Resource Formation Service

Template Reference

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1.1 Templates

RFS consists of templates and stacks. A stack is a collection of Huawei Cloud resources and created by users on RFS. A template is a script used to create and update stacks.

1.2 Syntax

1.2.1 Basic Syntax

The RFS configuration language is easy, highly readable, and compatible with the HCL and JSON syntax. This section describes the basic syntax and common functions of the HCL.

The RFS configuration language consists of arguments, blocks, expressions, and functions.

Arguments

Use an equal sign (=) to assign a value or expression to a particular name, which can contain letters, digits, underscores (_), and hyphens (-), but cannot start with a digit. For example:

```
image_id = "ad091b52-742f-469e-8f3c-fd81cadf0743"
```

Blocks

Aggregate multiple arguments and can contain another blocks. A block consists of type, label, and body. The format is as follows:

```
resource "myinstance" {
  name   = "myinstance"
   ......
   network {
      uuid = "55534eaa-533a-419d-9b40-ec427ea7195a"
   }
}
```

Before using a block, you must declare its type (**resource** and **network** in this example), where **resource** is the top-level block type and **network** is the nested block type. The top-level block type keywords supported by the HCL include **provider**, **resource**, **data**, **variable**, **output**, **module**, and **locals**.

Block labels are defined after the block type, and the number of block labels is determined by the block type. In the example, the **resource** block type expects one label: **myinstance**. The nested **network** type does not have block labels. The block body is defined at the last and delimited by the **{** and **}** characters. Other types can be nested in the block body to implement different layered structures.

Argument Types

The HCL supports the following argument types:

Basic types

- **string**: consists of one or more Unicode characters, for example, **hello**.
- **number**: can be an integer or a floating point number.
- **bool**: can only be **true** or **false**.

The HCL can automatically convert the **number** and **bool** types to the **string** type based on the argument type. If a string can be represented as a value of the **number** or **bool** type, it can also be converted to the other two types. Arguments of the three types can be directly assigned values. For example:

```
disk_type = "SSD"
disk_size = 40
enable    = true

# Strings can be of the number and bool types.
disk_size = "40"
enable    = "true"
```

Set types

- **map(...)**: a set of data elements combined using key-value pairs. The **key** is of the **string** type, while the **value** can be of the **string**, **number**, or **bool** type. The values of all elements must be of the same type.
- **list(...)**: a set of data elements of the same type. The elements can be of the basic type or block type. The list index starts from 0.
- **set(...)**: similar to the **list** type. Elements in a set are unique and do not have any auxiliary identifier or sequence.

The **map** type is delimited in **{** and **}** and has flexible types. Key-value pairs can be connected using equal signs (=) or colons (:). If a key does not start with a digit, double quotation marks (") are not required. For multi-line mapping, key-value pairs can be separated by newline characters or commas (,). You are advised to use equal signs (=) to connect key-value pairs and separate them with newline characters. For example:

```
# Recommended format
tags = {
  foo = "bar"
  key = "value"
}

# Other formats
tags = {"foo" = "bar", "key" = "value"}
tags = {"foo" : "bar", "key" : "value"}
tags = {foo = "bar", key = "value"}
tags = {foo : "bar", key : "value"}
tags = {
  foo : "bar"
  key : "value"
}
```

The list type and set type are represented in the same way. The list/set whose elements are of the basic type is delimited using **[** and **]**, and the list/set whose elements are of the block type is represented in the form of repeated blocks. For example:

```
# List whose elements are of the basic type
security_groups = ["default", "internal"]

# List whose elements are of the block type
network {
  uuid = "55534eaa-533a-419d-9b40-ec427ea7195a"
}
network {
  uuid = "ad091b52-742f-469e-8f3c-fd81cadf0743"
}
```

Special types

- **null**: If a parameter is set to null, the parameter has no specified value. The HCL automatically ignores the parameter and uses the default value. Null is common in conditional expressions, for example, **var.test==""? null: var.test**, indicating that when the value of **var.test** is **""**, it is ignored.

Other Syntax

- A single-line comment starts with **#** or **//**.

- **/*** and ***/** are start and end delimiters for a comment that might span over multiple lines. Nested block comments are not supported.

- Terraform configuration files are UTF-8 encoded. Terraform accepts non-ASCII characters in identifiers, comments, and string values.

- A multi-line string starts with **<<EOF**, contains the string content in the middle, and ends with **EOF**. **EOF** can also be replaced with other characters. For example:

```
...
website {
  ...
  routing_rules = <<EOF
[{
    "Condition": {
        "KeyPrefixEquals": "docs/"
    },
    "Redirect": {
        "ReplaceKeyPrefixWith": "documents/"
    }
}]
```

```
            EOF
    }
  }
```

1.2.2 Style Conventions

Style Conventions

The HCL has some idiomatic style conventions for consistency between files and modules written by different teams. The conventions are recommended for users to follow. They are as follows:

- Indent two spaces for each nesting level.

- When multiple arguments with single-line values appear on consecutive lines at the same nesting level, align their equals signs (=).
```
name            = "myinstance"
security_groups = ["default", "internal"]
```

- Use empty lines to separate logical groups of arguments within a block.

- When both arguments and blocks appear together inside a block body, place all of the arguments together at the top and then place nested blocks below them. Use one blank line to separate the arguments from the blocks.

- List meta-arguments at the top of the block body and separate them from other arguments with one blank line. Place meta-argument blocks at the end of the block body and separate them from other blocks with one blank line.
```
  count = 1

  bucket = "bucket_demo"
  acl    = "public-read"

  tags = {
    foo = "bar"
    env = "test"
  }

  lifecycle {
    create_before_destroy = true
  }
}
```

- Top-level blocks should always be separated from one another by one blank line.

- Nested blocks of the same type should be grouped together, while those of different types should be separated by blank lines.

Reference

https://www.terraform.io/docs/configuration/style.html

1.2.3 Expressions

Expressions refer to or compute values within a configuration. The simplest expressions are just literal values, like **hello world** or **5**. Terraform allows multiple expressions such as operators, conditional expressions, and built-in functions.

You can experience and test expressions and built-in functions using the Terraform expression console, by running the **terraform console** command.

Operators

Operators perform specific mathematical or logical operations. Terraform supports the following types of operators:

- Arithmetic operators: expect number values and produce number values as results, including +, - (subtraction), *, /, %, and - (multiplication by -1).
- Equality operators: both take two values of any type and produce bool values as results, including == and ! =.
- Comparison operators: expect number values and produce bool values as results, including >, >=, <, and <=.
- Logical operators: expect bool values and produce bool values as results, including ||, &&, and !.

When multiple operators are used together in an expression, they are evaluated in the following order of operations:

1. !, - (multiplication by -1)
2. *, /, %
3. +, - (subtraction)
4. >, >=, <, <=
5. ==, !=
6. &&
7. ||

Conditional Expressions

A conditional expression uses the value of a bool expression to select one of two values. The syntax is as follows:

```
condition ? true_value : false_value
```

This statement indicates that if **condition** is **true**, the result is **true_value**. Otherwise, the result is **false_value**. The result of a conditional expression can be of any type, but the types of **true_value** and **false_value** must be the same. A common use of conditional expressions is to define defaults to replace invalid values:

```
var.a != "" ? var.a : "default-a"
```

This statement indicates that if **var.a** is not empty, the actual value of **var.a** is returned. Otherwise, the result is **default-a**.

For Expressions

A for expression creates a set type by traversing and transforming each element in another set type (map, list, or set). The type of brackets around the for expression decide what type of result it produces.

- Using **[** and **]** will generate a list.
- Using **{** and **}** will generate a map or object.

Assume that the value of **mylist** is **["AA", "BBB", "CCCC"]**. You can use the for expression to convert each string element in **mylist** to lowercase and output another list.

```
> [for str in var.mylist : lower(str)]
[
  "aa",
  "bbb",
  "cccc",
]
```

You can also output a map, which is determined by =>:

```
> {for str in var.mylist : str => lower(str)}
{
  "AA" = "aa"
  "BBB" = "bbb"
  "CCCC" = "cccc"
}
```

The for expression can also convert a map. Assume that the value of **mymap** is **{element1="aaa", element2="bbb", element3="ccc"}**. You can convert each value in the map to uppercase.

```
> {for key, value in var.mymap : key => upper(value)}
{
  "element1 = "AAA"
  "element2 = "BBB"
  "element3 = "CCC"
}
```

In addition, the for expression can use the if clause to filter elements:

```
> [for str in var.list : upper(str) if length(str) >= 3]
[
  "bbb",
  "cccc",
]
```

Reference

https://www.terraform.io/docs/configuration/expressions.html

1.2.4 Common Functions

The HCL supports various built-in functions you can call by function name for processing strings, calculating values, encrypting values, and converting types. The syntax is as follows:

```
<Function name>(<Argument 1>, <Argument 2>...)
```

This section summarizes common functions in HCL and uses examples to describe their usage. For details about the complete list of supported functions, see **Terraform Functions**.

String Functions

Table 1-1 String functions

Name	Description	Example Value	Output
format	Produces a string by formatting a number of other values according to a specification string.	format("Hello, %s!", "cloud")	Hello, cloud!
lower	Converts all letters in the given string to lowercase.	lower("HELLO")	hello
upper	Converts all letters in the given string to uppercase.	upper("hello")	HELLO
join	Produces a string by concatenating together all elements of a given list of strings with the given delimiter.	join(", ", ["One", "Two", "Three"])	One, Two, Three
split	Produces a list by dividing a given string at all occurrences of a given separator.	split(", ", "One, Two, Three")	["One", "Two", "Three"]
substr	Extracts a substring from a given string by offset and length.	substr("hello world!", 1, 4)	ello
replace	Searches a given string for another given substring, and replaces each occurrence with a given replacement string.	replace("hello, cloud!", "h", "H")	Hello, cloud!

Numeric Functions

Table 1-2 Numeric functions

Name	Description	Example Value	Output
abs	Returns the absolute value of the given number.	abs(-12.4)	12.4

Name	Description	Example Value	Output
max	Takes one or more numbers and returns the greatest number from the set.	max(12, 54, 6) max([12, 54, 6]...)	54 54
min	Takes one or more numbers and returns the smallest number from the set.	min(12, 54, 6) min([12, 54, 6]...)	6 6
log	Returns the logarithm of a given number in a given base.	log(16, 2)	4
power	Calculates an exponent, by raising its first argument to the power of the second argument.	power(3, 2)	9

Collection Functions

Table 1-3 Collection functions

Name	Description	Example Value	Output
element	Retrieves a single element from a list by an index.	element(["One", "Two", "Three"], 1)	Two
index	Finds the element index for a given value in a list. If the given value is not present in the list, an error is reported.	index(["a", "b", "c"], "b")	1
lookup	Retrieves the value of a single element from a map, given its key. If the given key does not exist, the given default value is returned instead.	lookup({IT="A", CT="B"}, "IT", "G") lookup({IT="A", CT="B"}, "IE", "G")	A G
flatten	Replaces any elements that are lists with a flattened sequence of the list contents.	flatten([["a", "b"], [], ["c"]])	["a", "b", "c"]

Name	Description	Example Value	Output
keys	Returns a list containing the keys from a map.	keys({a=1, b=2, c=3})	["a", "b", "c"]
length	Determines the length of a given list, map, or string.	length(["One", "Two", "Three"]) length({IT="A", CT="B"}) length("Hello, cloud!")	3 2 13

Type Conversion Functions

Table 1-4 Type conversion functions

Name	Description	Example Value	Output
toset	Converts a list value to a set value.	toset(["One", "Two", "One"])	["One", "Two"]
tolist	Converts a set value to a list value.	toset(["One", "Two", "Three"])	["One", "Two", "Three"]
tonumber	Converts a string value to a number value.	tonumber("33")	33
tostring	Converts a number value to a string value.	tostring(33)	"33"

Encoding Functions

Table 1-5 Encoding functions

Name	Description	Example Value	Output
base64encode	Encodes a UTF-8 string using Base64.	base64encode("Hello, cloud!")	SGVsbG8sIGNsb3VkIQ==
base64decode	Decodes a Base64-encoded string to its original UTF-8 string. (If the bytes after Base64 decoding are not valid UTF-8, an error is reported.)	base64decode("SGVsbG8sIGNsb3VkIQ==")	Hello, cloud!

Name	Description	Example Value	Output
base64gzip	Compresses a UTF-8 string with gzip and then encodes the result using Base64.	base64gzip("Hello, cloud!")	H4sIAAAAAAAA// JIzcnJ11FIzskvTVEEAA AA//8BAAD// wbrhYUNAAAA

Hash and Crypto Functions

Table 1-6 Hash and crypto functions

Name	Description	Example Value	Output
sha256	Computes the SHA256 hash (hexadecimal) of a given string.	sha256("Hello, cloud!")	0ad167d1e3ac8e9f4e4f7ba8 3e92d0e3838177e95985863 1c770caaed8cc5e3a
sha512	Computes the SHA512 hash (hexadecimal) of a given string.	sha512("Hello, cloud!")	6eb6ed9fc4edffaf90e742e7 697f6cc7d8548e98aa4d5aa 74982e5cdf78359e84a3ae9f 226313b2dec765bf1ea4c83 922dbfe4a61636d585da44ff bd7e900f56
base64sha256	Computes the SHA256 hash of a given string and encodes it using Base64.	base64sha256("Hello, cloud!")	CtFn0eOsjp9OT3uoPpLQ44 OBd+lZhYYxx3DKrtjMXjo=
base64sha512	Computes the SHA512 hash of a given string and encodes it using Base64.	base64sha512("Hello, cloud!")	brbtn8Tt/ 6+Q50LnaX9sx9hUjpiqTVqn SYLlzfeDWehKOunyJjE7Lex2 W/HqTIOSLb/kphY21YXaRP +9fpAPVg==
md5	Computes the MD5 hash of a given string.	md5("hello world")	5eb63bbbe01eeed093cb22b b8f5acdc3

☐ NOTE

The output of **base64sha512("Hello, cloud!")** is not equal to that of **base64encode(sha512("Hello, cloud!"))**, because the hexadecimal output of **sha512** is Unicode-encoded in Terraform, not UTF-8.

Filesystem Functions

Table 1-7 Filesystem functions

Name	Description	Example Value	Output
abspath	Converts a string containing a filesystem path to an absolute path.	abspath("./hello.txt")	/home/demo/test/terraform/hello.txt
dirname	Removes the last portion from a string containing a filesystem path.	dirname("foo/bar/baz.txt")	foo/bar
basename	Removes all except the last portion from a string containing a filesystem path.	basename("foo/bar/baz.txt")	baz.txt
file	Reads the contents of a file at the given path and returns them as a string.	file("./hello.txt")	Hello, cloud!
filebase64	Reads the contents of a file at the given path and returns them as a Base64-encoded string.	filebase64("./hello.txt")	SGVsbG8sIGNsb3VkIQ==

1.3 Configuration Guide

1.3.1 Provider

Provider

The Terraform configuration file ends with .tf or .tf.json and consists of **providers**, **resources**, **data sources**, and **variables**.

Each provider represents a service provider. Terraform interacts with providers through plug-ins. A service provider is declared using the keyword **provider**. For details about the provider configuration parameters, see .

When you run the **terraform init** command, the plug-in required is downloaded. By default, the plug-in of the latest version is downloaded from the official Terraform registry. For Terraform of versions later than 0.13, you can use **required_providers** to specify the registry source and version of a provider.

1.3.2 Resources

Resources are the most important element in the Terraform language and are declared using the keyword **resource**. Each cloud service supported by the provider corresponds to one or more resources. For example, indicates ECS, and indicates VPC.

Resource Reference

You can use an expression to reference a resource attribute in the format of ***<Resource type>.<Name>.<Attribute>***. Assume that a **huaweicloud_compute_instance** resource named **myinstance** has been created. The following is an example:

```
# Instance ID
> huaweicloud_compute_instance.myinstance.id
55534eaa-533a-419d-9b40-ec427ea7195a

# Instance security group
> huaweicloud_compute_instance.myinstance.security_groups
["default", "internet"]

# IP address of the first NIC of the instance
> huaweicloud_compute_instance.myinstance.network[0].fixed_ip_v4
192.168.0.245

# IP addresses of all NICs of the instance
huaweicloud_compute_instance.myinstance.network[*].fixed_ip_v4
["192.168.0.24", "192.168.10.24"]

# Value of the tag key
> huaweicloud_compute_instance.myinstance.tags["key"]
value
```

1.3.3 Data Source

Data Source

A data source can be considered as a special resource and is declared using the keyword **data**. A data source is used to query the attributes and information of existing resources. For example, you can query the image ID and other attributes based on the image name of .

After an image is found, other resources can reference the attributes of the image to use it. The reference format is **data.*<Data type>.<Name>.<Attribute>***.

1.3.4 Variables

1.3.4.1 Input Variables

Input variables are like arguments for a module. They are declared using the keyword **variable**. By defining input variables, you can flexibly modify the configuration without altering the source code of the module. You can use default values, CLI options, or environment variables to set the input variables' values.

Defining Input Variables

By convention, input variables are defined in a file named **variables.tf**. The input variable is declared using the keyword **variable**:

```
variable "iamge_id" {
  type        = string
  description = "image id of Ubuntu 1804"
}

variable "availability_zone_name" {
  type    = string
  default =
}
```

The label after the **variable** keyword is the name of the input variable, which must be unique among all variables in the same module. The name of a variable can be any valid identifier other than a reserved keyword. The reserved keywords include:

```
source   version   providers   count   for_each   lifecycle   depends_on   locals
```

A **variable** block contains the following arguments:

- **type**: specifies the type of a variable. The default value is **string**.

- **description**: describes the usage of a variable.

- **default**: specifies the default value of a variable. A variable with a default value can be regarded as an optional variable.

- **validation** block: specifies the customized validation rules of a variable.

If no variable type is specified, the default value **string** is used. You are advised to explicitly specify variable types; they can serve as helpful reminders for users of the module, and they allow Terraform to return a helpful error message if the wrong type is used. Terraform input variables support the following types:

- Basic types: string, number, and bool

- Compound types: list(<TYPE>), set(<TYPE>), map(<TYPE>)

The following example defines a variable of the compound type:

```
variable "availability_zone_names" {
  type    = list(string)
  default = []
}

variable "docker_ports" {
  type = list(object({
    internal = number
    external = number
    protocol = string
  }))
  default = [{
    internal = 8300
    external = 8300
    protocol = "tcp"
  }]
}
```

Custom Validation Rules

You can use the **validation** nested block to specify custom validation rules for an input variable. This feature is supported in Terraform 0.13.0 and later versions. Example:

```
variable "iam_user_password" {
  type        = string
  description = "The password for iam user to log in."

  validation {
    condition     = length(var.iam_user_password)>=8
    error_message = "The password is too short."
  }
}
```

The **condition** argument is a Boolean expression. You can use a **can** function to check whether an error will be caused by the expression. Example:

```
variable "iam_user_name" {
  type        = string
  description = "This name is used for iam user to log in."

  validation {
    # regex(...) If the variable fails to match the following condition, an error is returned.
    condition     = can(regex("([a-zA-Z])", var.iam_user_name))
    error_message = "Incorrect user name. Please check whether it contains upper and lower case letters."
  }
}
```

If the result of **condition** is **false**, Terraform generates an error message that contains the character string defined by **error_message**. The value of **error_message** must include at least a complete sentence that starts with an uppercase letter and ends with a period (.) or question mark (?).

Referencing Input Variables

An input variable can be accessed as **var.<Variable name>** and only in the module that declares it.

```
# variables.tf
variable "vpc_cidr" {
  type        = string
  description = "the CIDR of VPC"
}

# main.tf
```

Setting Variables

You can set input variables in either of the following ways:

- With the **-var** command line option.
- In variable definitions (**.tfvars**) files, either specified on the command line or automatically loaded.
- As environment variables.

Variable Definitions (.tfvars) Files

If many variables are used in the configuration, you are advised to set their values in a variable definitions file, and then use the **-var-file** option to specify that file.

```
terraform apply -var-file="testing.tfvars"
```

A variable definitions (.tfvars) file uses the same basic syntax as the configuration files, but consists only of variable name assignments:

```
vpc_name = "my_vpc"
vpc_cidr = "192.168.0.0/16"
availability_zone_names = [
]
```

Terraform also automatically loads variable definitions files if they are present:

- Files named exactly terraform.tfvars or terraform.tfvars.json
- Any files with names ending in .auto.tfvars or .auto.tfvars.json

Files whose names end with .json are parsed instead as JSON objects.

```
{
    "vpc_name": "my_vpc"
}
```

Variable Definition Precedence

The above mechanisms for setting variables can be used together in any combination. For variables of the compound type, you are advised to use the variable definitions file to improve readability and avoid problems caused by escape. If you assign multiple values to the same variable, Terraform uses the last value it finds, overriding any previous values. Terraform loads variables in the following order, with later sources taking precedence over earlier ones:

1. Environment variables
2. terraform.tfvars or terraform.tfvars.json file
3. *.auto.tfvars or *.auto.tfvars.json file
4. **-var** and **-var-file** options in the command line

Note that the same variable cannot be assigned multiple values within a single source.

For more information about variables, see **Input Variables** in the Terraform documentation.

1.3.4.2 Output Variables

Output variables are like return values for a module. They are declared using the keyword **output**. Output variables can expose certain information. They can be used by a root module to output certain values after running the **terraform apply/output** command, or by a child module to expose a subset of its resource attributes to a parent module.

Declaring Output Variables

By convention, output variables are defined in a file named **variables.tf**. Output variables are declared using the keyword **output**.

```
output "ecs_address" {
  description = "The private IP address of my ECS"
}
```

The label immediately after the **output** keyword is the name, which must be a valid identifier. The **output** block contains the following arguments:

- **value** (mandatory): value of the output variable. Any valid expression is allowed as an output value.

- **description**: describes the usage of an output variable.
```
output "vpc_id" {
  description = "Check out the VPC ID"
}
```

- **sensitive**: marks output variables as sensitive and hides the output variable values on the CLI.
```
output "vpc_id" {
  description = "Check out the VPC ID"
  sensitive   = true
}

$ terraform output
vpc_id = <sensitive>
```

  Note: Output variables marked as sensitive are automatically hidden during output, but their output values can still display in the following ways:

  – The values of output variables are recorded in the **state** file and are visible to anyone who can access the file.

  – The sensitive output variable values in a child module can be invoked by its parent module and displayed on the CLI after being referenced by the related outputs and resources of the parent module.

- **depends_on**: specifies the dependency of an output variable. Since output variables are only a means of exporting data, you do not need to set the dependencies between output variables and other resources or data.

1.3.4.3 Local Variables

Local values are like temporary variables in a module. Their application scope is in the declared module. They are declared by the keyword **locals**. Local variables can be helpful to reduce code redundancy and make code easy to modify in scenarios where the same values or expressions are repeatedly defined in the configuration. However, if local variables are overused, the actual values are hidden, making code hard to read by future maintainers. Therefore, use local variables properly.

Declaring Local Variables

Local variables are declared using the keyword **locals**.

```
locals {
  service_name = "forum"
  owner        = "Community"
}
```

Expressions of local variables are not limited to character and numeric constants. They can also use references and expression results of input variables, resource attributes, or other local values.

```
locals {
}
```

```
locals {
 common_tags = {
  Service = local.service_name
  Owner  = local.owner
 }
}
```

Referencing Local Variables

After declaring a local variable, you can use **local.<*Variable name*>** to reference it.

```
...
tags = local.common_tags
}
```

1.3.5 Metadata

1.3.5.1 Instruction

Metadata refers to built-in meta-arguments supported by Terraform and can be used in the **provider**, **resource**, and **data** blocks. This section describes the meta-arguments supported by the **resource** block, including:

- **depends_on**: specifies the dependencies of a resource.
- **count**: creates multiple resources with the same configuration.
- **for_each**: creates multiple resources based on mappings and string sets.
- **lifecycle**: customizes the lifecycle of a resource.

1.3.5.2 depends_on

A Terraform configuration file can contain multiple resources. By referencing the attribute values of other resources in a resource, Terraform can automatically infer the dependencies of the resource. However, the dependencies of some resources are invisible to Terraform. Therefore, **depends_on** is needed to create explicit dependencies. You can use **depends_on** to change the creation or execution sequence of resources so that the resources are processed after the dependent resources. The expression of **depends_on** is the address list of dependent resources.

1.3.5.3 count

By default, only one resource is configured for a **resource** block of Terraform. When multiple same resources need to be created, configuring multiple independent **resource** blocks is redundant and difficult to maintain. You can use the **count** or **for_each** arguments to manage multiple identical resources in the same **resource** block. A given resource block cannot use both **count** and **for_each**. Example:

Three identical EVS disks are created based on the preceding configurations. In many cases, the provider requires that some arguments for creating resources be unique. You can use the **count.index** attribute (an index value starting from **0**) to distinguish the arguments.

```
}
```

Two VPCs (**myvpc_0** and **myvpc_1**) with the same CIDR value are created based on the preceding configuration. To modify the CIDR value, you can declare a string list to store the CIDR values of different VPCs, and then use **count.index** to access the list elements.

```
variable "name_list" {
  type    = list(string)
  default = ["vpc_demo1", "vpc_demo2"]
}
variable "cidr_list" {
  type    = list(string)
  default = ["192.168.0.0/16", "172.16.0.0/16"]
}

  count = 2
  name  = var.name_list[count.index]
  cidr  = var.cidr_list[count.index]
}
```

An index is required to access a resource created using **count**. The format is *<Resource type>.<Name>*[*Index*].

1.3.5.4 for_each

The function of **for_each** is similar to that of **count**. **for_each** uses key-value pairs or string sets to quickly fill values in corresponding attributes. This optimizes the script structure and helps understand the relationship between multiple instances.

When using the mapping type expression, you can use **each.key** and **each.value** to access the key and value of the mapping. For example, to create a VPC, you can use the key-value pair in **for_each** to flexibly configure the VPC name and CIDR.

```
for_each = {
  vpc_demo1 = "192.168.0.0/16"
  vpc_demo2 = "172.16.0.0/16"
}

name = each.key
cidr = each.value
}
```

When a string set is used, **each.key** is equivalent to **each.value** and generally **each.key** is used. In addition, you can use the **toset()** function to convert the defined **list** type.

```
for_each = toset(["secgroup_demo1", "secgroup_demo2"])
name     = each.key
}

# Use variables to indicate for _each.
variable "secgroup_name" {
  type = set(string)
}
  for_each = var.secgroup_name
  name     = each.key
}
```

A key is required to access a resource created using **for_each**. The format is *<Resource type>.<Name>*[*Key*].

```
# Access vpc_demo1.
# ID for accessing vpc_demo1
```

Both **count** and **for_each** can be used to create multiple resources. You are advised to select either of them based on the following rules:

1. If the arguments of a resource instance are completely or mostly the same, you are advised to use count.

2. If some arguments of a resource need to use distinct values that cannot be directly derived from an integer, **for_each** is recommended.

1.3.5.5 provider

In Terraform, you can use **provider** blocks to create multiple configurations, among which, one block is the default configuration, and other blocks are labeled as non-default configurations using **alias**. You can use the meta-argument **provider** in a resource to select a non-default **provider** block. For example, to manage resources in different regions, you need to declare multiple **provider** blocks.

```
provider "huaweicloud" {
  region = "cn-north-1"
  …
}

provider "huaweicloud" {
  alias  = "guangzhou"
  region = "cn-south-1"
  …
}
```

In the example, Huawei Cloud providers in Beijing and Guangzhou are declared, and the provider in Guangzhou is labeled with an alias. You can use the meta-argument **provider** in a resource to select a non-default **provider** block in the format of ***<Provider name>.<Alias>***.

```
resource "huaweicloud_networking_secgroup" "mysecgroup" {
# Use the name and alias of the non-default provider block.
  provider = huaweicloud.guangzhou
  …
}
```

Huawei Cloud providers allow you to specify the **region** argument in a resource to create resources in different regions. Compared with labeling providers with aliases, this mode is more flexible and simple.

```
provider "huaweicloud" {
  region = "cn-north-1"
  …
}

resource "huaweicloud_vpc" "example" {
  region = "cn-south-1"
  name   = "terraform_vpc"
  cidr   = "192.168.0.0/16"
}
```

1.3.5.6 lifecycle

Resource instances have three phases: creation, update, and destruction. The lifecycle of a resource instance involves two or three of the phases. The meta-argument **lifecycle** can be used to modify the lifecycle of a resource instance and includes the following arguments:

- **create_before_destroy**

By default, when you need to change a resource argument that cannot be updated, Terraform destroys the existing instance and then uses the newly configured arguments to create a new object for replacement. When you set the **create_before_destroy** argument to **true**, Terraform creates a new instance before destroying the existing instance. This argument applies to scenarios where service continuity needs to be ensured. Ensure in advance that each resource instance has a unique name and other constraints are met so that old and new instances can co-exist.

```
lifecycle {
  create_before_destroy = true
}
```

- **prevent_destroy**

  When **prevent_destroy** is set to **true**, Terraform blocks the deletion of the resource and returns an error. This meta-argument can be used as a security measure to prevent high-cost instances, such as database instances, from being recreated due to unexpected operations. To delete the resource, you need to delete the configuration and then perform the destroy operation.

  ```
  lifecycle {
    prevent_destroy = true
  }
  ```

- **ignore_changes**

  By default, the **Terraform plan/apply** operation detects the differences between the cloud resource attributes and the local resource blocks. If they are inconsistent, the update or rebuild operation is invoked to match the configuration. You can use **ignore_changes** specify arguments that Terraform should ignore when planning updates or rebuilds. The value of **ignore_changes** can be the relative address list of the attributes. The Map and List elements can be referenced using index notation, such as **tags["Name"]** and **list[0]**.

  ```
  …
  lifecycle {
    ignore_changes = [
      name,
    ]
  }
  }
  ```

  In this case, Terraform ignores the modification of the **name** argument. In addition to the list, you can also use the keyword **all** to ignore the updates of all attributes.

  ```
  …
  lifecycle {
    ignore_changes = all
  }
  }
  ```

1.4 Template Constraints and Limitations

Using RFS to deploy templates, there are several constraints listed as follows:

- The number of modules is limited to 25 and the module nesting depth is limited to 3.

- The **Provisioners**, **Backend Configuration** and **Cloud** features are not supported.

- The **Module Sources** feature is supported. However, you can only use Local Modules.

- The **HuaweiCloud Provider** is supported with certain prohibited resources which are listed as follows:

  - huaweicloud_vod_watermark_template

  - huaweicloud_compute_keypair

  - huaweicloud_identity_access_key

  - huaweicloud_images_image_v2

  - huaweicloud_kps_keypair

  - huaweicloud_obs_bucket_object

  - huaweicloud_iotda_batchtask

  - huaweicloud_cce_chart

  - huaweicloud_iotda_batchtask_file

  - huaweicloud_cse_microservice

- The following built-in functions are prohibited:

  - **abspath**

  - **basename**

  - **dirname**

  - **file**

  - **filebase64**

  - **filebase64sha256**

  - **filebase64sha512**

  - **fileexists**

  - **fileset**

  - **filemd5**

  - **filesha1**

  - **filesha256**

  - **filesha512**

  - **pathexpand**

  - **templatefile**

> ⚠ WARNING
>
> The use of the nonsensitive method to output sensitive information is not recommended. Random use of this method may result in sensitive information being printed out in plaintext by the service when it should have been hidden, leading to leakage of sensitive information.If output is necessary, it is recommended to prioritize encoding before outputting (e.g., nonsensitive(sha256(var.sensitive_value)))

2 Application Orchestration Service

2.1 Template Introduction

2.1.1 Templates (Cloud-Based Automation Scripts)

Application Orchestration Service (AOS) templates are text files in YAML or JSON format. They describe the cloud objects that you want, including applications, resources, and services. AOS creates various cloud objects automatically from AOS templates.

Each automated process requires a descriptive language to control its execution flow. For example, a shell script (text file) describes how to automatically run commands. Similarly, an AOS template describes the process of creating and deleting cloud objects.

The following is an example execution logic of a shell script:
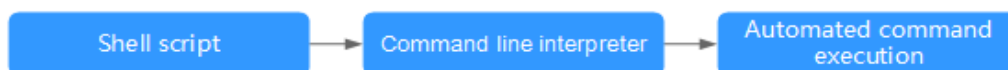
A shell script has the following features:

- A script is a text file.
- If a script is properly written, it can be reused.

An AOS template has the same execution logic as a shell script. The AOS service functions as the interpreter of AOS templates and executes actions according to templates. An AOS template can be considered as cloud automation standards.

A good shell script or function should have inputs, execution logic, and returned values. Likewise, a good template also should have **Inputs**, **Orchestration**, and **Outputs**. A good template eases knowledge transfer and sharing.

Figure 2-1 Comparison between the function and template
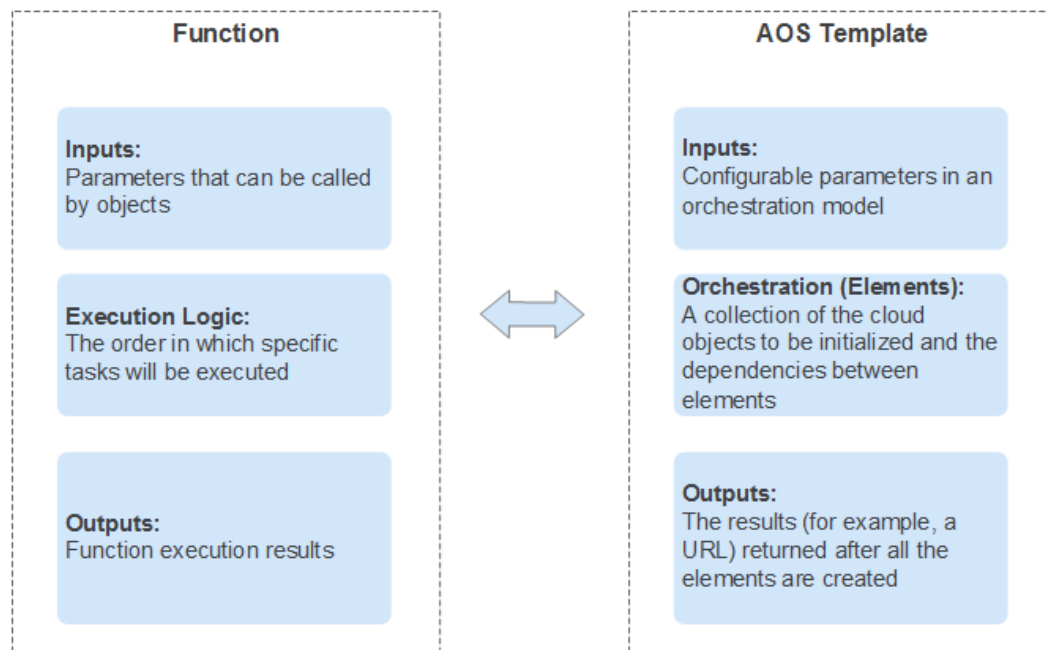
Elements (Cloud Objects)

Cloud objects can be cloud resources, services, or applications. Cloud resources are the most common cloud objects. AOS treats cloud objects as elements. A template is a collection of elements.

- Cloud resources: include the **Elastic Cloud Server (ECS)**, **Elastic Volume Service (EVS)**, **Virtual Private Cloud (VPC)**, and **Elastic IP (EIP)**.
- Cloud services: include the **Distributed Cache Service (DCS)** and **Distributed Message Service (DMS)**.
- Cloud applications: include containerized applications on **Cloud Container Engine (CCE)** and microservices on **Cloud Service Engine (CSE)**.

You need to set inputs to create any cloud object. After a cloud object is created, a result is displayed. The following figure uses an ECS (VM) as an example.

Figure 2-2 Inputs and outputs of a cloud object
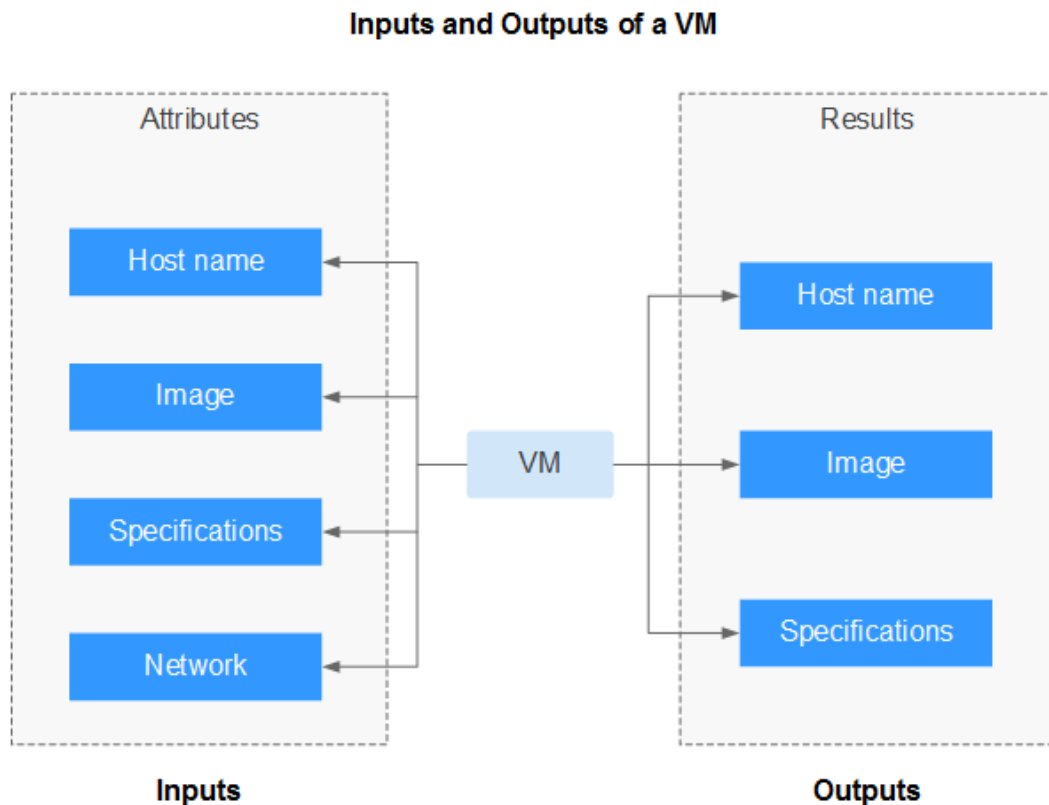
Inputs (Properties)

Inputs, also called parameters, are conditions for creating a cloud object. The parameters required by a cloud object are determined by the characteristics of the object. Some objects require many parameters, for example, VMs. Some objects can be created with a few parameters or without parameters, for example, Object Storage Service (OBS) buckets. Some input parameters are complex and consist of multiple basic parameters, for example, network attributes of VMs.

