Serverless Cloud Function FAQs

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General FAQs

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What should I do if the error "Cannot find module" or "No module named" is reported or the dependencies can't be found during function execution? How do I install dependencies?

This problem is usually caused by the fact that the dependency file for code execution is not uploaded to the cloud environment. You can troubleshot as follows:

1. Check whether the path of the dependency file referenced in the code is correct. If a relative path is used, **the dependency file must be placed in the same root directory as the function code file** and packaged and uploaded to the cloud together with the function code. If an absolute path is used, make sure that the path is accessible to SCF, and the specified dependency file exists under the path.
2. If you have uploaded the dependency file to a layer in advance, check whether the binding relationship between the layer version and the function runtime version is as expected.
3. If you have used the online dependency installation feature, check whether all dependencies are successfully installed.

> **Description**
> - For more information about function deployment, please see Deploying Functions.
> - For more information about dependency installation, please see Dependency Installation.

What is the time zone in the SCF environment? How do I eliminate the impact of time zone differences?

The SCF runtime environment maintains UTC time, which is 8 hours behind Beijing time. You can use the time processing libraries or code packages of the language to recognize UTC time and convert it to Beijing time (UTC+8), or specify the time zone by setting the environment variable `TZ=Asia/Shanghai`.

Is there an error indicating no permission to write files? Is there writable space within the environment?

SCF function has a temporary disk space of 500 MB (`/tmp`) during execution. You can perform read and write operations in this space or create subdirectories while executing the

code, but data written in this space will not be retained after the function is executed.

> **Description**
> - The temporary disk spaces of different instances are isolated, i.e., each instance has its own independent temporary space.
> - In the operating environment, all directories are read-only except for `/tmp`.

What if an error occurs after there is no more space for write operations?

If you continuously write to the `/tmp` temporary directory and the instance is constantly in use due to frequent calls, the temporary directory may become full, resulting in write failures. Please check the write status of the temporary directory in your code and use the code to delete unused temporary files to free up space.

Why does the returned data format have extra quotation marks?

API Gateway considers the returned result from SCF as in JSON format by default. You can select integration response in function configuration as instructed in Overview of API Gateway Trigger to solve this problem. Please note that after integration response is enabled, the data structure needs to be returned according to the specification.

Can the root account restrict a sub-account's permission to manipulate certain functions?

Yes. For more information, please see Sub-user and Authorization.

How can SCF logs be delivered to COS?

Forward logs to CLS as instructed in Connecting SCF Logs to CLS and configure CLS to deliver logs to COS.

How does an application trigger a function directly?

The function can be directly triggered by invoking the SCF's Invoke API. This can be done by the function's owner or an account with the permission to invoke the API.

Can a function be used when its code or configuration is changed?

Yes. There is a short window period of less than 1 minute in general when the function is updated, during which the request will be implemented by either the old or new function code.

Is there a limit to the number of concurrency instances for a single function?

SCF supports large numbers of concurrent function instances. For the total function concurrency quota per region, please see Quota Limits. For the function concurrency management, please see Function Concurrency.

Are there quota limits for serverless functions?

For each user account, SCF has certain quota restrictions. You can view the quota restrictions for user accounts, functions, layers, and function runtime environments in Quota Limits.

What if a failure occurs when a function handles an event?

In case of failure, a function that makes sync invocations will return the exception information, while a function that makes async invocations will automatically retry. For more information, please see Error Types and Retry Policies.

Can I use threads and processes in my function code?

Yes. You can use normal programming language and operating system features, such as creating additional threads and processes. Resources allocated to the function, including memory, execution duration, disk, and network, are shared by the threads or processes it uses.

What restrictions apply to function code?

We try not to impose restrictions on normal activities at the programming language and operating system levels, but certain activities such as inbound network connection are disabled.

A jar package of Java is deployed on the backend of SCF. How can a WeChat Mini Program on the frontend call the deployed code?

API Gateway can be used to this end. Configure the backend of API Gateway as a function and then call the gateway API to trigger the function. For detailed directions, please see Creating Triggers and API Gateway Trigger Configuration.

What events can trigger SCF functions?

Currently, SCF functions can be triggered by manual triggers (APIs), timer triggers, COS, CMQ, and API Gateway, and more triggering methods will be supported soon.

What languages does SCF support?

Currently, it supports Python 2.7 and 3.6, Node.js 6.10, 8.9, 10.15, and 12.16, Java 8, PHP 5 and 7, Go, and Custom Runtime. More programming languages will be supported in the future.

