

# Resource Formation Service

## Service Overview

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# Security Declaration

## Vulnerability

Huawei's regulations on product vulnerability management are subject to the *Vul. Response Process*. For details about this process, visit the following web page:

<https://www.huawei.com/en/psirt/vul-response-process>

For vulnerability information, enterprise customers can visit the following web page:

<https://securitybulletin.huawei.com/enterprise/en/security-advisory>

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# 1 Basic Concepts

| Concept        | Description  |
|----------------|--|
| Resource       | A cloud service may have multiple types of resources, such as VPCs, VMs, microservice applications, or high-level data models like security policies and DNS records.  |
| Template       | A template is a text file written using HCL syntax and describes your cloud resources. Its format can be tf, tf.json, or zip. RFS creates cloud resources based on templates.  |
| Stack          | A stack is a collection of cloud service resources. It creates, deletes, updates, and queries all cloud service resources described in a template as a whole.  |
| Execution plan | An execution plan provides a preview of stack changes. It displays the comparison between the current template and online resources, and clearly shows the operations (such as addition, modification, and deletion) to be performed on resources and attributes during resource formation. Before executing a plan, you can preview it to check whether it meets your expectation. During execution, RFS creates and modifies resources as defined in the template. |

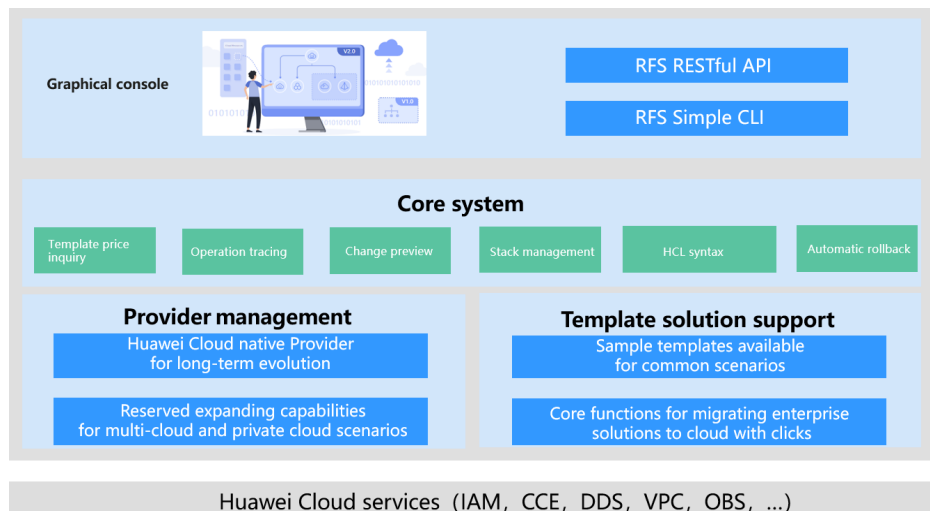
| <b>Concept</b> | <b>Description</b>  |
|----------------|---|
| Stack Set      | Entities that manage stack sets of resources under multiple accounts and regions in a unified manner. By deploying a stack set, you can deploy all stacks managed by the stack set to manage resources under multiple stacks. The stack set is an extension of the stack management function. |

# 2 What Is RFS?

Resource Formation Service (RFS) fully supports Terraform (HCL and Provider), which is a de facto standard. It manages system and service resources (all physical or logical entities that can be located and described, such as databases, VPCs, pipelines, and IAM roles). RFS automatically deploys specified cloud service resources based on the template which uses the HCL (an open ecosystem) syntax.

RFS focuses on automatically building Huawei Cloud resources in batches. It helps you create, manage, and upgrade required resources in an efficient, secure, and consistent manner, improving resource management efficiency and reducing security risks caused by resource management changes.

## Product architecture



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# 3 Advantages

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**Declarative:** You only need to intuitively describe the final state of required resources, freeing you from the complex request process and simplifying resource management.