Figure 2-3 Inputs
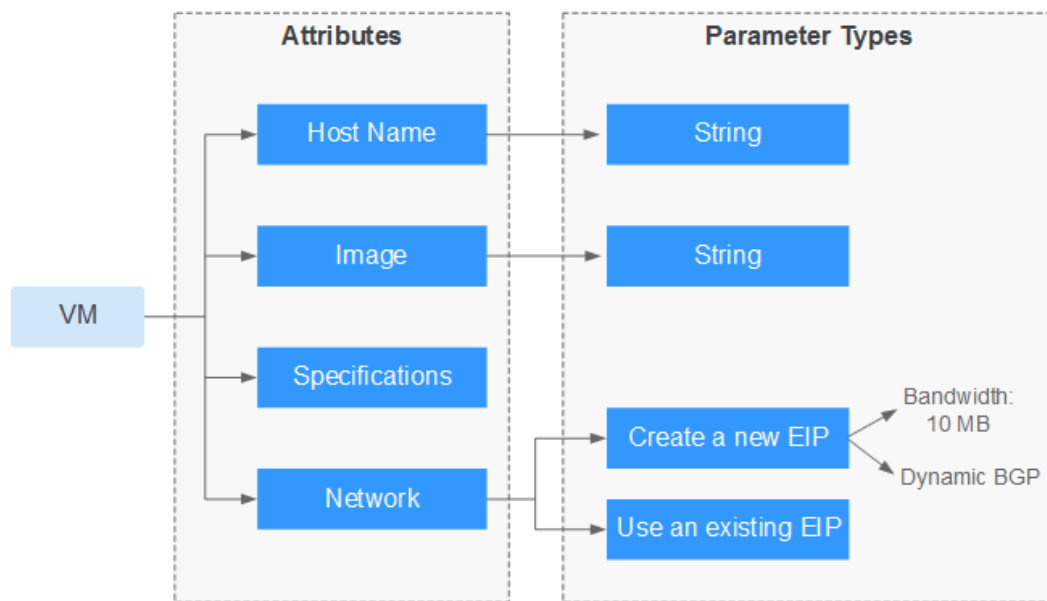
The syntax is as follows:

```
Cloud object (element):
  description: description of the cloud object
  properties: # Parameters of the cloud object
    Property 1:  # Parameter 1
    Property 2: # Parameter 2
    Property...:  # Parameter...
```

Orchestration (Elements)

If elements are initialized just one by one according to the order in which they are arranged, no orchestration is required. AOS supports orchestration of elements with complex dependencies between them. The initialization (input) of an element depends on the result (output) of another element. Such a relationship can be specified by using an AOS template.

In an AOS template, you can specify the output of any element as the input of another element. The initialization process can be controlled freely, which is called orchestration. Only orchestration can meet various automation requirements.

An AOS template is the collection of objects that you want to orchestrate. To be more specific, an AOS template is a collection of objects that you want to control during the initialization process.

Figure 2-4 Orchestration
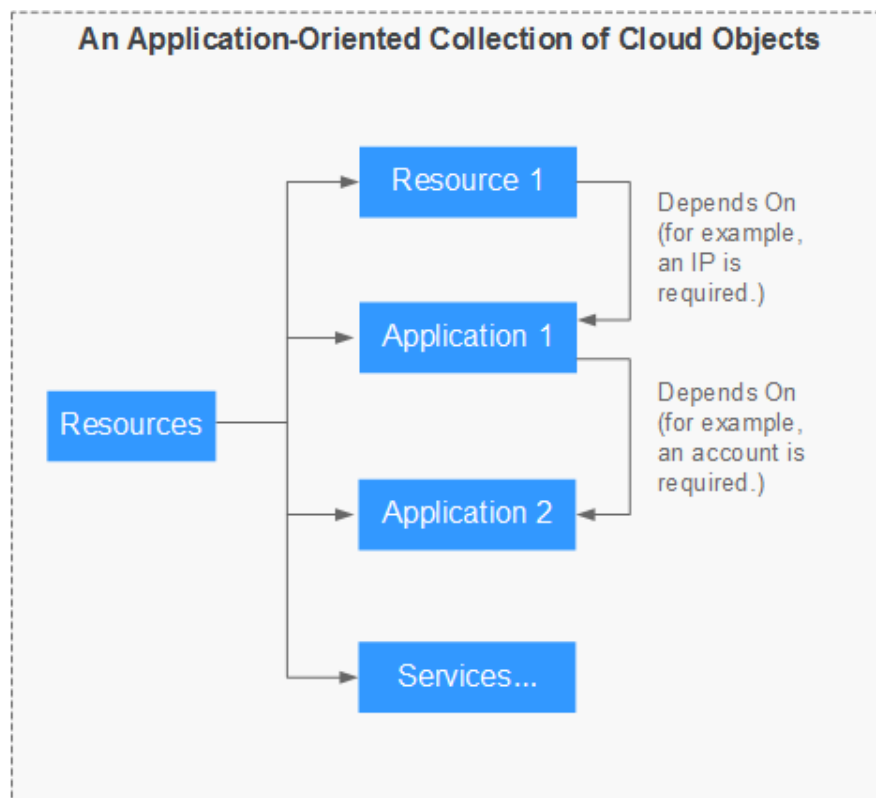
The relationship between elements is classified into two types: dependency and inclusion.

- Dependency relationship: The input of an element depends on the output of another element. If element A depends on element B, element A can be created only after element B is successfully created.

- Inclusion relationship: An element is a part of another element. If element A contains element B, element B can be created only after element A is successfully created.

Outputs (Return Values)

Outputs are the results returned after a cloud object is successfully created. The returned results of a cloud object are determined by the characteristics of the object. Some objects have many results, and some objects have few results.

The output of a cloud object is used in the following two scenarios. Generally, it is used together with the **get_attribute** built-in function.

- The output is used as an input of another cloud object.

- The output is used as the result of the entire stack.

The syntax is as follows:

```
# Result of another ECS. The service name is Service.
value: {get_attribute: [ecs, Service, ports, 0, nodePort]}
```

2.1.2 Template Structure

Sample Template

```
# Version of the application template
tosca_definitions_version: huaweicloud_tosca_version_1_0
# Description of the application template
description: template for deploying an Elastic Cloud Server (ECS)
# Definitions of input parameters
inputs:
  image:
    description: ID of the image used by the ECS
    type: HuaweiCloud.ECS.Image.Id
  instance:
    default: 1
    description: number of ECSs to be created
  subnet:
    description: ID of the subnet to which the ECS belongs
  vpc:
    description: ID of the Virtual Private Cloud (VPC) to which the ECS belongs
mappings:
  regionMap:
    cn-east-3:
      flavor: c2.medium
      image_id: f2003c7b-99c4-4616-be19-334beaca81b1
    cn-north-1:
      flavor: c1.medium
      image_id: 42f34d95-a538-4d17-be48-e690b48c1643
    cn-south-1:
      flavor: c1.medium
      image_id: a3934478-bfeb-4a02-b257-9089779f0380
# Definitions of element objects
node_templates:
  myecs:
    type: HuaweiCloud.ECS.CloudServer
    properties:
      availabilityZone: cn-south-1a
      flavor:
        get_in_map:
          - regionMap
          - get_input: HuaweiCloud.Region
          - flavor
      imageId:
        get_in_map:
          - regionMap
          - get_input: HuaweiCloud.Region
          - image_id
      instances:
        get_input: instance
      name: my-ecs
      nics:
        - subnetId:
            get_input: subnet
      publicIP:
        eip:
          bandwidth:
            shareType: PER
            size: 1
          ipType: 5_sbgp
      rootVolume:
        size: 40
        volumeType: SATA
      vpcId:
        get_input: vpc
# Definitions of output parameters
outputs:
  ecs-eip:
    description: elastic IP address of the ECS
```

```
  value:
    get_attribute:
      - myecs
      - publicIps
south-flavor:
  description: VM specifications of the South China region
  value:
    get_in_map:
      - regionMap
      - cn-south-1
      - flavor
```

Template Composition

An Application Orchestration Service (AOS) template consists of the following sections:

1. **tosca_definitions_version**: (mandatory) specifies the version of the template.

   📖 NOTE

   > Currently, only huaweicloud_tosca_version_1_0 is supported.

2. **node_templates**: (mandatory) defines the set of objects, which are all elements, to be orchestrated in a template. For more information, see **2.1.3 node_templates**.

3. **description**: (optional) describes the template. The maximum length is 1024 characters.

4. **inputs**: (optional) defines the input parameters used during stack creation. For more information, see **2.1.4 inputs**.

5. **outputs**: (optional) defines the output parameters during stack running. For more information, see **2.1.5 outputs**.

6. **mappings**: (optional) defines a mapping table. For more information, see **2.1.6 mappings**.

7. **conditions**: (optional) defines conditions. For more information, see **2.1.7 conditions**.

8. **policies**: (optional) defines security, monitoring, and other policies. For more information, see **2.1.8 policies**.

2.1.3 node_templates

The **node_templates** section is mandatory. It defines the set of objects, which are all elements, to be orchestrated in a template. An element can be an application or a cloud service resource.

Format of the **node_templates** section:

```
<Element name>:
  type: <Element type>
  properties: <Element properties>
  requirements: <Element dependency>
  condition: <Condition name>
```

Table 2-1 Parameter property description

Property	Mand atory or Not	Type	Value Constraint	Description
Element name	Yes	String	Enter 1 to 48 characters. Only lowercase letters, digits, and hyphens (-) are allowed.	Each element name must be unique.
Element type	Yes	HuaweiClou d.*** (*** indicates an element name in the **Resource Indexes**.)	-	This parameter is used to specify the type of an orchestration object.
Element property	No	-	Property information is expanded based on element types. Each element type has its properties. For more information, see the **Resource Indexes**.	The variable of a property can be obtained from the **inputs** section or by using the **get_attribute** function. If an element does not require a special property, you do not need to define **properties**.

Property	Mand atory or Not	Type	Value Constraint	Description
Element dependen cy	No	-	This parameter is used to specify the name of another element that has a dependency relationship with the current element.	If there is no relationship between elements, you do not need to define this parameter. The dependency between elements is based on the defined element type. Related dependencies can be defined for specific types. **NOTE** For example, when a subnet depends on a VPC, define the VPC as a dependent node in the requirements of the subnet. requirements: - vpcId: node: myvpc
Condition name	No	String	Enter 1 to 64 characters. Only letters, digits, and hyphens (-) are allowed.	If a condition is defined, the element is deployed only when the condition is met. For more information, see **conditions**.

Sample **node_templates**:

```
# Definitions of element objects
node_templates:
  myecs:
    type: HuaweiCloud.ECS.CloudServer
    properties:
      availabilityZone: cn-south-1a
      flavor: c1.medium
      imageId: a3934478-bfeb-4a02-b257-9089779f0380
      instances: 1
      name: my-ecs
      nics:
        - subnetId:
            get_input: subnet
      rootVolume:
        size: 40
        volumeType: SATA
      vpcId:
        get_input: vpc
```

2.1.4 inputs

To enable a template to be more commonly used, do not set all parameter values of the elements to fixed values. For example, it is recommended that the image ID

of a VM be used as an input of a template. In this case, users can set the value of this parameter freely. The image ID is set only when the template is used, that is, during stack deployment.

The **inputs** section is optional and defines the inputs of a stack created based on a template. A maximum of 60 input parameters can be defined in a template. Each input parameter must have a unique name so that the value can be obtained by using the **get_input** built-in function. If an input parameter is defined repeatedly, the latest definition will overwrite the previous one.

Function scope: **node_templates** and **outputs** sections. That is, input parameters can be transferred in the properties of **node_templates** and values of **outputs**.

Format of the **inputs** section:

```
<Input parameter name>:
  type: <Type>
  default: <Default value>
  constraints: <Constraints>
  description: <Description>
  label: <Label>
  invisible: <Whether command outputs are visible>
```

In addition to the reusability of a template, methods of restricting and verifying user inputs also need to be considered during template input design. Designers must understand parameter statements.

Table 2-2 Parameter property description

Property	Mand atory	Type	Value Constraint	Description
Input parameter name	Yes	String	The value must be 1 to 20 characters long. Only lowercase letters, digits, and hyphens (-) are allowed.	A maximum of 60 input parameter names can be defined and each name must be unique.

Property	Mand atory	Type	Value Constraint	Description
type	Yes	● **string**: charact er string ● **integer**: number ● **float**: floating -point number ● **boolea n**: boolean value ● **passwo rd**: passwor d	When the **type** is set to **password**, no output is visible. Currently, only the passwords entered at the system level can be decrypted. If a common parameter is defined as a password, encrypted information may be obtained and such information fails to be decrypted.	Parameter type.
description	No	String	The value must be 0 to 255 characters long.	Parameter description information.
default	No	String	When creating a stack, you can enter a value to replace the default value. If no default value is set, you must enter the value of this parameter. **NOTICE** The default value type must be the same as the defined parameter type. If they are inconsistent, the parser may perform automatic conversion, resulting in an unexpected result.	Default parameter value.

Property	Mandatory	Type	Value Constraint	Description
label	No	String	The value is a string of 0 to 64 characters.	Label of a parameter. The label defined here can be displayed by category during stack creation.

Property	Mand atory	Type	Value Constraint	Description
constraints	No	String	There are several constraints. You can define only one rule for each condition of an input parameter. If any of the constraints is not met, the parameter is considered invalid. ● **equal**: The value of this parameter must be equal to the specified value. For example, if the value of the input parameter is not **aos**, the value is regarded as invalid. **constraints:** **equal: 'aos'** ● **valid_values**: valid value range. This parameter is used to define an array. For example, set the valid value of the output parameter to **TCP** or **UDP**. **constraints:** **valid_values: ['TCP', 'UDP']** ● **regex**: The parameter	Parameter constraints, which are used to restrict the valid value range of an input parameter.

Property	Mand atory	Type	Value Constraint	Description
			must meet a certain regular condition and must be of the string type. For example, if the input parameter does not meet the regular condition, the parameter is regarded as invalid. **constraints:** **regex: "^[-_a-zA-Z0-9]*$"** ● **invalid_value s**: invalid value range. If you set a parameter to a value which is within the invalid value range, such a value is regarded as invalid and an error is reported. For example, if the value of the input parameter is set to **1** or **12**, the value is regarded as invalid. **constraints:** **invalid_value s: ['1', '12']**	

Property	Mand atory	Type	Value Constraint	Description
invisible	No	-	When **invisible** of an input parameter is set to **true**, ****** is displayed.	Whether the output is visible.

Example configuration of **inputs**:

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs: # defines the variables of a stack created based on a template.
  instance:
    description: number of Elastic Cloud Servers (ECSs) to be created
    default: 1
  image:
    description: ID of the image used by the ECS
    type: HuaweiCloud.ECS.Image.Id
  vpc:
    description: ID of the Virtual Private Cloud (VPC) to which the ECS belongs
  subnet:
    description: ID of the subnet to which the ECS belongs
```

2.1.5 outputs

After deployment operations are complete, all objects defined in a template will be created. To view the deployment results more intuitively, write the results in the output section of the template. Generally, common outputs include the access address+port number, application URL, and initial account password.

The **outputs** section is optional and defines the output parameters during stack running. Each output parameter must have a unique name.

Format of the **outputs** section:

```
<Output parameter name>:
 description: <Description>
 value: <Value>
```

Table 2-3 Parameter property description

Property	Mand atory	Type	Value Constraint	Description
Output parameter name	Yes	String	The value must be 1 to 20 characters long. Only lowercase letters, digits, and hyphens (-) are allowed.	Name of an output parameter, which must be unique.

Property	Mand atory	Type	Value Constraint	Description
Description	No	Text string	Text string, supporting a maximum of 255 characters	Name of a mapping object, which must be unique.
value	Yes	-	-	**value** is used to define an output value. It can be a text, string, or number. The value can be concatenated by the **concat** and **get_attribute** built-in functions, or be obtained from input parameters. **NOTE** A parameter that begins with a hyphen (-) can be considered as an array.

Example configuration of **outputs**:

```
outputs:
  ecs-eip:
    description: elastic IP address of the Elastic Cloud Server (ECS)
    value:
      get_attribute:
        - myecs
        - publicIps
```

2.1.6 mappings

The **mappings** section is optional and defines a mapping table. When creating a stack based on a template, you can use the **get_in_map** function to extract the content corresponding to a specific variable. A maximum of 10 **mappings** sections can be defined in a template.

Format of the **mappings** section:

```
<Mapping name>:
  <Mapping object name>:
    <Mapping object property name>: <Mapping object property value>
    <Mapping object property name>: <Mapping object property value>
    …
  …
…
```

Table 2-4 Parameter property description

Property	Mandatory	Type	Value Constraint	Description
Mapping name	Yes	String	The value must be 1 to 64 characters long. Only letters, digits, and hyphens (-) are allowed.	A maximum of 10 mapping names can be defined and each name must be unique.
Mapping object name	Yes	String	The value must be 1 to 64 characters long. Only letters, digits, and hyphens (-) are allowed.	Name of a mapping object, which must be unique.
Mapping object property name	Yes	String	The value must be 1 to 64 characters long. Only letters, digits, and hyphens (-) are allowed.	Property name of a mapping object. Each name must be unique in the same mapping object.
Mapping object property value	Yes	String or digit	String or digit	Property value corresponding to a mapping object.

Example configuration of **mappings**:

```
mappings:
 regionMap:
  cn-east-3:   # Defines the East China region.
    flavor: c2.medium    # Indicates the VM specifications of the East China region.
    image_id: f2003c7b-99c4-4616-be19-334beaca81b1   # Indicates the image ID of the East China region.
  cn-north-1:  # Defines the North China region.
    flavor: c1.medium    # Indicates the VM specifications of the North China region.
    image_id: 42f34d95-a538-4d17-be48-e690b48c1643   # Indicates the image ID of the North China
region.
  cn-south-1:  # Defines the South China region.
    flavor: c1.medium    # Indicates the VM specifications of the South China region.
    image_id: a3934478-bfeb-4a02-b257-9089779f0380   # Indicates the image ID of the South China
region.
```

Usage mode of **mappings**:

The defined mappings can be used in **node_templates** or **outputs**.

- Use the **get_in_map** function to extract the mapping content from **node_templates**.

  For example, the **myecs** object is defined in **node_templates**, and its properties include the image ID and VM specifications. The image ID and VM

specifications must have been predefined in **mappings**. During stack creation based on the template, the required image and VM specifications of the corresponding region will be used.

```
node_templates:
  myecs:
    type: HuaweiCloud.ECS.CloudServer
    properties:
      availabilityZone: cn-south-1a
      flavor:
        get_in_map:
          - regionMap
          - get_input: HuaweiCloud.Region
          - flavor
      imageId:
        get_in_map:
          - regionMap
          - get_input: HuaweiCloud.Region
          - image_id
      ...
```

● Use the **get_in_map** function to extract the mapping content from **outputs**.

```
outputs:
  south-flavor:
    description: VM specifications of the South China region
    value:
      get_in_map:
        - regionMap
        - cn-south-1
        - flavor
```

2.1.7 conditions

The **conditions** section is optional and defines conditions. By specifying conditions, you can determine whether to create and deploy elements defined in **node_templates**.

Format of the **conditions** section:

```
<Condition name>:
   <Built-in condition function>
...
```

The following shows how to specify conditions to control the effectiveness of properties in **node_templates**:

```
node_templates:
 <Element name>:
   condition: <Condition name>
...
```

Table 2-5 Parameter property description

Property	Mandatory or Not	Type	Value Constraint	Description
Condition name	Yes	String	The value must be 1 to 64 characters long. Only letters, digits, and hyphens (-) are allowed.	Name of the new condition, which must be unique.

Property	Mandatory or Not	Type	Value Constraint	Description
Built-in function	Yes	-	-	Built-in condition functions are used to define conditions. For details, see **Condition Function**.
Element name	Yes	String	The value must be 1 to 48 characters long. Only lowercase letters, digits, and hyphens (-) are allowed.	Name of the new element, which must be unique.
Condition name	Yes	String	The value must be 1 to 64 characters long. Only letters, digits, and hyphens (-) are allowed.	Condition name defined in **conditions**.

Example configuration of **conditions**:

When specifying conditions to determine whether to create and deploy elements, you need to define reference relationships in multiple sections such as **inputs**, **conditions**, and **node_templates**.

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
conditions:
  condition_vm_deploy:    #The conditions can be met only when inputs parameters are matched.
    cond_eq:
      - get_input: vm_deploy
      - true
inputs:
  image:
    description: ID of the image used by the Elastic Cloud Server (ECS)
    type: HuaweiCloud.ECS.Image.Id
  instance:
    default: 1
    description: number of ECSs to be created
  subnet:
    description: ID of the subnet to which the ECS belongs
..vm_deploy:    #Determines whether to deploy the VM.
    default: true
    type: boolean
  vpc:
    description: ID of the Virtual Private Cloud (VPC) to which the ECS belongs
node_templates:
  vm:
    condition: condition_vm_deploy      # The VM will be deployed only when the conditions are met.
    type: HuaweiCloud.ECS.CloudServer
    properties:
      availabilityZone: cn-south-1a
      imageId:
        get_input: image
```

```
        flavor: s3.small.1
        instances:
          get_input: instance
        name: my-ecs
        nics:
          - subnetId:
              get_input: subnet
        rootVolume:
          size: 40
          volumeType: SATA
        vpcId:
          get_input: vpc
    myecs:
      type: HuaweiCloud.ECS.CloudServer
      properties:
        name: my-ecs
        instances:
          get_input: instance
        imageId:
          get_input: image
        flavor: s3.small.1
        vpcId:
          get_input: vpc
        availabilityZone: cn-south-1a
        nics:
          - subnetId:
              get_input: subnet
        rootVolume:
          volumeType: SSD
          size: 40
```

2.1.8 policies

The **policies** section is optional. It defines security and monitoring policies. Currently, the following policy elements are supported:

- HuaweiCloud.AntiDDos.Service: defines anti-attack policies for Elastic Cloud Server (ECS) VMs and elastic IP addresses (EIPs).

- HuaweiCloud.APM.PinPoint: defines tracing policies for Java applications.

Format of the **policies** section:

```
<Policy element name>:
  type: <Policy element type>
  properties: <Policy properties>
  targets: <Policy validation object>
```

Table 2-6 Parameter property description

Property	Manda tory or Not	Type	Value Constraint	Description
Policy element name	Yes	String	The value must be 1 to 48 characters long. Only lowercase letters, digits, and hyphens (-) are allowed.	Name of a new policy, which must be unique.

Property	Mandatory or Not	Type	Value Constraint	Description
Policy element type	Yes	-	Currently, only HuaweiCloud.AntiDDos.Service and HuaweiCloud.APM.PinPoint are supported.	Used to specify the type of an orchestration object. The type must be included in the element type list.
Policy properties	No	-	Property information is expanded based on element types. Each element type has its properties. For more information, see the **Resource Indexes**.	The variable of a property can be obtained from the **inputs** section or by using the **get_attribute** function. If an element does not require a special property, you do not need to define **properties**.
Policy validation object	Yes	String	The value must be 1 to 64 characters long. Only letters, digits, and hyphens (-) are allowed.	A policy is effective only when it is applied to a certain resource or application.

Sample **policies**:

```
node_templates:
  myecs-vm:
    type: HuaweiCloud.ECS.CloudServer
    properties:
      vpcId: vpc-id-123
      name: myvm
      nics:
        - subnetId: subnet-id-123
      imageId: image-id-123
      instances: 1
      availabilityZone: az-1
      rootVolume:
        volumeType: SATA
        size: 40
      flavor: flavor-1
policies:
  myadtiddos:
    type: HuaweiCloud.AntiDDos.Service
    properties:
      floatingIpId: {get_attribute: [myecs-vm, floatingIpId]}  # Obtains the EIP from the object runtime information.
      trafficPos: 9
      appType: 1
```

```
      httpRequestPos: 1
      cleaningAccessPos: 8
      enableL7: false
    targets:
      - myecs-vm    # Applies to the myecs-vm VM.
```

2.1.9 Template Compilation Skills

Waiting for Component Start-up

Assume that the "A" (application) and "S" (service) components need to be started, "A" depends on "S", and "A" needs to connect to "S" to provide services. In the following example, "A" is Tomcat and "S" is MySQL.

During Application Orchestration Service (AOS) orchestration, "S" is first started based on the template. After "S" is started successfully (its process is started successfully, but its service function is still unavailable), "A" is then started. If "A" is connected to "S" before the "S" service function is completely started, "A" fails to be started. As a result, the entire stack fails to be started. Therefore, you may need to wait for a period of time before starting "A".

Currently, the waiting logic is not supported in the template syntax. To solve the problem, add the waiting logic to the service process.

The following is an example of waiting for a period of time before starting a component:

```
name:  # Parameter name
  type: string  # Parameter type
  description: resource name  # Parameter description
Task-Name: # Task name (user defined)
  description: sleep before business
  actions:
    poststart: # Execute scripts before startup.
      command: "/bin/sh, -c, sleep
```

Converting Numbers into Strings

In many cases, variables are defined as strings, but they sometimes need to be referenced as numbers. For example, when the port number is used as an environment variable, the value must be a string. When the port number is used as a microservice attribute, the value must be a number.

To solve the preceding problem, use either of the following methods:

- Method 1: Define two variables.

  Define the **PORT-i** and **PORT-s** variables. **PORT-s** is a string, while **PORT-i** is a number. This method can directly be used to solve the preceding problem, but the effect is not ideal. Due to duplication, the maintainability and usability of the template deteriorate.

- Method 2: Use the **concat** built-in function.

  Use the **concat** built-in function to combine multiple small strings into a longer and more complete string. The parameters of the **concat** built-in function can be any type of variable, supporting the combination of numbers and strings. Example command:

  First, define variables as follows:

```
magento-EPORT:
  type: integer
  default: 32080
```

When the parameter indicates a ULR, ensure that its value is a string:

```
name: MAGENTO_URL
  value:
    concat:
    - "http://"
    - {get_input: magento-EIP}
    - ":"
    - {get_input: magento-EPORT}  #Convert a number to a string.
```

When the parameter indicates a microservice attribute, ensure that its value is a number:

```
serviceSpec:
  ports:
    - port: {get_input: magento-container-port}
      nodePort: {get_input: magento-EPORT}  #The value must be a number.
```

2.1.10 Built-In Functions

2.1.10.1 Variable Reference

During template compilation, you can reference a defined variable or reference a member variable of another object, just like the variable reference during function compilation. You can also reference other existing values in an Application Orchestration Service (AOS) template.

To ease template compilation, different reference methods are used based on the reference objects:

- To reference input parameters, use **get_input**.
- To reference element properties, use **get_attribute** or **get_reference**.
- To reference mapping tables, use **get_in_map**.

The preceding reference methods are also called built-in functions. In addition to reference functions, built-in functions also include many other functions. For more information, see **Table 2-7**.

Table 2-7 AOS built-in functions

Built-In Function	Description
get_input	Used to obtain the values of input parameters in the **inputs** section of the template file.
get_attribute	Used to obtain the initialization results of other elements in the template.
get_reference	Simplified form of the **get_attribute** function. When the attribute information ends with **id** or **name**, use the **get_attribute** (refID or refName) function.
get_in_map	Used to obtain the content in mapping tables.

Built-In Function	Description
Condition function	Used to define whether elements need to be deployed, including **cond_eq**, **cond_not**, **cond_and**, **cond_or**, and **cond_if**.
base64_encode	Used to encode character strings in base64 mode.
concat	Used to convert description fields into strings and concatenate them. It can be embedded with the **get_attribute** and **get_input** functions.
split	Used together with the **select/get_list_length** function in most cases. The **split** function is mainly used in the following scenarios: • A string is split into a group of strings so that specific elements can be easily obtained from the result string list. • A result string array is directly used.
select	Used to obtain the object with a specified subscript from an array structure. Generally, this function is used together with the **split** function.
get_list_length	Used to calculate the number of elements in an array structure. Generally, this function is used together with the **split** function.

2.1.10.2 get_input

The **get_input** function is generally used to obtain the values of input parameters in the **inputs** section of the template file. You can also reference system pseudo parameters. For details, see **System Pseudo Parameters**.

Syntax

```
get_input: [paramName]
```

Parameter Description

Table 2-8 Parameter description

Parameter	Mandatory	Description
paramName	Yes	Name of the input parameter defined in the **inputs** section of the template file.

Return Value

Value of the parameter

Examples

The following shows how to use the **get_input** function to retrieve the value of a parameter in the **inputs** section:

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  name:
    default: test-vpc
  cidr:
    default: 10.0.0.0/8
node_templates:
  my-first-vpc:
    type: HuaweiCloud.VPC.VPC
    properties:
      name: {get_input: name}
      cidr: {get_input: cidr}
```

System Pseudo Parameters

In addition to the parameters defined in the template, the **get_input** function can also reference system pseudo parameters. Currently, the following system pseudo parameters are supported:

- HuaweiCloud.UserId: obtains the user ID of the current stack creator.

- HuaweiCloud.ProjectId: obtains the ID of the project to which the current stack belongs.

- HuaweiCloud.DomainId: obtains the ID of the tenant to which the current stack belongs.

- HuaweiCloud.Region: obtains the ID of the region where the current stack resides.

- HuaweiCloud.StackName: obtains the name of the current stack.

System pseudo parameters can be used together with the **mappings** and **get_in_map** functions to obtain predefined configuration information.

For example, an ECS VM can be deployed in the North China, South China, or East China region. You can predefine images and VM specifications for different regions in the mapping table. During stack creation, you can run **{get_input: HuaweiCloud.Region}** to obtain the region where the current stack resides and obtain configuration information such as images and specifications from the mapping table.

```
mappings:
  regionMap:
    cn-east-3:   # Defines the East China region.
      flavor: c2.medium    # Indicates the VM specifications of the East China region.
      image_id: f2003c7b-99c4-4616-be19-334beaca81b1   # Indicates the image ID of the East China region.
    cn-north-1: # Defines the North China region.
      flavor: c1.medium    # Indicates the VM specifications of the North China region.
      image_id: 42f34d95-a538-4d17-be48-e690b48c1643   # Indicates the image ID of the North China
region.
    cn-south-1:   # Defines the South China region.
      flavor: c1.medium    # Indicates the VM specifications of the South China region.
      image_id: a3934478-bfeb-4a02-b257-9089779f0380   # Indicates the image ID of the South China
region.
node_templates:
  myecs:
    type: HuaweiCloud.ECS.CloudServer
    properties:
      availabilityZone: cn-south-1a
      flavor:
```

```
        get_in_map:
          - regionMap
          - get_input: HuaweiCloud.Region
          - flavor
      imageId:
        get_in_map:
          - regionMap
          - get_input: HuaweiCloud.Region
          - image_id
    ...
```

2.1.10.3 get_attribute

The **get_attribute** function is used to obtain the initialization results of other elements in a template.

Syntax

get_attribute: [*resourceName*, *attributeName*]

If the content corresponding to attributeName is a structure body and contains multiple **key-value** fields, you can extend the definition. The format is as follows:

get_attribute: [resourceName, attributeName1, attributeName2, *[...]*]

Parameter Description

Table 2-9 Parameter description

Parameter	Ma nda tory	Parameter Description
resourceName	Yes	Name of a resource customized in the template.
attributeName	Yes	Attribute name of the desired resource. For details about the attribute name, see the **outputs** section of the element object. If the attribute name defined in the template does not exist, no information is returned. Currently, for most elements, only their **refID** and **refName** can be obtained. ● **refID**: unique ID generated after a resource is created. ● **refName**: resource name.

Return Value

Attribute value obtained

● When a single resource is created, the return values of **refID** and **refName** are strings.

● When multiple resources are created (for example, multiple ECS VMs are created at a time), the return values of **refID** and **refName** are string arrays.

Examples

- Obtain parameters and assign values to the parameters in the **outputs** section.

  Example: Obtain the ID of the created **my-first-vpc**, and then assign it to the **vpc_id** output parameter of a stack.

  ```
  tosca_definitions_version: huaweicloud_tosca_version_1_0
  inputs:
    name:
      default: test-vpc
    cidr:
      default: 10.0.0.0/8
  node_templates:
    my-first-vpc:
      type: HuaweiCloud.VPC.VPC
      properties:
        name: {get_input: name}
        ciddr: {get_input: cidr}
  outputs:
    vpc_id:
      value: {get_attribute: [my-first-vpc,refID]}
  ```

- Obtain parameters and use them as input parameters for creating other resources.

  Example: Obtain the ID of the created my-second-vpc and assign a value to the subnet resource as the input for creating the subnet resource. In this way, multiple resources can be created in one **blueprint** file.

  ```
  node_templates:
    my-subnet:
      type: HuaweiCloud.VPC.Subnet
      properties:
        name: {get_input: subnet-name}
        cidr: {get_input: vpc-cidr}
        gateway: {get_input: subnet-gateway}
        dnsList: {get_input: dnsList}
        vpc: {get_attribute: [my-second-vpc,refID]}
        availabilityZone: {get_input: az}
      requirements:
        - vpc:
            node: my-vpc
            relationship: HuaweiCloud.Relationships.ContainedIn
    my-second-vpc:
      type: HuaweiCloud.VPC.VPC
      properties:
        name: {get_input: vpc-name}
        cidr: {get_input: vpc-cidr}
  ```

2.1.10.4 get_reference

The **get_reference** function is the simplified form of the **get_attribute** function. When the attribute information ends with **id** or **name**, use the **get_attribute** (refID or refName) function.

When an Application Orchestration Service (AOS) designer is used to design a template and set up relationships between multiple elements, the **get_reference** function is set to automatically obtain the relationships.

Syntax

```
get_reference: [elementName ]
```

Parameters

Table 2-10 Parameters

Parameter	Mandatory or Not	Description
elementName	Yes	Element name defined in the **node_templates** section of the **blueprint** file.

Return Value

Value of the parameter

Examples

The following describes how to use the **get_reference** function to obtain the dynamic attributes of associated elements:

```
node_templates:
  my-first-vpc:
    type: HuaweiCloud.VPC.VPC
    properties:
      name: {get_input: name}
      ciddr: {get_input: cidr}
  my-first-subnet:
    type: HuaweiCloud.VPC.VPC
    properties:
      vpcId: {get_reference: my-first-vpc } # Corresponds to {get_attribute: [my-first-vpc, refID] }
...
```

2.1.10.5 get_in_map

If a mapping table is defined in the template, you can use the **get_in_map** function to obtain the mapping table content from the **node_templates** and **outputs** sections.

Syntax

```
get_in_map: [map_name, top_level_key, second_level_key]
```

Parameter Description

Table 2-11 Parameter description

Parameter	Mandatory or Not	Parameter Description
map_name	Yes	Mapping name
top_level_key	Yes	Mapping object name
second_level_key	Yes	Mapping object property

Return Value

Value of the corresponding field in the mapping table.

Examples

Obtain the mapped content using the **get_in_map** function:

```
mappings:
 regionMap:
  cn-east-3:  # Defines the East China region.
    flavor: c2.medium    # Indicates the VM specifications of the East China region.
    image_id: f2003c7b-99c4-4616-be19-334beaca81b1   # Indicates the image ID of the East China region.
  cn-north-1:  # Defines the North China region.
    flavor: c1.medium    # Indicates the VM specifications of the North China region.
    image_id: 42f34d95-a538-4d17-be48-e690b48c1643   # Indicates the image ID of the North China
region.
  cn-south-1:   # Defines the South China region.
    flavor: c1.medium    # Indicates the VM specifications of the South China region.
    image_id: a3934478-bfeb-4a02-b257-9089779f0380   # Indicates the image ID of the South China
region.
node_templates:
 myecs:
  type: HuaweiCloud.ECS.CloudServer
  properties:
    availabilityZone: cn-south-1a
    flavor:
      get_in_map:
        - regionMap
        - get_input: HuaweiCloud.Region
        - flavor
    imageId:
      get_in_map:
        - regionMap
        - get_input: HuaweiCloud.Region
        - image_id
    …
```

2.1.10.6 Condition Function

Condition functions are usually used to define whether elements need to be deployed, including **cond_eq**, **cond_not**, **cond_and**, **cond_or**, and **cond_if**. Except **cond_if**, other condition functions can only be used in the **conditions** section. The

cond_if function can be used in the **conditions**, **node_templates**, and **outputs** sections.

For example, **vm_deploy** is used to determine whether to deploy a VM.

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
conditions:
  condition_vm_deploy:    #The conditions can be met only when inputs parameters are matched.
    cond_eq:
      - get_input: vm_deploy
      - true
inputs:
  image:
    description: ID of the image used by the Elastic Cloud Server (ECS)
    type: HuaweiCloud.ECS.Image.Id
  instance:
    default: 1
    description: number of ECSs to be created
  subnet:
    description: ID of the subnet to which the ECS belongs
..vm_deploy:    #Determines whether to deploy the VM.
    default: true
    type: boolean
  vpc:
    description: ID of the Virtual Private Cloud (VPC) to which the ECS belongs
node_templates:
  vm:
    condition: condition_vm_deploy     # The VM will be deployed only when the conditions are met.
    type: HuaweiCloud.ECS.CloudServer
    properties:
      availabilityZone: cn-south-1a
      imageId:
        get_input: image
      flavor: s3.small.1
      instances:
        get_input: instance
      name: my-ecs
      nics:
        - subnetId:
            get_input: subnet
      rootVolume:
        size: 40
        volumeType: SATA
      vpcId:
        get_input: vpc
  myecs:
    type: HuaweiCloud.ECS.CloudServer
    properties:
      name: my-ecs
      instances:
        get_input: instance
      imageId:
        get_input: image
      flavor: s3.small.1
      vpcId:
        get_input: vpc
      availabilityZone: cn-south-1a
      nics:
        - subnetId:
            get_input: subnet
      rootVolume:
        volumeType: SSD
        size: 40
```

cond_eq

The **cond_eq** function is used to determine whether an equal condition is met. It is generally used to determine whether an input parameter is consistent with an expected value.