Can I access the infrastructure where SCF runs?

No. CF manages the computing infrastructure on your behalf.

How does SCF isolate code?

Each function runs in its own unique environment and has its own resources and file system. SCF uses the same technology as CVM to provide security and isolation at the infrastructure and execution levels.

Can SCF interconnect with other Tencent Cloud services such as CVM or TencentDB?

Yes. When you create or modify a function, select VPC configuration and deploy the function in the same VPC as the CVM or TencentDB instance.

Does SCF reuse function instances?

To improve performance, SCF will retain your function instance for a certain period of time and reuse it for subsequent requests. However, do not rely on this reuse.

Why should I keep an SCF function stateless?

Keeping the statelessness of the function allows the function to launch as many instances as needed to meet the requested rate.

How do I troubleshoot SCF?

SCF provides a logging feature. Each invocation will output its log to the logs window in the console. The log records the resources consumed by the function during each use, the log in the code, and the platform invocations. You can easily insert troubleshooting log statements into your code.

I uploaded a zip file to create function, and I was prompted that "Unable to create the function. Please try again" or "Function execution entry point file not found. Please confirm that the filename matches with the handler setting or the code package is correct". What should I do?

The issue usually arises when the outer folder is included during compression, and the zip file, once decompressed, cannot locate the entry-point function. That is, the function's execution method cannot find the corresponding executable file or function entry in the zip package. The execution method format is `a.b`, where 'a' is the name of the .py file and 'b' is the method name in the code. If the user-uploaded zip package, once decompressed, cannot find a file named `a.py` in the root directory, it will prompt "The function code cannot be displayed. The

file name specified by the execution method cannot be found in the code zip package." For instance, the file structure is as follows:

```
--RootFolder
----SecondFolder
------a.py
------thirdfolder
--------sth.json
```

When compressing the code into a zip file, if you compress the 'SecondFolder', the aforementioned error will occur. You need to select `a.py` and `thirdfolder` for compression.

What should I do if timeout occurs?

Please set the timeout period to a larger value (up to 900) and test the function again. If it still times out, please check whether there are excessive input data and computation, loops that cannot be jumped out, or prolonged sleeps in the log of your code.

How do I scale a function?

You do not have to care about function scaling as the SCF platform will automatically do so on your behalf. Whenever a function request is received, SCF will quickly locate the free capacity and execute your code. Since your code is stateless, as many instances as needed can be launched without lengthy delays in deployment and configuration.

How do I allocate computing resources to a function?

You can select the amount of memory allocated to a function, and the CPU and other resources will be allocated proportionally. For example, if you select 256 MB of memory, the CPU allocated to the function will be approximately twice that allocated for 128 MB of memory.

Can I use a local library?

Yes. You can add your own code repository to the function code and upload it to the platform as a zip package.

What should I do if the error "Resource limit exceeded for function" is reported during function invocation?

This typically occurs when the function concurrency hits the quota limit. You can calculate the required function concurrency using the formula "Function Concurrency = QPS (Queries Per Second) x Function Execution Time (Seconds)". For example, if QPS = 100 and Function Execution Time = 100ms, then the actual required Function Concurrency = 100 x 0.1 = 10. If the concurrency exceeds the limit, you can submit a ticket to increase the limit.

What should I do if the error "Account Arrears, Operation not Allowed" is reported during function creation?

There are overdue payments in your account. Please top up and try again.

What should I do if the error "SCF_QcsRole role does not exist, please visit https://console.cloud.tencent.com/scf to create a role" is reported during function creation?

Function creation depends on SCF_QcsRole. Please use the primary account to access the Cloud Function Console and follow the prompts to complete the authorization.

What should I do if "xxx you are not authorized to perform operation xxx" is reported during function creation?

Please go to the Role page in Access Management, click on `SCF_QcsRole` and confirm whether the preset policy `QcloudAccessForScfRole` is associated with the role's permission policy. If not, click **Add Policy** and associate `QcloudAccessForScfRole`, then try again.

How do I get the `DemoId` when creating a function with a template?

Select **Template** as the creation method when creating a function in the SCF console, select the template you want to use, click **View Details** in the top-right corner of the template, and click **Click to download template function** on the template details page. The template code will be downloaded to the local system with the name `DemoId`.

> **Note**
> The `DemoId` of the same function template varies in different regions. Please pay attention to the region selection when obtaining the `DemoId`.