**Idempotent:** The idempotent effect of invoking the resource description code for multiple times ensures that resources are not repeatedly applied for.

**Secure and reliable:** Visualized audit, security, and compliance control policies prevent security risks caused by resource changes.

**Rich ecosystem:** The southbound ecosystem supports mainstream Huawei Cloud services (90+ cloud services, 540+ resource objects). For details, see [HuaweiCloud Provider](#). The northbound ecosystem is fully compatible with the HCL syntax, eliminating a learning curve.

**Easy to use:** Wizard-based operations, comprehensive documentation, and sample auxiliary system help you to manage resources in five steps.

**Full hosting and cloud-based services:** You do not need to install any software, prepare executors, or manage underlying files and data.

**Automatic rollback:** If deployment fails for resources, RFS automatically returns the status of all resources to that of the previous successful deployment.



# 4 Application Scenarios

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## Migrating Applications to the Cloud

### Description

Migrating applications to the cloud involves repetitive manual work, such as the destruction and rebuild of environments and configuring new instances one by one when scaling out applications. These manual operations are error-prone.

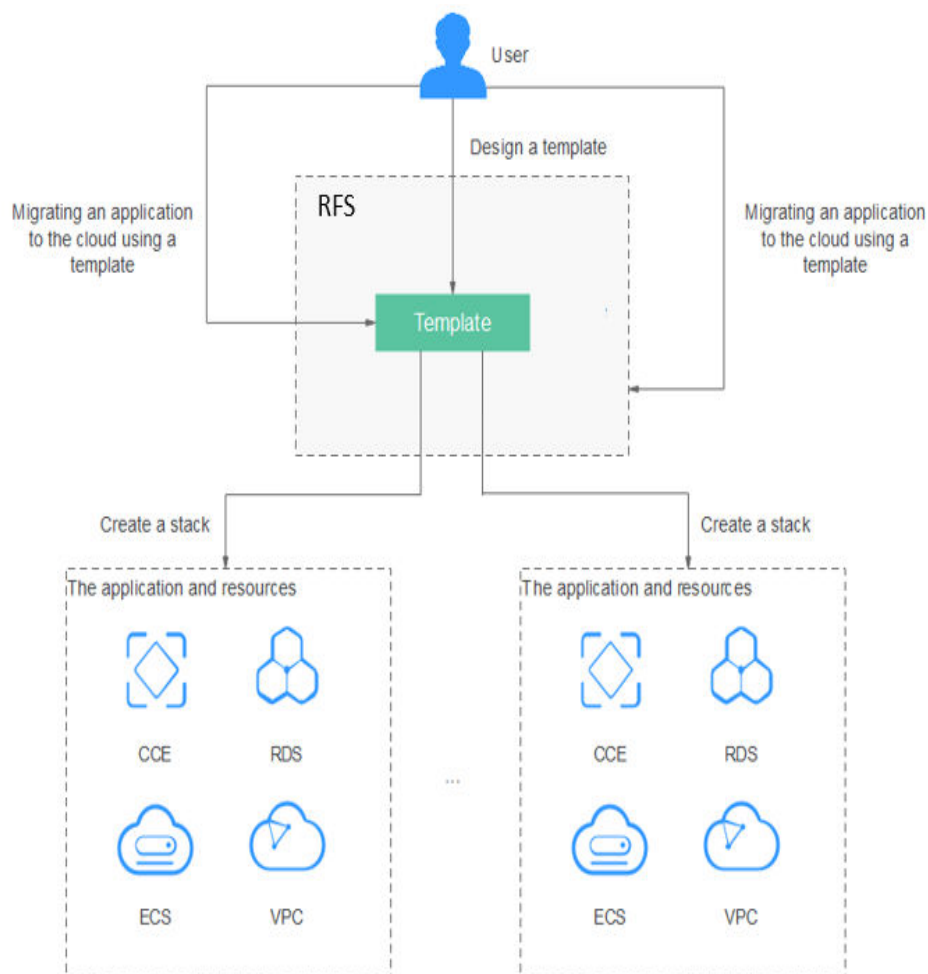
Some operations, such as creating databases or VMs, could be time-consuming. You may have to wait for a long time when these demanding operations need to be performed one by one.