Table 2-12 cond_eq

Syntax	Parameter Description	Return Value
cond_eq: [cond1, cond2]	• **cond1**: Condition 1, which can be a number, string, Boolean value, or variable obtained using the **get_input** function. • **cond2**: Condition 2, which can be a number, string, Boolean value, or variable obtained using the **get_input** function.	When the value of **cond1** is the same as that of **cond2**, **true** is returned; otherwise, **false** is returned.

The following describes how to use the **cond_eq** function to determine whether the input parameter is consistent with an expected value:

```
inputs:
  a:
    type: string
    default: 10
conditions:
  matchA:
    cond_eq: [{get_input: a}, 10]
```

cond_not

The **cond_not** function is used to reverse the calculation result and is usually nested with other condition functions.

Table 2-13 cond_not

Syntax	Parameter Description	Return Value
cond_not: cond	• **cond**: Condition expression, which can be a Boolean value, Boolean variable obtained using the **get_input** function, or nested condition function such as **cond_eq** or **cond_not**.	If the calculation result of the condition expression is **true**, **false** is returned. If the result is **false**, **true** is returned.

The following describes how to use the **cond_not** function to determine whether the input parameter is consistent with an expected value:

```
inputs:
  a:
    type: boolean
    default: true
conditions:
  matchA:
    cond_not: {get_input: a}
```

cond_and

The **cond_and** function is used to check whether multiple conditions are met. This function supports 2 to 10 conditions.

Table 2-14 cond_and

Syntax	Parameter Description	Return Value
cond_and: [cond1, cond2...condn]	• **cond1**: Condition 1, which can be a Boolean value, Boolean variable obtained using the **get_input** function, or nested condition function such as **cond_eq** or **cond_not**. • **cond2**: Condition 2, which can be a Boolean value, Boolean variable obtained using the **get_input** function, or nested condition function such as **cond_eq** or **cond_not**. • **condn**: Condition n (3 ≤ n ≤ 10), which is optional and can be defined as required. The parameter type is the same as that of **cond1** or **cond2**.	If all parameter conditions are met, **true** is returned; otherwise, **false** is returned.

The following describes how to use the **cond_and** function to check whether the combination conditions are met:

```
inputs:
  a:
    type: integer
    default: 10
  b:
    type: string
    default: debug
conditions:
  matchAnd:
    cond_and: [{cond_eq: [{get_input: a}, 10]}, {cond_eq: [{get_input: b}, debug]}]   # The condition of
matchAnd can be met only when both conditions 1 and 2 are met.
```

cond_or

The **cond_or** function is used to determine whether any of multiple conditions is met. This function supports 2 to 10 conditions.

Table 2-15 cond_or

Syntax	Parameter Description	Return Value
cond_or: [cond1, cond2...condn]	• **cond1**: Condition 1, which can be a Boolean value, Boolean variable obtained using the **get_input** function, or nested condition function such as **cond_eq** or **cond_not**. • **cond2**: Condition 2, which can be a Boolean value, Boolean variable obtained using the **get_input** function, or nested condition function such as **cond_eq** or **cond_not**. • **condn**: Condition n (3 ≤ n ≤ 10), which is optional and can be defined as required. The parameter type is the same as that of **cond1** or **cond2**.	If any condition is met, **true** is returned. If no condition is met, **false** is returned.

The following describes how to use the **cond_or** function to check whether the combination conditions are met:

```
inputs:
  a:
    type: integer
    default: 10
  b:
    type: string
    default: debug
conditions:
  matchOr:
    cond_or: [{cond_eq: [{get_input: a}, 8]}, {cond_eq: [{get_input: b}, debug]}]  # The condition of matchOr
can be met when either condition is met.
```

cond_if

The **cond_if** function is a triplet expression used to assign values to properties. It is generally used in the property structure of **node_templates**.

Table 2-16 cond_if

Syntax	Parameter Description	Return Value
cond_if: [condition, value_true, value_false]	• **condition**: Condition name, which must be defined in the **conditions** section. • **value_true**: Value assigned when a condition is met. • **value_false**: Value assigned when a condition is not met.	If the condition is met, **value_true** is returned. If the condition is not met, **value_false** is returned.

The following describes how to use the **cond_if** function to define property values:

```
inputs:
  a:
    type: integer
    default: 10
  b:
    type: string
    default: debug
conditions:
  matchOr:
    cond_or: [{cond_eq: [{get_input: a}, 8]}, {cond_eq: [{get_input: b}, debug]}]  # The condition of matchOr
can be met when either condition is met.
node_templates:
  vm:
    type: HuaweiCloud.ECS.CloudServer
    properties:
      vpcId: vpc-id-123
      name: myvm
      nics:
        - subnetId: subnet-id-123
      imageId: {cond_if: [matchOr, image-debug, image-product]}   # cond_if is used to define a condition. If
the debugging mode is used, debugging images are used; otherwise, product images are used.
      instances: 1
      availabilityZone: az-1
      rootVolume:
        volumeType: SATA
        size: 40
      flavor: flavor-1
```

2.1.10.7 base64_encode

The **base64_encode** function is used to encode character strings in base64 mode.

Syntax

```
base64_encode: param
```

Parameter Description

Table 2-17 Parameter description

Parameter	Parameter Description
param	Character string to be encoded.

Return Value

Base64-encoded result.

Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  ecs_availabilityZone:
    description: AZ to which the Elastic Cloud Server (ECS) belongs
    label: ''
  ecs_flavor:
    description: ECS specifications
    label: ''
  ecs_imageId:
    description: ID of the image used by the ECS
    label: ''
  ecs_nics_0_subnetId:
    description: NIC information about the ECS to be created
    label: ''
  ecs-key:
    description: SSH key pair used for login
    label: ''
  user-name:
    default: test
  password:
    label: ''
  ecs_vpcId:
    description: ID of the Virtual Private Cloud (VPC) to which the ECS belongs
    label: ''
node_templates:
  ecs:
    properties:
      availabilityZone:
        get_input: ecs_availabilityZone
      flavor:
        get_input: ecs_flavor
      imageId:
        get_input: ecs_imageId
      instances: 1
      name: jkhlh
      nics:
        - subnetId:
            get_input: ecs_nics_0_subnetId
      publicIP:
        eip:
          bandwidth:
            shareType: PER
          ipType: 5_bgp
      rootVolume:
        size: 40
        volumeType: SATA
      sshKeyName:
        get_input: ecs-key
      userData:
        base64_encode:
          replace:
            - |
              #!/bin/bash -x
              useradd ${user_name}
              echo '${user_name}:${user_pwd}' | chpasswd
            - user_name:
                get_input: user-name
              user_pwd:
                get_input: password
      vpcId:
        get_input: ecs_vpcId
    type: HuaweiCloud.ECS.CloudServer
```

2.1.10.8 concat

During template compilation, the **concat** function is often used. For example, you may obtain an IP address from the VM result and a listening port number from the APP result, and then print the final and intuitive HTTP access address in the output of the template.

The **concat** function is a built-in function and used to convert descriptions into strings and concatenate them. It can be embedded with the **get_attribute** and **get_input** functions.

In the current version, **concat** can only be defined in the **outputs** section. It cannot be defined in the **node_templates** section or embedded with the **get_attribute** function.

Syntax

concat: [args, {get_attribute:[...]}, {get_input: [...]}]

Parameters

Table 2-18 Parameters

Parameter	Description
args	Any user-defined field. The value can be an integer, Boolean value, or string.
	Example:
	concat: ["string example", 100, -10, true, false], {get_attribute: [...]}, {get_input: [...]}
	There is no sequence requirement for the preceding three parameters.

Return Value

Strings that are successfully concatenated are returned.

Examples

```
properties:
  package:
    image: {get_input: magento-image}
    imagePullPolicy: {get_input: imagePullPolicy}
     env:
       - name: MYSQL_HOST # Specifies where MySQL is located.
        value:
          concat:
            - {get_input: mysql-name}
            - .default.svc.cluster.local # Actual address of MySQL, which is an internal domain name of
Kubernetes.
       - name: MYSQL_USER
         value: {get_input: mysql-user}
       - name: MYSQL_PASSWORD
         value: {get_input: mysql-password}
       - name: MYSQL_DATABASE
         value: {get_input: mysql-database}
```

```
    - name: ACCESS_URL
      value:
        concat:
          - "http://"
          - {get_input: magento-EIP}
          - ":"
          - {get_input: magento-EPORT-s}
```

2.1.10.9 split

Generally, the **split** function is used together with the **select** or **get_list_length** function. The **split** function is mainly used in the following scenarios:

- A string is split into a group of strings so that specific elements can be easily obtained from the result string list.

- A result string array is directly used.

Syntax

split: [*delimiter, sourceString*]

Parameters

Table 2-19 Parameters

Parameter	Description
delimiter	Separator, which can be a string, single character, or variable obtained using the **get_input** function.
sourceString	Original string, which can be a variable obtained using the **get_input** function. Original strings are grouped by separators.

Return Values

Split string arrays are returned.

Examples

The following describes how to use the **split** function to group strings:

```
inputs:
  source:
    default: "a,b,c,d,e,f,g"
node_templates:
  test:
    type: HuaweiCloud.AOS.Stack
    properties:
      templateId: "abcdf-fdeee"
      inputs:
        aaa: {select: [0, {split: [",", {get_input: source}]}]}          # The value is a.
```

2.1.10.10 select

The **select** function can be used to obtain the object with a specified subscript from an array structure. Generally, this function is used together with the **split** function.

Syntax

select: [*index, list*]

Parameters

Table 2-20 Parameters

Parameter	Description
index	Subscript, which is used to obtain the specified elements in an array. If the subscript is not in the range supported by the array, an error is reported.
list	Array structure, which cannot be empty.

Return Values

Objects in the corresponding positions in an array are returned.

Examples

The following describes how to use the select function to obtain the specified object:

```
inputs:
  source:
    default: "a,b,c,d,e,f,g"
node_templates:
 test:
   type: HuaweiCloud.AOS.Stack
   properties:
     templateId: "abcdf-fdeee"
     inputs:
       aaa: {select: [0, {split: [",", {get_input: source}]}]}          # The value is a.
       bbb: {select: [1, ["alpha", "beta", "gamma"]]}          # The value is beta.
```

2.1.10.11 get_list_length

The **get_list_length** function can be used to calculate the number of elements in an array structure. Generally, this function is used together with the **split** function.

Syntax

get_list_length: *list*

Parameter Description

Table 2-21 Parameter description

Parameter	Parameter Description
list	Array structure

Return Value

The length of an array is returned.

Examples

The following describes how to use the get_list_length function to obtain the length of an array:

```
inputs:
  source:
    default: "a,b,c,d,e,f,g"
node_templates:
  testStack:
    type: HuaweiCloud.AOS.Stack
    properties:
      templateId: "abcdf-fdeee"
      inputs:
        aaa: {select: [0, {split: [",", {get_input: source}]}]}          # The value is a.
        bbb: {select: [1, ["alpha", "beta", "gamma"]]}          # The value is beta.
        cc_length: {get_list_length: {split: [",", {get_input: source}]}}      # The value is 7.
        bbb_length: {get_list_length: ["alpha", "beta", "gamma"]}  # The value is 3.
```

2.2 List of Elements

2.2.1 Resource Indexes

Servic e	Element	Description
Traffic Cleans ing	**AntiDDos.Service**	The **AntiDDos.Service** element is a traffic cleaning service that can prevent DDoS attacks against Elastic IP Address (EIP).

Servic e	Element	Description
Applic ation Orches tration Servic e (AOS)	**AOS.Batch**	The **AOS.Batch** element is a batch processing object. It is used to create and deploy jobs in batches. By defining contained sub-objects and the number of batch processing times, the **AOS.Batch** element implements the batch processing function. The **AOS.Batch** element considers that the execution succeeds only after all the batch operations of the included objects are complete. Currently, the **AOS.Batch** element supports the following sub-objects: CCE.Job, CCE.Deployment, and AOS.Stack.
	AOS.Stack	The **AOS.Stack** element is a Huawei PaaS solution deployment template. It is used to create stack resources of AOS so that AOS can orchestrate various resources. The **AOS.Stack** element corresponds to the solution in real scenarios. It can implement one-click deployment of the solution. After being defined, the element can be replicated in batches, helping services to be quickly deployed on the cloud.
API Gatew ay	**APIG.API**	API providers configure APIs in API gateways to open backend capabilities. An API is divided into two parts. The first part is oriented to API users and defines how to invoke the API. The second part is oriented to API providers and defines the backend status of the API and how to access backend services through an API gateway.
	APIG.ApiGroup	An API group is an API management unit. An API group is equivalent to a service entry. When an API group is created, a subdomain name is returned as the access entry.
	APIG.Throttle	The request throttling function allows you to limit the number of API calls within a specified period to protect backend services. After APIs go online, the system provides an access control policy for each API by default. API providers can change the access control policy based on the service capabilities and load conditions of their APIs.

Servic e	Element	Description
Applic ation Perfor mance Mana gemen t (APM)	**APM.AutoScaler**	The **APM.AutoScaler** element is used to control elastic scaling of applications.
	APM.Pinpoint	The **APM.Pinpoint** element is used to orchestrate a stack containing the Pinpoint monitoring policy. After the stack is successfully deployed, you can view the monitoring group and monitoring details of the applications in the stack on the monitoring page.
Cloud Contai ner Engine (CCE)	**CCE.Addon.AutoScaler**	**CCE.Addon.AutoScaler** is a plug-in for node auto-scaling in a Kubernetes cluster.
	CCE.Cluster	The **CCE.Cluster** element is used to deploy Kubernetes cluster resources at the Huawei PaaS layer. A master node can be created based on this element to manage and create slave nodes. This element provides the application orchestration function for users.
	CCE.ConfigMap	The **CCE.ConfigMap** is used to provide basic configuration information storage services for the cluster creation of Huawei CCE. Sensitive information is prohibited in **ConfigMap**.
	CCE.DaemonSet	The **CCE.DaemonSet** element is used to create a DaemonSet object in the Kubernetes cluster. Currently, the Kubernetes native YAML file can be used to create the object.
	CCE.Deployment	The **CCE.Deployment** element is used to create a Deployment object in the Kubernetes cluster on Huawei CCE. Currently, the Kubernetes native YAML file can be used to create the object.
	CCE.HelmRelease	Helm is a type of Kubernetes-based package specifications provided by CCE. The **CCE.HelmRelease** element is a deployment instance of the Helm package.
	CCE.Ingress	The **CCE.Ingress** element is used to create an Ingress object in the Kubernetes cluster on CCE. Currently, the Kubernetes native YAML file can be directly used to create such an object.
	CCE.Job	The **CCE.Job** element is used to create a Job object in the Kubernetes cluster on Huawei CCE.

Servic e	Element	Description
	CCE.NodePool	The **CCE.NodePool** element is used to deploy Kubernetes node resources at the Huawei PaaS layer. Deploying this type of resources enables users to orchestrate Huawei cloud resources on nodes, providing more powerful functions.
	CCE.Pod	The **CCE.Pod** element is used to create a pod in the Kubernetes cluster on the CCE.
	CCE.Secret	The **CCE.Secret** element is used to provide encryption information storage services for the cluster creation of Huawei CCE. The **Secret** object can contain sensitive configuration information such as usernames, passwords, and certificates.
	CCE.Service	The **CCE.Service** element is used to deploy a Kubernetes resource object **Service** at the PaaS layer of HUAWEI CLOUD. By creating such an object, you can provide a unified entry address for a group of containerized applications with the same functions, and distribute requests in load balancing mode to backend containerized applications.
	CCE.StatefulSet	The **CCE.StatefulSet** element is used to create a StatefulSet on a CCE cluster.
	CCE.Storage.EVS	The **CCE.Storage.EVS** element corresponds to an Elastic Volume Service (EVS) disk under CCE storage management. This type of resources must be used together with CCE clusters.
	CCE.Storage.OBS	The **CCE.Storage.OBS** element corresponds to object storage volumes in the CCE storage management function. This type of resources must be used together with CCE clusters.
	CCE.Storage.SFS	The **CCE.Storage.SFS** element corresponds to file storage volumes in the CCE storage management function. This type of resources must be used together with CCE clusters.
Cloud Contai ner Instance (CCI)	**CCI.ConfigMap**	The **CCI.ConfigMap** element is used to create a configMap.
	CCI.Deployment	The **CCI.Deployment** element is used to create a deployment.

Servic e	Element	Description
	CCI.Ingress	The **CCI.Ingress** element is used to create an ingress.
	CCI.Job	The **CCI.Job** element is used to create a job.
	CCI.Namespace	The **CCI.Namespace** element is used to create a namespace.
	CCI.Secret	The **CCI.Secret** element is used to create a secret. In Kubernetes, secrets are used to carry sensitive information.
	CCI.Service	The **CCI.Service** element is used to create a service.
	CCI.StatefulSet	The **CCI.StatefulSet** element is used to create a StatefulSet.
	CCI.Storage.EVS	The **CCI.Storage.EVS** element is used to create a Persistent Volume Claim (PVC) under a specified namespace.
	CCI.Storage.SFS	The **CCI.Storage.SFS** element is used to create an SFS file system under a specified namespace.
Conte nt Delive ry Netwo rk (CDN)	**CDN.Cache**	The **CDN.Cache** element is used to set cache policies for resources on CDN nodes.
	CDN.Domain	The **CDN.Domain** element indicates the acceleration domain name.
	CDN.Host	The **CDN.Host** element can be used to modify the retrieval host. The retrieval host information indicates the host information contained in an HTTP request header. A retrieval host is the site domain name accessed by CDN nodes during retrieval.
	CDN.Https	The **CDN.Https** element can be used to configure the HTTPS of the acceleration domain name. You can configure the HTTPS certificate of the acceleration domain name and deploy it on network-wide CDN nodes to implement secure acceleration.
	CDN.PreheatJob	The **CDN.PreheatJob** element can be used to create a preheating job.
	CDN.Referer	The **CDN.Referer** element is used to configure referer filtering rules. You can set referer filtering policies to identify and filter users, controlling access.

Servic e	Element	Description
	CDN.RefreshJob	The **CDN.RefreshJob** element can be used to create a cache refreshing job.
	CDN.Source	The **CDN.Source** element can be used to modify information about the source server. Both the IP address and domain name of the source server can direct CDN nodes back to the source server. A source domain name cannot be the same as an acceleration domain name.
Datab ase Securit y Servic e (DBSS)	**DBSS.Instance**	The **DBSS.Instance** element is used to create Database Security Service (DBSS) resources.
Distrib uted Cache Servic e (DCS)	**DCS.Redis**	Distributed Cache Service (DCS) provides online distributed cache capabilities that are ready to use out of the box, secure, reliable, scalable, and easy to manage. It is compatible with Redis and Memcached and provides various instance types such as single-node, active/standby, and cluster, meeting users' requirements for high concurrency and fast data access.
Docu ment Datab ase Servic e (DDS)	**DDS.CommunityRepli caSetOrSingle**	The **DDS.CommunityReplicaSetOrSingle** element is used to create a replica set instance or a single-node instance.
Data Ingesti on Servic e (DIS)	**DIS.Stream**	The **DIS.Stream** element is used to create cloud channel resources. You can use these resources to improve collection, transmission, and distribution capabilities.
Elastic Cloud Server (ECS)	**ECS.CloudServer**	The **ECS.CloudServer** element is used to deploy the ECS at Huawei cloud IaaS layer. It consists of CPUs, memory, images, and EVS disks.

Servic e	Element	Description
	ECS.ServerGroup	An ECS group allows you to create ECSs on different hosts, thereby improving service reliability. This function does not apply to existing ECSs. You cannot add existing ECSs to an ECS group.
	ECS.KeyPair	**ECS.KeyPair** is used to create a key pair for remote login authentication. To ensure security, you are advised to use the key authentication mode when logging in to an ECS.
Elastic Volum e Service (EVS)	**EVS.NonSharedVolum e**	**EVS.NonSharedVolume** is used to deploy non-shared Elastic Volume Service (EVS) disks at the IaaS layer of HUAWEI CLOUD. Such disks provide scalable block storage that features high reliability, high performance, and rich specifications for servers.
	EVS.SharedVolume	The **EVS.SharedVolume** element is used to deploy shared EVS disks at the IaaS layer. Shared EVS disks are block storage devices that can be attached to multiple ECSs and support concurrent read/write operations. These disks feature multiple attachments, high-concurrency, high-performance, and high-reliability.
Functi onGra ph Servic e (FGS)	**FGS.ApigEventMap**	**FGS.ApigEventMap** is used to create APIG trigger resources for FunctionGraph. APIG triggers depend on the API Gateway service. Based on APIG trigger events, APIG triggers can trigger function execution.
	FGS.CtsEventMap	The **FGS.CtsEventMap** element is used to create Cloud Trace Service (CTS) trigger resources for FunctionGraph. CTS triggers depend on the CTS service. To create CTS triggers, you need to enable the CTS service first. Based on CTS events, CTS triggers can trigger function execution.
	FGS.DisEventMap	The **FGS.DisEventMap** element is used to create Data Ingestion Service (DIS) trigger resources for FunctionGraph. DIS triggers depend on the DIS service. Based on DIS events, DIS triggers can trigger function execution. To create DIS triggers, you need to enable the DIS service and configure Identity and Access Management (IAM) agencies for accessing the DIS service.

Servic e	Element	Description
	FGS.DmsEventMap	The **FGS.DmsEventMap** element is used to create Distributed Message Service (DMS) trigger resources for FunctionGraph. DMS triggers depend on the DMS service. Based on DMS events, DMS triggers can trigger function execution. To create DMS triggers, you need to enable the DMS service first and configure the IAM agencies for accessing the DMS service.
	FGS.Function	**HuaweiCloud.FGS.Function** is used to create function resources for FunctionGraph.
	FGS.LtsEventMap	The **FGS.LtsEventMap** element is used to create Log Tank Service (LTS) trigger resources for FunctionGraph. LTS triggers depend on the LTS service. To create LTS triggers, you need to enable the LTS service first. Based on LTS events, LTS triggers can trigger function execution.
	FGS.ObsEventMap	**HuaweiCloud.FGS.ObsEventMap** is used to create Object Storage Service (OBS) trigger resources for FunctionGraph. OBS triggers depend on the OBS service. Based on OBS trigger events, OBS triggers can trigger function execution.
	FGS.TimerEventMap	**HuaweiCloud.FGS.TimerEventMap** is used to create timer trigger resources for FunctionGraph. Timer triggers can periodically trigger function execution.
	FGS.SmnEventMap	The **FGS.SmnEventMap** element is used to create Simple Message Notification (SMN) trigger resources for FunctionGraph. SMN triggers depend on the SMN service. To create SMN triggers, you need to enable the SMN service first. Based on SMN events, SMN triggers can trigger function execution.
Host Securit y Servic e (HSS)	**HSS.Instance**	The **HSS.Instance** element is used to create HSS resources.

Servic e	Element	Description
Identit y and Access Mana gemen t (IAM)	**IAM.Agency**	The **IAM.Agency** element is used to create agencies on IAM, specify entrusted accounts, and grant rights. After an administrator assigns agent operator permissions to an entrusted account user, the user can manage corresponding resources.
	IAM.UserGroup	The **IAM.UserGroup** element is used to create a user group.
NAT Gatew ay	**NAT.Instance**	The **NAT.Instance** element is used to create a NAT gateway instance.
	NAT.SNatRule	The **NAT.SNatRule** element is used to create a source NAT rule, which specifies the network segment for accessing the external network.
Object Storag e Servic e (OBS)	**OBS.Bucket**	The **OBS.Bucket** element is used to deploy bucket resources for HUAWEI CLOUD Object Storage Service (OBS). OBS provides a lot of secure, reliable, and low-cost data storage capabilities. Buckets are containers used to store objects.
Relati onal Datab ase Servic e (RDS)	**RDS.MySQL**	Relational Database Service (RDS) is a cloud-based web service that is reliable, scalable, easy to manage, and ready to use out-of-the-box.
	RDS.MySQL.DataBase	A database instance can contain multiple databases created by database users and can be accessed using the client tool and application program that are the same as those of an independent database instance. The **RDS.MySQL.DataBase** element can be used to create a database in a specified RDS instance.
	RDS.MySQL.User	Database user accounts are used to connect to database instances and control the access to the database instances. For example, in a MySQL database, when a database instance is created, the **root** user account is created by default.
	RDS.PostgreSQL	RDS is a cloud-based web service that is reliable, scalable, easy to manage, and ready to use out-of-the-box.

Servic e	Element	Description
Servic eStage	**ServiceStage.Agent**	The **ServiceStage.Agent** element is compatible with original functions of ServiceStage. This element is about to be removed from AOS. You are advised to use CCE-related resources or the to-be-released AOS.Application element.
	ServiceStage.AppGrou p	The **ServiceStage.AppGroup** element is compatible with original functions of ServiceStage. This element is about to be removed from AOS. You are advised to use CCE-related resources or the to-be-released **AOS.Application** element.
	ServiceStage.Containe rComponent	The **ServiceStage.ContainerComponent** element is compatible with the original functions of ServiceStage. This element is about to be removed from AOS. You are advised to use CCE-related resources or the to-be-released **AOS.Application** element.
	ServiceStage.Job	The **ServiceStage.Job** element is compatible with the original functions of ServiceStage. This element is about to be removed from AOS. You are advised to use CCE-related resources or the to-be-released **AOS.Application** element.
	ServiceStage.Stateful Application	The **ServiceStage.StatefulApplication** element is compatible with the original functions of ServiceStage. This element is about to be removed from AOS. You are advised to use CCE-related resources or the to-be-released **AOS.Application** element.
	ServiceStage.Stateless Application	The **ServiceStage.StatelessApplication** element is compatible with the original functions of ServiceStage. This element is about to be removed from AOS. You are advised to use CCE-related resources or the to-be-released **AOS.Application** element.
Scalab le File Servic e (SFS)	**SFS.FileSystem**	SFS provides high-performance file storage which supports on-demand scaling. It can be shared by multiple ECSs.

Servic e	Element	Description
Simple Messa ge Notific ation (SMN)	**SMN.Subscription**	The **SMN.Subscription** element is used to subscribe for SMN.
	SMN.Topic	The **SMN.Topic** element is used to create an SMN topic.
Shared Load Balanc e	**ULB.Healthmonitor**	The **ULB.Healthmonitor** element is a health check component of a shared load balancer. One pool corresponds to one HealthMonitor, and one HealthMonitor can manage multiple ECSs. You can add or delete the HealthMonitor as required.
	ULB.Listener	The **ULB.Listener** element indicates the listener under a shared load balancer. One shared load balancer corresponds to multiple listeners. You can add or delete listeners as required.
	ULB.LoadBalancer	The **ULB.LoadBalancer** element is used to deploy a shared load balancer at the PaaS layer. By creating such an object, you can provide a unified entry address for a group of containerized applications with the same functions, and distribute requests in load balancing mode to backend container applications. Shared load balancers are applicable to web services with high access traffic. They forward requests based on domain names or URLs, making request routing more flexible. Compared with classic load balancers, shared load balancers provide stronger HTTP and HTTPS forwarding capabilities, and better forwarding performance and stability.
	ULB.Member	The **ULB.Member** element indicates an ECS under a shared load balancer. One pool corresponds to multiple ECSs. You can add or delete ECSs as required.
	ULB.Pool	The **ULB.Pool** element indicates an ECS group under a shared load balancer. One listener corresponds to multiple ECS groups. You can add or delete ECS groups as required. An ECS group consists of multiple ECSs.

Servic e	Element	Description
VPC Endpoi nt (VPCE P)	**VPCEndpoint.Endpoin t**	The **VPCEndpoint.Endpoint** element is used to create a VPC endpoint. VPC endpoints are channels for connecting VPCs to VPC endpoint services.
	VPCEndpoint.Endpoin tService	The **VPCEndpoint.EndpointService** element is used to create a VPC endpoint service. VPC endpoint services are cloud services or users' private services configured in VPCEP.
Virtual Private Cloud (VPC)	**VPC.EIP**	**VPC.EIP** is used to create a public elastic IP address. A public elastic IP address is a static IP address. You can bind or unbind an elastic IP address to an Elastic Cloud Server (ECS) in a subnet. An ECS in a Virtual Private Cloud (VPC) can access the Internet through a fixed public IP address.
	VPC.FirewallGroup	A firewall group (a logical group) is an access control policy system for one or more subnets. Based on the ingress and egress rules of associated subnets, firewalls determine whether data packets can be received by or sent into associated subnets.
	VPC.FirewallPolicy.Egr ess	ACL policies in the outbound direction belong to ACL group members. One policy can contain multiple ACL rules.
	VPC.FirewallPolicy.Ing ress	ACL policies in the inbound direction belong to ACL group members. One policy can contain multiple ACL rules.
	VPC.FirewallRule	The **VPC.FirewallRule** element can be used to create ACL rules for subnet access control.
	VPC.SecurityGroup	A security group (a logical group) is a collection of access control policies for ECSs that have the same security protection requirements and are mutually trusted in a VPC.
	VPC.SecurityGroupRul e	A security group rule is an access policy added for an ECS to implement access control.
	VPC.Subnet	The **VPC.Subnet** element is used to create a subnet on a Huawei VPC.

Service	Element	Description
	VPC.VIP	The **VPC.VIP** element is used to create a virtual IP address, that is, an IP address which has not been allocated to an ECS NIC. The ECS can be accessed through this virtual IP address.
	VPC.VPC	**VPC.VPC** is used to create a VPC network for Huawei public cloud products.
Vulnerability Scan Service (VSS)	**VSS.WebScan**	VSS provides one-stop security detection services, including website vulnerability scanning, OS vulnerability scanning, asset compliance check, configuration baseline scanning, and weak password scanning, meeting standards compliance requirements.
Web Application Firewall (WAF)	**WAF.Service**	WAF examines and protects website service traffic from multiple dimensions. Together with deep learning, WAF intelligently identifies malicious requests and prevents unknown threats. It also avoids common attacks such as SQL injection and cross-site scripting so that these attacks will not affect availability or security, or consume too much resources, reducing the risk of data tampering and theft.

2.2.2 AntiDDos.Service

Element Description

The **AntiDDos.Service** element is a traffic cleaning service that can prevent DDoS attacks against Elastic IP Address (EIP).

Element Properties

Table 2-22 Property Description

Property	Required	Descripiton
cleaningAccessPos	Yes	ID of the access restriction segment during cleaning **Type:** integer **Value Description:** Supports an integer ranging from 1 to 8. A larger value indicates a larger number of new connections of a single source IP address and a larger total number of connections of a single source IP address during cleaning. **Default:** 8 **Suggestion:** Set the value based on specifications and requirements.
trafficPos	Yes	Traffic segment ID **Type:** integer **Value Description:** Supports an integer ranging from 1 to 9. A larger value indicates a larger threshold for the traffic volume per second and a larger threshold for the number of packets per second. **Default:** 9 **Suggestion:** Set the value based on specifications and requirements.
appType	Yes	Application type ID **Type:** integer **Value Description:** Supports 0 and 1. If the UDP protocol or a common application is used, the value is 0. If the TCP protocol or a web application is used, the value is 1. **Default:** 1 **Suggestion:** Set the value based on specifications and requirements.
httpRequestPos	Yes	HTTP request quantity segment ID **Type:** integer **Value Description:** Supports an integer ranging from 1 to 15. A larger value indicates a larger threshold for the number of HTTP requests per second. **Default:** 1 **Suggestion:** Set the value based on specifications and requirements.

Property	Required	Descripiton
floatingIp Id	Yes	User EIP ID **Type:** string **Value Description:** Supports the ID of an existing or new public elastic IP address. To use the ID of a new public elastic IP address, you need to add the publicIP field to the ECS.CloudServer or CCE.NodePool element in the template and establish the dependency relationship. **Suggestion:** 1. Use the get_attribute function to obtain the ID of the elastic public IP address created by the template. 2. On the public elastic IP address page (https://console.huaweicloud.com/vpc?&locale=en-us), obtain the ID of the created IP address.
enableL7	Yes	Whether to enable L7 protection **Type:** boolean **Value Description:** Supports true or false. If this parameter is set to true, L7 protection is enabled. **Default:** False **Suggestion:** Set the value based on specifications and requirements.

Relationships Between Elements

None.

Return Value

None.

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  ecs-name:
    default: "my-cloudserver"
    label: ECS
    description: "VM name"
  ecs-image:
    default: "327946b5-e954-42c3-949a-3312688c9269"
    label: ECS
    description: "VM image"
  ecs-flavor:
    default: "c1.medium"
    label: ECS
    description: "VM specifications"
  ecs-volumetype:
    default: SATA
    label: ECS
    description: "VM disk type"
  ecs-count:
    default: 1
```

```
      label: ECS
      description: "Number of VMs"
    az:
      default: "cn-north-1a"
      label: ECS
      description: "Belonged AZ"
    subnet-name:
      default: "my-ecs-subnet2"
      label: ECS
      description: "Subnet name"
    subnet-gateway:
      default: "192.168.1.1"
      label: ECS
      description: "Subnet gateway"
    vpc-name:
      default: "my-ecs-vpkvc2"
      label: ECS
      description: "VPC name"
    vpc-cidr:
      default: "192.168.0.0/16"
      label: ECS
      description: "CIDR address of a VPC"
    ads-enableL7:
      type: boolean
      default: true
      label: AntiDDos
      description: "Whether to enable Layer 7 protection"
    ads-trafficPos:
      type: integer
      default: 9
      label: AntiDDos
      description: "Traffic segment ID"
    ads-httpRequestPos:
      type: integer
      default: 1
      label: AntiDDos
      description: "HTTP request quantity segment ID"
    ads-cleaningAccessPos:
      type: integer
      default: 8
      label: AntiDDos
      description: "ID of the access restriction segment during traffic cleaning"
    ads-appType:
      type: integer
      default: 1
      label: AntiDDos
      description: "Application type ID"
  node_templates:
    my-ecs:
      type: HuaweiCloud.ECS.CloudServer
      properties:
        name: {get_input: ecs-name}
        instances: {get_input: ecs-count}
        imageId: {get_input: ecs-image}
        flavor: {get_input: ecs-flavor}
        vpcId: {get_attribute: [my-subnet, vpcId]}
        availabilityZone: {get_input: az}
        nics:
          - subnetId: {get_attribute: [my-subnet, refID]}
        rootVolume:
          volumeType: {get_input: ecs-volumetype}
        dataVolumes:
          - volumeType: SATA
            size: 100
        publicIP:
          eip:
            ipType: 5_bgp
            bandwidth:
              size: 100
```

```
          shareType: PER
      requirements:
       - nics.subnetId:
          node: my-subnet
  my-subnet:
    type: HuaweiCloud.VPC.Subnet
    properties:
      name: {get_input: subnet-name}
      cidr: {get_input: vpc-cidr}
      gateway: {get_input: subnet-gateway}
      dnsList: [114.114.114.115, 114.114.114.114]
      vpcId: {get_attribute: [my-vpc,refID]}
      availabilityZone: {get_input: az}
    requirements:
     - vpcId:
        node: my-vpc
  my-vpc:
    type: HuaweiCloud.VPC.VPC
    properties:
      name: {get_input: vpc-name}
      cidr: {get_input: vpc-cidr}
policies:
  my-antiddos:
    type: HuaweiCloud.AntiDDos.Service   # Enable anti-DDoS protection for EIP.
    properties:
      enableL7: {get_input: ads-enableL7}
      trafficPos: {get_input: ads-trafficPos}
      httpRequestPos : {get_input: ads-httpRequestPos}
      cleaningAccessPos: {get_input: ads-cleaningAccessPos}
      appType: {get_input: ads-appType}
      floatingIpId: {get_attribute: [my-ecs, floatingIpId]}
    targets: [my-ecs]
outputs:
  ecs-id:
    value: {get_attribute: [my-ecs, refID]}
    description: "ECS ID"
  vpc-id:
    value: {get_attribute: [my-vpc, refID]}
    description: "VPC ID"
  subnet-id:
    value: {get_attribute: [my-subnet, refID]}
    description: "SUBNET ID"
```

2.2.3 AOS.Batch

Element Description

The **AOS.Batch** element is a batch processing object. It is used to create and deploy jobs in batches. By defining contained sub-objects and the number of batch processing times, the **AOS.Batch** element implements the batch processing function. The **AOS.Batch** element considers that the execution succeeds only after all the batch operations of the included objects are complete. Currently, the **AOS.Batch** element supports the following sub-objects: CCE.Job, CCE.Deployment, and AOS.Stack.

