

Resource Formation Service

Service Overview

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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.

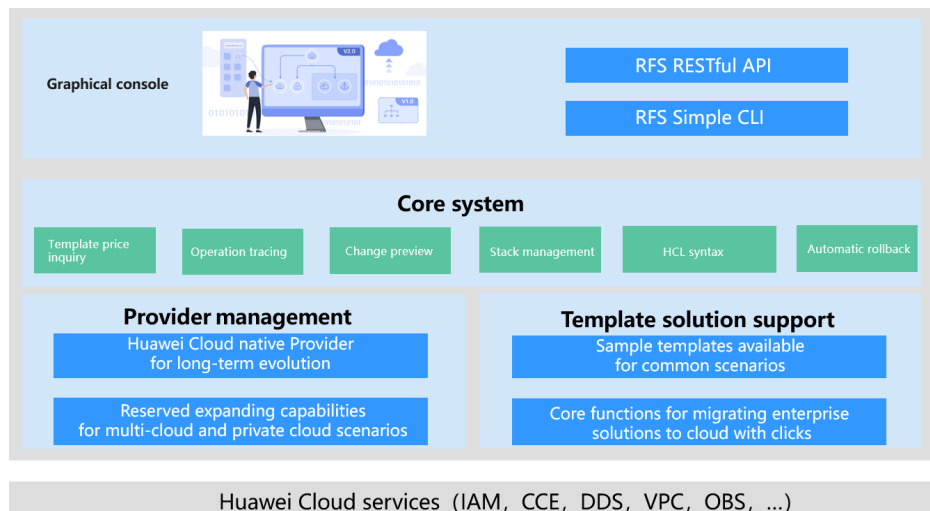
Concept	Description
Stack Set	Entities that manage stack sets of resources under multiple accounts and regions in a unified manner. By deploying a stack set, you can deploy all stacks managed by the stack set to manage resources under multiple stacks. The stack set is an extension of the stack management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



3 Advantages

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

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.

