causes

If a request times out, there is a high probability that the request is intercepted by API Gateway. Check the API Gateway and model.

Solution

1. Run the **:curl -kv** *{Prediction address}* command on the local host to check whether the API Gateway is reachable. If the request timed out, check the local firewall, proxy, and network configurations.
2. Check whether the model is started or the duration for the model to process a single request. Due to the limitation of API Gateway, the duration of a single prediction cannot exceed 40s. If the duration exceeds 40s, the system will return a timeout error by default.

5.3.9 Error Occurred When an API Is Called for Deploying a Model Created Using a Custom Image

If an error occurs when an API is called for service deployment, check the following items:

1. Check whether POST is used in the configuration file for the model API.
2. Check whether the URL in the configuration file contains a customized path, for example, **/predictions/poetry** (the default path is **/**).
3. Check whether the called path in the body of the API request contains a customized path, for example, **{API address}/predictions/poetry**.

5.3.10 Error "DL.0105" Occurred During Real-Time Inference

Symptom

Error "DL.0105" occurred during real-time inference. Error log: "TypeError: 'float' object is not subscriptable".

Possible Causes

According to the error logs, a float data record is accessed as an object subscript.

Solution

Change **x[0][i]** in the model inference code to **x[i]** and deploy the real-time inference service again.

6 MoXing

6.1 Error Occurs When MoXing Is Used to Copy Data

Symptom

1. When you call **moxing.file.copy_parallel()** to copy a file from the OBS bucket for a development environment to another bucket, the file is not visible in the target bucket.
2. An error occurs when MoXing is used to copy data. Example:
   - The following error occurs when MoXing is used to copy OBS data in the ModelArts development environment: **keyError: 'request-id'**
   - The error **No files to copy** occurs when ModelArts uses MoXing to copy data.
   - socket.gaierror: [Errno -2] Name or service not known
   - ERROR:root:Failed to call:

     func=<bound method ObsClient.getObject of <obs.client.ObsClient object at 0x7fd705939710>>

     args=('bucket', 'data/TFRecord/HY_all_inside/no_adjust_light_3/09_06_6x128x128_0000000212.tfrecord')
3. When MoXing is used to copy data, an error message is displayed, indicating that the operation timed out. Example:
   - TimeoutError: [Errno 110] Connection timed out
   - WARNING:root:Retry=9,Wait=0.1, Timestamp = 1567152567.5327423

Possible Cause

The possible causes are as follows:

- The source file does not exist.
- The target OBS path is incorrect or the two OBS paths are not in the same region.
- Space of the training job is insufficient.

Solution

Check the following items based on the error message:

1. Check whether the first parameter of **moxing.file.copy_parallel()** contains a file. If it contains no file, the error message "No files to copy" is displayed.
   - If the file exists, go to **2**.
   - If the file does not exist, ignore the error and proceed with subsequent operations.
2. Check whether the OBS path where data is copied is in the same region as the development environment or training job.

   Log in to the ModelArts management console, and view the region where ModelArts resides. Log in to OBS Console, and view the region where the OBS bucket resides. Check whether they are in the same region.
   - If they are in the same region, go to step **3**.
   - If they are not in the same region, create a bucket and a folder in OBS that is in the same region as ModelArts, and upload data to the bucket.
3. Check whether the OBS path is **obs://xxx**. You can check whether the OBS path exists as follows:

   mox.file.exists('obs://bucket_name/sub_dir_0/sub_dir_1')
   - If the path exists, go to **4**.
   - If the path does not exist, change it to an available OBS path.
4. Check whether the used resource is a CPU. The **/cache** directory of the CPU and the code directory share 10 GB. The possible cause is insufficient space. You can run the following command in code to check the disk size:

   os.system('df -hT')
   - If disk space is sufficient, go to **5**.
   - If disk space is insufficient, use GPU resources.
5. If data fails to be copied using MoXing in a notebook instance, run the **df -hT** command on the **Terminal** page to check the space size and check whether the failure cause is insufficient space. You can use EVS to attach disks when creating a notebook instance.

If code is correct but the problem persists, submit a service ticket to get professional technical support.

6.2 How Do I Disable the Warmup Function of the Mox?

Symptom

When the TensorFlow version of the training job Mox is running, 50 steps are executed for four times before the job is formally running.

Warmup indicates a process of using a small learning rate to train several epochs first. Network parameters are randomly initialized. If a large learning rate is used at the beginning, the value may be unstable. This is why warmup is used. After the training process is basically stable, the originally set initial learning rate can be used for training.

Possible Cause

There are multiple execution modes for distributed TensorFlow. Mox executes 50 steps for four times to record the execution time, and selects the model with the minimum execution time.

Solution

When creating a training job, add **variable_update=parameter_server** in **Running Parameter** to disable the warmup function of Mox.