Element Properties

Table 2-23 Property Description

Property	Required	Descripiton
items	Yes	Contained sub-element template **Type:** AOS.BatchItem Array **Value Description:** Supports customization. **Value Constraint:** Array format. A template contains 1 to 10 objects. **Suggestion:** Customize the value. For details, visit https://support.huaweicloud.com/eu/tr-aos/datatypes-aos-batchitem.html.
step	No	Maximum concurrency value **Type:** integer **Value Description:** By default, the step is not defined. That is, objects are created in batches based on the maximum concurrency value. If the step is specified, objects are executed in batches by phase. For example, a batch object contains one job and the step is 5. In this scenario, job6 will be executed only after job1 is completed. **Suggestion:** Set the value based on specifications and requirements.
values	No	Variable used in the sub-element template **Type:** dict **Value Description:** Supports customization. When a batch object is instantiated, the values are replaced with the variables of properties defined in items, including the built-in variables item, limit, and offset. **Default:** {} **Suggestion:** Set the value based on specifications and requirements.
limit	Yes	Total number of jobs that are executed in batches **Type:** integer **Value Description:** Supports customization. The value ranges from 1 to 500. **Suggestion:** Set the value based on specifications and requirements.

Relationships Between Elements

Table 2-24 Relationship description

Description	Target
ConsistsOf	**AOS.Stack**
ConsistsOf	**CCE.Deployment**
ConsistsOf	**CCE.Job**
Depends On	**CCE.Service**
Depends On	**EVS.NonSharedVolume**
Depends On	**CCE.Deployment**
Depends On	**ServiceStage.Agent**
Depends On	**SMN.Topic**
Depends On	**CCI.Storage.EVS**
Depends On	**VPC.VIP**
Depends On	**APM.AutoScaler**
Depends On	**ServiceStage.AppGroup**
Depends On	**FGS.DmsEventMap**
Depends On	**VPC.FirewallPolicy.Ingress**
Depends On	**VPC.EIP**
Depends On	**CDN.Source**
Depends On	**RDS.MySQL.User**

Description	Target
Depends On	**CCE.Ingress**
Depends On	**CDN.Cache**
Depends On	**CCI.ConfigMap**
Depends On	**DIS.Stream**
Depends On	**CCI.Namespace**
Depends On	**CCE.Addon.AutoScaler**
Depends On	**VPC.FirewallRule**
Depends On	**CCE.Cluster**
Depends On	**SFS.FileSystem**
Depends On	**CDN.RefreshJob**
Depends On	**EVS.SharedVolume**
Depends On	**CCI.Job**
Depends On	**AOS.Stack**
Depends On	**FGS.TimerEventMap**
Depends On	**NAT.Instance**
Depends On	**FGS.ObsEventMap**
Depends On	**OBS.Bucket**
Depends On	**APIG.ApiGroup**

Description	Target
Depends On	**AOS.Batch**
Depends On	**CCE.Secret**
Depends On	**CCE.Storage.EVS**
Depends On	**CCE.Storage.SFS**
Depends On	**CCE.HelmRelease**
Depends On	**FGS.ApigEventMap**
Depends On	**RDS.MySQL.DataBase**
Depends On	**CCE.NodePool**
Depends On	**IAM.UserGroup**
Depends On	**CCI.Deployment**
Depends On	**CDN.Domain**
Depends On	**CCE.StatefulSet**
Depends On	**VPCEndpoint.Endpoint**
Depends On	**CCI.Ingress**
Depends On	**CCE.Job**
Depends On	**CCI.Secret**
Depends On	**APIG.API**
Depends On	**FGS.LtsEventMap**

Description	Target
Depends On	**ServiceStage.ContainerComponent**
Depends On	**CCI.Storage.SFS**
Depends On	**VPC.FirewallGroup**
Depends On	**CCI.StatefulSet**
Depends On	**CCE.DaemonSet**
Depends On	**RDS.PostgreSQL**
Depends On	**ECS.KeyPair**
Depends On	**ServiceStage.StatelessApplication**
Depends On	**ServiceStage.StatefulApplication**
Depends On	**IAM.Agency**
Depends On	**FGS.CtsEventMap**
Depends On	**DDS.CommunityReplicaSetOrSingle**
Depends On	**FGS.DisEventMap**
Depends On	**APIG.Throttle**
Depends On	**CCE.Pod**
Depends On	**DCS.Redis**
Depends On	**CDN.Https**
Depends On	**VPC.VPC**

Descripti on	Target
Depends On	**CDN.PreheatJob**
Depends On	**CDN.Referer**
Depends On	**ECS.CloudServer**
Depends On	**SMN.Subscription**
Depends On	**VPC.Subnet**
Depends On	**CCE.ConfigMap**
Depends On	**FGS.Function**
Depends On	**VPC.FirewallPolicy.Egress**
Depends On	**CCI.Service**
Depends On	**CCE.Storage.OBS**
Depends On	**ServiceStage.Job**
Depends On	**CDN.Host**
Depends On	**ECS.ServerGroup**
Depends On	**RDS.MySQL**
Depends On	**VPCEndpoint.EndpointService**
Depends On	**FGS.SmnEventMap**

Return Value

None.

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  sample_list: # Sample directory name.
    default: A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,X,Y,Z
    type: string
  one_wgs_tpid:
    description: ID of a single sample processing template.
  sleep_time:
    default: 120
    label: wgs
node_templates:
  sample: # Single sample processing.
    type: HuaweiCloud.AOS.Stack
    properties:
      templateId: {get_input: one_wgs_tpid}
      inputs:
        sleep_time: {get_input: sleep_time}
  sample-all: # Performs batch operations on sample1.
    type: HuaweiCloud.AOS.Batch
    properties:
      limit: {get_list_length: {split: [',', {get_input: sample_list}]}}  # Number of batch operations.
      step: 10
      items:
        - element: sample # Performs batch operations on each sample.
          values: # Divide the samples into arrays and obtain array elements.
            sample_name_list: {split: [',', {get_input: sample_list}]}
          properties: |
            templateId: {get_input: one_wgs_tpid}
            inputs:
              sleep_time: {get_input: sleep_time}
    requirements:
      - item:
          node: sample
```

2.2.4 AOS.Stack

Element Description

The **AOS.Stack** element is a Huawei PaaS solution deployment template. It is used to create stack resources of AOS so that AOS can orchestrate various resources. The **AOS.Stack** element corresponds to the solution in real scenarios. It can implement one-click deployment of the solution. After being defined, the element can be replicated in batches, helping services to be quickly deployed on the cloud.

Element Properties

Table 2-25 Property Description

Property	Required	Descripiton
inputs	Yes	Input information required by the nested stack **Type:** dict **Value Description:** Indicates the customized structure. **Default:** {} **Value Constraint:** A maximum of 60 inputs properties can be defined in a template.

Property	Required	Descripiton
description	No	Stack **Type:** string **Value Description:** Supports customization. **Default:** '' **Value Constraint:** The value must be a text string and support a maximum of 1024 characters.
failureStrategy	No	failure strategy **Type:** string **Value Description:** DoNothing, Rollback.Do nothing or rollback. **Default:** DoNothing
deploy	No	Whether to deploy the application **Type:** boolean **Value Description:** Supports true and false. If this parameter is set to false, the application (including software components contained in the application and host resources required by the application) will not be deployed. **Default:** True
clusterId	No	ID of the cluster which is associated with the SFS file system **Type:** HuaweiCloud.CCE.Cluster.Id **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** Enter the cluster ID. Specifically, log in to the CCE console, and choose Resource Management > Clusters. Click the target cluster, and you can obtain its cluster ID. Connect to the cluster object and use the get_reference function to automatically obtain the value.
templateId	Yes	ID of the template that the created stack depends on **Type:** string **Value Description:** Enter an ID of an existing template. To obtain a template ID, go to the AOS console. Click Template Market > Public Templates. Click the target template to enter its details page. You can obtain its ID from the end of the page's URL. **Value Constraint:** The value must be a text string and support a maximum of 64 characters.

Relationships Between Elements

Table 2-26 Relationship description

Description	Target
Depends On	**CCE.Service**
Depends On	**EVS.NonSharedVolume**
Depends On	**CCE.Deployment**
Depends On	**ServiceStage.Agent**
Depends On	**SMN.Topic**
Depends On	**CCI.Storage.EVS**
Depends On	**VPC.VIP**
Depends On	**APM.AutoScaler**
Depends On	**ServiceStage.AppGroup**
Depends On	**FGS.DmsEventMap**
Depends On	**VPC.FirewallPolicy.Ingress**
Depends On	**VPC.EIP**
Depends On	**CDN.Source**
Depends On	**RDS.MySQL.User**
Depends On	**CCE.Ingress**
Depends On	**CDN.Cache**
Depends On	**CCI.ConfigMap**

Description	Target
Depends On	**DIS.Stream**
Depends On	**CCI.Namespace**
Depends On	**CCE.Addon.AutoScaler**
Depends On	**VPC.FirewallRule**
Depends On	**CCE.Cluster**
Depends On	**SFS.FileSystem**
Depends On	**CDN.RefreshJob**
Depends On	**EVS.SharedVolume**
Depends On	**CCI.Job**
Depends On	**AOS.Stack**
Depends On	**FGS.TimerEventMap**
Depends On	**NAT.Instance**
Depends On	**FGS.ObsEventMap**
Depends On	**OBS.Bucket**
Depends On	**APIG.ApiGroup**
Depends On	**AOS.Batch**
Depends On	**CCE.Secret**
Depends On	**CCE.Storage.EVS**

Description	Target
Depends On	**CCE.Storage.SFS**
Depends On	**CCE.HelmRelease**
Depends On	**FGS.ApigEventMap**
Depends On	**RDS.MySQL.DataBase**
Depends On	**CCE.NodePool**
Depends On	**IAM.UserGroup**
Depends On	**CCI.Deployment**
Depends On	**CDN.Domain**
Depends On	**CCE.StatefulSet**
Depends On	**VPCEndpoint.Endpoint**
Depends On	**CCI.Ingress**
Depends On	**CCE.Job**
Depends On	**CCI.Secret**
Depends On	**APIG.API**
Depends On	**FGS.LtsEventMap**
Depends On	**ServiceStage.ContainerComponent**
Depends On	**CCI.Storage.SFS**
Depends On	**VPC.FirewallGroup**

Description	Target
Depends On	**CCI.StatefulSet**
Depends On	**CCE.DaemonSet**
Depends On	**RDS.PostgreSQL**
Depends On	**ECS.KeyPair**
Depends On	**ServiceStage.StatelessApplication**
Depends On	**ServiceStage.StatefulApplication**
Depends On	**IAM.Agency**
Depends On	**FGS.CtsEventMap**
Depends On	**DDS.CommunityReplicaSetOrSingle**
Depends On	**FGS.DisEventMap**
Depends On	**APIG.Throttle**
Depends On	**CCE.Pod**
Depends On	**DCS.Redis**
Depends On	**CDN.Https**
Depends On	**VPC.VPC**
Depends On	**CDN.PreheatJob**
Depends On	**CDN.Referer**
Depends On	**ECS.CloudServer**

Description	Target
Depends On	**SMN.Subscription**
Depends On	**VPC.Subnet**
Depends On	**CCE.ConfigMap**
Depends On	**FGS.Function**
Depends On	**VPC.FirewallPolicy.Egress**
Depends On	**CCI.Service**
Depends On	**CCE.Storage.OBS**
Depends On	**ServiceStage.Job**
Depends On	**CDN.Host**
Depends On	**ECS.ServerGroup**
Depends On	**RDS.MySQL**
Depends On	**VPCEndpoint.EndpointService**
Depends On	**FGS.SmnEventMap**
Contained In	**CCE.Cluster**

Return Value

Property	Type	Description
refName	string	Solution stack name
refID	string	Solution stack ID

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  delpoy1:
   default: false
   type: boolean
  delpoy2:
   default: true
   type: boolean
  delpoy3:
   default: true
   type: boolean
  description:
   default: nginx stack
   type: string
  template-id1:
   default: 370f60c6-afc2-e08a-d1c4-fd33bd58b785
   type: string
  template-id2:
   default: 753c30cf-3b3b-cd63-f7f0-1550d058eaac
   type: string
  template-id3:
   default: 2fdd9e05-1406-15d4-7b35-1274a036bcfb
   type: string
  images:
   default: 192.168.0.249:20202/op_svc_servicestage_88b899/nginx:latest
   type: string
node_templates:
  stackone:
   type: HuaweiCloud.AOS.Stack
   properties:
     deploy: {get_input: delpoy1}
     description: {get_input: description}
     templateId: {get_input: template-id1}
     inputs:
       images: {get_input: images}
   requirements:
     - dependency:
       node: stacktwo
  stacktwo:
   type: HuaweiCloud.AOS.Stack
   properties:
     deploy: {get_input: delpoy2}
     description: {get_input: description}
     templateId: {get_input: template-id2}
     inputs:
       images: {get_input: images}
       myport: {get_attribute: [stackthree,nginx-NodePort]}
   requirements:
     - dependency:
       node: stackthree
  stackthree:
   type: HuaweiCloud.AOS.Stack
   properties:
     deploy: {get_input: delpoy3}
     description: {get_input: description}
     templateId: {get_input: template-id3}
     inputs:
       image: {get_input: images}
```

2.2.5 APIG.API

Element Description

API providers configure APIs in API gateways to open backend capabilities. An API
is divided into two parts. The first part is oriented to API users and defines how to

invoke the API. The second part is oriented to API providers and defines the backend status of the API and how to access backend services through an API gateway.

Element Properties

Table 2-27 Property Description

Property	Required	Descripiton
mockInfo	No	Mock backend details **Type: APIG.MockInfo** **Value Description:** For details, see the definition of the datatype. **Default:** {} **Suggestion:** None
reqMethod	Yes	API request mode **Type:** string **Value Description:** Supports the following methods: GET, POST, PATCH, DELETE, OPTIONS, PUT, HEAD, and ANY. **Default:** GET **Value Constraint:** Supports "GET", "POST", "DELETE", "PUT", "PATCH", "HEAD", "OPTIONS", "ANY" **Suggestion:** None
name	Yes	API group name **Type:** string **Value Description:** Supports customization. **Value Constraint:** Supports a string of 3-64 characters. This string consists of Chinese characters, letters, digits, and underscores (_), and starts with a letter. **Suggestion:** None
backendType	Yes	Backend type **Type:** string **Value Description:** HTTP: a web backend; FUNCTION: a function workflow; MOCK: a simulated backend **Default:** HTTP **Value Constraint:** Supports HTTP, FUNCTION, MOCK **Suggestion:** None

Property	Required	Descripiton
remark	No	API description **Type:** string **Value Description:** Indicates the API description,Ensure that the length does not exceed 255 characters. **Value Constraint:** Supports a maximum of 255 characters. **Suggestion:** None
backendApi	No	Web backend details **Type: APIG.BackendApi** **Value Description:** For details, see the definition of the datatype. **Default:** {u'reqUri': u'unset', u'reqMethod': u'GET', u'urlDomain': u'unset', u'reqProtocol': u'HTTP'} **Suggestion:** None
groupId	Yes	Group to which the API belongs **Type:** HuaweiCloud.APIG.ApiGroup.Id **Value Description:** Supports the use of an existing or new API group. To use a new API group, define the API group object in the template and establish the dependency relationship. You are advised to drag the object to the API group to automatically establish the dependency relationship. **Suggestion:** Use the get_input function to pass this parameter. Its value can then be automatically selected when you create a stack on the AOS console. Use the get_reference function to reference an APIG.ApiGroup element created by the current stack. The group ID can then be automatically specified when you use the designer to create a dependency on the APIG.ApiGroup element. Go to the API Gateway console and obtain the IDs of existing API groups.
reqUri	Yes	API access mode **Type:** string **Value Description:** Indicates the API access address. **Value Constraint:** Supports a maximum of 255 characters. **Suggestion:** Comply with the URI specifications.

Property	Required	Descripiton
authType	Yes	API authentication mode **Type:** string **Value Description:** NONE: no authentication; APP: app authentication; IAM: IAM authentication **Default:** IAM **Value Constraint:** The value can be NONE, APP, or IAM. **Suggestion:** Use the IAM authentication mode.
matchMode	Yes	API matching mode **Type:** string **Value Description:** SWA: prefix match; NORMAL: full match **Default:** NORMAL **Value Constraint:** Supports "SWA", "NORMAL" **Suggestion:** None
cors	Yes	Whether cross-domain access is supported **Type:** boolean **Value Description:** true: Cross-origin resource sharing (CORS) is supported. false: CORS is not supported. **Default:** False **Suggestion:** Unless required by services, you are advised to disable cross-domain access to ensure security.
funcInfo	No	Function computation backend details **Type: APIG.FuncInfo** **Value Description:** For details, see the definition of the datatype. **Default:** {u'functionUrn': u'', u'invocationType': u'async'} **Suggestion:** None
type	Yes	API type **Type:** string **Value Description:** public: public API; private: private API **Default:** public **Value Constraint:** Supports "public", "private" **Suggestion:** None

Property	Required	Descripiton
strategyId	No	Process policy used by the API **Type:** string **Value Description:** Supports the use of an existing or new request throttling policy. To use a new request throttling policy, define the API policy object in the template and establish the dependency relationship. You are advised to connect the API to the API policy. **Suggestion:** Use the get_input function to pass this parameter. Its value can then be automatically selected when you create a stack on the AOS console. Use the get_reference function to reference an APIG.Throttle element created by the current stack. The group ID can then be automatically specified when you use the designer to create a dependency on the APIG.Throttle element. Go to the API Gateway console and obtain the IDs of existing API groups.
reqProtocol	Yes	API protocol type **Type:** string **Value Description:** Supports HTTP and HTTPS, or BOTH. **Default:** HTTP **Value Constraint:** Supports "HTTP", "HTTPS", "BOTH" **Suggestion:** If sensitive information needs to be transferred, you are advised to use HTTPS.

Relationships Between Elements

Table 2-28 Relationship description

Description	Target
Connected	**APIG.Throttle**
Contained In	**APIG.ApiGroup**

Return Value

Property	Type	Description
reqUri	string	API Uri

Property	Type	Description
reqMethod	string	API Method
refID	string	API ID
reqProtocol	string	API Protocol

Blueprint Example

```
inputs:
 apiName:
  default: api321b
 apigroupName:
  default: test_group321b
 throttleName:
  default: throttle321
node_templates:
 throttle1:
  type: HuaweiCloud.APIG.Throttle
  properties:
   name:
    get_input: throttleName
   remark: test throttle of aos plugin
   apiCallLimits: 10
   appCallLimits: 7
   userCallLimits: 9
   timeInterval: 100
   timeUnit: MINUTE
 api-group1:
  properties:
   name:
    get_input: apigroupName
   remark: test group of aos plugin
  type: HuaweiCloud.APIG.ApiGroup
 api1:
  properties:
   authType: NONE
   backendApi:
    remark: test backend
    reqMethod: GET
    reqProtocol: HTTP
    reqUri: '/test/{aaa}'
    timeout: 10000
    urlDomain: 192.145.47.226:12346
   backendType: HTTP
   cors: false
   groupId:
    get_attribute:
     - api-group1
     - refID
   matchMode: NORMAL
   name:
    get_input: apiName
   remark: test api of aos plugin
   reqMethod: GET
   reqProtocol: HTTP
   reqUri: '/test/{aaa}'
   strategyId:
    get_attribute:
     - throttle1
     - refID
  requirements:
```

```
    - groupId:
        node: api-group1
    - strategyId:
        node: throttle1
  type: HuaweiCloud.APIG.API
tosca_definitions_version: huaweicloud_tosca_version_1_0
```

2.2.6 APIG.ApiGroup

Element Description

An API group is an API management unit. An API group is equivalent to a service entry. When an API group is created, a subdomain name is returned as the access entry.

Element Properties

Table 2-29 Property Description

Property	Required	Descripiton
remark	No	API group description **Type:** string **Value Description:** Supports a maximum of 255 characters. **Value Constraint:** Supports a maximum of 255 characters. **Suggestion:** None
name	Yes	API group name **Type:** string **Value Description:** Supports customization. **Value Constraint:** Supports a string of 3-64 characters. This string consists of Chinese characters, letters, digits, and underscores (_), and starts with a letter. **Suggestion:** None

Relationships Between Elements

None.

Return Value

Property	Type	Description
slDomain	string	SL domain
refID	string	API Group UUID
refName	string	API Group name

Blueprint Example

```
inputs:
  apiName:
    default: api321b
  apigroupName:
    default: test_group321b
  throttleName:
    default: throttle321
node_templates:
  throttle1:
    type: HuaweiCloud.APIG.Throttle
    properties:
      name:
        get_input: throttleName
      remark: test throttle of aos plugin
      apiCallLimits: 10
      appCallLimits: 7
      userCallLimits: 9
      timeInterval: 100
      timeUnit: MINUTE
  api-group1:
    properties:
      name:
        get_input: apigroupName
      remark: test group of aos plugin
    type: HuaweiCloud.APIG.ApiGroup
  api1:
    properties:
      authType: NONE
      backendApi:
        remark: test backend
        reqMethod: GET
        reqProtocol: HTTP
        reqUri: '/test/{aaa}'
        timeout: 10000
        urlDomain: 192.145.47.226:12346
      backendType: HTTP
      cors: false
      groupId:
        get_attribute:
          - api-group1
          - refID
      matchMode: NORMAL
      name:
        get_input: apiName
      remark: test api of aos plugin
      reqMethod: GET
      reqProtocol: HTTP
      reqUri: '/test/{aaa}'
      strategyId:
        get_attribute:
          - throttle1
          - refID
    requirements:
      - groupId:
          node: api-group1
      - strategyId:
          node: throttle1
    type: HuaweiCloud.APIG.API
tosca_definitions_version: huaweicloud_tosca_version_1_0
```

2.2.7 APIG.Throttle

Element Description

The request throttling function allows you to limit the number of API calls within a specified period to protect backend services. After APIs go online, the system provides an access control policy for each API by default. API providers can change the access control policy based on the service capabilities and load conditions of their APIs.

Element Properties

Table 2-30 Property Description

Property	Required	Descripiton
timeInterval	Yes	Duration unit of request throttling **Type:** integer **Value Description:** Indicates the duration unit of request throttling. This parameter works with the API request throttling limit, which indicates the maximum number of API requests in a specified period. This value must be a positive integer and cannot exceed 2147483647. **Value Constraint:** This value must be a positive integer and cannot exceed 2147483647
remark	No	Description of the request throttling policy **Type:** string **Value Description:** Supports a maximum of 255 characters. **Value Constraint:** Supports a maximum of 255 characters. **Suggestion:** None
name	Yes	Request throttling policy name **Type:** string **Value Description:** Supports customization. **Value Constraint:** Supports a string of 3-64 characters. This string consists of Chinese characters, letters, digits, and underscores (_), and starts with a letter. **Suggestion:** None

Property	Required	Descripiton
apiCallLimits	Yes	API request throttling limit **Type:** integer **Value Description:** API request throttling limits the maximum number of access requests that can be sent to an API within a specified time period. **Value Constraint:** This value must be a positive integer and cannot exceed 2147483647 **Suggestion:** None
userCallLimits	No	User request throttling limit **Type:** integer **Value Description:** User request throttling limits the maximum number of access requests that each user can send to an API within a specified time period. This value cannot be greater than the value of apiCallLimits. **Value Constraint:** This value must be a positive integer and cannot exceed 2147483647 **Suggestion:** None
appCallLimits	No	APP request throttling limit **Type:** integer **Value Description:** Indicates the maximum number of times that an API can be accessed by an APP in a specified period. This value cannot exceed the user request throttling limit. This value must be a positive integer and cannot exceed 2147483647. **Value Constraint:** This value must be a positive integer and cannot exceed 2147483647 **Suggestion:** None
timeUnit	Yes	Time unit of request throttling **Type:** string **Value Description:** Supports the following units: second, minute, hour, or day. **Default:** SECOND **Value Constraint:** Supports "SECOND", "MINUTE", "HOUR", "DAY" **Suggestion:** None

Relationships Between Elements

None.

Return Value

Property	Type	Description
refName	string	Throtte name
refID	string	Throttle ID

Blueprint Example

```
inputs:
  apiName:
    default: api321b
  apigroupName:
    default: test_group321b
  throttleName:
    default: throttle321
node_templates:
  throttle1:
    type: HuaweiCloud.APIG.Throttle
    properties:
      name:
        get_input: throttleName
      remark: test throttle of aos plugin
      apiCallLimits: 10
      appCallLimits: 7
      userCallLimits: 9
      timeInterval: 100
      timeUnit: MINUTE
  api-group1:
    properties:
      name:
        get_input: apigroupName
      remark: test group of aos plugin
    type: HuaweiCloud.APIG.ApiGroup
  api1:
    properties:
      authType: NONE
      backendApi:
        remark: test backend
        reqMethod: GET
        reqProtocol: HTTP
        reqUri: '/test/{aaa}'
        timeout: 10000
        urlDomain: 192.145.47.226:12346
      backendType: HTTP
      cors: false
      groupId:
        get_attribute:
          - api-group1
          - refID
      matchMode: NORMAL
      name:
        get_input: apiName
      remark: test api of aos plugin
      reqMethod: GET
      reqProtocol: HTTP
      reqUri: '/test/{aaa}'
      strategyId:
        get_attribute:
          - throttle1
          - refID
    requirements:
      - groupId:
          node: api-group1
      - strategyId:
```

```
        node: throttle1
    type: HuaweiCloud.APIG.API
tosca_definitions_version: huaweicloud_tosca_version_1_0
```

2.2.8 APM.AutoScaler

Element Description

The **APM.AutoScaler** element is used to control elastic scaling of applications.

Element Properties

Table 2-31 Property Description

Property	Required	Descripiton
name	Yes	Auto scaling policy type **Type:** string **Value Description:** Supports customization. **Value Constraint:** The value contains 1 to 64 characters. This value is unique under a tenant, and must meet the following requirement: {"regex": "^[a-zA-Z][0-9a-zA-Z-_]*$", "min_length" :1, "max_length" :64}.
maxInstances	Yes	Maximum number of instances supported by an auto scaling policy. If the number of instances reaches this value, scale-out will not be performed. **Type:** integer **Value Description:** Supports an integer ranging from 1 to 1000. For example, 15. **Default:** 10 **Value Constraint:** The value must be an integer ranging from 1 to 1000. This integer must be greater than the value of minInstance. **Suggestion:** Set the value based on specifications and requirements.
appName	Yes	Application to which the auto scaling policy applies **Type:** string **Value Description:** Indicates the name of the CCE.deployment object in the template. **Default:** '' **Suggestion:** You are advised to connect to the CCE.deployment object and use the get_reference function to automatically obtain the value, or manually enter the value.

Property	Required	Descripiton
rules	Yes	Auto scaling rule, which indicates the scale-out or scale-in policy (currently, scaling can only be performed based on performance metrics) **Type: APM.AutoscalerRule** Array **Value Description:** Indicates the APM.AutoscalerRule array. **Value Constraint:** The definition of the APM.AutoscalerRule type is met. **Suggestion:** Select the rules field in the component part, and then fill in the field based on prompts.
clusterId	No	Cluster ID to which the auto scaling policy applies **Type:** HuaweiCloud.CCE.Cluster.Id **Value Description:** Indicates the ID of the CCE.cluster object in the template. **Suggestion:** You are advised to connect to the CCE.deployment object which is contained in the CCE.cluster object and use the get_attribute function to automatically obtain the value, or manually enter the value.
cooldown Time	Yes	Cooldown time of auto scaling, that is, the interval between two consecutive auto scalings **Type:** integer **Value Description:** Supports an integer ranging from 0 to 86400 (unit: s). For example, 180. **Default:** 60 **Value Constraint:** The value must be an integer ranging from 0 to 86400. The maximum cooldown time is 24 hours. **Suggestion:** Set the value based on specifications and requirements.
minInstan ces	Yes	Minimum number of instances supported by an auto scaling policy. **Type:** integer **Value Description:** Supports an integer ranging from 1 to 1000. For example, 15. **Default:** 1 **Value Constraint:** The value must be an integer ranging from 1 to 1000. This integer must be greater than the value of maxInstance. **Suggestion:** Set the value based on specifications and requirements.

Property	Required	Descripiton
type	Yes	Auto scaling policy type **Type:** string **Value Description:** Supports auto scaling for the current type of application. That is, policies can be loaded to stateless applications and CCE deployment objects. **Default:** app **Value Constraint:** Currently, only app is supported. **Suggestion:** Use the default value.

Relationships Between Elements

Table 2-32 Relationship description

Description	Target
Connected	**ServiceStage.StatelessApplication**
Contained In	**CCE.Cluster**
Connected	**CCE.Deployment**

Return Value

Property	Type	Description
refID	string	Instance ID of an auto scaling policy
refName	string	Instance name of an auto scaling policy

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  images:
    type: string
  instances:
    default: 1
    type: integer
node_templates:
  containercomponent-2:      # Define containers of the application.
    type: HuaweiCloud.ServiceStage.ContainerComponent
    properties:
      package:
```

```
        image:
          get_input: images
        imagePullPolicy: Always
        lifecycle:
          postStart:
            - '/bin/bash'
            - '-c'
            - touch aos
          preStop:
            - '/bin/bash'
            - '-c'
            - sleep 60
  statelessapplication-1:     # Define a Deployment.
    type: HuaweiCloud.ServiceStage.StatelessApplication
    properties:
      affinitySelector:
        affinities:
          antiself: false
      instances:
        get_input: instances
      type: container
    requirements:
      - package:
          node: containercomponent-2
          relationship: HuaweiCloud.Relationships.PackageConsistsOf
  my-scaling-policy:
    type: HuaweiCloud.APM.AutoScaler
    properties:
      name: my-scaling-policy
      maxInstances: 10
      minInstances: 3
      cooldownTime: 180
      rules:
        - name: scaling-out-rule
          conditions:
            - evaluationPeriods: 1
              metricUnit: Percent
              period: 60
              metricOperation: '>'
              metricThreshold: 70
              metricNamespace: PAAS.CONTAINER
              statistic: average
              metricName: cpuUsage
          actions:
            - type: scale_out_k8s
              parameters:
                scaleUnit: 1
        - name: scaling-in-rule
          conditions:
            - metricNamespace: PAAS.CONTAINER
              metricName: cpuUsage
              metricUnit: Percent
              metricOperation: <
              metricThreshold: 50
              statistic: average
              period: 60
              evaluationPeriods: 3
          actions:
            - type: scale_in_k8s
    requirements:
      - application:
          node: statelessapplication-1       # Define the dependencies on StatelessApplication.
```

2.2.9 APM.Pinpoint

Element Description

The **APM.Pinpoint** element is used to orchestrate a stack containing the Pinpoint monitoring policy. After the stack is successfully deployed, you can view the monitoring group and monitoring details of the applications in the stack on the monitoring page.

Element Properties

Table 2-33 Property Description

Property	Required	Descripiton
name	Yes	Tracing probe name **Type:** string **Value Description:** Supports customization. **Value Constraint:** The following requirement must be met: {"^[a-zA-Z][0-9a-zA-Z-_]*$"}. **Suggestion:** Customize the value.

Relationships Between Elements

None.

Return Value

None.

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  images:
    type: string
  instances:
    default: 1
    type: integer
node_templates:
  containercomponent-2:
    type: HuaweiCloud.ServiceStage.ContainerComponent
    properties:
      package:
        image:
          get_input: images
        imagePullPolicy: Always
        lifecycle:
          postStart:
            - '/bin/bash'
            - '-c'
            - touch aos
          preStop:
            - '/bin/bash'
            - '-c'
```

```
          - sleep 60
    statelessapplication-1:
      type: HuaweiCloud.ServiceStage.StatelessApplication
      properties:
        affinitySelector:
          affinities:
            antiself: false
        instances:
          get_input: instances
        type: container
      requirements:
        - package:
            node: containercomponent-2
            relationship: HuaweiCloud.Relationships.PackageConsistsOf
policies:
  test-apm:
    type: HuaweiCloud.APM.Pinpoint
    properties:
      name: test
    targets:
      - statelessapplication-1
```

2.2.10 CCE.Addon.AutoScaler

Element Description

CCE.Addon.AutoScaler is a plug-in for node auto-scaling in a K8S cluster.

Element Properties

Table 2-34 Property Description

Property	Required	Descripiton
scaleDownUtilizationThreshold	No	Node resource usage ratio **Type:** float **Value Description:** Supports the range of 0 to 1. **Default:** 0.4 **Value Constraint:** The value ranges from 0 to 1. **Suggestion:** Select a port in the range as required.
clusterId	Yes	ID of the cluster to which the resource belongs **Type:** HuaweiCloud.CCE.Cluster.Id **Value Description:** Indicates the ID of an existing or new container cluster. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** Enter the cluster ID. Specifically, log in to the CCE console, and choose Resource Management > Clusters. Click the target cluster, and you can then obtain its cluster ID. Connect to the cluster object and use the get_reference function to obtain the cluster ID.

Property	Required	Descripiton
scaleDownEnabled	Yes	scale down function switch **Type:** boolean **Default:** False
publicKey	No	public key **Type:** HuaweiCloud.ECS.KeyPair.PublicKey
nodePasswd	No	node root user password **Type:** password
nodes	Yes	autoscaler nodes with AZ, flavor, and OS ,taints **Type:** **CCE.Addon.AutoScaler.Node** Array **Suggestion:** During scaling, taints are arrays, including key, value, and effect. The effect can be set to NoSchedule, PreferNoSchedule, or NoExecute.
sshKeyName	No	name of sshKey **Type:** HuaweiCloud.ECS.KeyPair.Name
scaleDownUnneededTime	No	When a node remains idle for this specified time duration (in minutes), scaling in will be performed. **Type:** integer **Value Description:** Supports the range of 1 to 1000. **Default:** 10 **Value Constraint:** The value ranges from 1 to 1000. **Suggestion:** Select a port in the range as required.

Relationships Between Elements

Table 2-35 Relationship description

Description	Target
Depends On	**CCE.NodePool**
Contained In	**CCE.Cluster**

Return Value

Property	Type	Description
clusterId	string	ID of the cluster which is associated with the AutoScaler
refName	string	Name of the AutoScaler
refID	string	UID of the AutoScaler

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  clusterId:
    default: "e0f98d46-9716-11e8-a25f-0255ac106314"
    description: cluster ID.
  nodePasswd:
    default: "******"
    description: node root user password
  scaleDownEnabled:
    default: true
    description: scale down enabled.
  scaleDownUnneededTime:
    default: 10
    description: sale down unneeded time
  scaleDownUtilizationThreshold:
    default: 0.5
    description: scale down utilization threshold
  avaliableZone:
    default: az1.dc1
    description: avaliableZone.
  nodeFlavor:
    default: s1.xlarge
    description: node flavor.
  nodeOS:
    default: EulerOS 2.2
    description: node OS.
node_templates:
  autoscaler:
    type: HuaweiCloud.CCE.Addon.AutoScaler
    properties:
      clusterId:
        get_input: clusterId
      nodePasswd:
        get_input: nodePasswd
      scaleDownEnabled:
        get_input: scaleDownEnabled
      scaleDownUnneededTime:
        get_input: scaleDownUnneededTime
      scaleDownUtilizationThreshold:
        get_input: scaleDownUtilizationThreshold
      nodes:
        - az:
            get_input: avaliableZone
          flavor:
            get_input: nodeFlavor
          os:
            get_input: nodeOS
outputs:
  autoscaler_id:
    value: {get_attribute: [autoscaler, refID]}
```

2.2.11 CCE.Cluster

Element Description

The **CCE.Cluster** element is used to deploy Kubernetes cluster resources at the Huawei PaaS layer. A master node can be created based on this element to manage and create slave nodes. This element provides the application orchestration function for users.

Element Properties

Table 2-36 Property Description

Property	Required	Descripiton
multiAZ	No	Multi-AZ Cluster **Type:** boolean **Default:** False **Value Constraint:** Only when HA clusters are used, for example, clusters of cce.s2 specifications, can you set this parameter to true. **Suggestion:** If multiAZ is set to true, the cluster flavor must support multi-AZ cluster creation, for example, flavors of cce.s2 specifications.
vpcId	Yes	VPC ID **Type:** HuaweiCloud.VPC.VPC.Id **Value Constraint:** An existing or new VPC ID can be used. To use a new VPC ID, you need to define the VPC object in the template and establish the dependency relationship. **Suggestion:** Use the get_input function to pass this parameter. Its value can then be automatically selected when you create a stack on the AOS console. Use the get_reference function to reference a VPC.VPC element created by the current stack. The group ID can then be automatically specified when you use the designer to create a dependency on the VPC.VPC element. Obtain the ID of the created VPC on the VPC console at https://console.huaweicloud.com/vpc?&locale=en-us.
network Mode	No	Container network type **Type:** string **Default:** overlay_l2 **Value Constraint:** Currently, overlay_l2, underlay_ipvlan, and vpc-router are supported. If you select vpc-router, the selected VPC can contain only one subnet. **Suggestion:** Use the default value.

Property	Required	Descripiton
description	No	Cluster description **Type:** string **Suggestion:** Customize the value.
name	No	Cluster name **Type:** string **Value Constraint:** The value contains 4 to 128 characters and must start with a letter and end with a digit. Only lowercase letters, digits, and hyphens (-) are allowed. The following regular specification must be met: (^$) \| (^[a-z] ([-a-z0-9]*[a-z0-9]) ?$). **Suggestion:** Customize the value.
kubeProxyMode	No	Service forwarding mode **Type:** string **Default:** iptables **Value Constraint:** Currently, only iptables and ipvs are supported. **Suggestion:** You are advised to use the default value iptables for cluster 1.7, and use ipvs for cluster above version 1.9 to achieve better performance.
highwaySubnetId	No	High-speed subnet ID **Type:** HuaweiCloud.VPC.Subnet.Id **Value Constraint:** An existing or new subnet ID can be used. To use a new subnet ID, you need to define the subnet object in the template and establish the dependency relationship. **Suggestion:** Use the get_input function to pass this parameter. Its value can then be automatically selected when you create a stack on the AOS console. Use the get_reference function to reference a VPC.Subnet element created by the current stack. The group ID can then be automatically specified when you use the designer to create a dependency on the VPC.Subnet element. Obtain the ID of the created subnet on the VPC console at https://console.huaweicloud.com/vpc?&locale=en-us.

Property	Required	Descripiton
container NetworkC IDR	No	Container network segment **Type:** string **Default:** '' **Value Constraint:** You need set this parameter based on the networks created by users. The available network segments are as follows: 172.16.0.0/16-172.31.0.0/16 10.0.0.0/16-10.255.0.0/16 192.168.0.0/16. **Suggestion:** Use the default value.
version	No	Cluster version **Type:** string **Value Constraint:** Currently, versions v1.15, v1.13 and v1.11 are supported. **Suggestion:** Set it to a version supported by CCE. Use the get_input function to set this field, and then the value can be automatically selected on the AOS console.
namespac es	No	Namespace created during cluster creation **Type:** string Array **Default:** [] **Value Constraint:** Array type.
subnetId	Yes	Subnet ID **Type:** HuaweiCloud.VPC.Subnet.Id **Value Constraint:** An existing or new subnet ID can be used. To use a new subnet ID, you need to define the subnet object in the template and establish the dependency relationship. **Suggestion:** Use the get_input function to pass this parameter. Its value can then be automatically selected when you create a stack on the AOS console. Use the get_reference function to reference a VPC.Subnet element created by the current stack. The group ID can then be automatically specified when you use the designer to create a dependency on the VPC.Subnet element. Obtain the ID of the created subnet on the VPC console at https://console.huaweicloud.com/vpc?&locale=en-us.

Property	Required	Descripiton
flavor	Yes	Cluster specification **Type:** HuaweiCloud.CCE.Cluster.Flavor.Name **Value Constraint:** The value must comply with CCE flavor definitions (You can view supported flavors on the CCE console.) **Suggestion:** You can query the specification of the available cluster on the cluster creation page of the CCE.
type	No	Cluster type **Type:** HuaweiCloud.CCE.Cluster.Type **Default:** VirtualMachine **Value Constraint:** Currently, VirtualMachine, BareMetal, and Windows are supported. **Suggestion:** Use the default value.
nodes	No	User node created during periodic cluster creation **Type: CCE.NodePool** **Default:** {u'dataVolumes': [], u'availabilityZone': u'unset', u'instances': 1, u'rootVolume': {u'volumeType': u'unset', u'size': 40}, u'flavor': u'unset', u'sshKeyName': u'unset'} **Value Constraint:** The description and constraint of HuaweiCloud.CCE.NodePool must be complied with. **Suggestion:** Set the value based on specifications and requirements.
availabilityZone	No	AZ. For periodic clusters, this field is mandatory. **Type:** HuaweiCloud.ECS.AvailabilityZone.Name **Value Constraint:** The value varies depending on regions. For details, visit https://developer-intl.huaweicloud.com/en-us/endpoint. **Suggestion:** Use the get_input function to pass this parameter. Its value can then be automatically selected when you create a stack on the AOS console.

Relationships Between Elements

Table 2-37 Relationship description

Description	Target
Connected	**VPC.Subnet**

Descripti on	Target
Contained In	**VPC.VPC**

Return Value

Property	Type	Description
refName	string	Cluster name
refID	string	Cluster ID

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  availabilityZone:
    default: az1.dc1
  vpcId:
    default: ba6e4347-99d2-4649-b114-85c28d3d71b0
  subnetId:
    default: 3be61f68-9bfc-41bf-8f5e-66c57122f270
  clusterFlavor:
    default: cce.s1.small

node_templates:
  cluster:
    type: HuaweiCloud.CCE.Cluster
    properties:
      availabilityZone: {get_input: availabilityZone}
      vpcId: {get_input: vpcId}
      subnetId: {get_input: subnetId}
      flavor: {get_input: clusterFlavor}

outputs:
  cluster_id:
    value: {get_attribute: [cluster, clusterId]}
```

2.2.12 CCE.ConfigMap

Element Description

The **CCE.ConfigMap** element is used to provide basic configuration information storage services for the cluster creation of Huawei CCE. Sensitive information is prohibited in **ConfigMap**.