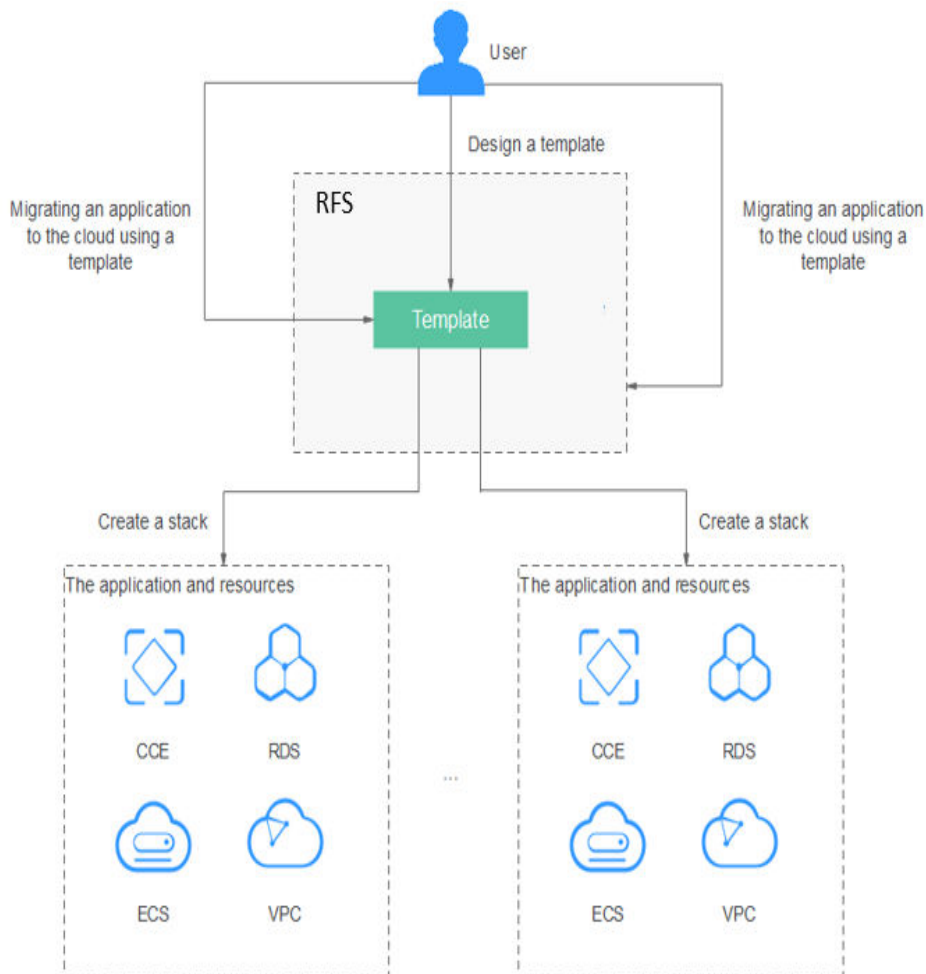
Solution

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.

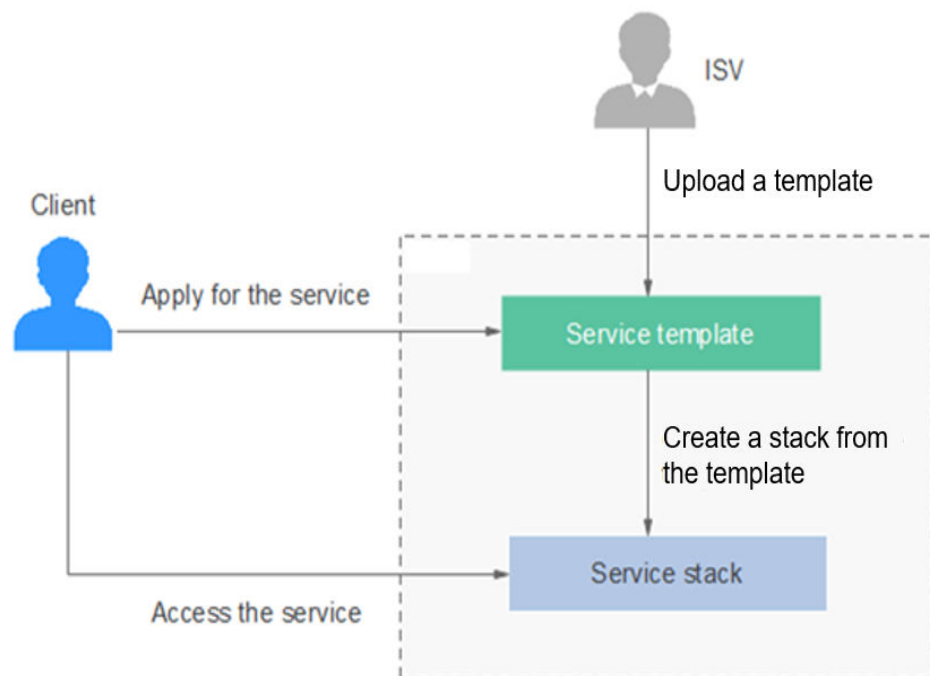
Solution

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 template_uri used in APIs for creating a template or a template version	1 MB after decompression

Resource	Item	Quota
	Maximum size of the file passed by template_body 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.	1.72.1	96	846
		1.71.1	96	800
		1.70.2	97	746
		1.70.1	97	746
		1.69.1	97	730
		1.68.1	96	687
		1.67.1	96	664
		1.66.3	96	641
		1.66.2	96	637
		1.66.0	96	634
		1.64.4	95	603
		1.61.1	94	525
		1.59.1	92	474
		1.58.0	92	461
		1.57.0	91	426
1.56.0	91	413		

Type	Introduction	Version	Number of Supported Services	Number of Supported Resources
		1.54.1	88	388
		1.52.0	87	367
		1.50.0	86	350
		1.49.0	83	346
		1.48.0	82	324
		1.47.1	82	296
		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