### Solution

RFS implements tool-based and process-based work for the preceding scenarios. It uses templates to describe resources required by applications in a unified manner. The stack management function enables automatic deployment or destruction for various resources. RFS allows you to define a large number of resource instances of different services and specifications in a template. You can also use RFS to realize automatic creation, quick deployment, and flexible configuration of resources.

### Advantages

- **Easy to use**  
Design your applications and schedule resources by writing templates. Organize and manage the service easily and efficiently.
- **Highly efficient**  
Automatically deploy or delete a template with a wizard to reduce repetitive work and manual misoperations.
- **Quick replication of applications**  
Replicate a template to automatically deploy the same applications and resources to different data centers, improving efficiency.

**Figure 4-1** Migrating applications to the cloud

## ISV Resource Provisioning

### Description

Independent software vendors (ISVs) need to deploy resources required by software on the cloud for their customers to use. The traditional delivery method is that ISVs provide the software code and platform building guides on their official websites for customers to download. This could be time demanding and costly, because ISVs have to configure networks, deliver resources, and deploy software all on themselves.

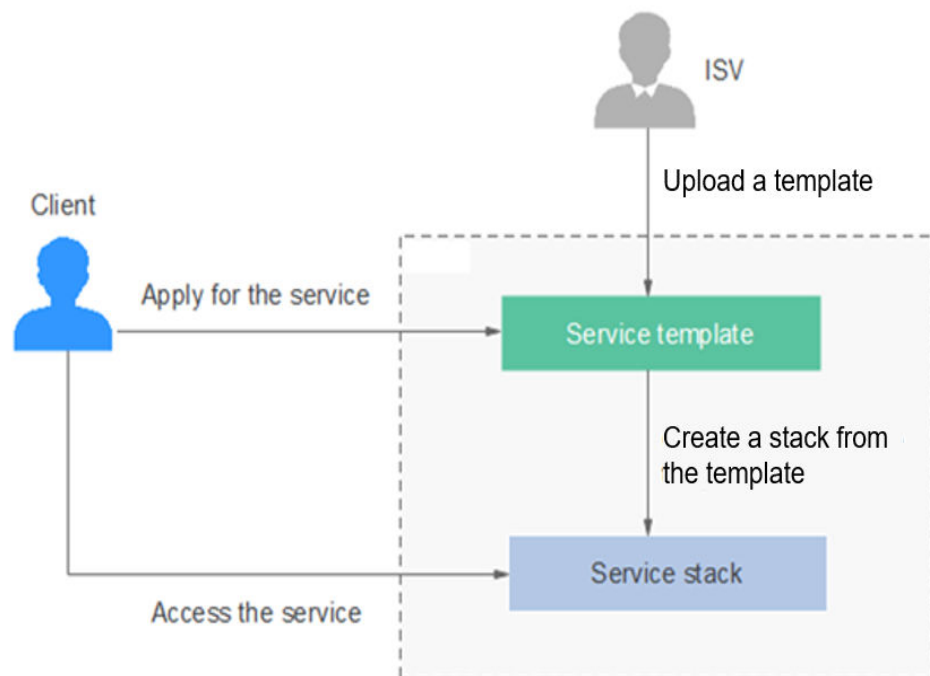
### Solution

RFS enables ISVs to deliver software and required resources in a standard manner. ISVs can convert software services to templates. The stack deployment capability of RFS enables quick service provisioning and streamlines the delivery process. RFS uses a code template to describe the entire delivery environment, facilitating ISVs to integrate delivery with the CI/CD process.