📖 **NOTE**

Currently, ConfigMap dynamic mounting is not supported.

Element Properties

Table 2-38 Property Description

Property	Required	Descripiton
k8sManifest	No	K8s-native manifest object of the ConfigMap, based on which you can create ConfigMap resources to replace other configuration items **Type:** dict **Value Description:** Supports customization. You are not advised to change the name and labels under the metadata during an update.
name	No	ConfigMap name **Type:** string **Value Description:** Supports customization, for example, :my-configmap. **Default:** '' **Value Constraint:** The value supports a maximum of 63 characters and must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed.
clusterId	No	ID of the cluster to which the resource belongs **Type:** HuaweiCloud.CCE.Cluster.Id **Value Description:** Indicates the ID of an existing or new container cluster. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters.
namespace	No	Namespace in a cluster where a resource is located **Type:** string **Value Description:** Must be a valid namespace in the cluster, for example, default. **Value Constraint:** The value must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed.
data	No	ConfigMap resource data, consisting of keys and values **Type:** dict **Value Description:** Supports customization.

Relationships Between Elements

Table 2-39 Relationship description

Description	Target
Depends On	**AOS.Batch**
Depends On	**DCS.Redis**
Depends On	**RDS.MySQL**
Depends On	**CCE.Storage.EVS**
Depends On	**OBS.Bucket**
Depends On	**CCE.Storage.SFS**
Depends On	**CCE.ConfigMap**
Depends On	**CCE.Job**
Depends On	**CCE.Storage.OBS**
Depends On	**CCE.DaemonSet**
Depends On	**CCE.Secret**
Depends On	**CCE.Service**
Depends On	**CCE.Ingress**
Depends On	**CCE.StatefulSet**
Depends On	**CCE.NodePool**
Depends On	**CCE.Deployment**
Depends On	**CCE.Pod**

Descripti on	Target
Depends On	**RDS.PostgreSQL**
Contained In	**CCE.Cluster**

Return Value

Property	Type	Description
refName	string	ConfigMap name

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  name:
    default: my-configmap
  xx-value:
    default: abcd
  yy-value:
    default: efgh
node_templates:
  configmap:
    type: HuaweiCloud.CCE.ConfigMap
    properties:
      name: {get_input: name}
      data:
        xx: {get_input: xx-value}
        yy: {get_input: yy-value}
```

2.2.13 CCE.DaemonSet

Element Description

The **CCE.DaemonSet** element is used to create a DaemonSet object in the Kubernetes cluster. Currently, the Kubernetes native YAML file can be used to create the object.

Element Properties

Table 2-40 Property Description

Property	Required	Descripiton
namespace	No	Namespace in a cluster where a resource is located **Type:** string **Value Description:** Must be a valid namespace in the cluster, for example, default. **Value Constraint:** The value must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed. **Suggestion:** Log in to the CCE console, and choose Resource Management > Namespaces. View and select the target namespace.
k8sManifest	Yes	Native YAML file content of the Kubernetes object **Type:** dict **Value Description:** Supports customization. You are advised to use a public image (which is uploaded to the image repository and whose type is set to public), and not to change the name and labels under the metadata during an update. **Value Constraint:** This field cannot be empty. **Suggestion:** Compilation guide for your reference: https://support.huaweicloud.com/eu/api-cce/cce_02_0133.html
clusterId	No	ID of the cluster to which the resource belongs **Type:** HuaweiCloud.CCE.Cluster.Id **Value Description:** Indicates the ID of an existing or new container cluster. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** Enter the cluster ID. Specifically, log in to the CCE console, and choose Resource Management > Clusters. Click the target cluster, and you can obtain its cluster ID. Connect to the cluster object and use the get_reference function to automatically obtain the value.

Relationships Between Elements

Table 2-41 Relationship description

Description	Target
Depends On	**AOS.Batch**
Depends On	**DCS.Redis**
Depends On	**RDS.MySQL**
Depends On	**CCE.Storage.EVS**
Depends On	**OBS.Bucket**
Depends On	**CCE.Storage.SFS**
Depends On	**CCE.ConfigMap**
Depends On	**CCE.Job**
Depends On	**CCE.Storage.OBS**
Depends On	**CCE.DaemonSet**
Depends On	**CCE.Secret**
Depends On	**CCE.Service**
Depends On	**CCE.Ingress**
Depends On	**CCE.StatefulSet**
Depends On	**CCE.NodePool**
Depends On	**CCE.Deployment**
Depends On	**CCE.Pod**

Descripti on	Target
Depends On	**RDS.PostgreSQL**
Contained In	**CCE.Cluster**

Return Value

Property	Type	Description
refName	string	DaemonSet name

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  clusterId:
    default: 774e6cef-01a3-11e8-8d80-0255ac101b56
  containername:
    default: daemonset-123
    type: string
  deploymentname:
    default: mydaemonset
    type: string
  image:
    default: nginx
    type: string
  imagePullPolicy:
    default: IfNotPresent
    type: string
  labels:
    default: mydaemonset
    type: string
  namespace:
    default: default
    type: string
node_templates:
  my-daemonset:
    type: HuaweiCloud.CCE.DaemonSet
    properties:
      clusterId:
        get_input: clusterId
      k8sManifest:
        apiVersion: 'apps/v1'
        kind: DaemonSet
        metadata:
          labels:
            name:
              get_input: labels
          name:
            get_input: deploymentname
        spec:
          selector:
            matchLabels:
              name:
                get_input: labels
          template:
            metadata:
```

```
        labels:
          name:
            get_input: labels
      spec:
        containers:
          - image:
              get_input: image
            imagePullPolicy:
              get_input: imagePullPolicy
            name:
              get_input: containername
        imagePullSecrets:
          - name: default-secret
    namespace:
      get_input: namespace
```

2.2.14 CCE.Deployment

Element Description

The **CCE.Deployment** element is used to create a Deployment object in the Kubernetes cluster on Huawei CCE. Currently, the Kubernetes native YAML file can be used to create the object.

Element Properties

Table 2-42 Property Description

Property	Required	Descripiton
namespac e	No	Namespace in a cluster where a resource is located **Type:** string **Value Description:** Must be a valid namespace in the cluster, for example, default. **Value Constraint:** The value must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed. **Suggestion:** Log in to the CCE console, choose Resource Management > Namespaces, and query information as required.
k8sManif est	Yes	Deployment object in the Kubernetes cluster created by the CCE service **Type:** dict **Value Description:** This field can be customized. You are advised to use a public image (uploading an image to SWR and setting the image type to public). When updating the image, do not change the name and labels under metadata. If replicas under spec is specified using a get_input function, set type to integer. **Suggestion:** Enter the native YAML file content of the Kubernetes object.

Property	Required	Descripiton
clusterId	No	ID of the CCE cluster to which the resource belongs **Type:** HuaweiCloud.CCE.Cluster.Id **Value Description:** Indicates the ID of an existing or new container cluster. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** Enter the cluster ID. Specifically, log in to the CCE console, and choose Resource Management > Clusters. Click the target cluster, and you can obtain its cluster ID. Connect to the cluster object and use the get_reference function to automatically obtain the value.

Relationships Between Elements

Table 2-43 Relationship description

Description	Target
Depends On	**AOS.Batch**
Depends On	**DCS.Redis**
Depends On	**RDS.MySQL**
Depends On	**CCE.Storage.EVS**
Depends On	**OBS.Bucket**
Depends On	**CCE.Storage.SFS**
Depends On	**CCE.ConfigMap**
Depends On	**CCE.Job**
Depends On	**CCE.Storage.OBS**
Depends On	**CCE.DaemonSet**

Description	Target
Depends On	**CCE.Secret**
Depends On	**CCE.Service**
Depends On	**CCE.Ingress**
Depends On	**CCE.StatefulSet**
Depends On	**CCE.NodePool**
Depends On	**CCE.Deployment**
Depends On	**CCE.Pod**
Depends On	**RDS.PostgreSQL**
Contained In	**CCE.Cluster**

Return Value

Property	Type	Description
chargeMode	No	Billing mode (billed by traffic or bandwidth) **Type:** string **Value Description:** Supports bandwidth and traffic. When this parameter is left blank or empty, the default value is bandwidth. **Default:** bandwidth **Value Constraint:** Supports bandwidth and traffic.
refName	string	Name of the created Deployment object
refLabels App	string	Name of label app

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  containername:
    default: deployment-123
```

```
        type: string
      deploymentname:
        default: deploymenttest
        type: string
      image:
        default: nginx
        type: string
      imagePullPolicy:
        default: IfNotPresent
        type: string
      labels:
        default: mydeployment
        type: string
    node_templates:
      my-deployment:
        type: HuaweiCloud.CCE.Deployment
        properties:
          k8sManifest:
            apiVersion: 'apps/v1'
            kind: Deployment
            metadata:
              labels:
                'cce/appgroup':
                  get_input: labels
              name:
                get_input: deploymentname
            spec:
              'replicas:{get_input': 'deploymentname}'
              selector:
                matchLabels:
                  'cce/appgroup':
                    get_input: labels
              template:
                metadata:
                  labels:
                    'cce/appgroup':
                      get_input: labels
                spec:
                  containers:
                    - image:
                        get_input: image
                      name:
                        get_input: containername
              imagePullPolicy:
                get_input: imagePullPolicy
```

2.2.15 CCE.HelmRelease

Element Description

Helm is a type of Kubernetes-based package specifications provided by CCE. The
CCE.HelmRelease element is a deployment instance of the Helm package.

Element Properties

Table 2-44 Property Description

Property	Required	Descripiton
name	Yes	Name of the created CCE.HelmRelease **Type:** string **Value Description:** Supports customization, for example, my_release. **Value Constraint:** The value must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed.
clusterId	No	ID of the cluster to which the resource belongs **Type:** HuaweiCloud.CCE.Cluster.Id **Value Description:** Indicates the ID of an existing or new container cluster. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** This parameter is optional. You can set this parameter when creating a stack.
namespace	No	Namespace in a cluster where a resource is located **Type:** string **Value Description:** Indicates the namespace of a cluster. **Default:** default **Value Constraint:** The value must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed. **Suggestion:** This parameter is optional. You can set this parameter when creating a stack.
chart	Yes	Chart information about the Helm application **Type:** **CCE.HelmChart** **Value Description:** Information includes the chart package name and version number, which can be obtained from Charts in the navigation pane on the CCE console. **Default:** {u'version': u'', u'name': u''} **Suggestion:** Set the value based on the helm application to be orchestrated. The value can be your own applications or Huawei official applications.

Property	Required	Descripiton
values	Yes	Input value of the Helm application **Type:** dict **Value Description:** Supports customization. **Default:** {} **Value Constraint:** Composite structure, which is similar to {"key": "value"}, where value can be nested. **Suggestion:** For your own applications, enter the corresponding value. For Huawei official applications, the value can be an empty structure body.

Relationships Between Elements

Table 2-45 Relationship description

Description	Target
Connected	**CCE.ConfigMap**
Connected	**CCE.Job**
Connected	**CCE.Storage.OBS**
Connected	**CCE.HelmRelease**
Connected	**CCE.Service**
Connected	**CCE.DaemonSet**
Connected	**CCE.StatefulSet**
Connected	**CCE.Secret**
Connected	**AOS.Batch**
Connected	**CCE.Ingress**
Connected	**CCE.Deployment**

Descripti on	Target
Connecte d	**CCE.Pod**
Connecte d	**CCE.Storage.SFS**
Connecte d	**CCE.Storage.EVS**
Contained In	**CCE.Cluster**

Return Value

Property	Type	Description
clusterId	string	Cluster ID
refName	string	Release name

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0

inputs:
  release_name:
    default: "release"
  cluster_id:
    default: "25f511bc-00f7-11e8-958d-0255ac101a5a"
  namespace:
    default: "default"
  chart_name:
    default: "redis"
  chart_version:
    default: "1.0.0"
  app_image:
    default: "10.125.5.235:20202/hwofficial/redis:3.2.8"
  config_image:
    default: "10.125.5.235:20202/hwofficial/redis-conf:3.2.8"
  service_port:
    type: integer
    default: 6379


node_templates:
  redis-helm:
    type: HuaweiCloud.CCE.HelmRelease
    properties:
      name: {get_input: release_name}
      chart:
        name: {get_input: chart_name}
        version: {get_input: chart_version}
      clusterId: {get_input: cluster_id}
      namespace: {get_input: namespace}
      values:
        chartimage:
```

```
          app_image: {get_input: app_image}
          config_image: {get_input: config_image}
        format1:
          redis_master_replicas: 1
          redis_sentinel_replicas: 1
          redis_slave_replicas: 1
        format2:
          redis_master_replicas: 1
          redis_sentinel_replicas: 1
          redis_slave_replicas: 2
        highavailable:
          redis_replication_enabled: true
          redis_sentinel_replicas: 1
          redis_slave_replicas: 1
        servicestorage:
          service:
            instance: "127.0.0.1"
            service_port: {get_input: service_port}
            type: "ClusterIP"
          storage:
           enabled: false
           kind: "sas"
           size: "10Gi"
```

2.2.16 CCE.Ingress

Element Description

The **CCE.Ingress** element is used to create an Ingress object in the Kubernetes cluster on CCE. Currently, the Kubernetes native YAML file can be directly used to create such an object.

Element Properties

Table 2-46 Property Description

Property	Required	Descripiton
namespace	No	Namespace in a cluster where a resource is located **Type:** string **Value Description:** Must be a valid namespace in the cluster, for example, default. **Value Constraint:** The value must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed. **Suggestion:** Log in to the CCE console, and choose Resource Management > Namespaces. View and select the target namespace.

Property	Required	Descripiton
k8sManif est	Yes	Ingress object in the Kubernetes cluster created by the CCE service **Type:** dict **Value Description:** Supports customization. You are not advised to change the name and labels under the metadata during an update. **Suggestion:** Enter the native YAML file content of the Kubernetes object.
clusterId	No	ID of the CCE cluster to which the resource belongs (the cluster version must be 1.7 or later) **Type:** HuaweiCloud.CCE.Cluster.Id **Value Description:** ID of an existing or new container cluster, for example, 32589333-5da1-11e8-9567-0255ac102136. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. The cluster must be a cluster of the current tenant. **Suggestion:** Enter the cluster ID. Specifically, log in to the CCE console, and choose Resource Management > Clusters. Click the target cluster, and you can obtain its cluster ID. Connect to the cluster object and use the get_reference function to automatically obtain the value.

Relationships Between Elements

Table 2-47 Relationship description

Description	Target
Depends On	**AOS.Batch**
Depends On	**DCS.Redis**
Depends On	**RDS.MySQL**
Depends On	**CCE.Storage.EVS**
Depends On	**OBS.Bucket**

Descripti on	Target
Depends On	**CCE.Storage.SFS**
Depends On	**CCE.ConfigMap**
Depends On	**CCE.Job**
Depends On	**CCE.Storage.OBS**
Depends On	**CCE.DaemonSet**
Depends On	**CCE.Secret**
Depends On	**CCE.Service**
Depends On	**CCE.Ingress**
Depends On	**CCE.StatefulSet**
Depends On	**CCE.NodePool**
Depends On	**CCE.Deployment**
Depends On	**CCE.Pod**
Depends On	**RDS.PostgreSQL**
Contained In	**CCE.Cluster**

Return Value

Property	Type	Description
refName	string	Ingress name

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
```

```
clusterID:
  default: 32589333-5da1-11e8-9567-0255ac102136
  type: string
ingressname:
  default: ingress-test
  type: string
namespace:
  default: default
  type: string
secretName:
  default: tenant-management-service-server
  type: string
serviceName:
  default: aos-apiserver
  type: string
servicePort:
  default: 31800
  type: integer
node_templates:
  my-ingress:
    type: HuaweiCloud.CCE.Ingress
    properties:
      k8sManifest:
        apiVersion: extensions/v1beta1
        kind: Ingress
        metadata:
          clusterId:
            get_input: clusterID
          labels:
            stack-name: aos-aos
            zone:
              get_input: ingressname
          name:
            get_input: ingressname
          namespace:
            get_input: namespace
          selfLink: /apis/extensions/v1beta1/namespaces/aos/ingresses/aos-apiserver-region-ingress
          uid: 56118da4-2d89-11e8-9ed3-286ed488d4c7
        spec:
          rules:
          - http:
              paths:
                - backend:
                    serviceName:
                      get_input: serviceName
                    servicePort:
                      get_input: servicePort
                  path: /v2/user/agencies
                  property:
                    ingress.beta.kubernetes.io/enable-checksession: 'true'
          tls:
            - secretName:
                get_input: secretName
```

2.2.17 CCE.Job

Element Description

The **CCE.Job** element is used to create a Job object in the Kubernetes cluster on Huawei CCE.

For example, if you want to run a container to execute a specific task, the container does not need to exist once the task is completed. In this scenario, you can use jobs, which refer to one-time tasks. A job is performed to run a container. After the job completes, it automatically exits, and the cluster does not wake it up again.

Element Properties

Table 2-48 Property Description

Property	Required	Descripiton
k8sManif est	Yes	Native manifest of the job object of the Kubernetes **Type:** dict **Value Description:** This field can be customized. You are advised to use a public image (uploading an image to SWR and setting the image type to public). When updating the image, do not change the name and labels under metadata. **Value Constraint:** This field cannot be empty. **Suggestion:** Customize the value. For details, visit https://kubernetes.io/docs/tasks/job/automated-tasks-with-cron-jobs/.
namespac e	No	Namespace in a cluster where a resource is located **Type:** string **Value Description:** Must be a valid namespace in the cluster, for example, default. **Value Constraint:** The value must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed. **Suggestion:** Log in to the CCE console, and choose Resource Management > Namespaces. View and select the target namespace.
clusterId	No	ID of the CCE cluster to which the resource belongs (the cluster version must be 1.7 or later) **Type:** HuaweiCloud.CCE.Cluster.Id **Value Description:** Indicates the ID of an existing or new container cluster. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** Enter the cluster ID. Specifically, log in to the CCE console, and choose Resource Management > Clusters. Click the target cluster, and you can then obtain its cluster ID. Connect to the cluster object and use the get_reference function to obtain the cluster ID.

Relationships Between Elements

Table 2-49 Relationship description

Description	Target
Depends On	**AOS.Batch**
Depends On	**DCS.Redis**
Depends On	**RDS.MySQL**
Depends On	**CCE.Storage.EVS**
Depends On	**OBS.Bucket**
Depends On	**CCE.Storage.SFS**
Depends On	**CCE.ConfigMap**
Depends On	**CCE.Job**
Depends On	**CCE.Storage.OBS**
Depends On	**CCE.DaemonSet**
Depends On	**CCE.Secret**
Depends On	**CCE.Service**
Depends On	**CCE.Ingress**
Depends On	**CCE.StatefulSet**
Depends On	**CCE.NodePool**
Depends On	**CCE.Deployment**
Depends On	**CCE.Pod**

Descripti on	Target
Depends On	**RDS.PostgreSQL**
Contained In	**CCE.Cluster**

Return Value

Property	Type	Description
refName	string	Task name

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  job-image-addr:
    default: "*.*.*.*:20202/***/redis:V1"
    description: "job used image address."
node_templates:
  ccej4ipi:
    type: HuaweiCloud.CCE.Job
    properties:
      k8sManifest:
        apiVersion: 'batch/v1'
        kind: Job
        metadata:
          name: my-job
        spec:
          template:
            metadata:
              name: my-job
            spec:
              containers:
                - command:
                    - bash
                    - '-c'
                    - 'echo job finished > /var/log/job-finished'
                  image:
                    get_input: job-image-addr
                  imagePullPolicy: IfNotPresent
                  name: job-sample
                  volumeMounts:
                    - mountPath: '/var/log'
                      name: sample
              imagePullPolicy: IfNotPresent
              imagePullSecrets:
                - name: default-secret
              restartPolicy: Never
              volumes:
                - hostPath:
                    path: '/var/log'
                  name: sample
```

2.2.18 CCE.NodePool

Element Description

The **CCE.NodePool** element is used to deploy Kubernetes node resources at the Huawei PaaS layer. Deploying this type of resources enables users to orchestrate Huawei cloud resources on nodes, providing more powerful functions.

Element Properties

Table 2-50 Property description

Property	Required	Description
dataVolumes	Yes	Data disk of the created node **Type: CCE.DataVolume** array **Value Description:** Supports customization, for example, [{"volumeType":"SATA","size":100}]. **Value Constraint:** Array format. Currently, only one object is supported. **Suggestion:** Customize the value. For details, visit https://support.huaweicloud.com/eu/tr-aos/datatypes-cce-datavolume.html.
availabilityZone	Yes	AZ where the node is located **Type:** HuaweiCloud.ECS.AvailabilityZone.Name **Value Description:** Indicates the AZ where the to-be-created ECS is located. The name of the AZ needs to be specified, for example, cn-north-1a. See the Regions and Endpoints. **Value Constraint:** The value varies depending on the region. For details, visit https://developer.huaweicloud.com/intl/en-us/endpoint. **Suggestion:** 1. Use the **get_input** function to pass this parameter. Its value can then be automatically selected when you create a stack on the AOS console. 2. For details about the AZs of each region, visit https://developer.huaweicloud.com/intl/en-us/endpoint.
name	Yes	Name of the created node **Type:** string **Value Description:** Supports customization. **Value Constraint:** The value contains 4 to 32 characters and must start with a lowercase letter. Only lowercase letters, digits, and underscores (_) are allowed. **Suggestion:** Customize the value. Generally, the stack name is used as the node name.

Property	Required	Description
publicKey	No	Public key of the key pair. For periodic nodepool, this field is mandatory. **Type:** HuaweiCloud.ECS.KeyPair.PublicKey **Value Description:** Selects an existing public key. **Suggestion:** Use the **get_input** function to pass this parameter. Its value can then be automatically selected based on parameter **sshKeyName** when you create a stack on the AOS console.
postInstall	No	Node post-installation script **Type:** string **Value Description:** Supports customization. **Value Constraint:** The script you specify here will be executed after Kubernetes software is installed. **Suggestion:** The script is usually used to modify container parameters.
labels	No	Labels of Node **Type:** **CCE.Labels** array **Value Description:** Supports customization, for example, {"app": "aos"}. **Suggestion**: Enters multiple key-value pairs to customize the value.
clusterId	No	ID of the cluster to which a resource belongs. **Type:** HuaweiCloud.CCE.Cluster.Id **Value Description:** ID of an existing or new container cluster. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** 1. Enter the cluster ID. Specifically, log in to the CCE console, and choose **Resource Management** > **Clusters**. Click the target cluster, and you can then obtain its cluster ID. 2. Connect to the cluster object and use the **get_reference** function to obtain the cluster ID. Connect to the cluster object and use the get_reference function to automatically obtain the value.

Property	Required	Description
preInstall	No	Node pre-installation script **Type:** string **Value Description:** Supports customization. **Value Constraint:** The script you specify here will be executed before Kubernetes software is installed. Note that if the script is incorrect, Kubernetes software may not be installed successfully. **Suggestion:** The script is usually used to format data disks.
publicIp	No	Virtual IP address of the created node **Type: CCE.PublicIP** **Value Description:** Supports customization, for example, {"eip":{"bandwidth:{"shareType":PER}, 5_sbgp"}}. **Default Value:** {} **Value Constraint:** Only one elastic IP address can be defined for each node. **Suggestion:** Customize the value. For details, visit https://support.huaweicloud.com/eu/tr-aos/datatypes-cce-publicip.html.
instances	Yes	Number of created nodes **Type:** integer **Value Description:** Supports customization. The value ranges from 1 to 50. **Default Value:** 1 **Value Constraint:** {u'in_range': [1, 50]} **Suggestion:** Set the value based on specifications and requirements.
rootVolume	Yes	System disk of the created node **Type: ECS.RootVolume** **Value Description:** Supports customization, for example, {"volumeType":"SATA","size":40}. **Default:** {u'volumeType': u'unset', u'size': 40} **Suggestion:** Customize the value. For details, visit https://support.huaweicloud.com/eu/usermanual-iaas/en-us_topic_0040259342.html.

Property	Required	Description
os	No	OS of Node **Type:** string **Value Description:** ["EulerOS 2.2", "CentOS 7.4"] **Default:** EulerOS 2.2 **Value Constraint:** {u'valid_values': [u'CentOS 7.4', u'EulerOS 2.2']}
nodePass wd	No	Password of nodes' root **Type:** password **Value Description:** Supports customization. **Value Constraint:** 1. The parameter must be written into **inputs** and set using the **get_input** function. 2. Enter 8 to 26 characters. Only letters, digits, and special characters !@$%^-_=+[{}]:,./? are allowed. The value must contain at least two types of characters and must not be a weak password. **Suggestion:** You are advised to use the **get_input** function to obtain the value and avoid plaintext passwords to ensure security.
flavor	Yes	Container node specifications **Type:** HuaweiCloud.CCE.Node.Flavor.Name **Value Description:** System flavor ID of the ECS to be created. For example, c1.medium indicates 1 vCPU | 1 GB, and c2.large indicates 2 vCPU | 4 GB. For details about the available flavors, see ECS Specifications at https://support.huaweicloud.com/eu/productdesc-ecs/ ecs_01_0014.html. It is advised to use the **get_input** function to pass this parameter. **Suggestion:** Select the node specification during node creation on the CCE console. In the node template, you can set **inputs** to specify the node specification.
sshKeyNa me	No	Key pair used for logging in to a node, which needs to be kept properly **Type:** HuaweiCloud.ECS.KeyPair.Name **Value Description:** Must be created on the ECS console in advance. **Suggestion:** 1. You are advised to use the **get_input** function to define the parameter so that you can select a value when using the template. 2. Query information on the ECS page and then enter such information accordingly.

Property	Required	Description
annotations	No	Annotations of Node **Type:** dict **Value Description:** Supports customization, for example, {"app": "aos"}. **Suggestion**: Enter multiple key-value pairs to customize the value.

Relationships Between Elements

Table 2-51 Relationship description

Description	Target
Contained In	**CCE.Cluster**
Connected	**ECS.KeyPair**
Connected	**CCE.ConfigMap**
Connected	**CCE.Job**
Connected	**CCE.Storage.OBS**
Connected	**CCE.Service**
Connected	**CCE.DaemonSet**
Connected	**CCE.StatefulSet**
Connected	**CCE.Secret**
Connected	**CCE.Deployment**
Connected	**CCE.Ingress**
Connected	**CCE.Pod**

Descripti on	Target
Connecte d	**CCE.NodePool**
Connecte d	**CCE.Storage.SFS**
Connecte d	**CCE.Storage.EVS**

Return Value

Property	Type	Description
floatingIp Id	string	ID of an elastic IP address
clusterId	string	Cluster ID
refName	string	Node name
privateIp	Array	List of private elastic IP addresses
publicIp	Array	List of public elastic IP addresses
refID	string	Node ID

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  ccenp1ep:
    type: HuaweiCloud.CCE.NodePool
    properties:
      dataVolumes:
        - volumeType: SATA
          size: 100
      name: ''
      instances: 1
      rootVolume:
        volumeType: SATA
        size: 40
      flavor:
        get_input: ccenp1ep_flavor
      sshKeyName:
        get_input: ccenp1ep_sshKeyName
inputs:
  ccenp1ep_flavor:
    description: Container node specifications
    label: ''
  ccenp1ep_sshKeyName:
    description: Key pair used for logging in to a node. Keep the key pair properly.
    label: ''
```

2.2.19 CCE.Pod

Element Description

The **CCE.Pod** element is used to create a pod in the Kubernetes cluster on the CCE.

Element Properties

Table 2-52 Property Description

Property	Required	Descripiton
k8sManifest	Yes	Native YAML file content of the Kubernetes object **Type:** dict **Value Description:** Supports customization. You are advised to use a public image (which is uploaded to the image repository and whose type is set to public), and not to change the name under the metadata during an update. **Value Constraint:** This field cannot be empty. **Suggestion:** For details, visit https://support.huaweicloud.com/eu/api-cce/cce_02_0133.html.
name	No	Pod name **Type:** string **Value Description:** Supports customization, for example, :my-pod. **Value Constraint:** The value supports a maximum of 63 characters and must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed.
clusterId	No	ID of the cluster to which the resource belongs **Type:** HuaweiCloud.CCE.Cluster.Id **Value Description:** Indicates the ID of an existing or new container cluster. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** Enter the cluster ID. Specifically, log in to the CCE console, and choose Resource Management > Clusters. Click the target cluster, and you can then obtain its cluster ID. Connect to the cluster object and use the get_reference function to obtain the cluster ID.

Property	Required	Descripiton
namespace	No	Namespace in a cluster where a resource is located **Type:** string **Value Description:** Must be a valid namespace in the cluster, for example, default. **Value Constraint:** The value must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed. **Suggestion:** Log in to the CCE console, and choose Resource Management > Namespaces. View and select the target namespace.

Relationships Between Elements

Table 2-53 Relationship description

Description	Target
Depends On	**AOS.Batch**
Depends On	**DCS.Redis**
Depends On	**RDS.MySQL**
Depends On	**CCE.Storage.EVS**
Depends On	**OBS.Bucket**
Depends On	**CCE.Storage.SFS**
Depends On	**CCE.ConfigMap**
Depends On	**CCE.Job**
Depends On	**CCE.Storage.OBS**
Depends On	**CCE.DaemonSet**
Depends On	**CCE.Secret**

Descripti on	Target
Depends On	**CCE.Service**
Depends On	**CCE.Ingress**
Depends On	**CCE.StatefulSet**
Depends On	**CCE.NodePool**
Depends On	**CCE.Deployment**
Depends On	**CCE.Pod**
Depends On	**RDS.PostgreSQL**
Contained In	**CCE.Cluster**

Return Value

Property	Type	Description
refName	string	Pod name

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  ccepxbto:
    type: HuaweiCloud.CCE.Pod
    properties:
      k8sManifest:
        kind: Pod
        spec:
          containers:
            - image:
                get_input: ccepxbto_k8sManifest_spec_containers_0_image
              imagePullSecrets:
                - name: default-secret
              name: test
              restartPolicy: Always
              imagePullPolicy: Always
        apiVersion: v1
        metadata:
          labels:
            name: pod-test
          name: pod-test
        name:
```

```
        get_input: ccepxbto_name
      clusterId:
        get_input: ccepxbto_clusterId
      namespace:
        get_input: ccepxbto_namespace
inputs:
  ccepxbto_k8sManifest_spec_containers_0_image:
    description: Image of the cluster
    label: Pod
  ccepxbto_name:
    description: Pod name
    label: Pod
  ccepxbto_clusterId:
    description: ID of the cluster
    label: Pod
  ccepxbto_namespace:
    description: Namespace in a cluster where a resource is located
    label: Pod
outputs:
  name:
    value:
      get_attribute:
        - ccepxbto
        - refName
    description: pod name
```

2.2.20 CCE.Secret

Element Description

The **CCE.Secret** element is used to provide encryption information storage services for the cluster creation of Huawei CCE. The **Secret** object can contain sensitive configuration information such as usernames, passwords, and certificates.

☐ NOTE

Currently, dynamic mounting is not supported.

Element Properties

Table 2-54 Property Description

Property	Required	Descripiton
k8sManifest	No	K8s-native manifest object of the secret, based on which you can create secret resources to replace other configuration items **Type:** dict **Value Description:** Supports customization. You are not advised to change the name and labels under the metadata during an update. **Suggestion:** Customize the value. You are advised to set the value based on the following example or query the CCE secret documentation at https://support.huaweicloud.com/eu/api-cce/cce_02_0042.html.

Property	Required	Descripiton
name	No	Name of the CCE secret created by a user **Type:** string **Value Description:** Supports customization, for example, my-secret. **Default:** '' **Value Constraint:** The value supports a maximum of 63 characters. This value is unique under a tenant, and must meet the following requirement: {"regex":"^[a-zA-Z][0-9a-zA-Z-_]*$","max_length":63}. **Suggestion:** Customize the value.
clusterId	No	ID of the cluster to which the resource belongs **Type:** HuaweiCloud.CCE.Cluster.Id **Value Description:** Indicates the ID of an existing or new container cluster. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** Enter the cluster ID. Specifically, log in to the CCE console, and choose Resource Management > Clusters. Click the target cluster, and you can then obtain its cluster ID. Connect to the cluster object and use the get_reference function to obtain the cluster ID.
namespace	No	Namespace in a cluster where a resource is located **Type:** string **Value Description:** Must be a valid namespace in the cluster, for example, default. **Value Constraint:** The value must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed. **Suggestion:** Log in to the CCE console, and choose Resource Management > Namespaces. View and select the target namespace.
data	No	Secret data, consisting of keys and values **Type:** dict **Value Description:** Supports customization. **Suggestion:** You are advised to use the name and data modes to create a secret so that the secret is encrypted for storage.

Property	Required	Descripiton
type	No	Key type **Type:** string **Value Description:** Supports Opaque or customization. **Default:** Opaque **Suggestion:** To view the available secret types, log in to the CCE console, and choose Configuration Center > Secret > Create Secret > Type. This parameter can be self-defined.