6.3 Pytorch Mox Logs Are Repeatedly Generated

Symptom

The Pytorch engine of a frequently-used framework is used as an algorithm source of a ModelArts training job. During the running of the training job, Mox versions for each epoch will be printed in the Pytorch Mox log. The log details are as follows:

```
INFO:root:Using MoXing-v1.13.0-de803ac9
INFO:root:Using OBS-Python-SDK-3.1.2
INFO:root:Using MoXing-v1.13.0-de803ac9
INFO:root:Using OBS-Python-SDK-3.1.2
```

Possible Cause

Pytorch creates multiple processes in spawn mode. Each process invokes the Mox to download data in multi-process mode. In this case, subprocesses are destroyed and recreated repeatedly, and Mox is imported repeatedly. As a result, a large amount of Mox version information is printed.

Solution

To avoid repeated output of the Pytorch Mox logs of the training job, you need to add the following code to the boot file. When **MOX_SILENT_MODE = "1"**, Mox version information can be blocked in the log.

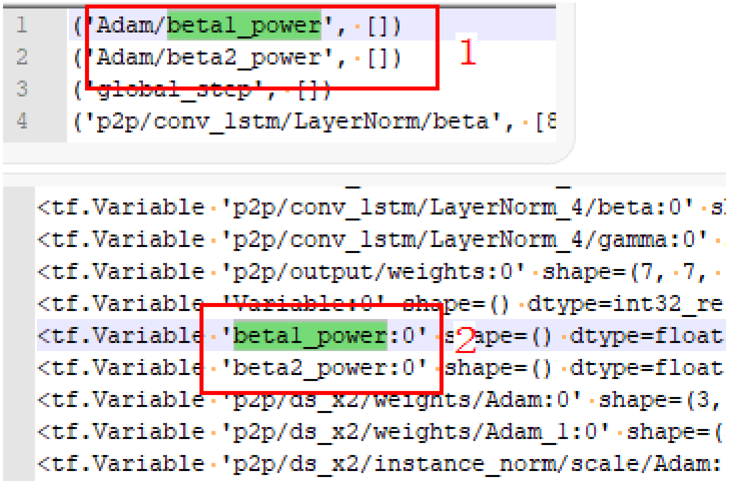
```
import os
os.environ["MOX_SILENT_MODE"] = "1"
```

6.4 Failed to Perform Local Fine Tuning on the Checkpoint Generated by moxing.tensorflow

Symptom

When MoXing is used to train a model, **global_step** is placed in the Adam name range. The non-MoXing code does not contain the Adam name range. See **Figure 6-1**. In the figure, **1** indicates MoXing code, and **2** indicates non-MoXing code.

Figure 6-1 Sample code



```
('Adam/beta1_power', [])
('Adam/beta2_power', [])
('global_step', [])
('p2p/conv_lstm/LayerNorm/beta', [8
```

```
<tf.Variable 'p2p/conv_lstm/LayerNorm_4/beta:0' s
<tf.Variable 'p2p/conv_lstm/LayerNorm_4/gamma:0'
<tf.Variable 'p2p/output/weights:0' shape=(7, 7,
<tf.Variable 'Variable:0' shape=() dtype=int32_re
<tf.Variable 'beta1_power:0' shape=() dtype=float
<tf.Variable 'beta2_power:0' shape=() dtype=float
<tf.Variable 'p2p/ds_x2/weights/Adam:0' shape=(3,
<tf.Variable 'p2p/ds_x2/weights/Adam_1:0' shape=(
<tf.Variable 'p2p/ds_x2/instance_norm/scale/Adam:
```

Solution

Fine tuning is a process of using a model that is trained by others and your own data to train a new model. It is equivalent to using the several top layers of a model trained by others to extract shallow features and then making the features fall into your own classification.

Generally, the accuracy of a newly trained model increases gradually from a very low value. However, fine tuning allows you to obtain a better effect after a relatively small number of iterations. The advantage of fine tuning is that it prevents you from training a model from scratch and improves training efficiency. Fine tuning is a good choice when the data volume is not large.

All APIs contained in **moxing.tensorflow** have been optimized for TensorFlow. The actual APIs inside are the native APIs of TensorFlow.

If non-MoXing code does not contain the Adam name range, add the following content to non-MoXing code:

```
with tf.variable_scope("Adam"):
```

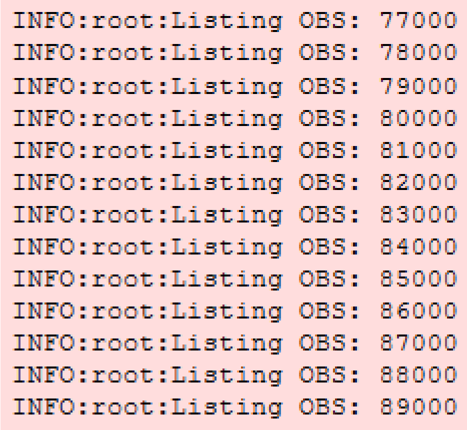
When adding code, you are advised to use **tf.train.get_or_create_global_step()** instead of **global_step**.