HTTP-triggered Function FAQs

Last updated: 2023-09-28 17:10:18

What are the differences between HTTP-triggered Function and event function?

As a new function type, HTTP-triggered Function can be directly triggered by HTTP requests, breaking through the limit of JSON event format required by the current event function type. It has more flexible application scenarios and delivers a development experience much similar to that of native web services.

What are the use cases of HTTP-triggered Function?

HTTP-triggered Function focuses on optimization of web service scenarios and can directly send HTTP requests to URLs to trigger function execution. You can use SCF to develop web services or quickly migrate your local web framework to Tencent Cloud.

How is HTTP-triggered Function billed?

As a new type of SCF function, HTTP-triggered Function is billed in the same way as event function. Both of them are billed by the number of invocations, resource usage, and public network outbound traffic. For more information, please see Billing Overview.

What is a bootstrap file? How do I write it?

HTTP-triggered Function operates based on the built-in standard language image environment of the function. You must create an executable file named scf_bootstrap to start your Web Server. Then, package this file with your code files for deployment to complete the creation of the HTTP-triggered Function. When processing requests, your scf_bootstrap file will first start the service. After starting, your Web Server will receive all HTTP requests through the specified `9000` port and forward them to the backend service for logical processing and response to the user.

Can I simulate the cloud environment during local development?

Currently, the standard SCF runtime environment image has been opened up. For directions on how to use it, please see Using Container Image. You can select an appropriate image tag for local development and testing based on your actual development scenario. Before deploying a HTTP-triggered Function, please make sure that your project can be normally started in the local image.

Why don't some header requests work?

When sending an HTTP request, due to the interaction requirements and capability limitations between the function and the gateway, some header fields will be automatically filled in by the API Gateway and do not support user-defined configuration. The main fields are as follows:

- `connection` field
- Custom fields starting with `X-SCF-`

How to retrieve environment variables?

In the context of HTTP-triggered Functions, the method for retrieving environment variables is the same as that for event functions. For more details, please refer to Environment Variables.
For Python Runtime, if you wish to retrieve and print environment variables in the log, you need to add `-u` in the startup command parameters. The execution code is as follows:

```
python -u app.py
```

How do I quickly troubleshoot function execution failures?

You can quickly identify the cause of failure and find the solution based on the returned error code. For more information, please see Common Error Codes and Solutions.

Network FAQs

Last updated: 2023-09-27 14:42:29

Can I initiate network connections in my function code?

Yes. You can use general programming language and operating system features, such as initiating TCP and UDP connections. Through relevant language libraries, you can also perform operations such as connecting to databases and accessing APIs.

My TencentDB for Redis instance has only private network access. How do I connect SCF to it?

You can deploy a function to a VPC through which SCF can access resources in the private network.

After SCF is deployed to a VPC, how do I configure public network access?

There are several ways for a VPC to access the public network. For more information, see the NAT Gateway documentation.

Is the IP used for SCF to access the public network random or fixed?

It is random by default. You can also set a fixed public IP. For more information, please see Fixed Public Outbound IP.

Are there any network restrictions for serverless functions?

Yes, there are restrictions on the concurrent connections and internal network bandwidth for serverless functions.

- **Concurrent Connection Limit**
  The current limit for concurrent connections to the same IP:port is 60,000. Due to the release time of intermediate devices in short connections, the number of connections will further decrease in such cases. If you have multiple functions or multiple concurrent instances of the same function accessing the same IP:port, please be aware of this limit. You can avoid code errors caused by rapidly exhausting the number of connections by implementing the following solutions.
  - Use persistent connections as much as possible. During function initialization, complete and continuously reuse the connections. This avoids frequent connections and releases caused by the use of non-persistent connections during invocation. This measure gives full play to the supported connection count, but it is still limited by the connection count limit.

  - Provide multiple ip:port pairs. In this way, connections are spread to multiple ip:port pairs to avoid reaching the connection count limit.
- **Internal Network Bandwidth Limit**
  When a VPC connection is configured for internal network access, the current bandwidth for a specific VPC is 100MB. This bandwidth is shared by functions configured with the same VPC and multiple concurrent instances of the function. If you need to increase the internal network bandwidth, please contact Tencent Cloud Technical Consultant for application. For more details, please refer to Network Configuration Management.