Relationships Between Elements

Table 2-55 Relationship description

Description	Target
Depends On	**AOS.Batch**
Depends On	**DCS.Redis**
Depends On	**RDS.MySQL**
Depends On	**CCE.Storage.EVS**
Depends On	**OBS.Bucket**
Depends On	**CCE.Storage.SFS**
Depends On	**CCE.ConfigMap**
Depends On	**CCE.Job**
Depends On	**CCE.Storage.OBS**
Depends On	**CCE.DaemonSet**
Depends On	**CCE.Secret**

Descripti on	Target
Depends On	**CCE.Service**
Depends On	**CCE.Ingress**
Depends On	**CCE.StatefulSet**
Depends On	**CCE.NodePool**
Depends On	**CCE.Deployment**
Depends On	**CCE.Pod**
Depends On	**RDS.PostgreSQL**
Contained In	**CCE.Cluster**

Return Value

Property	Type	Description
refID	string	ID of the encryption information storage service
refName	string	Name of the encryption information storage service

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  name:
    default: my-secret
  xx-value:
    default: abcd
  yy-value:
    default: efgh
node_templates:
  mysecret:
    type: HuaweiCloud.CCE.Secret
    properties:
      name: {get_input: name}
      data:
        xx: {get_input: xx-value}
        yy: {get_input: yy-value}
```

2.2.21 CCE.Service

Element Description

The **CCE.Service** element is used to deploy a Kubernetes resource object **Service** at the PaaS layer of HUAWEI CLOUD. By creating such an object, you can provide a unified entry address for a group of containerized applications with the same functions, and distribute requests in load balancing mode to backend containerized applications.

Element Properties

Table 2-56 Property Description

Property	Required	Descripiton
k8sManifest	Yes	Description file of the Kubernetes service **Type:** dict **Value Description:** Supports customization. You are not advised to change the name and labels under the metadata during an update. **Suggestion:** For details, see the Kubernetes official guide at https://kubernetes.io/docs/concepts/services-networking/service.
clusterId	No	ID of the cluster to which the resource belongs **Type:** HuaweiCloud.CCE.Cluster.Id **Value Description:** Indicates the ID of an existing or new container cluster. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** Connect to the cluster object and use the get_reference function to obtain the cluster ID. Leave it blank, and specify the ID on the AOS console when creating a stack. Enter the cluster ID. Specifically, log in to the CCE console, and choose Resource Management > Clusters. Click the target cluster, and you can then obtain its cluster ID.

Property	Required	Descripiton
namespace	No	Namespace of the cluster to which the resource belongs **Type:** string **Value Description:** Must be a valid namespace in the cluster, for example, default. If k8sManifest is defined, the namespace specified here will be overwritten by the namespace specified in k8sManifest (k8sManifest > metadata > namespace). **Value Constraint:** The value must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed. **Suggestion:** Customize the value based on the existing cluster or the cluster to be created.

Relationships Between Elements

Table 2-57 Relationship description

Description	Target
Depends On	**AOS.Batch**
Depends On	**DCS.Redis**
Depends On	**RDS.MySQL**
Depends On	**CCE.Storage.EVS**
Depends On	**OBS.Bucket**
Depends On	**CCE.Storage.SFS**
Depends On	**CCE.ConfigMap**
Depends On	**CCE.Job**
Depends On	**CCE.Storage.OBS**
Depends On	**CCE.DaemonSet**

Descripti on	Target
Depends On	**CCE.Secret**
Depends On	**CCE.Service**
Depends On	**CCE.Ingress**
Depends On	**CCE.StatefulSet**
Depends On	**CCE.NodePool**
Depends On	**CCE.Deployment**
Depends On	**CCE.Pod**
Depends On	**RDS.PostgreSQL**
Contained In	**CCE.Cluster**
Connecte d	**ULB.LoadBalancer**

□ NOTE

Relationship between **CCE.Service** and **ULB.LoadBalancer**:

1. When compiling the **service.yaml** file, add **kubernetes.io/elb.class: union** to the **annotations** section in the **metadata**.

2. **loadBalancerIP** in **spec** must be set to the private IP address of ULB, which can be obtained using **get_attribute**, for example, **loadBalancerIP: {get_attribute: [*ULB.LoadBalancer element name*, vip_address]}**.

   For details about how to create a service using a load balancer, see .

Return Value

Property	Type	Description
IP	Array	ExternalIPs or LoadBalancerIP Value of a k8s service
Port	Array	NodePort Value of a k8s service
refName	string	Name of a k8s service

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  labels:
    description: Application instance label, which must be the same as that specified by parameter selector
    label: Workload
    default: test
  deploymentName:
    description: Workload name
    label: Workload
    default: deployment-test
  image:
    description: Application image address
    label: Workload
  ingressName:
    description: Ingress name
    label: Ingress information
    default: ingress-test
  host:
    description: Domain name information about the ingress host
    label: Ingress information
    default: test.com
  secretName:
    description: Secret name
    label: Ingress information
    type: HuaweiCloud.ECS.KeyPair.Name
  serviceName:
    description: Service name
    label: Network service
    default: service-test
  servicePort:
    description: Service port
    label: Network service
    default: 8888
    type: integer
  path:
    description: Application route
    label: Network service
    default: /test
  protocol:
    description: Service protocol, which must be TCP or UDP
    label: Network service
    default: TCP
  targetPort:
    description: Open service port of an application
    label: Network service
    default: 8888
    type: integer
node_templates:
  my-deployment:
    properties:
      k8sManifest:
        apiVersion: apps/v1
        kind: Deployment
        metadata:
          labels:
            app:
              get_input: labels
          name:
            get_input: deploymentName
        spec:
          replicas: 1
          selector:
            matchLabels:
              app:
                get_input: labels
          strategy:
            rollingUpdate:
              maxSurge: 0
```

```
              maxUnavailable: 1
            type: RollingUpdate
          template:
            metadata:
              labels:
                app:
                  get_input: labels
            spec:
              containers:
                - image:
                    get_input: image
                  imagePullPolicy: IfNotPresent
                  name: nginx
      requirements: []
      type: HuaweiCloud.CCE.Deployment
    my-ingress:
      properties:
        k8sManifest:
          apiVersion: extensions/v1beta1
          kind: Ingress
          metadata:
            annotations:
              ingress.beta.kubernetes.io/role: data
              ingress.kubernetes.io/secure-backends: 'false'
            labels:
              isExternal: 'true'
              zone: data
            name:
              get_input: ingressName
          spec:
            rules:
              - host:
                  get_input: host
                http:
                  paths:
                    - backend:
                        serviceName:
                          get_input: serviceName
                        servicePort:
                          get_input: servicePort
                      path:
                        get_input: path
            tls:
              - secretName:
                  get_input: secretName
                hosts:
                  - get_input: host
      requirements:
        - dependency:
            node: my-service
      type: HuaweiCloud.CCE.Ingress
    my-service:
      properties:
        k8sManifest:
          apiVersion: v1
          kind: Service
          metadata:
            name:
              get_input: serviceName
          spec:
            ports:
              - name:
                  get_input: serviceName
                port:
                  get_input: servicePort
                protocol:
                  get_input: protocol
                targetPort:
                  get_input: targetPort
```

```
              selector:
                app:
                  get_input: labels
              sessionAffinity: ClientIP
              type: ClusterIP
    requirements:
      - dependency:
          node: my-deployment
    type: HuaweiCloud.CCE.Service
```

2.2.22 CCE.StatefulSet

Element Description

The **CCE.StatefulSet** element is used to create stateful services for a Huawei CCE cluster.

Element Properties

Table 2-58 Property Description

Property	Required	Descripiton
namespace	No	Namespace in a cluster where a resource is located **Type:** string **Value Description:** Must be a valid namespace in the cluster, for example, default. **Value Constraint:** The value must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed. **Suggestion:** Log in to the CCE console, and choose Resource Management > Namespaces. View and select the target namespace.
k8sManifest	Yes	Native manifest of the StatefulSet object of the Kubernetes **Type:** dict **Value Description:** This field can be customized. You are advised to use a public image (uploading an image to SWR and setting the image type to public). When updating the image, do not change the name and labels under metadata. If replicas under spec is specified using a get_input function, set type to integer. **Value Constraint:** This field cannot be empty. **Suggestion:** Customize the value. For details, visit https://kubernetes.io/docs/tutorials/stateful-application/basic-stateful-set/.

Property	Required	Descripiton
clusterId	No	ID of the CCE cluster to which the resource belongs (the cluster version must be 1.7 or later) **Type:** HuaweiCloud.CCE.Cluster.Id **Value Description:** Indicates the ID of an existing or new container cluster. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** Enter the cluster ID. Specifically, log in to the CCE console, and choose Resource Management > Clusters. Click the target cluster, and you can then obtain its cluster ID. Connect to the cluster object and use the get_reference function to obtain the cluster ID.

Relationships Between Elements

Table 2-59 Relationship description

Description	Target
Depends On	**AOS.Batch**
Depends On	**DCS.Redis**
Depends On	**RDS.MySQL**
Depends On	**CCE.Storage.EVS**
Depends On	**OBS.Bucket**
Depends On	**CCE.Storage.SFS**
Depends On	**CCE.ConfigMap**
Depends On	**CCE.Job**
Depends On	**CCE.Storage.OBS**
Depends On	**CCE.DaemonSet**

Descripti on	Target
Depends On	**CCE.Secret**
Depends On	**CCE.Service**
Depends On	**CCE.Ingress**
Depends On	**CCE.StatefulSet**
Depends On	**CCE.NodePool**
Depends On	**CCE.Deployment**
Depends On	**CCE.Pod**
Depends On	**RDS.PostgreSQL**
Contained In	**CCE.Cluster**

Return Value

Property	Type	Description
refName	string	Name of a stateful service
refLabels App	string	Name of label app

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  statefulset-image-addr:
    default: "*.*.*.*:20202/***/redis:V1"
    description: "StatefulSet used image address."
node_templates:
  ccess2u6:
    type: HuaweiCloud.CCE.StatefulSet
    properties:
      k8sManifest:
        kind: StatefulSet
        spec:
          replicas: 1
          serviceName: statefulsettest
          template:
```

```
        spec:
          imagePullSecrets:
            - name: default-secret
          containers:
            - image:
                get_input: statefulset-image-addr
              terminationMessagePath: '/dev/termination-log'
              ports:
                - containerPort: 80
                  protocal: TCP
              name: mystatefulset-123
              imagePullPolicy: IfNotPresent
          metadata:
            labels:
              app: statefulsettest
            name: mystatefulset
        selector:
          matchLabels:
            app: statefulsettest
    apiVersion: 'apps/v1'
    metadata:
      labels:
        'cce/appgroup': mystatefulset
      name: statefulsettest
```

2.2.23 CCE.Storage.EVS

Element Description

The **CCE.Storage.EVS** element corresponds to an Elastic Volume Service (EVS) disk under CCE storage management. This type of resources must be used together with CCE clusters.

Element Properties

Table 2-60 Property Description

Property	Required	Descripiton
size	No	Storage space size, in GB. The default value is 80. **Type:** integer **Default:** 10 **Value Constraint:** From 1 to 511800. **Suggestion:** Set the value based on specifications and requirements.

Property	Required	Descripiton
availabilit yZone	Yes	AZ where the node is located **Type:** HuaweiCloud.ECS.AvailabilityZone.Name **Value Description:** Indicates the AZ where the to-be-created ECS is located. The name of the AZ needs to be specified, for example, cn-north-1a. See the Regions and Endpoints. **Value Constraint:** The value varies depending on the belonged region. For details, visit https://developer-intl.huaweicloud.com/en-us/endpoint. **Suggestion:** Use the get_input function to pass this parameter. Its value can then be automatically selected when you create a stack on the AOS console. For details about the AZ of each region, visit https://developer-intl.huaweicloud.com/en-us/endpoint.
k8sManif est	No	K8s-native manifest object of the EVS, based on which you can create EVS resources to replace other configuration items **Type:** dict **Value Constraint:** The value must meet the Kubernetes specifications. **Suggestion:** For details, see the sample or CCE documentation.
name	No	Name of the CCE EVS file system, which is mounted to the container **Type:** string **Value Constraint:** The value contains 1 to 24 characters and must start with a letter and end with a digit. Only lowercase letters, digits, and hyphens (-) are allowed. The following regular specification must be met: (^$)|(^[a-z]([-a-z0-9]*[a-z0-9])?$)". **Suggestion:** None
clusterId	No	ID of the cluster which is associated with the SFS file system **Type:** HuaweiCloud.CCE.Cluster.Id **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** Enter the cluster ID. Specifically, log in to the CCE console, and choose Resource Management > Clusters. Click the target cluster, and you can then obtain its cluster ID. Connect to the cluster object and use the get_reference function to obtain the cluster ID.

Property	Required	Descripiton
volumeId	No	the existing volume id which need mount **Type:** string **Value Description:** Supports customization. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** None
diskType	Yes	disk type **Type:** HuaweiCloud.EVS.Volume.Type.Name **Value Description:** Supports customization. **Value Constraint:** SATA: common I/O EVS disks; SAS: high I/O EVS disks; SSD: ultra-high I/O EVS disks **Suggestion:** None
deleteVolume	No	delete volume resource when delete pvc **Type:** boolean **Default:** False **Value Constraint:** Supports true false **Suggestion:** None
namespace	No	Namespace in a cluster where a resource is located **Type:** string **Value Constraint:** The value must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed. **Suggestion:** Log in to the CCE console, and choose Resource Management > Namespaces. View and select the target namespace.

Relationships Between Elements

Table 2-61 Relationship description

Description	Target
Depends On	**AOS.Batch**
Depends On	**DCS.Redis**
Depends On	**RDS.MySQL**

Description	Target
Depends On	**CCE.Storage.EVS**
Depends On	**OBS.Bucket**
Depends On	**CCE.Storage.SFS**
Depends On	**CCE.ConfigMap**
Depends On	**CCE.Job**
Depends On	**CCE.Storage.OBS**
Depends On	**CCE.DaemonSet**
Depends On	**CCE.Secret**
Depends On	**CCE.Service**
Depends On	**CCE.Ingress**
Depends On	**CCE.StatefulSet**
Depends On	**CCE.NodePool**
Depends On	**CCE.Deployment**
Depends On	**CCE.Pod**
Depends On	**RDS.PostgreSQL**
Contained In	**CCE.Cluster**

Return Value

Property	Type	Description
status	string	Status of the EVS file system
clusterId	string	ID of the cluster which is associated with the EVS file system
refID	string	UID of the EVS file system
refName	string	Name of the EVS file system

Blueprint Example

Example 1:

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  storage-name:
    default: my-evc-storage
  size:
    default: 100
node_templates:
  my-storage:
    type: HuaweiCloud.CCE.Storage.EVS
    properties:
      name: {get_input: storage-name}
      size: {get_input: size}
      diskType: SATA
```

Example 2: Custom K8s Manifest for Orchestration

- For clusters of version 1.15, the example configuration of the YAML file is as follows:

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  my-storage:
    type: HuaweiCloud.CCE.Storage.EVS
    properties:
      apiVersion: v1
      kind: PersistentVolumeClaim
      metadata:
        labels:
          failure-domain.beta.kubernetes.io/region: cn-north-1
          failure-domain.beta.kubernetes.io/zone: cn-north-1a
        annotations:
          everest.io/disk-volume-type: SATA
        name: cce-evs-k7yigsvm-1nku
        namespace: default
      spec:
        accessModes:
        - ReadWriteOnce
        resources:
          requests:
            storage: 10Gi
        storageClassName: csi-disk
```

- For clusters of version 1.13 or earlier, the example configuration of the YAML file is as follows:

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  my-storage:
    type: HuaweiCloud.CCE.Storage.EVS
```

```
properties:
  apiVersion: v1
  kind: PersistentVolumeClaim
  metadata:
    labels:
      failure-domain.beta.kubernetes.io/region: cn-north-1
      failure-domain.beta.kubernetes.io/zone: cn-north-1a
    annotations:
      volume.beta.kubernetes.io/storage-class: sata
      volume.beta.kubernetes.io/storage-provisioner: flexvolume-huawei.com/fuxivol
    name: cce-evs-k7yigsvm-1nku
    namespace: default
  spec:
    accessModes:
    - ReadWriteOnce
    resources:
      requests:
        storage: 10Gi
```

2.2.24 CCE.Storage.OBS

Element Description

The **CCE.Storage.OBS** element corresponds to object storage volumes in the CCE storage management function. This type of resources must be used together with CCE clusters.

Element Properties

Table 2-62 Property Description

Property	Required	Descripiton
k8sManifest	No	K8s-native manifest object of the OBS, based on which you can create OBS resources to replace other configuration items **Type:** dict **Value Constraint:** The value must meet the Kubernetes specifications. **Suggestion:** For details, see the sample or CCE documentation.
name	No	PVC name **Type:** string **Value Description:** Supports customization. **Value Constraint:** Each PVC name must be unique in a namespace. The value must contain 1 to 24 characters and meet the following requirement: (^$) \| (^[a-z] ([-a-z0-9]*[a-z0-9])?$). **Suggestion:** Customize the value.

Property	Required	Descripiton
clusterId	No	ID of the cluster to which the resource belongs **Type:** HuaweiCloud.CCE.Cluster.Id **Value Description:** Indicates the ID of an existing or new container cluster. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** Enter the cluster ID. Specifically, log in to the CCE console, and choose Resource Management > Clusters. Click the target cluster, and you can then obtain its cluster ID. Connect to the cluster object and use the get_reference function to obtain the cluster ID. Leave it blank, and specify the ID on the AOS console when creating a stack.
namespace	No	Namespace of the cluster to which the resource belongs **Type:** string **Value Description:** Must be a valid namespace in the cluster, for example, default. **Value Constraint:** The value must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed. **Suggestion:** Customize the value based on the existing cluster or the cluster to be created.
volumeId	No	the existing volume id which need mount **Type:** string **Value Description:** Supports customization. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** None
deleteVolume	No	delete volume resource when delete pvc **Type:** boolean **Default:** False **Value Constraint:** Supports true false **Suggestion:** None

Relationships Between Elements

Table 2-63 Relationship description

Description	Target
Depends On	**AOS.Batch**
Depends On	**DCS.Redis**
Depends On	**RDS.MySQL**
Depends On	**CCE.Storage.EVS**
Depends On	**OBS.Bucket**
Depends On	**CCE.Storage.SFS**
Depends On	**CCE.ConfigMap**
Depends On	**CCE.Job**
Depends On	**CCE.Storage.OBS**
Depends On	**CCE.DaemonSet**
Depends On	**CCE.Secret**
Depends On	**CCE.Service**
Depends On	**CCE.Ingress**
Depends On	**CCE.StatefulSet**
Depends On	**CCE.NodePool**
Depends On	**CCE.Deployment**
Depends On	**CCE.Pod**

Descripti on	Target
Depends On	**RDS.PostgreSQL**
Contained In	**CCE.Cluster**

Return Value

Property	Type	Description
clusterId	string	ID of the cluster which is associated with the OBS file system
refID	string	UID of the OBS file system
refName	string	Name of the OBS file system

Blueprint Example

Example 1:

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  storage-name:
    default: my-evc-storage
node_templates:
  my-storage:
    type: HuaweiCloud.CCE.Storage.OBS
    properties:
      name: {get_input: storage-name}
```

Example 2: Custom K8s Manifest for Orchestration

● For clusters of version 1.15, the example configuration of the YAML file is as follows:

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  my-storage:
    type: HuaweiCloud.CCE.Storage.OBS
    properties:
      apiVersion: v1
      kind: PersistentVolumeClaim
      metadata:
        annotations:
          everest.io/obs-volume-type: STANDARD
        name: cce-obs-k7yhr36u-iuu9
        namespace: default
      spec:
        accessModes:
        - ReadWriteMany
        resources:
          requests:
            storage: 1Gi
        storageClassName: csi-obs
```

- For clusters of version 1.13 or earlier, the example configuration of the YAML file is as follows:

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  my-storage:
    type: HuaweiCloud.CCE.Storage.OBS
    properties:
      apiVersion: v1
      kind: PersistentVolumeClaim
      metadata:
        annotations:
          volume.beta.kubernetes.io/storage-class: obs-standard
          volume.beta.kubernetes.io/storage-provisioner: flexvolume-huawei.com/fuxiobs
        name: cce-obs-k7yhr36u-iuu9
        namespace: default
      spec:
        accessModes:
        - ReadWriteMany
        resources:
          requests:
            storage: 10Gi
```

2.2.25 CCE.Storage.SFS

Element Description

The **CCE.Storage.SFS** element corresponds to file storage volumes in the CCE storage management function. This type of resources must be used together with CCE clusters.

Element Properties

Table 2-64 Property Description

Property	Required	Descripiton
size	No	Storage space size, in GB. The default value is 80. **Type:** integer **Default:** 10 **Value Constraint:** From 1 to 511800. **Suggestion:** Set the value based on specifications and requirements.
k8sManifest	No	K8s-native manifest object of the SFS, based on which you can create SFS resources to replace other configuration items **Type:** dict **Value Constraint:** The value must meet the Kubernetes specifications. **Suggestion:** For details, see the sample or CCE documentation.

Property	Required	Descripiton
name	No	Name of the CCE SFS file system, which is mounted to the container **Type:** string **Value Constraint:** The value contains 1 to 24 characters and must start with a letter and end with a digit. Only lowercase letters, digits, and hyphens (-) are allowed. The following regular specification must be met: (^$)\|(^[a-z]([-a-z0-9]*[a-z0-9])?$)". **Suggestion:** Customize the value.
clusterId	No	ID of the cluster which is associated with the SFS file system **Type:** HuaweiCloud.CCE.Cluster.Id **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** Enter the cluster ID. Specifically, log in to the CCE console, and choose Resource Management > Clusters. Click the target cluster, and you can then obtain its cluster ID. Connect to the cluster object and use the get_reference function to obtain the cluster ID.
volumeId	No	the existing volume id which need mount **Type:** string **Value Description:** Supports customization. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** None
deleteVolume	No	delete volume resource when delete pvc **Type:** boolean **Default:** False **Value Constraint:** Supports true false **Suggestion:** None
namespace	No	Namespace in a cluster where a resource is located **Type:** string **Value Constraint:** The value must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed. **Suggestion:** Log in to the CCE console, and choose Resource Management > Namespaces. View and select the target namespace.

Relationships Between Elements

Table 2-65 Relationship description

Description	Target
Depends On	**AOS.Batch**
Depends On	**DCS.Redis**
Depends On	**RDS.MySQL**
Depends On	**CCE.Storage.EVS**
Depends On	**OBS.Bucket**
Depends On	**CCE.Storage.SFS**
Depends On	**CCE.ConfigMap**
Depends On	**CCE.Job**
Depends On	**CCE.Storage.OBS**
Depends On	**CCE.DaemonSet**
Depends On	**CCE.Secret**
Depends On	**CCE.Service**
Depends On	**CCE.Ingress**
Depends On	**CCE.StatefulSet**
Depends On	**CCE.NodePool**
Depends On	**CCE.Deployment**
Depends On	**CCE.Pod**

Descripti on	Target
Depends On	**RDS.PostgreSQL**
Contained In	**CCE.Cluster**

Return Value

Property	Type	Description
status	string	Status of the SFS file system
clusterId	string	ID of the cluster which is associated with the SFS file system
refID	string	UID of the SFS file system
refName	string	Name of the SFS file system

Blueprint Example

Example 1:

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  storage-name:
    default: my-evc-storage
node_templates:
  my-storage:
    type: HuaweiCloud.CCE.Storage.SFS
    properties:
      name:
        get_input: storage-name
```

Example 2: Custom K8s Manifest for Orchestration

- For clusters of version 1.15, the example configuration of the YAML file is as follows:

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  my-storage:
    type: HuaweiCloud.CCE.Storage.SFS
    properties:
      apiVersion: v1
      kind: PersistentVolumeClaim
      metadata:
        annotations: {}
        name: cce-sfs-k7yimkqa-p66e
        namespace: default
      spec:
        accessModes:
        - ReadWriteMany
        resources:
          requests:
            storage: 10Gi
        storageClassName: csi-nas
```

- For clusters of version 1.13 or earlier, the example configuration of the YAML file is as follows:

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  my-storage:
    type: HuaweiCloud.CCE.Storage.SFS
    properties:
      apiVersion: v1
      kind: PersistentVolumeClaim
      metadata:
        annotations:
          volume.beta.kubernetes.io/storage-class: nfs-rw
          volume.beta.kubernetes.io/storage-provisioner: flexvolume-huawei.com/fuxinfs
        name: cce-sfs-k7yimkqa-p66e
        namespace: default
      spec:
        accessModes:
        - ReadWriteMany
        resources:
          requests:
            storage: 10Gi
```

2.2.26 CCI.ConfigMap

Element Description

The **CCI.ConfigMap** element is used to create a configMap.

Element Properties

Table 2-66 Property Description

Property	Required	Descripiton
k8sManifest	Yes	K8s-native manifest object of the ConfigMap, based on which you can create ConfigMap resources to replace other configuration items **Type:** dict **Value Description:** Supports customization. You are not advised to change the name and labels under the metadata during an update.
namespace	Yes	Namespace in a cluster where a resource is located **Type:** HuaweiCloud.CCI.Namespace.Name **Value Description:** Must be a valid namespace in the cluster, for example, default. **Value Constraint:** The value must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed.

Relationships Between Elements

Table 2-67 Relationship description

Description	Target
Depends On	**RDS.MySQL**
Depends On	**CCI.Secret**
Depends On	**CCI.Job**
Depends On	**CCI.StatefulSet**
Depends On	**CCI.Storage.EVS**
Depends On	**DCS.Redis**
Depends On	**CCI.Service**
Depends On	**CCI.Deployment**
Depends On	**CCI.Storage.SFS**
Depends On	**CCI.ConfigMap**
Depends On	**RDS.PostgreSQL**
Depends On	**CCI.Ingress**
Depends On	**AOS.Batch**
Depends On	**OBS.Bucket**
Contained In	**CCI.Namespace**

Return Value

Property	Type	Description
refName	string	ConfigMap name

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  namespace:
    description: ns
node_templates:
  ccei4xws:
    type: HuaweiCloud.CCI.ConfigMap
    properties:
      k8sManifest:
        apiVersion: v1
        data:
          property_1: test
        kind: ConfigMap
        metadata:
          name: configmap-test1
        namespace:
          get_input: namespace
```

2.2.27 CCI.Deployment

Element Description

The **CCI.Deployment** element is used to create a deployment.

Element Properties

Table 2-68 Property Description

Property	Required	Descripiton
k8sManifest	Yes	Deployment object in the Kubernetes cluster created by the CCI service **Type:** dict **Value Description:** This field can be customized. You are advised to use a public image (uploading an image to SWR and setting the image type to public). When updating the image, do not change the name and labels under metadata. If replicas under spec is specified using a get_input function, set type to integer. **Suggestion:** Enter the native YAML file content of the Kubernetes object.

Property	Required	Descripiton
namespace	Yes	Namespace in a cluster where a workload is located **Type:** HuaweiCloud.CCI.Namespace.Name **Value Description:** Supports customization. **Value Constraint:** The value must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed. The length of namespace can't be over 63. **Suggestion:** Log in to the CCI console. In the navigation pane on the left, choose Namespaces. View and select the target namespace.

Relationships Between Elements

Table 2-69 Relationship description

Description	Target
Depends On	**RDS.MySQL**
Depends On	**CCI.Secret**
Depends On	**CCI.Job**
Depends On	**CCI.StatefulSet**
Depends On	**CCI.Storage.EVS**
Depends On	**DCS.Redis**
Depends On	**CCI.Service**
Depends On	**CCI.Deployment**
Depends On	**CCI.Storage.SFS**
Depends On	**CCI.ConfigMap**
Depends On	**RDS.PostgreSQL**

Descripti on	Target
Depends On	**CCI.Ingress**
Depends On	**AOS.Batch**
Depends On	**OBS.Bucket**
Contained In	**CCI.Namespace**

Return Value

Property	Type	Description
refID	string	ID of CCI Deployment
refName	string	Name of CCI Deployment

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  containername:
    default: deployment-123
    type: string
  cpu:
    default: 300m
    type: string
  deploymentname:
    default: deploymenttest
    type: string
  image:
    default: '*.*.*.*:20202/***/redis:V1'
    type: string
  imagePullPolicy:
    default: IfNotPresent
    type: string
  labels:
    default: mydeployment
    type: string
  memory:
    default: 1Gi
    type: string
  replicas:
    default: 1
    type: integer
  namespace:
    default: cci-ns
    description: Namespace in a cluster where a workload is located
node_templates:
  my-deployment:
    properties:
      k8sManifest:
        apiVersion: 'apps/v1'
```

```
        kind: Deployment
        metadata:
          labels:
            'cce/appgroup':
              get_input: labels
          name:
            get_input: deploymentname
        spec:
          replicas:
            get_input: replicas
          rollbackTo:
            revision: 0
          selector:
            matchLabels:
              'cce/appgroup':
                get_input: labels
          template:
            metadata:
              labels:
                'cce/appgroup':
                  get_input: labels
            spec:
              containers:
                - command:
                    - sh
                    - '-c'
                    - sleep 10000;
                  image:
                    get_input: image
                  name:
                    get_input: containername
                  resources:
                    limits:
                      cpu:
                        get_input: cpu
                      memory:
                        get_input: memory
                    requests:
                      cpu:
                        get_input: cpu
                      memory:
                        get_input: memory
              imagePullPolicy:
                get_input: imagePullPolicy
          namespace:
            get_input: namespace
      type: HuaweiCloud.CCI.Deployment
outputs:
  deployment-name:
    description: Name of deployment
    value:
      get_attribute:
        - my-deployment
        - refName
```

2.2.28 CCI.Ingress

Element Description

The **CCI.Ingress** element is used to create an ingress.

Element Properties

Table 2-70 Property Description

Property	Required	Descripiton
k8sManifest	Yes	Ingress object in the Kubernetes cluster created by the CCI service **Type:** dict **Value Description:** Supports customization. You are not advised to change the name and labels under the metadata during an update. **Suggestion:** Enter the native YAML file content of the Kubernetes object.
namespace	Yes	Namespace in a cluster where a resource is located **Type:** HuaweiCloud.CCI.Namespace.Name **Value Description:** Must be a valid namespace in the cluster, for example, default. **Value Constraint:** The value must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed. **Suggestion:** Log in to the CCI console, choose Resource Management > Namespaces, and query information as required.

Relationships Between Elements

Table 2-71 Relationship description

Description	Target
Depends On	**RDS.MySQL**
Depends On	**CCI.Secret**
Depends On	**CCI.Job**
Depends On	**CCI.StatefulSet**
Depends On	**CCI.Storage.EVS**
Depends On	**DCS.Redis**

Descripti on	Target
Depends On	**CCI.Service**
Depends On	**CCI.Deployment**
Depends On	**CCI.Storage.SFS**
Depends On	**CCI.ConfigMap**
Depends On	**RDS.PostgreSQL**
Depends On	**CCI.Ingress**
Depends On	**AOS.Batch**
Depends On	**OBS.Bucket**
Contained In	**CCI.Namespace**

Return Value

Property	Type	Description
refName	string	Ingress name

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
 namespace:
  description: ns
node_templates:
 ccei4xws:
  type: HuaweiCloud.CCI.Ingress
  properties:
   k8sManifest:
    apiVersion: 'extensions/v1beta1'
    kind: Ingress
    metadata:
     labels:
      stack-name: aos-aos
     name: ingress-test
    spec:
     rules:
      - http:
        paths:
```

```
              - backend:
                  serviceName: aos-apiserver
                  servicePort: 31800
                path: '/v2/sample_templates'
                property:
                  'ingress.beta.kubernetes.io/enable-checksession': 'true'
          tls:
            - secretName: tenant-management-service-server
        namespace:
          get_input: namespace
```

2.2.29 CCI.Job

Element Description

The **CCI.Job** element is used to create a job.

Element Properties

Table 2-72 Property Description

Property	Required	Descripiton
k8sManifest	Yes	Native manifest of the job object of the Kubernetes **Type:** dict **Value Description:** Supports customization. You are advised to use a public image (which is uploaded to the image repository and whose type is set to public), and not to change the name and labels under the metadata during an update. **Value Constraint:** This field cannot be empty. **Suggestion:** Customize the value. For details, visit https://kubernetes.io/docs/tasks/job/automated-tasks-with-cron-jobs/.
namespace	Yes	Namespace in a cluster where a job is located **Type:** HuaweiCloud.CCI.Namespace.Name **Value Description:** Supports customization. **Value Constraint:** The value must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed. The length of namespace can't be over 63. **Suggestion:** Log in to the CCI console. In the navigation pane on the left, choose Namespaces. View and select the target namespace.

Relationships Between Elements

Table 2-73 Relationship description

Description	Target
Depends On	**RDS.MySQL**
Depends On	**CCI.Secret**
Depends On	**CCI.Job**
Depends On	**CCI.StatefulSet**
Depends On	**CCI.Storage.EVS**
Depends On	**DCS.Redis**
Depends On	**CCI.Service**
Depends On	**CCI.Deployment**
Depends On	**CCI.Storage.SFS**
Depends On	**CCI.ConfigMap**
Depends On	**RDS.PostgreSQL**
Depends On	**CCI.Ingress**
Depends On	**AOS.Batch**
Depends On	**OBS.Bucket**
Contained In	**CCI.Namespace**

Return Value

Property	Type	Description
refID	string	ID of CCI job
refName	string	Name of CCI Job

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  cci_namespace:
    default: cci-ns
    description: Namespace where the job locates
  command:
    default: sleep 10;
    description: Command for using the image to execute the job
    type: string
  containername:
    default: cci-job-123
    description: Name of the container to be started when the job is executed using the image
    type: string
  cpu:
    default: 500m
    description: Number of CPU cores required for using the image to execute the job
    type: string
  image:
    default: 'redis:latest'
    description: 'Name and tag of the image used by the job'
    type: string
  jobname:
    default: cci-job
    description: 'Job name'
    type: string
  memory:
    default: 1Gi
    description: Memory amount required for using the image to execute the job
    type: string
node_templates:
  my-job:
    properties:
      k8sManifest:
        apiVersion: 'batch/v1'
        kind: Job
        metadata:
          name:
            get_input: jobname
        spec:
          template:
            metadata:
              name:
                get_input: jobname
            spec:
              containers:
                - command:
                    - sh
                    - '-c'
                    - get_input: command
                  image:
                    get_input: image
                  name:
                    get_input: containername
                  resources:
                    limits:
                      cpu:
```

```
              get_input: cpu
            memory:
              get_input: memory
          requests:
            cpu:
              get_input: cpu
            memory:
              get_input: memory
        imagePullPolicy: IfNotPresent
        restartPolicy: OnFailure
    namespace:
      get_input: cci_namespace
    type: HuaweiCloud.CCI.Job
```

2.2.30 CCI.Namespace

Element Description

The **CCI.Namespace** element is used to create a namespace.

Element Properties

Table 2-74 Property Description

Property	Required	Descripiton
flavor	Yes	Used to specify the flavor type of the cluster namespace belongs to. **Type:** string **Value Description:** Supports customization. **Default:** general-computing **Value Constraint:** he value can be pu-accelerated,general-computing
name	No	NameSpace name **Type:** string **Value Description:** Supports customization. **Value Constraint:** The value contains 3 to 25 characters and cannot be changed. It must start with a letter, consist of letters, digits, and hyphens (-), and meets the following requirement: (^$)\|(^[a-z] ([-a-z0-9]*[a-z0-9])?$).
network	Yes	Cloud container instance network object. A network object corresponds to a subnet in the virtual private cloud. **Type:** CCI.Network **Value Description:** Supports customization. **Default:** {u'subnetId': u'unset', u'networkType': u'underlay_neutron', u'securityGroupId': u'unset', u'vpcId': u'unset', u'availableZone': u'unset'}

Relationships Between Elements

Table 2-75 Relationship description

Description	Target
Connected	**VPC.Subnet**
Connected	**VPC.SecurityGroup**
Contained In	**VPC.VPC**

Return Value

Property	Type	Description
refName	string	Name of the cci namespace

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  flavor:
    default: gpu-accelerated
    type: string
  name:
    default: hanyi-ns
    type: string
  subnet_id:
    description: Subnet ID
    label: ''
  security_group_id:
    description: ID of the security group to which the subnet belongs
    label: ''
  vpc_id:
    description: VPC ID
    label: ''
node_templates:
  my-namespace:
    properties:
      flavor:
        get_input: flavor
      name:
        get_input: name
      network:
        subnetId:
          get_input: subnet_id
        networkType: underlay_neutron
        securityGroupId:
          get_input: security_group_id
        vpcId:
          get_input: vpc_id
        availableZone: cnnorth1a
    type: HuaweiCloud.CCI.Namespace
```

2.2.31 CCI.Secret

Element Description

The **CCI.Secret** element is used to create a secret. In Kubernetes, secrets are used to carry sensitive information.

Element Properties

Table 2-76 Property Description

Property	Required	Descripiton
k8sManif est	Yes	K8s-native manifest object of the Secret, based on which you can create ConfigMap resources to replace other configuration items **Type:** dict **Value Description:** Supports customization. You are not advised to change the name and labels under the metadata during an update.
type	Yes	type determines how the Service is exposed **Type:** string **Value Description:** Supports customization. **Default:** Opaque **Suggestion:** Set the value based on requirements.
namespac e	Yes	Namespace in a cluster where a resource is located **Type:** HuaweiCloud.CCI.Namespace.Name **Value Description:** Must be a valid namespace in the cluster, for example, default. **Value Constraint:** The value must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed. **Suggestion:** Log in to the CCI console. In the navigation pane on the left, choose Namespaces. View and select the target namespace.
name	No	CCI name **Type:** string **Value Description:** Supports customization. **Default:** '' **Value Constraint:** The value contains 3 to 25 characters and cannot be changed. It must start with a letter, consist of letters, digits, and hyphens (-), and meets the following requirement: (^$)\|(^[a-z] ([-a-z0-9]*[a-z0-9])?$).

Property	Required	Descripiton
data	Yes	key-value string map of secret **Type:** dict **Value Description:** Supports customization. **Suggestion:** Set the value based on requirements.

Relationships Between Elements

Table 2-77 Relationship description

Description	Target
Depends On	**RDS.MySQL**
Depends On	**CCI.Secret**
Depends On	**CCI.Job**
Depends On	**CCI.StatefulSet**
Depends On	**CCI.Storage.EVS**
Depends On	**DCS.Redis**
Depends On	**CCI.Service**
Depends On	**CCI.Deployment**
Depends On	**CCI.Storage.SFS**
Depends On	**CCI.ConfigMap**
Depends On	**RDS.PostgreSQL**
Depends On	**CCI.Ingress**
Depends On	**AOS.Batch**

Descripti on	Target
Depends On	**OBS.Bucket**
Contained In	**CCI.Namespace**

Return Value

Property	Type	Description
refName	string	Secret name

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
 xx-value:
   default: abcd
   type: password
 yy-value:
   default: efgh
   type: password
 name:
   default: my-secret
 ns:
   description: Namespace defines the space within which name must be unique
   label: ''
node_templates:
 mysecret:
  properties:
   data:
     xx:
       get_input: xx-value
     yy:
       get_input: yy-value
   name:
     get_input: name
   namespace:
     get_input: ns
   k8sManifest: {}
  type: HuaweiCloud.CCI.Secret
```

2.2.32 CCI.Service

Element Description

The **CCI.Service** element is used to create a service.