### Advantages

- **Standardized delivery**  
Templates and stacks standardize software delivery processes, which can be summarized into best practices for wider use.
- **Better efficiency**  
Templates are used to automatically provision resources. ISVs only need to deploy stacks to complete service delivery, improving delivery efficiency.
- **Error-proof creation**  
ISV software and resources required for the software are defined in a template to prevent mistakes introduced through manual work.
- **CI/CD integration**  
RFS can be integrated into the existing tool chain to improve automation.

Figure 4-2 ISV resource provisioning scenario



# 5 Constraints and Limitations

## Permissions

To use RFS, [create an agency](#).

## Quotas

RFS limits the number of stacks for a single user, as shown in the following table.

To increase the quota, [create a service ticket](#). For more information on quotas, see [Quotas](#).

| Resource | Item  | Quota                    |
|----------|---|--------------------------|
| Template | Maximum number of templates that can be created by a Huawei Cloud account   | 100                      |
|          | Maximum length of a template name   | 128 characters           |
|          | Maximum length of a template file name  | 255 bytes                |
|          | Maximum length of a template URL  | 2048 bytes               |
|          | Maximum size of the file pointed to by the <b>template_uri</b> used in APIs for creating a template or a template version | 1 MB after decompression |

| Resource       | Item  | Quota          |
|----------------|---|----------------|
|                | Maximum size of the file containing <b>template_body</b> used in APIs for creating a template or template version | 50 KB          |
| Stack          | Maximum number of stacks that can be created by a Huawei Cloud account  | 100            |
|                | Timeout interval for creating a stack   | 6 hours        |
|                | Maximum length of a stack name  | 128 characters |
| Execution plan | Maximum length of an execution plan name  | 255 bytes      |
|                | Maximum number of execution plans that can be created in each stack   | 100            |
| Stack set      | Maximum number of stack sets that can be created by a Huawei Cloud account  | 100            |
|                | Maximum number of stack instances that can be created in each stack set   | 100            |
|                | Maximum run time of a stack set operation   | 6 hours        |

# 6 Supported Provider Versions

A Provider is a plug-in that encapsulates various resource APIs (such as CRUD APIs of resources) for the resource formation engine to call.

The following table lists the Provider types and versions supported by RFS.

| Type                           | Introduction   | Version                | Number of Supported Services | Number of Supported Resources |
|--------------------------------|--|------------------------|------------------------------|-------------------------------|
| terraform-provider-huaweicloud | Users can use HuaweiCloud Provider to interact with various resources on Huawei Cloud. Before using the provider, configure the corresponding permissions. | <a href="#">1.67.1</a> | 96                           | 664                           |
|                                |  | <a href="#">1.66.3</a> | 96                           | 641                           |
|                                |  | <a href="#">1.66.2</a> | 96                           | 637                           |
|                                |  | <a href="#">1.66.0</a> | 96                           | 634                           |
|                                |  | <a href="#">1.64.4</a> | 95                           | 603                           |
|                                |  | <a href="#">1.61.1</a> | 94                           | 525                           |
|                                |  | <a href="#">1.59.1</a> | 92                           | 474                           |
|                                |  | <a href="#">1.58.0</a> | 92                           | 461                           |
|                                |  | <a href="#">1.57.0</a> | 91                           | 426                           |
|                                |  | <a href="#">1.56.0</a> | 91                           | 413                           |
|                                |  | <a href="#">1.54.1</a> | 88                           | 388                           |
|                                |  | <a href="#">1.52.0</a> | 87                           | 367                           |
|                                |  | <a href="#">1.50.0</a> | 86                           | 350                           |
|                                |  | <a href="#">1.49.0</a> | 83                           | 346                           |
|                                |  | <a href="#">1.48.0</a> | 82                           | 324                           |
| <a href="#">1.47.1</a>         | 82   | 296                    |                              |                               |