6.5 Copying Data Using MoXing Is Slow and the Log Is Repeatedly Printed in a Training Job

Symptom

- Copying data using MoXing is slow in a ModelArts training job.
- The log **INFO:root:Listing OBS** is repeatedly printed.

Figure 6-2 Repeated log printing



```
INFO:root:Listing OBS: 77000
INFO:root:Listing OBS: 78000
INFO:root:Listing OBS: 79000
INFO:root:Listing OBS: 80000
INFO:root:Listing OBS: 81000
INFO:root:Listing OBS: 82000
INFO:root:Listing OBS: 83000
INFO:root:Listing OBS: 84000
INFO:root:Listing OBS: 85000
INFO:root:Listing OBS: 86000
INFO:root:Listing OBS: 87000
INFO:root:Listing OBS: 88000
INFO:root:Listing OBS: 89000
```

Possible Cause

1. The possible causes for slow data copying are as follows:
   - Reading data from OBS will make data reading become a training bottleneck, resulting in slow iteration.
   - Data fails to be read from OBS due to environment or network issues. As a result, the job fails.
2. The log is printed repeatedly. The log indicates that the file is being read from the remote end. After the file list is read, data starts to be downloaded. If there are many files, this process takes a long time.

Solution

When creating a training job, you can save data to OBS. You are advised not to use the OBS APIs of TensorFlow, MXNet, and PyTorch to directly read data from OBS.

- If the file is small, you can save data on OBS as a **.tar** package. When starting the training, download the package from OBS to the **/cache** directory and decompress the package.
- If the file is large, save data as multiple **.tar** packages and invoke multiple processes in the entry script to decompress data in parallel. You are advised not to save discrete files to OBS. Otherwise, data download will be slow.
- In a training job, use the following code to decompress the **.tar** package:

```
import moxing as mox
import os
mox.file.copy_parallel("obs://donotdel-modelarts-test/AI/data/PyTorch-1.0.1/tiny-imagenet-200.tar", '/cache/tiny-imagenet-200.tar')
os.system('cd /cache; tar -xvf tiny-imagenet-200.tar > /dev/null 2>&1')
```

6.6 Failed to Access a Folder Using MoXing and Read the Folder Size Using get_size

Symptom

- The folder cannot be accessed using MoXing.

- The folder size read by using **get_size** of MoXing is 0.

Possible Cause

To use MoXing to access a folder, you need to add the **recursive=True** parameter. The default value is **False**.

Solution

Obtain the size of an OBS folder.

```
mox.file.get_size('obs://bucket_name/sub_dir_0/sub_dir_1', recursive=True)
```

Obtain the size of an OBS file.

```
mox.file.get_size('obs://bucket_name/obs_file.txt')
```

7 APIs or SDKs

7.1 "ERROR: Could not install packages due to an OSError" Occurred During ModelArts SDK Installation

Symptom

When ModelArts SDKs are installed, the following error message is displayed: "ERROR: Could not install packages due to an OSError: [WinError 2] The system cannot find the file specified: 'c:\python39\Scripts\ephemeral-port-reserve.exe' -> 'c:\python39\Scripts\ephemeral-port-reserve.exe.deleteme".

Possible Causes

The role of the login user is incorrect.

Solution

Log in to the system as the administrator, press **Windows+R**, enter **cmd**, and run the following command:

```
python -m pip install --upgrade pip
```

7.2 Error Occurred During Service Deployment After the Target Path to a File Downloaded Through a ModelArts SDK Is Set to a File Name

Symptom

A ModelArts SDK was used to download a file from OBS, and the target path was set to the file name. No error was reported in the local IDE, but an error occurred when the target AI application was deployed as a real-time service.

Sample code:

```
session.obs.download_file (obs_path, local_path)
```

The error message is as follows:

```
2022-07-06 16:22:36 CST [ThreadPoolEx] - /home/work/predict/model/customize_service.py[line:184] -
WARNING: 4 try: IsADirectoryError(21, 'Is a directory'). update products failed!
```

Possible Causes

The target path (**local_path**) was incorrectly set in code.

Solution

Set **local_path** to a folder and ensure the folder name extension ends with a slash (/).

7.3 A Training Job Created Using an API Is Abnormal

Symptom

When you call an API to create a training job (CPU specifications for the dedicated resource pool), the training job status changes from **Creating** to **Abnormal**, and specifications information on the training job details page is **--**.

Possible Causes

A parameter that is not supported by dedicated resource pools of CPU specifications is used in the API call.

Solution

Make sure that the API request body does not contain **flavor_id** because this parameter is not supported by dedicated resource pools of CPU specifications