Element Properties

Table 2-78 Property Description

Property	Required	Descripiton
k8sManif est	Yes	Description file of the Kubernetes service **Type:** dict **Value Description:** Supports customization. You are not advised to change the name and labels under the metadata during an update. **Suggestion:** For details, see the Kubernetes official guide at https://kubernetes.io/docs/concepts/services-networking/service.
namespac e	Yes	Namespace in a cluster where a service is located **Type:** HuaweiCloud.CCI.Namespace.Name **Value Description:** Supports customization. **Value Constraint:** The value must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed. The length of namespace can't be over 63. **Suggestion:** Log in to the CCI console. In the navigation pane on the left, choose Namespaces. View and select the target namespace.

Relationships Between Elements

Table 2-79 Relationship description

Description	Target
Depends On	**RDS.MySQL**
Depends On	**CCI.Secret**
Depends On	**CCI.Job**
Depends On	**CCI.StatefulSet**
Depends On	**CCI.Storage.EVS**
Depends On	**DCS.Redis**

Descripti on	Target
Depends On	**CCI.Service**
Depends On	**CCI.Deployment**
Depends On	**CCI.Storage.SFS**
Depends On	**CCI.ConfigMap**
Depends On	**RDS.PostgreSQL**
Depends On	**CCI.Ingress**
Depends On	**AOS.Batch**
Depends On	**OBS.Bucket**
Contained In	**CCI.Namespace**
Connecte d	**ULB.LoadBalancer**

Return Value

Property	Type	Description
refID	string	UID of the cci service
refName	string	Name of the cci service

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  service:
    properties:
      k8sManifest:
        apiVersion: v1
        kind: Service
        metadata:
          annotations:
            'service.beta.kubernetes.io/role': tenant
          labels:
            app: aos-apiserver-edec06ac-d
            appgroup: cde-cde_aos
```

```
            name: aos-apiserver
        name: service-hy
      spec:
        ports:
          - name: https
            nodeport: 30280
            port: 30210
            protocol: TCP
            targetPort: 9763
        selector:
          app: trm-apiserver-e2f63e54-f
        sessionAffinity: None
        type: LoadBalancer
      namespace:
        get_input: ns
    type: HuaweiCloud.CCI.Service
inputs:
  ns:
    description: Namespace where the service locates
    label: ''
```

2.2.33 CCI.StatefulSet

Element Description

The **CCI.StatefulSet** element is used to create a StatefulSet.

Element Properties

Table 2-80 Property Description

Property	Required	Descripiton
k8sManifest	Yes	Native manifest of the StatefulSet object of the Kubernetes **Type:** dict **Value Description:** This field can be customized. You are advised to use a public image (uploading an image to SWR and setting the image type to public). When updating the image, do not change the name and labels under metadata. If replicas under spec is specified using a get_input function, set type to integer. **Value Constraint:** This field cannot be empty. **Suggestion:** Customize the value. For details, visit https://kubernetes.io/docs/tutorials/stateful-application/basic-stateful-set/.

Property	Required	Descripiton
namespace	Yes	Namespace in a cluster where a resource is located **Type:** HuaweiCloud.CCI.Namespace.Name **Value Description:** Must be a valid namespace in the cluster, for example, default. **Value Constraint:** The value must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed. **Suggestion:** Log in to the CCI console. In the navigation pane on the left, choose Namespaces. View and select the target namespace.

Relationships Between Elements

Table 2-81 Relationship description

Description	Target
Depends On	**RDS.MySQL**
Depends On	**CCI.Secret**
Depends On	**CCI.Job**
Depends On	**CCI.StatefulSet**
Depends On	**CCI.Storage.EVS**
Depends On	**DCS.Redis**
Depends On	**CCI.Service**
Depends On	**CCI.Deployment**
Depends On	**CCI.Storage.SFS**
Depends On	**CCI.ConfigMap**
Depends On	**RDS.PostgreSQL**

Descripti on	Target
Depends On	**CCI.Ingress**
Depends On	**AOS.Batch**
Depends On	**OBS.Bucket**
Contained In	**CCI.Namespace**

Return Value

Property	Type	Description
refName	string	Name of a stateful service
refLabels App	string	Name of label app

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
 cciss1pe_namespace:
   description: Namespace in a cluster where a resource is located
   label: ''
node_templates:
 cciss1pe:
   type: HuaweiCloud.CCI.StatefulSet
   properties:
    k8sManifest:
      kind: StatefulSet
      spec:
        replicas: 1
        serviceName: statefulsettest3
        template:
          spec:
            imagePullSecrets:
              - name: default-secret
            containers:
              - image: 'nginx:stable-alpine-perl'
                name: ll-test
                resources:
                  requests:
                    cpu: 4
                    memory: 8Gi
                  limits:
                    cpu: 4
                    memory: 8Gi
          metadata:
            labels:
              app: ll-test
        selector:
          matchLabels:
```

```
            app: ll-test
    apiVersion: 'apps/v1'
    metadata:
      labels:
        app: ll-test
      name: statefulsettest3
    namespace:
      get_input: cciss1pe_namespace
```

2.2.34 CCI.Storage.EVS

Element Description

The **CCI.Storage.EVS** element is used to create a Persistent Volume Claim (PVC) under a specified namespace.

Element Properties

Table 2-82 Property Description

Property	Required	Descripiton
k8sManifest	No	K8s-native manifest object of the EVS, based on which you can create EVS resources to replace other configuration items **Type:** dict **Value Constraint:** The value must meet the Kubernetes specifications. **Suggestion:** For details, see the sample or CCI documentation.
name	No	PVC name **Type:** string **Value Description:** Supports customization. **Value Constraint:** Each PVC name must be unique in a namespace. The value must contain 1 to 24 characters and meet the following requirement: (^$) \| (^[a-z] ([-a-z0-9]*[a-z0-9])?$). **Suggestion:** Customize the value.
accessMode	Yes	Access mode for the persist volume, default value is ReadWriteMany. **Type:** string **Value Description:** Supports customization. **Default:** ReadWriteMany **Value Constraint:** Supports "ReadWriteOnce", "ReadOnlyMany", "ReadWriteMany" **Suggestion:** None

Property	Required	Descripiton
namespace	Yes	Namespace in a cluster where a service is located **Type:** HuaweiCloud.CCI.Namespace.Name **Value Description:** Supports customization. **Value Constraint:** The value must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed. The length of namespace can't be over 63. **Suggestion:** Log in to the CCI console. In the navigation pane on the left, choose Namespaces. View and select the target namespace.
diskType	Yes	disk type **Type:** HuaweiCloud.CCI.Volume.Type.Name **Value Description:** Supports customization. **Value Constraint:** SATA: common I/O EVS disks; SAS: high I/O EVS disks; SSD: ultra-high I/O EVS disks **Suggestion:** None
storageClass	No	storage class(deprecated) **Type:** string **Value Description:** Supports customization. **Default:** sata **Value Constraint:** Supports "sata", "sas", "ssd" **Suggestion:** None
size	Yes	PVC name **Type:** integer **Value Description:** Supports customization. **Default:** 10 **Value Constraint:** the value range 1-1024 **Suggestion:** None

Relationships Between Elements

Table 2-83 Relationship description

Description	Target
Depends On	**RDS.MySQL**
Depends On	**CCI.Secret**

Descripti on	Target
Depends On	**CCI.Job**
Depends On	**CCI.StatefulSet**
Depends On	**CCI.Storage.EVS**
Depends On	**DCS.Redis**
Depends On	**CCI.Service**
Depends On	**CCI.Deployment**
Depends On	**CCI.Storage.SFS**
Depends On	**CCI.ConfigMap**
Depends On	**RDS.PostgreSQL**
Depends On	**CCI.Ingress**
Depends On	**AOS.Batch**
Depends On	**OBS.Bucket**
Contained In	**CCI.Namespace**

Return Value

Property	Type	Description
refName	string	Name of the EVS file system
refID	string	UID of the EVS file system

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  pvc-name:
```

```
      default: pvc
    pvc-ns:
      default: default
    class:
      default: sata
node_templates:
  my-pvc:
    properties:
      name:
        get_input: pvc-name
      namespace:
        get_input: pvc-ns
      storageClass:
        get_input: class
    type: HuaweiCloud.CCI.Storage.EVS
outputs:
  pvc-name:
    description: Name of pvc
    value:
      get_attribute:
        - my-pvc
        - refName
```

2.2.35 CCI.Storage.SFS

Element Description

The **CCI.Storage.SFS** element is used to create an SFS file system under a specified namespace.

Element Properties

Table 2-84 Property Description

Property	Required	Descripiton
k8sManif est	No	K8s-native manifest object of the SFS, based on which you can create SFS resources to replace other configuration items **Type:** dict **Value Constraint:** The value must meet the Kubernetes specifications. **Suggestion:** For details, see the sample or CCI documentation.
namespac e	Yes	Namespace in a cluster where a service is located **Type:** HuaweiCloud.CCI.Namespace.Name **Value Description:** Supports customization. **Value Constraint:** The value must start with a letter. Only lowercase letters, digits, and hyphens (-) are allowed. The length of namespace can't be over 63. **Suggestion:** Log in to the CCI console. In the navigation pane on the left, choose Namespaces. View and select the target namespace.

Property	Required	Descripiton
name	No	SFS name **Type:** string **Value Description:** Supports customization. **Value Constraint:** Each SFS name must be unique in a namespace. The value must contain 1 to 24 characters and meet the following requirement: (^$) \| (^[a-z] ([-a-z0-9]*[a-z0-9])?$). **Suggestion:** Customize the value.

Relationships Between Elements

Table 2-85 Relationship description

Description	Target
Depends On	**RDS.MySQL**
Depends On	**CCI.Secret**
Depends On	**CCI.Job**
Depends On	**CCI.StatefulSet**
Depends On	**CCI.Storage.EVS**
Depends On	**DCS.Redis**
Depends On	**CCI.Service**
Depends On	**CCI.Deployment**
Depends On	**CCI.Storage.SFS**
Depends On	**CCI.ConfigMap**
Depends On	**RDS.PostgreSQL**

Descripti on	Target
Depends On	**CCI.Ingress**
Depends On	**AOS.Batch**
Depends On	**OBS.Bucket**
Contained In	**CCI.Namespace**

Return Value

Property	Type	Description
status	string	Status of the SFS file system
refName	string	Name of the SFS file system
refID	string	UID of the SFS file system

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  ccis34wa_namespace:
    description: Namespace defines the space within which name must be unique
    label: ''
node_templates:
  ccis34wa:
    type: HuaweiCloud.CCI.Storage.SFS
    properties:
      namespace:
        get_input: ccis34wa_namespace
      k8sManifest:
        kind: PersistentVolumeClaim
        spec:
          accessModes:
            - ReadWriteMany
          resources:
            requests:
              storage: 10Gi
        apiVersion: v1
        metadata:
          namespace: default
          annotations:
            'volume.beta.kubernetes.io/storage-class': nfs-rw
            'volume.beta.kubernetes.io/storage-provisioner': 'flexvolume-huawei.com/fuxinfs'
          name: pvc-sfs-auto-example
```

2.2.36 CDN.Cache

Element Description

The **CDN.Cache** element is used to set cache policies for resources on CDN nodes.

Element Properties

Table 2-86 Property Description

Property	Required	Descripiton
rules	No	Cache rule **Type: CDN.CacheRule** Array **Value Description:** Overwrites the previous rule configurations. If rules are blank, default rules are used.
domainId	Yes	Acceleration domain name ID **Type:** HuaweiCloud.CDN.Domain.Id **Value Description:** You are advised to use the get_input function to obtain the value, or connect to the CDN.Domain object and use the get_reference function to obtain the value.
ignoreUrl Paramete r	No	Whether to ignore URL parameters **Type:** boolean **Value Description:** false: indicates ignored. true: indicates not ignored.

Relationships Between Elements

Table 2-87 Relationship description

Description	Target
Connected	**CDN.Domain**

Return Value

Property	Type	Description
refID	string	Acceleration cache ID

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  cdnd4u36:
    type: HuaweiCloud.CDN.Domain
    properties:
      sources:
        - activeStandby:
            get_input: cdnd4u36_sources_0_activeStandby
          originType:
            get_input: cdnd4u36_sources_0_originType
          ipOrDomain:
            get_input: cdnd4u36_sources_0_ipOrDomain
      businessType:
        get_input: cdnd4u36_businessType
      domainName:
        get_input: cdnd4u36_domainName
  cdnc3j3e:
    type: HuaweiCloud.CDN.Cache
    properties:
      domainId:
        get_reference: cdnd4u36
    requirements:
      - domainId:
          node: cdnd4u36
inputs:
  cdnd4u36_sources_0_activeStandby:
    description: Active/standby status
    default: master
    label: ''
  cdnd4u36_sources_0_originType:
    description: Source site type
    label: ''
  cdnd4u36_sources_0_ipOrDomain:
    description: Source IP address or domain name
    label: ''
  cdnd4u36_businessType:
    description: Domain name service type
    label: ''
  cdnd4u36_domainName:
    description: Acceleration domain name
    label: ''
```

2.2.37 CDN.Domain

Element Description

The **CDN.Domain** element indicates the acceleration domain name.

Element Properties

Table 2-88 Property Description

Property	Required	Descripiton
sources	Yes	Domain name or IP address of the source server **Type: CDN.Source** Array

Property	Required	Descripiton
businessType	Yes	Domain name service type **Type:** string **Value Description:** web: indicates static acceleration. download: indicates download acceleration. video: indicates media stream acceleration.
domainName	Yes	Acceleration domain name **Type:** string **Value Description:** Indicates the international English domain name. The domain name supports a maximum of 50 characters. It consists of letters (A-Z; a-z; case-insensitive), digits (0-9), and hyphens (-), but cannot start or end with a hyphen (-). Domain names at different levels are connected by periods (.).

Relationships Between Elements

None.

Return Value

Property	Type	Description
refName	string	Acceleration domain name
refID	string	Acceleration domain name ID

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  cdnd4u36:
    type: HuaweiCloud.CDN.Domain
    properties:
      sources:
        - activeStandby:
            get_input: cdnd4u36_sources_0_activeStandby
          originType:
            get_input: cdnd4u36_sources_0_originType
          ipOrDomain:
            get_input: cdnd4u36_sources_0_ipOrDomain
      businessType:
        get_input: cdnd4u36_businessType
      domainName:
        get_input: cdnd4u36_domainName
  cdnhm6xf:
    type: HuaweiCloud.CDN.Host
    properties:
      originHostType:
        get_input: cdnhm6xf_originHostType
      domainId:
        get_reference: cdnd4u36
    requirements:
```

```
      - domainId:
          node: cdnd4u36
inputs:
  cdnd4u36_sources_0_activeStandby:
    description: Active/standby status
    default: master
    label: ''
  cdnd4u36_sources_0_originType:
    description: Source site type
    label: ''
  cdnd4u36_sources_0_ipOrDomain:
    description: Source IP address or domain name
    label: ''
  cdnd4u36_businessType:
    description: Domain name service type
    label: ''
  cdnd4u36_domainName:
    description: Acceleration domain name.
    label: ''
  cdnhm6xf_originHostType:
    description: Retrieval host type
    label: ''
```

2.2.38 CDN.Host

Element Description

The **CDN.Host** element can be used to modify the retrieval host. The retrieval host information indicates the host information contained in an HTTP request header. A retrieval host is the site domain name accessed by CDN nodes during retrieval.

Element Properties

Table 2-89 Property Description

Property	Required	Descripiton
originHostType	Yes	Retrieval host type **Type:** string **Value Description:** accelerate: Select the acceleration domain name as the retrieval address. customize: Use the auto-defined domain name as the retrieval address.
domainId	Yes	Acceleration domain name ID **Type:** HuaweiCloud.CDN.Domain.Id **Value Description:** You are advised to use the get_input function to obtain the value, or connect to the CDN.Domain object and use the get_reference function to obtain the value.
customizeDomain	No	Customized domain name of the source server **Type:** string **Value Description:** Customizes the retrieval domain name. When the value of originHostType is customize, this parameter is needed.

Relationships Between Elements

Table 2-90 Relationship description

Description	Target
Connected	**CDN.Domain**

Return Value

Property	Type	Description
refID	string	CDN host ID

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
 cdnd4u36:
  type: HuaweiCloud.CDN.Domain
  properties:
   sources:
    - activeStandby:
       get_input: cdnd4u36_sources_0_activeStandby
      originType:
       get_input: cdnd4u36_sources_0_originType
      ipOrDomain:
       get_input: cdnd4u36_sources_0_ipOrDomain
   businessType:
    get_input: cdnd4u36_businessType
   domainName:
    get_input: cdnd4u36_domainName
 cdnhm6xf:
  type: HuaweiCloud.CDN.Host
  properties:
   originHostType:
    get_input: cdnhm6xf_originHostType
   domainId:
    get_reference: cdnd4u36
  requirements:
   - domainId:
      node: cdnd4u36
inputs:
 cdnd4u36_sources_0_activeStandby:
  description: Active/standby status
  default: master
  label: ''
 cdnd4u36_sources_0_originType:
  description: Source site type
  label: ''
 cdnd4u36_sources_0_ipOrDomain:
  description: Source IP address or domain name
  label: ''
 cdnd4u36_businessType:
  description: Domain name service type
  label: ''
 cdnd4u36_domainName:
  description: Acceleration domain name.
```

```
        label: ''
    cdnhm6xf_originHostType:
      description: Retrieval host type
      label: ''
```

2.2.39 CDN.Https

Element Description

The **CDN.Https** element can be used to configure the HTTPS of the acceleration domain name. You can configure the HTTPS certificate of the acceleration domain name and deploy it on network-wide CDN nodes to implement secure acceleration.

Element Properties

Table 2-91 Property Description

Property	Required	Descripiton
domainId	Yes	Acceleration domain name ID **Type:** HuaweiCloud.CDN.Domain.Id **Value Description:** You are advised to use the get_input function to obtain the value, or connect to the CDN.Domain object and use the get_reference function to obtain the value.
certificate	No	Certificate content of the HTTPS protocol **Type:** secret **Value Description:** If the certificate is not enabled, you do not need to enter the value. The value is in PEM coding format.
certName	Yes	Certificate name **Type:** string
privateKey	No	Private key used by the HTTPS protocol **Type:** secret **Value Description:** If the certificate is not enabled, you do not need to enter the value. The value is in PEM coding format.
httpsStatus	Yes	Whether the HTTPS certificate is enabled **Type:** integer **Value Description:** 0: Disable the HTTPS certificate. In this case, the certificate and private key are not required. 1: Enable HTTPS for acceleration and use HTTPS to access source websites. 2: Enable HTTPS for acceleration and use HTTP to access source websites. The certificate and private key are required.

Property	Required	Descripiton
forceRedir ectHttps	No	Whether to forcibly redirect the client request **Type:** boolean **Value Description:** true: indicates yes. false: indicates no. After this function is enabled, all requests will be forcibly redirected to HTTPS access.
http2	No	Whether to use HTTP 2.0 **Type:** boolean **Value Description:** true: indicates yes. false: indicates no.

Relationships Between Elements

Table 2-92 Relationship description

Descripti on	Target
Connecte d	**CDN.Domain**

Return Value

Property	Type	Description
refID	string	CDN https ID

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  cdnd4u36:
    type: HuaweiCloud.CDN.Domain
    properties:
      sources:
        - activeStandby:
            get_input: cdnd4u36_sources_0_activeStandby
          originType:
            get_input: cdnd4u36_sources_0_originType
          ipOrDomain:
            get_input: cdnd4u36_sources_0_ipOrDomain
      businessType:
        get_input: cdnd4u36_businessType
      domainName:
        get_input: cdnd4u36_domainName
  cdnh6661:
    type: HuaweiCloud.CDN.Https
    properties:
      domainId:
        get_reference: cdnd4u36
```

```
          certName:
            get_input: cdnh6661_certName
          httpsStatus:
            get_input: cdnh6661_httpsStatus
          certificate:
            get_input: cdnh6661_certificate
          privateKey:
            get_input: cdnh6661_privateKey
          forceRedirectHttps:
            get_input: cdnh6661_forceRedirectHttps
          http2:
            get_input: cdnh6661_http2
        requirements:
        - domainId:
            node: cdnd4u36
inputs:
  cdnd4u36_sources_0_activeStandby:
    description: Active/standby status
    default: master
    label: ''
  cdnd4u36_sources_0_originType:
    description: Source site type
    label: ''
  cdnd4u36_sources_0_ipOrDomain:
    description: Source IP address or domain name
    label: ''
  cdnd4u36_businessType:
    description: Domain name service type
    label: ''
  cdnd4u36_domainName:
    description: Acceleration domain name
    label: ''
  cdnh6661_certName:
    description: Certificate name
    label: ''
  cdnh6661_httpsStatus:
    description: Whether to enable the HTTPS certificate
    label: ''
  cdnh6661_certificate:
    description: Certificate used by the HTTPS protocol
    label: ''
  cdnh6661_privateKey:
    description: Private key used by the HTTPS protocol
    label: ''
  cdnh6661_forceRedirectHttps:
    description: Whether to forcibly redirect the client request
    label: ''
  cdnh6661_http2:
    description: Whether to use HTTP 2.0
    label: ''
```

2.2.40 CDN.PreheatJob

Element Description

The **CDN.PreheatJob** element can be used to create a preheating job.

Element Properties

Table 2-93 Property Description

Property	Required	Descripiton
urls	Yes	Preheated URL **Type:** string Array **Value Description:** Example: abc.com/image/1.png. If multiple URLs exist, use commas (,) to separate them. Preheating for directory is not available yet. A single URL can contain a maximum of 10240 characters.

Relationships Between Elements

None.

Return Value

Property	Type	Description
refID	string	Preheating job ID

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  cdnpj2iv:
    type: HuaweiCloud.CDN.PreheatJob
    properties:
      urls:
        - get_input: cdnpj2iv_urls_0
inputs:
  cdnpj2iv_urls_0:
    description: Preheat URL
    label: ''
```

2.2.41 CDN.Referer

Element Description

The **CDN.Referer** element is used to configure referer filtering rules. You can set referer filtering policies to identify and filter users, controlling access.

Element Properties

Table 2-94 Property Description

Property	Required	Descripiton
refererType	Yes	Referer type **Type:** string **Value Description:** unused: no referer filtering is configured; whiteList: whitelist; blackList: blacklist.
includeEmpty	No	Whether blank referers are included **Type:** boolean **Value Description:** A blacklist including blank referers indicates that requests without any referers are not allowed to access. A whitelist including blank referers indicates that requests without any referers are allowed to access.
refererList	No	List of domain names that are separated by semicolon (;) **Type:** string
domainId	Yes	Acceleration domain name ID **Type:** HuaweiCloud.CDN.Domain.Id **Value Description:** You are advised to use the get_input function to obtain the value, or connect to the CDN.Domain object and use the get_reference function to obtain the value.

Relationships Between Elements

Table 2-95 Relationship description

Description	Target
Connected	**CDN.Domain**

Return Value

Property	Type	Description
refID	string	CDN Referer ID

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  cdnd4u36:
    type: HuaweiCloud.CDN.Domain
    properties:
      sources:
        - activeStandby:
            get_input: cdnd4u36_sources_0_activeStandby
          originType:
            get_input: cdnd4u36_sources_0_originType
          ipOrDomain:
            get_input: cdnd4u36_sources_0_ipOrDomain
      businessType:
        get_input: cdnd4u36_businessType
      domainName:
        get_input: cdnd4u36_domainName
  cdnr140q:
    type: HuaweiCloud.CDN.Referer
    properties:
      refererType:
        get_input: cdnr140q_refererType
      domainId:
        get_reference: cdnd4u36
      includeEmpty:
        get_input: cdnr140q_includeEmpty
      refererList:
        get_input: cdnr140q_refererList
    requirements:
      - domainId:
          node: cdnd4u36
inputs:
  cdnd4u36_sources_0_activeStandby:
    description: Active/standby status
    default: master
    label: ''
  cdnd4u36_sources_0_originType:
    description: Source site type
    label: ''
  cdnd4u36_sources_0_ipOrDomain:
    description: Source IP address or domain name
    label: ''
  cdnd4u36_businessType:
    description: Domain name service type
    label: ''
  cdnd4u36_domainName:
    description: Acceleration domain name
    label: ''
  cdnr140q_refererType:
    description: Referer type
    label: ''
  cdnr140q_includeEmpty:
    description: Whether blank referers are included
    label: ''
  cdnr140q_refererList:
    description: List of domain names that are separated by semicolon (;)
    label: ''
```

2.2.42 CDN.RefreshJob

Element Description

The **CDN.RefreshJob** element can be used to create a cache refreshing job.

Element Properties

Table 2-96 Property Description

Property	Required	Descripiton
type	No	Refreshed type **Type:** string **Value Description:** Supports file and directory. The default value is file.
urls	Yes	Refreshed URL **Type:** string Array **Value Description:** Example: abc.com/image/1.png. If multiple URLs exist, use commas (,) to separate them. A single URL can contain a maximum of 10240 characters.

Relationships Between Elements

None.

Return Value

Property	Type	Description
refID	string	Refreshing job ID

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
 node_templates:
  cdnrj1gi:
    type: HuaweiCloud.CDN.RefreshJob
    properties:
     urls:
       - get_input: cdnrj1gi_urls_0
     type:
       get_input: cdnrj1gi_type
inputs:
  cdnrj1gi_urls_0:
    description: Refreshed URL,
     label: ''
  cdnrj1gi_type:
    description: Refreshed type,
     label: ''
```

2.2.43 CDN.Source

Element Description

The **CDN.Source** element can be used to modify information about the source server. Both the IP address and domain name of the source server can direct CDN

nodes back to the source server. A source domain name cannot be the same as an acceleration domain name.

Element Properties

Table 2-97 Property Description

Property	Required	Descripiton
sources	Yes	Source domain name or IP address **Type: CDN.Source** Array
domainId	Yes	Acceleration domain name ID **Type:** HuaweiCloud.CDN.Domain.Id **Value Description:** You are advised to use the get_input function to obtain the value, or connect to the CDN.Domain object and use the get_reference function to obtain the value.

Relationships Between Elements

Table 2-98 Relationship description

Description	Target
Connected	**CDN.Domain**

Return Value

Property	Type	Description
refID	string	CDN Source ID

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
 node_templates:
  cdnd4u36:
    type: HuaweiCloud.CDN.Domain
    properties:
      sources:
        - activeStandby:
            get_input: cdnd4u36_sources_0_activeStandby
          originType:
            get_input: cdnd4u36_sources_0_originType
          ipOrDomain:
            get_input: cdnd4u36_sources_0_ipOrDomain
          businessType:
```

```
      get_input: cdnd4u36_businessType
    domainName:
      get_input: cdnd4u36_domainName
cdns3t06:
  type: HuaweiCloud.CDN.Source
  properties:
    sources:
      - activeStandby:
          get_input: cdns3t06_sources_0_activeStandby
        originType:
          get_input: cdns3t06_sources_0_originType
        ipOrDomain:
          get_input: cdns3t06_sources_0_ipOrDomain
      domainId:
        get_reference: cdnd4u36
    requirements:
      - domainId:
          node: cdnd4u36
inputs:
  cdnd4u36_sources_0_activeStandby:
    description: Active/standby status
    default: master
    label: ''
  cdnd4u36_sources_0_originType:
    description: Source site type
    label: ''
  cdnd4u36_sources_0_ipOrDomain:
    description: Source IP address or domain name
    label: ''
  cdnd4u36_businessType:
    description: Domain name service type
    label: ''
  cdnd4u36_domainName:
    description: Acceleration domain name
    label: ''
  cdns3t06_sources_0_activeStandby:
    description: Active/standby status
    label: ''
  cdns3t06_sources_0_originType:
    description: Source site type
    label: ''
  cdns3t06_sources_0_ipOrDomain:
    description: Source IP address or domain name
    label: ''
```

2.2.44 DBSS.Instance

Element Description

The **DBSS.Instance** element is used to create Database Security Service (DBSS) resources.

Element Properties

Table 2-99 Property Description

Property	Required	Descripiton
comment	No	Remark information. **Type:** string

Property	Required	Descripiton
vpcId	Yes	VPC ID of the tenant production. **Type:** HuaweiCloud.VPC.VPC.Id
name	Yes	Name of CloudServer. **Type:** string
periodType	No	Type of subscription period. **Type:** HuaweiCloud.Common.PeriodType **Default:** month
periodNum	No	Number of subscription period. **Type:** HuaweiCloud.Common.PeriodNum **Default:** 1
resourceSpecCode	Yes	Resource Specification Types which have been registered at CBC. **Type:** string
publicIp	No	The EIP configuration of CloudServer. **Type:** **ECS.PublicIP** **Value Description:** If you do not want to use an elastic IP address, do not configure this parameter. To enable automatic allocation of elastic IP addresses, specify the information of the IP address to be created. To use an existing elastic IP address, specify the information of the existing elastic IP address. **Default:** {}
subscriptionNum	No	Number of subscriptions. **Type:** integer **Default:** 1 **Value Constraint:** The value can only be 1.
securityGroups	Yes	The SecurityGroup information of CloudServer. **Type:** **ECS.SecurityGroup** Array
nics	Yes	The NIC configuration of CloudServer. **Type:** **ECS.NICS** Array
availabilityZone1	Yes	Name of Master AvailabilityZone. **Type:** HuaweiCloud.ECS.AvailabilityZone.Name
availabilityZone2	Yes	Name of Slave AvailabilityZone. **Type:** HuaweiCloud.ECS.AvailabilityZone.Name
hxPassword	Yes	The login password of Hx. **Type:** secret

Relationships Between Elements

Table 2-100 Relationship description

Description	Target
Connected	**VPC.Subnet**
Contained In	**VPC.VPC**
Connected	**VPC.SecurityGroup**
Connected	**VPC.EIP**

Return Value

Property	Type	Description
refID	string	Database Security Service ID

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  dbss-name:
    description: Name of CloudServer
  vpc-id:
    description: VPC ID of the tenant production
  subnet-vpcid:
    description: Subnet ID
  security-groups-id:
    description: ID of the security group
  availability-zone1:
    description: Name of master availabilityZone
  availability-zone2:
    description: Name of slave availabilityZone
  resource-spec-code:
    description: Resource specification Type
  hx-password:
    description: The login password of Hx
node_templates:
  my-dbss:
    type: HuaweiCloud.DBSS.Instance
    properties:
      name: {get_input: dbss-name}
      vpcId: {get_input: vpc-id}
      availabilityZone1: {get_input: availability-zone1}
      availabilityZone2: {get_input: availability-zone2}
      nics:
        - subnetId: {get_input: subnet-vpcid}
      security_groups:
        - id: {get_input: security-groups-id}
      securityGroups: {get_input: ecs-name}
```

```
        subscriptionNum: 1
        resourceSpecCode: {get_input: resource-spec-code}
        hxPassword: {get_input: hx-password}
    outputs:
     ha-id:
       description: Database Security Service ID
```

2.2.45 DCS.Redis

Element Description

Distributed Cache Service (DCS) provides online distributed cache capabilities that are ready to use out of the box, secure, reliable, scalable, and easy to manage. It is compatible with Redis and Memcached and provides various instance types such as single-node, active/standby, and cluster, meeting users' requirements for high concurrency and fast data access.

Element Properties

Table 2-101 Property Description

Property	Required	Descripiton
vpcId	Yes	ID of the VPC to which the DCS instance belongs
		Type: HuaweiCloud.VPC.VPC.Id
		Value Description: Supports the use of an existing or new VPC ID. To use a new VPC ID, you need to define the VPC object in the template and establish the dependency relationship. You are advised to drag the object to the VPC to automatically establish the dependency relationship.
		Value Constraint: The value must satisfy the UUID generation rule.
		Suggestion: Use the get_input function to pass this parameter. Its value can then be automatically selected when you create a stack on the AOS console. Use the get_reference function to reference a VPC.VPC element created by the current stack. The group ID can then be automatically specified when you use the designer to create a dependency on the VPC.VPC element. Obtain the ID of the created VPC on the VPC console at https://console.huaweicloud.com/vpc?&locale=en-us.
capacity	Yes	Capacity of the DCS instance
		Type: integer
		Value Description: Supports customization.
		Default: 2
		Value Constraint: Currently, the value can only be 2, 4, 8, 16, 32, 64, 128, 256, 512, or 1024.
		Suggestion: Use the default value.

Property	Required	Descripiton
descriptio n	No	Description of the DCS instance **Type:** string **Value Description:** Supports customization.
name	No	Name of the DCS instance **Type:** string **Value Description:** Supports customization. **Value Constraint:** The value must start with a letter. Only letters, digits, underscores (_), and hyphens (-) are allowed.
securityGr oupId	Yes	ID of the security group used by the DCS instance **Type:** HuaweiCloud.VPC.SecurityGroup.Id **Value Description:** Obtains the security group ID from the VPC service or connects to the VPC.SecurityGroup to automatically generate the security group ID. **Value Constraint:** None **Suggestion:** Use the get_input function to pass this parameter. Its value can then be automatically selected when you create a stack on the AOS console. Use the get_reference function to reference a VPC.SecurityGroup element created by the current stack. The group ID can then be automatically specified when you use the designer to create a dependency on the VPC.SecurityGroup element. Obtain the ID of a created security group on the VPC console at https://console.huaweicloud.com/vpc/?locale=en-us#/secGroups.
availablit yZone1	No	AZ 1 to which the DCS instance belongs **Type:** HuaweiCloud.ECS.AvailabilityZone.Name **Value Description:** Indicates AZ 1 where the to-be-created DCS instance is located. The AZ can be automatically selected on the AOS page. You need to specify the AZ name, for example, cn-north-1a. See the Regions and Endpoints. **Value Constraint:** The value varies depending on the belonged region. For details, visit https://developer-intl.huaweicloud.com/en-us/endpoint. For the North China region, the value can be cn-north-1a or cn-north-1b. **Suggestion:** Use the get_input function to pass this parameter. Its value can then be automatically selected when you create a stack on the AOS console. For details about the AZ of each region, visit https://developer-intl.huaweicloud.com/en-us/endpoint.

Property	Required	Descripiton
instance Mode	Yes	Type of the DCS instance **Type:** string **Default:** single **Value Constraint:** Currently, the value can only be single, HA, or cluster. **Suggestion:** Use the default value.
availablit yZone2	No	AZ 2 to which the DCS instance belongs. This AZ is required for creating master/standby DCS instances. **Type:** HuaweiCloud.ECS.AvailabilityZone.Name **Value Description:** Indicates AZ 2 where the to-be-created DCS instance is located. The AZ can be automatically selected on the AOS page and must be different from AZ1. You need to specify the AZ name, for example, cn-north-1b. See the Regions and Endpoints. **Value Constraint:** The value varies depending on the belonged region. For details, visit https://developer-intl.huaweicloud.com/en-us/endpoint. For the North China region, the value can be cn-north-1a or cn-north-1b. **Suggestion:** Use the get_input function to pass this parameter. Its value can then be automatically selected when you create a stack on the AOS console. For details about the AZ of each region, visit https://developer-intl.huaweicloud.com/en-us/endpoint.
instanceB ackupPoli cy	No	Backup plan of the DCS instance **Type: DCS.InstanceBackupPolicy** **Value Description:** Supports customization. **Default:** {u'extendParam': {u'backupAt': [], u'beginAt': u'00', u'periodType': u'weekly'}, u'backupType': u'auto', u'saveDays': 1} **Suggestion:** Use the default value.
maintain Begin	No	Start time of the maintenance time window **Type:** string **Default:** 02:00:00 **Value Constraint:** Currently, the value can only be 02:00, 06:00, 10:00, 14:00, 18:00, or 22:00. **Suggestion:** Use the default value.

Property	Required	Descripiton
subnetId	Yes	Subnet ID of the DCS instance **Type:** HuaweiCloud.VPC.Subnet.Id **Value Description:** Supports the use of an existing or new subnet ID. To use a new subnet ID, you need to define the subnet object in the template and establish the dependency relationship. You are advised to connect the VPC.Subnet to automatically establish the dependency relationship. **Value Constraint:** The subnet must correspond to the VPC. **Suggestion:** Use the get_input function to pass this parameter. Its value can then be automatically selected when you create a stack on the AOS console. Use the get_reference function to reference a VPC.Subnet element created by the current stack. The group ID can then be automatically specified when you use the designer to create a dependency on the VPC.Subnet element. Obtain the ID of the created subnet on the VPC console at https://console.huaweicloud.com/vpc?&locale=en-us.
maintainEnd	No	End time of the maintenance time window **Type:** string **Default:** 06:00:00 **Value Constraint:** Currently, the value can only be 06:00, 10:00, 14:00, 18:00, 22:00, or 02:00. **Suggestion:** Use the default value.
password	Yes	Login password of the DCS instance **Type:** password **Value Description:** Supports customization. **Value Constraint:** 1. The parameter must be written into inputs and imported using the get_input function. 2. The value consists of uppercase and lowercase letters, numbers, and special symbols `~!@#$^&*()-_=+|[{}]:'",<.>/? and contains at least two, length 6 ~32 bit, non-weak password. **Suggestion:** You are advised to use the get_input function to obtain the value and avoid plaintext passwords to ensure security.

Relationships Between Elements

Table 2-102 Relationship description

Description	Target
Connected	**VPC.Subnet**
Connected	**VPC.SecurityGroup**
Contained In	**VPC.VPC**

Return Value

Property	Type	Description
refIP	string	Access IP address of the DCS instance
refPort	integer	Access port of the DCS instance
refName	string	Name of the DCS instance
refID	string	ID of the DCS instance
chargeMode	string	Billing mode of the DCS instance

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  dcs-name:
    default: my-dcsinstance
  dcs-description:
    default: dcs service
  dcs-capacity:
    default: 2
  dcs-vpcId:
    default: fdcd13cf-579e-41d6-b2b5-01cda2f37719
  dcs-securityGroupId:
    default: 07f01d47-11fc-4b9b-bce3-f0f47350ad7a
  dcs-subnetId:
    default: 85786d98-06ed-4d33-a85c-572238649029
  dcs-password:
    default: "******"
  dcs-instanceMode:
    default: "single"
node_templates:
  my-dcs:
    type: HuaweiCloud.DCS.Redis
    properties:
      name: {get_input: dcs-name}
      description: {get_input: dcs-description}
      capacity: {get_input: dcs-capacity}
```

```
        vpcId: {get_input: dcs-vpcId}
        securityGroupId: {get_input: dcs-securityGroupId}
        subnetId: {get_input: dcs-subnetId}
        password: {get_input: dcs-password}
        instanceMode: {get_input: dcs-instanceMode}
```

2.2.46 DDS.CommunityReplicaSetOrSingle

Element Description

The **DDS.CommunityReplicaSetOrSingle** element is used to create a replica set instance or a single-node instance.