Log FAQs

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Log Query Error: 'A query error has occurred'

This issue is usually caused by the incorrect index configuration of the log topic associated with the function. Reconfigure the index as instructed in Configuring index and try again.

> **Note**
> - It generally takes 60 seconds for the log index configuration to take effect.
> - The index configuration update only affects new input data.

Log Query Error: 'Server response timeout'

This API timeout issue is usually caused by the oversized logs of the log topic associated with the function. Please shorten the log query time frame and try again.

Issues Related To Status Codes FAQs

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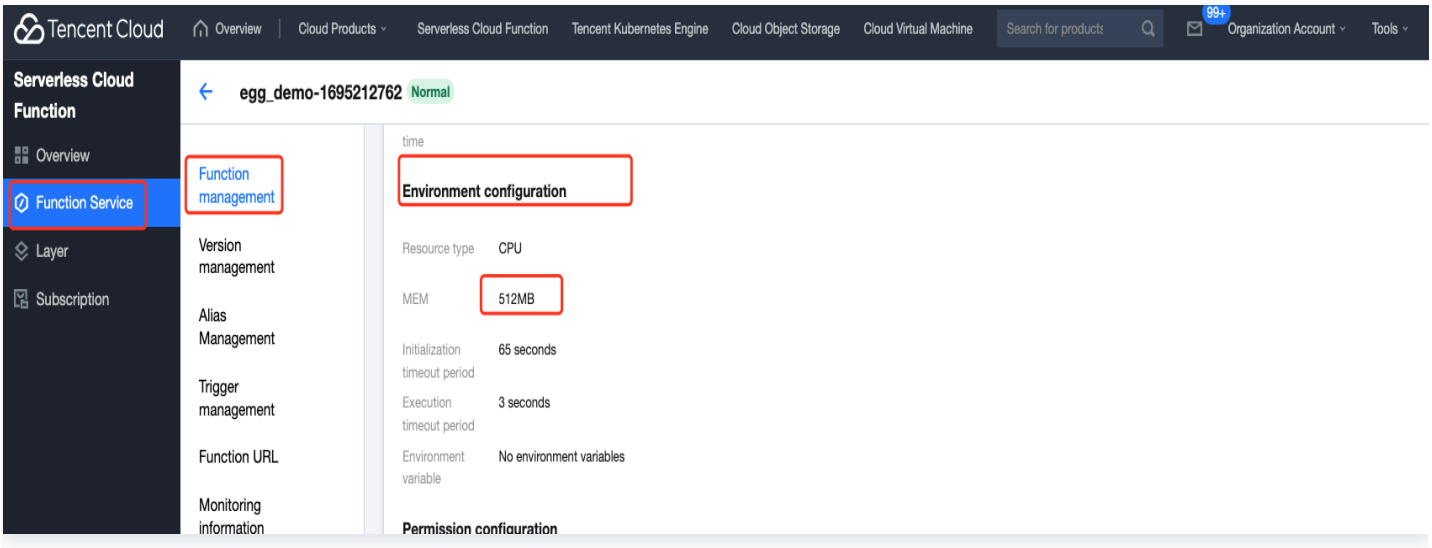
Troubleshooting Directions for 405 Status Code

If the cloud function execution returns a 405 error code, it typically involves a code issue. You can troubleshoot using the following steps:

1. Verify if the memory size allocated to the function is sufficient.

The configured memory size is 128MB, but the actual memory usage of the function exceeds this configuration, preventing the function from starting and causing a timeout.
Suggestion: Increase the memory configuration. You can log in to the Serverless Console, select the function, and increase the memory configuration on the **Function Management** page. As shown in the figure below:



2. Verify the listener port configuration.

The HTTP Server service within the container needs to listen on port 0.0.0.0:9000 (not 127.0.0.1:9000), rather than the host machine port outside the container.
Suggestion: Launch the container in your local environment and check if the service can start normally.

3. Check the permissions of the scf_bootstrap file.

Ensure that the permissions for the scf_bootstrap file are set to 755 or 777. Additionally, on Linux, you can try executing the `./scf_bootstrap` command. If the output is similar to the following, it is likely in DOS format:

```
[root@ src]# ./scf_bootstrap
bash: ./scf_bootstrap: /bin/bash^M: bad interpreter: No such file or directory
[root@ src]#
```

Suggestion: Open the scf_bootstrap file with the vim editor and execute the `:set ff` command to check the file format, verifying whether it is in UNIX format. If not, you can use the `:set fileformat=unix` command to change it to UNIX format.