| Type | Introduction | Version | Number of Supported Services | Number of Supported Resources |
|------|--------------|---------|------------------------------|-------------------------------|
|      |              | 1.46.0  | 83                           | 282                           |
|      |              | 1.44.1  | 80                           | 270                           |
|      |              | 1.43.0  | 71                           | 252                           |
|      |              | 1.42.0  | 68                           | 236                           |
|      |              | 1.41.0  | 63                           | 225                           |
|      |              | 1.40.2  | 63                           | 225                           |
|      |              | 1.40.1  | 63                           | 225                           |
|      |              | 1.40.0  | 63                           | 225                           |
|      |              | 1.39.0  | 63                           | 221                           |
|      |              | 1.38.2  | 33                           | 117                           |
|      |              | 1.38.1  | 33                           | 117                           |

# 7 Security

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## 7.1 Shared Responsibilities

Huawei guarantees that its commitment to cyber security will never be outweighed by the consideration of commercial interests. To cope with emerging cloud security challenges and pervasive cloud security threats and attacks, Huawei Cloud builds a comprehensive cloud service security assurance system for different regions and industries based on Huawei's unique software and hardware advantages, laws, regulations, industry standards, and security ecosystem.

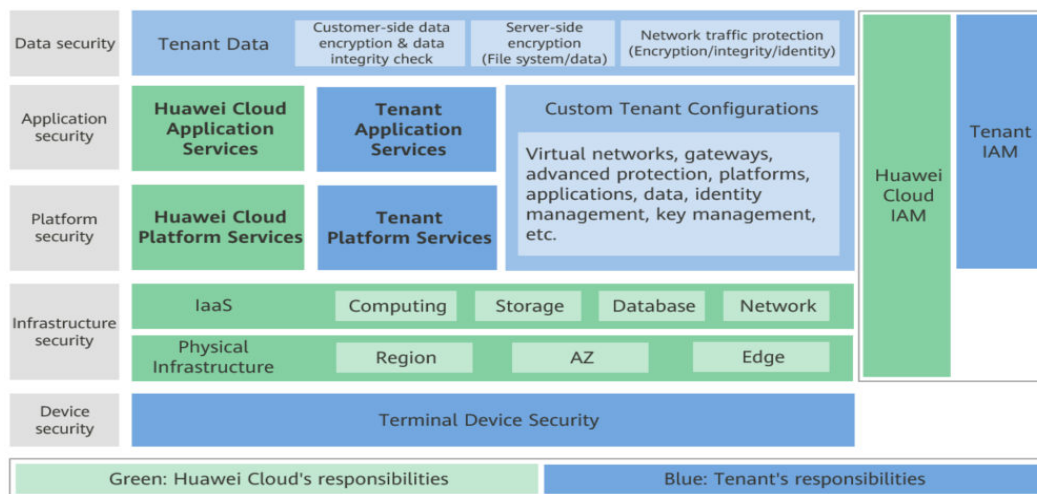
**Figure 1** illustrates the responsibilities shared by Huawei Cloud and users.

- Huawei Cloud: ensures the security of cloud services and provides secure clouds. Huawei Cloud's security responsibilities include ensuring the security of our IaaS, PaaS, and SaaS services, as well as the physical environments of the Huawei Cloud data centers where our IaaS, PaaS, and SaaS services operate. Huawei Cloud is responsible for not only the security functions and performance of our infrastructure, cloud services, and technologies, but also for the overall cloud O&M security and, in the broader sense, the security compliance of our infrastructure and services.
- Tenant: uses the cloud securely. Tenants of Huawei Cloud are responsible for the secure and effective management of the internal security as well as the tenant-customized configurations of cloud services including IaaS, PaaS, and SaaS. This includes but is not limited to operating systems like virtual networks, virtual machine host and guest virtual machines, virtual firewall, API Gateway and advanced security services, all types of cloud services, tenant data, identity accounts, and key management.