4. Check the read and write permissions of other directories.

Only the tmp directory is writable, all other directories are read-only.
Suggestion: To troubleshoot locally, you can use the `docker diff` command to identify modified files.

5. Check for overwriting in the tmp read-write directory within the container image.

Upon startup, the container will overwrite the tmp directory, meaning the contents within the tmp directory of the original container image will be replaced. Files that the startup depends on should not be placed in the tmp directory.

API Gateway Trigger FAQs

Last updated: 2023-09-27 14:43:28

What should I do if SCF returns a 504 error?

1. Check the timeout period configured for the function and gateway and try to increase the gateway timeout period.
2. Configure logging as instructed in API Gateway Log Management and analyze logs to identify specific causes.

What should I do if SCF returns the "error":403,"error":"Invalid scf response format. please check your scf response format." error message?

API Gateway parses the return content of the cloud function and constructs an HTTP response based on the parsed content. By using an integrated response, you can control the status code, headers, and body content of the response through code, enabling custom format content responses, such as XML, HTML, JSON, or even JS content. When using an integrated response, you need to follow the data structure of the API Gateway trigger's integrated response return in order to be successfully parsed by API Gateway. Otherwise, you will encounter an error message like `{"errno":403,"error":"requestId xxx , Invalid scf response. expected scf response valid JSON."}`.

How do I use a custom domain name?

Users can bind their own independent domain names to the service through the domain name binding feature, allowing the service to be provided in the form of the user's own independent domain name. For details, refer to the API documentation Configure Custom Domain Name. After the domain name is configured, select **Use Existing API Service** to create an API Gateway trigger under the function where the custom domain name is to be used.

How can a function implement cross-origin resource sharing?

You can refer to Implementing Cross-Origin Resource Sharing with Tencent Cloud SCF and Tencent Cloud API Gateway for configuration.

Event Handling FAQs

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What is an Event Source?

An Event Source is a category of Tencent Cloud services or applications created by developers, designed to generate events that can trigger cloud functions.

What are the various Event Sources?

Currently supported triggers include: Manual (API), Scheduled, COS, CMQ Topic, API Gateway, Ckafka, among others. More trigger methods are being continuously added.

What is the latency of the function's response to events?

In regular requests, SCF can process response times within milliseconds. However, latency will increase during function creation, updates, or if it has not been triggered recently.

SCF Utility Class FAQs

Last updated: 2023-09-28 17:10:35

Installation Related

What to do if the setuptools version is outdated?

Manifestation:

```
error in scf setup command: 'install_requires' must be a string or list of strings
containing valid project/version requirement specifiers
```

Solutions:

```
pip install -U setuptools
```

What to do if the existing distutils package cannot be upgraded?

Manifestation:

```
Cannot uninstall 'PyYAML'. It is a distutils installed project and thus we cannot
accurately determine which files belong to it which would lead to only a partial
uninstall.
```

Solutions:

```
pip install -I PyYAML==x.x.x  # Check the specific version in requirements.txt
```

What to do if the six version is too low?

Manifestation:

```
pip "Cannot uninstall 'six'. It is a distutils installed project..."
```

Solutions:

```
sudo pip install six --upgrade --ignore-installed six
```

What to do if the pytz version is too low?

Manifestation:

```
uninstalling pytz : [error 1] Operation not permitted ...
```

Solution:

```
sudo pip install pytz --upgrade --ignore-installed six
```

Usage

When there are multiple function descriptions in the yaml configuration file, how can a specific function be designated for local debugging?

Manifestation:

```
Error: You must provide a function identifier (function's Logical ID in the template).
Possible options in your template: ['xxxB', 'xxxA']
```

Solution:
Invoke the local invoke command with the function name, as shown below:

```
scf local invoke -t template.yaml xxxA
```

What should I do if an [SSL: CERTIFICATE_VERIFY_FAILED] error occurs during deployment?

Manifestation:
When using deploy, the function deployment fails and prompts a certificate verification error. The error message is as follows:

```
[SSL: CERTIFICATE_VERIFY_FAILED]
```

Root Cause:
In the environment of Mac 10.12 + Python 3.6 and above, Python no longer reads system path certificates, leading to certificate reading failure and SSL verification failure when deploying Tencent Cloud API.
Solution:

In the Python installation directory, execute the `Install Certificates.command` script, which will automatically install the certifi package, resolving the certificate issue.