**Huawei Cloud Security White Paper** elaborates on the ideas and measures for building Huawei Cloud security, including cloud security strategies, the shared responsibility model, compliance and privacy, security organizations and personnel, infrastructure security, tenant service and security, engineering security, O&M security, and ecosystem security.



Figure 7-1 Huawei Cloud shared security responsibility model



## 7.2 Identity Control and Access Control

### Identity authentication

Tenants can use RFS through the console or by calling APIs.

#### 1. Identity authentication on the console

RFS is interconnected with Identity and Access Management (IAM) to manage tenant identity authentication and access using IAM permissions.

IAM is a basic service of Huawei Cloud that provides permissions management to help you securely control access to RFS. With IAM, you can add users to a user group and configure policies to control their access to RFS resources. IAM permissions define which actions on your cloud resources are allowed and which actions are denied in a fine-grained manner, to control access to your RFS resources.

#### 2. Identity authentication by calling APIs

All APIs can only be accessed by authenticated requests. An authenticated request must contain a signature value. The signature value is calculated based on the access key (AK/SK) of the requester and the specific information carried in the request body. supports AK/SK authentication. It uses AK/SK-based encryption to authenticate requests. For details about access keys and how to obtain them, see [Authentication](#).

## 7.3 Audit and Logging

### Audit

Cloud Trace Service (CTS) records operations on the cloud resources in your account. You can use the logs generated by CTS to perform security analysis, trace resource changes, audit compliance, and locate faults.

For details about RFS operations supported by CTS, see [RFS Operations Supported by CTS](#).

## Logging

After you enable CTS and configure a tracker, CTS can record RFS operations for auditing. You can search for RFS traces in the trace list on the CTS console to view RFS audit logs.

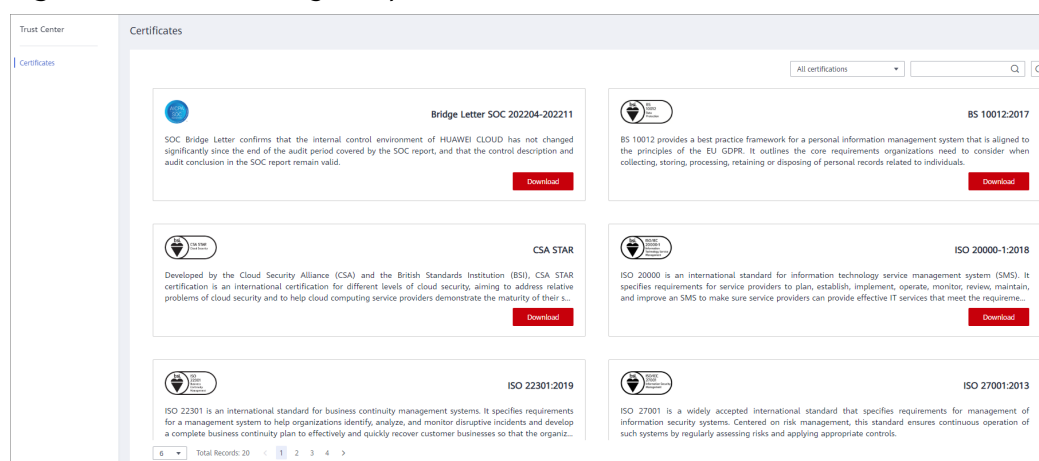
For details about how to view audit logs, see [Viewing Logs in CTS](#).

# 7.4 Certificates

## Compliance Certificates

Huawei Cloud services and platforms have obtained various security and compliance certifications from authoritative organizations, such as International Organization for Standardization (ISO), system and organization controls (SOC), and Payment card industry (PCI) compliance standards. These certifications are available for [download](#).

**Figure 7-2** Downloading compliance certificates



## Resource Center

Huawei Cloud also provides the following resources to help users meet compliance requirements. For details, see [Resource Center](#).

Figure 7-3 Resource center