A replica set consists of three nodes: primary, secondary, and hidden. The three-node architecture is automatically set up, and the three nodes automatically synchronize data with each other to ensure data reliability. The single-node architecture contains only one node. The node can be directly accessed.

Element Properties

Table 2-103 Property Description

Property	Required	Descripiton
backupStrategy	Yes	Backup policy of the instance **Type: DDS.BackupStrategy** **Default:** {u'endTime': u'02:00', u'startTime': u'01:00'} **Value Constraint:** Set the value based on specifications.
name	No	Instance name **Type:** string **Value Description:** Supports customization. **Default:** '' **Value Constraint:** 1. The value must contain 4 to 64 characters and start with a letter. It is case-insensitive, and can only contain letters, digits, hyphens (-), and underscores (_). 2. The instance name of the same type under the same tenant must be unique. **Suggestion:** Customize the value.

Property	Required	Descripiton
securityGroupId	Yes	ID of the security group to which the instance belongs **Type:** HuaweiCloud.VPC.SecurityGroup.Id **Value Description:** Obtains the security group ID from the VPC service or connects to the VPC.SecurityGroup to automatically generate the security group ID. **Value Constraint:** None **Suggestion:** 1. Use the get_input function to import this field. The value can be automatically selected on the AOS page. 2. Use the get_reference function to obtain the VPC.SecurityGroup created by the stack. The element is automatically specified when you use the designer to establish the dependency relationship. 3. Obtain the created security group ID on the VPC page.see https://console.huaweicloud.com/vpc/?locale=en-us
dbRootPassword	Yes	Password of the root user of the instance. The value is not empty. It contains 8-32 characters and is not a weak password. It contains letters, digits, and the following special characters: ~!@#%^*-_=+? **Type:** password **Value Description:** Supports customization. **Value Constraint:** 1. The parameter must be written into inputs and imported using the get_input function. 2. The value is not empty. It contains 8-32 characters and is not a weak password. It contains letters, digits, and the following special characters: ~!@#%^*-_=+? suggestion: 'You are advised to use the get_input function to obtain the value and avoid plaintext passwords to ensure security.'
availabilityZone	Yes	AZ where the instance is located **Type:** HuaweiCloud.ECS.AvailabilityZone.Name **Value Description:** Indicates the AZ where the to-be-created ECS is located. The name of the AZ needs to be specified, for example, cn-north-1a. **Value Constraint:** The value varies depending on the belonged region. **Suggestion:** 1. Use the get_input function to import this field. The value can be automatically selected when creating stack to fill in input parameters on the AOS page. 2. For details about the AZ of each region, visit http://developer.huaweicloud.com/en-us/endpoint.

Property	Required	Descripiton
mode	Yes	Database instance type **Type:** string **Value Description:** ReplicaSet or Single **Default:** ReplicaSet **Value Constraint:** The value can only be ReplicaSet or Single. **Suggestion:** Set the value based on specifications and requirements.
subnetId	Yes	ID of the subnet to which the instance belongs **Type:** HuaweiCloud.VPC.Subnet.Id **Value Description:** Supports the use of an existing or new subnet ID. To use a new subnet ID, you need to define the subnet object in the template and establish the dependency relationship. You are advised to connect the VPC.Subnet to automatically establish the dependency relationship. **Value Constraint:** The subnet must correspond to the VPC. **Suggestion:** 1. Use the get_input function to import this field. The value is automatically selected on the AOS page. 2. Use the get_reference function to obtain the VPC.Subnet element created by the stack. The element is automatically specified when you use the designer to establish the dependency relationship. 3. Obtain the created subnet ID on the VPC page. See https://console.huaweicloud.com/vpc
dataStore	Yes	Database information **Type: DDS.DDSCommunity.DataStore** **Default:** {u'storageEngine': u'wiredTiger', u'dbtype': u'DDS-Community', u'version': u'4.0'} **Suggestion:** Select the dataStore field in the component part, and then fill in the field based on prompts.

Property	Required	Descripiton
vpcId	Yes	ID of the VPC to which the instance belongs **Type:** HuaweiCloud.VPC.VPC.Id **Value Description:** Supports the use of an existing or new VPC ID. To use a new VPC ID, you need to define the VPC object in the template and establish the dependency relationship. You are advised to drag the object to the VPC to automatically establish the dependency relationship. **Value Constraint:** The value must satisfy the UUID generation rule. **Suggestion:** 1. Use the get_input function to import this field. The value can be automatically selected on the AOS page. 2. Use the get_reference function to obtain the VPC.VPC element created by the stack. The element is automatically specified when you use the designer to establish the dependency relationship. 3. Obtain the created VPC ID on the VPC page. See https://console.huaweicloud.com/vpc
flavor	Yes	instance specifications information **Type: DDS.CommunityReplicaSetOrSingle-Mode.Flavor** **Default:** {u'nodeOneset': {u'nodeType': u'replica', u'num': 1, u'storage': u'ULTRAHIGH', u'specCode': u'unset', u'size': 10}} **Suggestion:** Select the flavor field in the component part, and then fill in the field based on prompts.

Relationships Between Elements

Table 2-104 Relationship description

Description	Target
Connected	**VPC.Subnet**
Connected	**VPC.SecurityGroup**
Contained In	**VPC.VPC**

Return Value

Property	Type	Description
chargeMo de	string	Billing mode of the DDS-Community ReplicaSet or Single instance
refName	string	Name of the DDS-Community ReplicaSet or Single instance
refID	string	ID of the DDS-Community ReplicaSet or Single instance

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  my-dds:
    type: HuaweiCloud.DDS.CommunityReplicaSetOrSingle
    properties:
      availabilityZone:
        get_input: my_az
      securityGroupId:
        get_input: my_securityGroupId
      dbRootPassword:
        get_input: my_password
      backupStrategy:
        endTime: '02:00'
        startTime: '01:00'
      mode: ReplicaSet
      subnetId:
        get_input: my-subnetid
      dataStore:
        dbtype: DDS-Community
        storageEngine: wiredTiger
        version: 4.0
      vpcId:
        get_input: my_vpcid
      flavor:
        nodeOneset:
          nodeType: replica
          num: 1
          storage: ULTRAHIGH
          specCode:
            get_input: my_speccode
          size: 10
inputs:
  my_az:
    description: AZ to which the instance belongs
  my_securityGroupId:
    description: ID of the security group to which the instance belongs
  my_password:
    description: password of user root of the instance
  my-subnetid:
    description: ID of the subnet to which the instance belongs
  my_vpcid:
    description: ID of the VPC to which the instance belongs
  my_speccode:
    description: instance specifications
```

2.2.47 DIS.Stream

Element Description

The **DIS.Stream** element is used to create cloud channel resources. You can use these resources to improve collection, transmission, and distribution capabilities.

Element Properties

Table 2-105 Property Description

Property	Required	Descripiton
dataType	No	Data type. **Type:** string **Value Description:** BLOB: indecates Binary data, JSON: indecates JSON data, CSV: indicates simple text format data for storing tabular data, FILE: indecates source data from file. **Default:** BLOB **Value Constraint:** The value can only be BLOB, JSON, CSV or FILE.
streamName	Yes	Stream name **Type:** string **Value Description:** Supports an English character string.
streamType	No	Stream type **Type:** string **Value Description:** COMMON: indecates a common stream channel, false: indecates an advanced stream channel. **Default:** COMMON **Value Constraint:** The value can only be COMMON or ADVANCED. **Suggestion:** Set the value based on requirements.
instances	Yes	Number of DIS Stream **Type:** integer **Default:** 1
resourceSpecCode	No	Resource Specification Types which have been registered at CBC. **Type:** string

Property	Required	Descripiton
dataDurat ion	No	The number of hours for which data from the stream will be retained in DIS. **Type:** integer **Value Description:** Supports an integer. **Default:** 24 **Value Constraint:** N*24, where N is an integer from 1 to 7.
dataSche ma	No	Source data structure. **Type:** string **Value Description:** Must meet the syntax of Avro. **Default:** ''

Relationships Between Elements

None.

Return Value

None.

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
 diss3x9y:
   type: HuaweiCloud.DIS.Stream
   properties:
     streamName: mystream
     instances: 1
```

2.2.48 ECS.CloudServer

Element Description

The **ECS.CloudServer** element is used to deploy the ECS at Huawei cloud IaaS layer. It consists of CPUs, memory, images, and EVS disks.

Element Properties

Table 2-106 Property Description

Property	Required	Descripiton
vpcId	Yes	ID of the VPC to which the ECS belongs **Type:** HuaweiCloud.VPC.VPC.Id **Value Description:** Supports the use of an existing or new VPC ID. To use a new VPC ID, you need to define the VPC object in the template and establish the dependency relationship. You are advised to drag the object to the VPC to automatically establish the dependency relationship. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** 1. Use the get_input function to import this field. The value can be automatically selected on the AOS page. 2. Use the get_reference function to obtain the VPC.VPC element created by the stack. The element is automatically specified when you use the designer to establish the dependency relationship. 3. Obtain the created VPC ID on the VPC page (https://console.huaweicloud.com/vpc?&locale=en-us).
mounted Volumes	No	mount volumes **Type:** **ECS.MountedVolumes** Array **Value Description:** ECS.MountedVolumes array **Value Constraint:** ECS.MountedVolumes **Suggestion:** refer **https://support.huaweicloud.com/eu/api-ecs/ecs_02_0307.html**
imageId	Yes	ID of the image used by the ECS **Type:** HuaweiCloud.ECS.Image.Id **Value Description:** Indicates the system image of the to-be-created ECS. The ID of the created image must be specified. The ID format is UUID. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** 1. You are advised to use the get_input function to assign values so that you can select a value when using the template. 2. For the ECS documentation, visit https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.

Property	Required	Descripiton
serverTags	No	Specifies the tags of an ECS. **Type: ECS.ServerTags** Array **Value Constraint:** One ECS supports up to 10 tags. The key contains a maximum of 36 Unicode characters. This field cannot be left blank. It cannot contain ASCII (0-31) or the following characters: "=*<>\,|/".The value can contain a maximum of 43 Unicode characters and can be left blank. It cannot contain ASCII (0-31) or the following characters: =*<>\,|/
instances	Yes	Number of created ECSs **Type:** integer **Value Description:** Supports 1-500. **Default:** 1 **Value Constraint:** The value ranges from 1 to 500. **Suggestion:** Set the value based on specifications and requirements.
securityGroups	No	Array of the security group ID used by the cloud server **Type: ECS.SecurityGroup** Array **Value Description:** Indicates the ECS.SecurityGroup type array. **Value Constraint:** The value must meet the definition of the ECS.SecurityGroup type. **Suggestion:** For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.
flavor	Yes	ECS specification **Type:** HuaweiCloud.ECS.Flavor.Name **Value Description:** Indicates the ID of the system flavor of the to-be-created ECS. For example, c1.medium indicates 1-core CPU and 1 G memory while c2.large indicates 2-core CPU and 4 G memory. For details about the available flavors, see Instances and Application Scenarios in the Elastic Cloud Server User Guide https://support.huaweicloud.com/eu/productdesc-ecs/en-us_topic_0035470096.html. **Value Constraint:** The definition of the flavor format is met. **Suggestion:** 1. You are advised to use the get_input function to assign values so that you can select a value when using the template. 2. For the ECS documentation, visit https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.

Property	Required	Descripiton
serverGroupId	No	ID of the cloud server group to which the host belongs **Type:** HuaweiCloud.ECS.ServerGroup.Id **Value Description:** Existing cloud server group ID of the current account **Value Constraint:** Existing cloud server group ID of the current account **Suggestion:** If you are adding this server to an existing cloud server group, specify the server group ID. If you are adding this server to a cloud server group created together with this server in the same template, use the get_reference function to automatically obtain the value.
nics	Yes	Information about the NIC of the ECS **Type: ECS.NICS** Array **Value Description:** Indicates the ECS.NICS type array. **Value Constraint:** The definition of the ECS.NICS type is met. The minimum value of the array length is 1 and the maximum value is 12. **Suggestion:** For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.
rootVolume	Yes	System disk configuration of the ECS **Type: ECS.RootVolume** **Value Description:** Indicates the ECS.RootVolume type. **Default:** {u'volumeType': u'unset', u'size': 40} **Value Constraint:** The value must meet the definition of the ECS.RootVolume type. **Suggestion:** For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html

Property	Required	Descripiton
userData	No	User data during ECS creation. Texts, text files, or GZIP files can be injected. For more information about the user data to be injected, see https://support.huaweicloud.com/eu/usermanual-ecs/en-us_topic_0032380449.html. **Type:** string **Value Description:** Supports customization. **Value Constraint:** The content to be injected must be encoded using base64. The maximum size of the content to be injected (before encoding) is 32 KB. If key_name is not specified, the data injected by user_data is the password of the root user for logging in to the ECS by default. This parameter is mandatory when you create a Linux ECS using the password authentication mode. Its value is the initial password of the root user. **Suggestion:** Set the value based on specifications and requirements,please visit https://support.huaweicloud.com/eu/usermanual-ecs/en-us_topic_0032380449.html
availabilityZone	Yes	AZ to which the ECS belongs **Type:** HuaweiCloud.ECS.AvailabilityZone.Name **Value Description:** Indicates the AZ where the to-be-created ECS is located. The name of the AZ needs to be specified, for example, cn-north-1a. See the Regions and Endpoints. **Value Constraint:** The value varies depending on the belonged region. **Suggestion:** 1. Use the get_input function to import this field. The value can be automatically selected on the AOS page. 2. For details about the AZ of each region, visit https://developer-intl.huaweicloud.com/en-us/endpoint.
dataVolumes	No	Data disk configuration of the ECS **Type:** **ECS.DataVolume** Array **Value Description:** Indicates the ECS.DataVolume type array. **Value Constraint:** The value must meet the definition of the ECS.DataVolume type. **Suggestion:** For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.

Property	Required	Descripiton
name	Yes	ECS name **Type:** string **Value Description:** Supports customization, for example, myvm. **Value Constraint:** The value contains 1 to 59 characters. This value is unique under a tenant, and must meet the following requirement: {"regex":"^[a-zA-Z][0-9a-zA-Z-_]*$","min_length":1,"max_length":59}. **Suggestion:** Customize the value.
publicIP	No	Elastic IP address of the ECS **Type: ECS.PublicIP** **Value Description:** Indicates the ECS.PublicIP type. **Default:** {} **Value Constraint:** The value must meet the definition of the ECS.PublicIP type. **Suggestion:** For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.
adminPwd	No	Specifies the initial login password of the administrator account for logging in to an ECS using password authentication. **Type:** password **Value Description:** The Linux administrator is root, and the Windows administrator is Administrator. sshKey login and password login can only choose one of them. **Value Constraint:** Consists of 8 to 26 characters.The password must contain at least three of the following character types: uppercase letters, lowercase letters, digits, and special characters (!@$%^-_=+[{}]:,./?).The password cannot contain the username or the username in reverse.The Windows ECS password cannot contain the username, the username in reverse, or more than two consecutive characters in the username. **Suggestion:** 1. It is recommended to enter by Get_input Way

Property	Required	Descripiton
sshKeyNa me	No	SSH key pair **Type:** HuaweiCloud.ECS.KeyPair.Name **Value Description:** Must be created in advance on the ECS console. **Value Constraint:** The value contains 1 to 64 characters. This value is unique under a tenant, and must meet the following requirement: {"regex":"^[a-zA-Z][0-9a-zA-Z-_]*$","min_length":1,"max_length":64}. **Suggestion:** 1. You are advised to use the get_input function to assign values so that you can select a value when using the template. 2. Query information on the ECS page and then enter such information accordingly.

Relationships Between Elements

Table 2-107 Relationship description

Descripti on	Target
Contained In	**VPC.VPC**
HostedOn	**ECS.ServerGroup**
Connecte d	**VPC.SecurityGroup**
Depends On	**SFS.FileSystem**
Connecte d	**VPC.Subnet**
Connecte d	**ECS.KeyPair**
Connecte d	**VPC.EIP**
Connecte d	**EVS.SharedVolume**
Connecte d	**EVS.NonSharedVolume**

Return Value

Property	Type	Description
publicIps	string	List of all ECS instance publicIps
privateIps	string	List of all ECS instance privateIps
floatingIp Ids	string	List of all ECS instance floatingIpIds
refID	Array	List of all ECS instance IDs
refName	Array	List of all ECS instance names

Blueprint Example

The following uses the CloudServer resource orchestration blueprint as an example:

- Create a subnet under the existing VPCs and subnets.

```
tosca_definitions_version: huaweicloud_tosca_version_1_0

inputs:
  ecs-name:
    default: "my-cloudserver"
  ecs-image:
    default: "327946b5-e954-42c3-949a-3312688c9269"
  ecs-flavor:
    default: "c2.large"
  vpc-id:
    default: "ba6e4347-99d2-4649-b114-85c28d3d71b0"
  az:
    default: "az1.dc1"
  subnet-vpcid:
    default: "3be61f68-9bfc-41bf-8f5e-66c57122f270"
  ecs-volumetype:
    default: "SATA"
  ecs-sshKeyName:
    default: "KeyPair-magento"

node_templates:
  my-ecs:
    type: HuaweiCloud.ECS.CloudServer
    properties:
      name: {get_input: ecs-name}
      instances: 2
      imageId: {get_input: ecs-image}
      flavor: {get_input: ecs-flavor}
      vpcId: {get_input: vpc-id}
      availabilityZone: {get_input: az}
      nics:
        - subnetId: {get_input: subnet-vpcid}
      rootVolume:
        volumeType: {get_input: ecs-volumetype}
      dataVolumes:
        - volumeType: SATA
          size: 100
      sshKeyName: {get_input: ecs-sshKeyName}
```

- Associate with a VPC and subnet. CloudServer is automatically created under the newly created VPC and subnet.

  If you have not created a VPC or subnet, or you do not need to use an existing VPC or subnet, you can create a blueprint file and create a VPC,

subnet, and CloudServer at the same time. When you create CloudServer, it can be automatically associated with the created VPC and subnet. The following is an example:

- Add the dependency requirements to the desired subnet. In this manner, the object on which the subnet depends will be created during blueprint execution.

- For the **vpcId** property and its value on a subnet, use the **get_attribute** function to obtain the response attribute refID of the created VPC (my-vpc).

- For the **subnetId** property and its value in **vpcId** and **nics** on CloudServer, the **get_attribute** function is used to obtain the response attribute refID of the created subnet (my-subnet).

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  ecs-name:
    default: "my-cloudserver"
  ecs-image:
    default: "327946b5-e954-42c3-949a-3312688c9269"
  ecs-flavor:
    default: "c2.large"
  ecs-volumetype:
    default: "SATA"
  az:
    default: "az1.dc1"
  subnet-name:
    default: "my-ecs-subnet2"
  subnet-cidr:
    default: "192.168.1.0/24"
  subnet-gateway:
    default: "192.168.1.1"
  vpc-name:
    default: "my-ecs-vpc2"
  vpc-cidr:
    default: "192.168.0.0/16"
node_templates:
  my-ecs:
    type: HuaweiCloud.ECS.CloudServer
    properties:
      name: {get_input: ecs-name}
      instances: 1
      imageId: {get_input: ecs-image}
      flavor: {get_input: ecs-flavor}
      vpcId: {get_attribute: [my-vpc, refID]}
      availabilityZone: {get_input: az}
      nics:
        - subnetId: {get_attribute: [my-subnet, refID]}
      rootVolume:
        volumeType: {get_input: ecs-volumetype}
      dataVolumes:
        - volumeType: SATA
          size: 100
    requirements:
      - nics.subnetId:
          node: my-subnet
          relationship: HuaweiCloud.Relationships.ConnectsTo
  my-subnet:
    type: HuaweiCloud.VPC.Subnet
    properties:
      name: {get_input: subnet-name}
      cidr: {get_input: subnet-cidr}
      gateway: {get_input: subnet-gateway}
      dnsList: [114.114.114.115,114.114.114.114]
      vpcId: {get_attribute: [my-vpc, refID]}
      availabilityZone: {get_input: az}
```

```
    requirements:
      - vpcId:
          node: my-vpc
          relationship: HuaweiCloud.Relationships.ContainedIn
  my-vpc:
    type: HuaweiCloud.VPC.VPC
    properties:
      name: {get_input: vpc-name}
      cidr: {get_input: vpc-cidr}
```

2.2.49 ECS.ServerGroup

Element Description

An ECS group allows you to create ECSs on different hosts, thereby improving service reliability. This function does not apply to existing ECSs. You cannot add existing ECSs to an ECS group.

Element Properties

Table 2-108 Property Description

Property	Required	Descripiton
name	No	ECS group name **Type:** string **Value Description:** Supports customization, for example, my-group. **Suggestion:** Customize the value.
policies	Yes	Policy name list associated with the ECS group **Type:** string **Value Description:** anti-affinity: The servers in this group must be deployed on different hosts, the server group supports up to 16 elastic cloud servers. affinity: The servers in this group must be deployed on the same host. soft-anti-affinity: If possible, the servers in this group should be deployed on different hosts. If this goal cannot be achieved, they should still be arranged instead of generating failures. soft-affinity: If possible, the servers in this group should be deployed on the same host. If this goal cannot be achieved, they should still be arranged instead of generating failures. **Default:** anti-affinity **Suggestion:** Set the value based on the affinity policy.

Relationships Between Elements

None.

Return Value

Property	Type	Description
refID	string	ECS group ID
refName	string	ECS group name

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  ecscs513:
    type: HuaweiCloud.ECS.CloudServer
    properties:
      name:
        get_input: ecscs513_name
      imageId:
        get_input: ecscs513_imageId
      instances: 2
      availabilityZone:
        get_input: ecscs513_availabilityZone
      nics:
        - subnetId:
            get_input: ecscs513_nics_0_subnetId
      rootVolume:
        volumeType: SATA
        size: 40
      flavor:
        get_input: ecscs513_flavor
      serverGroupId:
        get_reference: ecssg4rg
      vpcId:
        get_input: ecscs513_vpcId
    requirements:
      - serverGroupId:
          node: ecssg4rg
  ecssg4rg:
    type: HuaweiCloud.ECS.ServerGroup
    properties:
      policies: anti-affinity
inputs:
  ecscs513_name:
    description: ECS name
    label: ''
  ecscs513_imageId:
    description: ID of the image used by the ECS
    default: 327946b5-e954-42c3-949a-3312688c9269
    label: ''
  ecscs513_availabilityZone:
    description: AZ to which the ECS belongs
    label: ''
  ecscs513_nics_0_subnetId:
    description: Information about the NIC of the to-be-created ECS
    label: ''
  ecscs513_flavor:
    description: ECS specifications
    label: ''
  ecscs513_vpcId:
    description: ID of the VPC to which the ECS belongs
    label: ''
```

2.2.50 ECS.KeyPair

Element Description

ECS.KeyPair is used to create a key pair for remote login authentication. To ensure security, you are advised to use the key authentication mode when logging in to an ECS.

Element Properties

Table 2-109 Property Description

Property	Required	Descripiton
bucketName	Yes	KeyPair bucket name **Type:** string **Value Description:** Supports customization, for example, my-bucket. **Suggestion:** Customize the value.
name	Yes	KeyPair name **Type:** string **Value Description:** Supports customization, for example, my-key. **Suggestion:** Customize the value.

Relationships Between Elements

Table 2-110 Relationship description

Description	Target
Connected	**OBS.Bucket**

Return Value

Property	Type	Description
refName	string	Key pair name

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
```

```
obsbozli:
  type: HuaweiCloud.OBS.Bucket
  properties:
    acl: private
ecskp4ep:
  type: HuaweiCloud.ECS.KeyPair
  properties:
    name:
      get_input: ecskp4ep_name
    bucketName:
      get_reference: obsbozli
    requirements:
    - bucketName:
        node: obsbozli
inputs:
  ecskp4ep_name:
    description: keypair name
    label: ''
```

2.2.51 EVS.NonSharedVolume

Element Description

EVS.NonSharedVolume is used to deploy non-shared Elastic Volume Service (EVS) disks at the IaaS layer of HUAWEI CLOUD. Such disks provide scalable block storage that features high reliability, high performance, and rich specifications for servers.

Element Properties

Table 2-111 Property Description

Property	Required	Descripiton
availabilityZone	Yes	AZ **Type:** HuaweiCloud.ECS.AvailabilityZone.Name **Value Description:** Indicates the AZ where the to-be-created ECS is located. The name of the AZ needs to be specified, for example, cn-north-1a. **Value Constraint:** The value must be selected as required. If the value of backupId is not empty, the AZ must be the same as the AZ where the backup is located. **Suggestion:** 1. Use the get_input function to import this field. The value can be automatically selected on the AOS page. 2. For details about the AZ of each region.
description	No	EVS disk description **Type:** string **Value Description:** Supports customization.

Property	Required	Descripiton
image	No	ID of the image used by the EVS disk **Type:** HuaweiCloud.ECS.Image.Id **Value Description:** Indicates the IMS image ID of an EVS disk. If you specify this parameter, the EVS disk is created from an image. Specifying either two of the image, snapshotId, and backupId fields is not supported. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** You are advised to use the get_input function to assign values so that you can select a value when using the template.
volumeTy pe	Yes	EVS disk type **Type:** HuaweiCloud.EVS.Volume.Type.Name **Value Description:** The value can be SSD (ultra-high I/O disk), SAS (high I/O disk), or SATA (common I/O disk). When creating a disk from a snapshot, set volumeType to the same value as that of the disk of the snapshot. **Suggestion:** Set the value based on specifications and requirements. For more information on different disk types, see **https://support.huaweicloud.com/eu/productdesc-evs/en-us_topic_0014580744.html**.
name	No	EVS disk name **Type:** string **Value Description:** Supports customization, for example, share. **Value Constraint:** The following requirement must be met: {"regex":"^[a-zA-Z][0-9a-zA-Z-_]*$","min_length":1,"max_length":250}. **Suggestion:** Customize the value.
passthrou gh	No	equipment type about the created EVS disk **Type:** string **Value Description:** The default value is false, which indicates that the disk is a virtual block device (VBD). VBDs support only simple SCSI read/write commands. When creating an SCSI EVS disk, which allows ECS to directly access underlying storage media, set this property to true. SCSI reservation command is supported. **Value Constraint:** The value must be true or false **Suggestion:** For details, see the EVS documentation at **https://support.huaweicloud.com/eu/api-evs/evs_04_2013.html**.

Property	Required	Descripiton
backupId	No	EVS disk backup ID **Type:** string **Value Description:** Indicates the existing backup ID of an EVS disk. Specifying either two of the image, snapshotId, and backupId fields is not supported.When you create a disk from a backup, this property is required. **Value Constraint:** The value must satisfy the UUID generation rule.
size	Yes	EVS disk size **Type:** integer **Value Description:** The size of a system disk and a data disk ranges from 1 GB to 1,024 GB and 10 GB to 32,768 GB, respectively. When creating a blank disk or a disk from an image or snapshot, set this property to a value larger than the image or snapshot size. When creating a disk from a backup, you can leave this property unspecified. In this case, the disk will be the same size as the backup. **Default:** 40 **Suggestion:** Set the value based on requirements.When you try to create an EVS disk from a backup disk, image, or snapshot, the size of the EVS disk cannot be smaller than that of the backup disk, image, or snapshot.
snapshotId	No	Snapshot ID of the EVS disk **Type:** string **Value Description:** When creating a disk from a snapshot, specify a snapshot ID for this property. Specifying either two of the image, snapshotId, and backupId fields is not supported. **Value Constraint:** The value must satisfy the UUID generation rule.

Relationships Between Elements

None.

Return Value

Property	Type	Description
volume	Array	EVS disk information list

Property	Type	Description
refName	string	EVS disk name
volumeIDs	string	Set of EVS disk IDs, which are separated by commas (,)

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  availabilityZone:
    description: AZ
  size:
    description: EVS disk size
    default: 10
  volumeType:
    description: EVS disk type
    default: SATA
  name:
    description: EVS disk name
    default: my-evs
node_templates:
  my-evs:
    type: HuaweiCloud.EVS.NonSharedVolume
    properties:
      size:
        get_input: size
      availabilityZone:
        get_input: availabilityZone
      volumeType:
        get_input: volumeType
      name:
        get_input: name
outputs:
  evs-id:
    description: cloud server ID
    value:
      get_attribute:
        - my-evs
        - volumeIDs
```

2.2.52 EVS.SharedVolume

Element Description

The **EVS.SharedVolume** element can be used to deploy shared EVS disks at the IaaS layer. Shared EVS disks are block storage devices that can be attached to multiple ECSs and support concurrent read/write operations. These disks feature multiple attachments, high-concurrency, high-performance, and high-reliability.

Element Properties

Table 2-112 Property Description

Property	Required	Descripiton
availabilityZone	Yes	AZ **Type:** HuaweiCloud.ECS.AvailabilityZone.Name **Value Constraint:** The value must be selected as required. If the value of backupId is not empty, the AZ must be the same as the AZ where the backup is located. **Suggestion:** 1. Use the get_input function to import this field. The value can be automatically selected on the AOS page. 2. For details about the AZ of each region.
description	No	EVS disk description **Type:** string **Value Description:** Supports customization.
volumeType	Yes	EVS disk type **Type:** HuaweiCloud.EVS.Volume.Type.Name **Value Description:** Supports SSD, SAS, and SATA. During EVS disk creation from a snapshot, the value of the volumeType field must be the same as that of the source EVS disk. **Suggestion:** Set the value based on specifications and requirements.For more information on different disk types, see **https://support.huaweicloud.com/eu/productdesc-evs/en-us_topic_0014580744.html**.
name	No	EVS disk name **Type:** string **Value Description:** Supports customization, for example, share. **Value Constraint:** The following requirement must be met: {"regex":"^[a-zA-Z][0-9a-zA-Z-_]*$","min_length":1,"max_length":250}. **Suggestion:** Customize the value.
passthrough	No	equipment type about the created EVS disk **Type:** string **Value Description:** false: indicates that EVS disks are VBD. true: indicates that disks are SCSI **Value Constraint:** The value must be true or false **Suggestion:** For details, see the EVS documentation at **https://support.huaweicloud.com/eu/api-evs/evs_04_2013.html**.

Property	Required	Descripiton
backupId	No	EVS disk backup ID **Type:** string **Value Description:** Indicates the existing backup ID of an EVS disk. The use of both "Snapshotid" and "backupid" fields is not supported. **Value Constraint:** The value must satisfy the UUID generation rule.
size	Yes	EVS disk size **Type:** integer **Value Description:** Indicates the EVS disk size (unit: GB). **Default:** 40 **Suggestion:** Set the value based on requirements.When you try to create an EVS disk from a backup disk, image, or snapshot, the size of the EVS disk cannot be smaller than that of the backup disk, image, or snapshot.
snapshotId	No	Snapshot ID of the EVS disk **Type:** string **Value Description:** Indicates the existing snapshot ID of an EVS disk. The use of both "Snapshotid" and "backupid" fields is not supported. **Value Constraint:** The value must satisfy the UUID generation rule.

Relationships Between Elements

None.

Return Value

Property	Type	Description
volume	Array	EVS disk information list
refName	string	EVS disk name
volumeIDs	string	Set of EVS disk IDs, which are separated by commas (,)

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
  inputs:
```

```
  availabilityZone:
    description: AZ
  size:
    description: EVS disk size
    default: 10
  volumeType:
    description: EVS disk type
    default: SATA
  name:
    description: EVS disk name
    default: my-evs
node_templates:
  my-evs:
    type: HuaweiCloud.EVS.SharedVolume
    properties:
      size:
        get_input: size
      availabilityZone:
        get_input: availabilityZone
      volumeType:
        get_input: volumeType
      name:
        get_input: name
outputs:
  evs-id:
    description: ECS ID
    value:
      get_attribute:
        - my-evs
        - volumeIDs
```

2.2.53 FGS.ApigEventMap

Element Description

FGS.ApigEventMap is used to create APIG trigger resources for FunctionGraph. APIG triggers depend on the API Gateway service. Based on APIG trigger events, APIG triggers can trigger function execution.

Element Properties

Table 2-113 Property Description

Property	Required	Descripiton
protocol	Yes	Request protocol **Type:** string **Value Description:** Support HTTP, HTTPS **Default:** HTTPS **Value Constraint:** Valid values can only be HTTP or HTTPS **Suggestion:** Use the get_input function to pass this parameter. Its value can then be automatically selected when you create a stack on the AOS console.

Property	Required	Descripiton
name	Yes	APIG trigger name **Type:** string **Value Description:** Supports customization **Value Constraint:** You can only begin with english letters or chinese characters, and contain only letters, numbers, underlines, and middle scribe. 3-24 character. **Suggestion:** Use the get_input function to pass this parameter. Its value can then be automatically selected when you create a stack on the AOS console.
apigroup_id	Yes	api group id. **Type:** string **Value Description:** The field is automatically retrieved from the refID field of HuaweiCloud.APIG.ApiGroup element by the get_reference function. The field must be selected. **Suggestion:** Using the default configuration.
env_name	Yes	The name of API publishing environment. **Type:** string **Value Description:** The default publishing environment name is "RELEASE", and the API publishing environment configuration based on the created API environment. **Default:** RELEASE **Value Constraint:** Valid values can only be "RELEASE".
sl_domain	Yes	Sub domain. **Type:** string **Value Description:** The field must be selected. **Suggestion:** The field is automatically retrieved from the slDomain field of type HuaweiCloud.APIG.ApiGroup element by the get_attribute function. The field needs to manually configure the get_attribute function.
auth	Yes	Security authentication type. **Type:** string **Value Description:** Support IAM, APP, NONE **Default:** IAM **Value Constraint:** Valid values can only be IAM, APP, NONE. **Suggestion:** Use the get_input function to import this field. The value can be obtained on the AOS page.

Property	Required	Descripiton
timeout	Yes	Maximum time that the backend can run before it is killed in milliseconds. **Type:** integer **Value Description:** If the backend timeout, the API call will be stopped. The unit of timeout is millisecond. **Default:** 5000 **Value Constraint:** The value ranges from 1 to 60000. **Suggestion:** Use the get_input function to import this field. The value can be obtained on the AOS page.
env_id	Yes	API publishing environment id. **Type:** string **Value Description:** The default publishing environment id is "DEFAULT_ENVIRONMENT_RELEASE_ID", and the API publishing environment configuration based on the created API environment. **Default:** DEFAULT_ENVIRONMENT_RELEASE_ID **Value Constraint:** Valid values can only be "DEFAULT_ENVIRONMENT_RELEASE_ID".
funcId	Yes	function urn. **Type:** string **Value Description:** The field is automatically retrieved from the refID field of type HuaweiCloud.FGS.Function element by the get_reference function. The field must be selected. **Suggestion:** Using the default configuration.

Relationships Between Elements

Table 2-114 Relationship description

Description	Target
Connected	**APIG.ApiGroup**
Contained In	**FGS.Function**

Return Value

None.

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  codeUrl:
    description: >-
      The address of the function code package on OBS. You need to upload the
      function code to OBS barrel in advance.
    label: Function
    type: string
  handler:
    default: index.handler
    description: >-
      The Execution Entry of the function. Default value is index. handler. It
      can be configured independently by code file name and entry function name.
    label: Function
    type: string
  memorySize:
    constraints:
      valid_values:
        - 128
        - 256
        - 512
        - 768
        - 1024
        - 1280
        - 1536
    default: 128
    description: The memory size of the function.
    label: Function
    type: integer
  name:
    constraints:
      regex: '^[a-zA-Z]([a-zA-Z0-9_-]*[a-zA-Z0-9])?$'
    default: image_watermark
    description: The name of the function.
    label: Function
    type: string
  runtime:
    constraints:
      valid_values:
        - Node.js6.10
        - Python2.7
        - Python3.6
        - Java8
        - Go1.8
        - Node.js8.10
    description: The runtime of the function.
    label: Function
    type: string
  timeout:
    constraints:
      in_range:
        - 3
        - 300
    default: 3
    description: The timeout of the function. The effective range is 3~300.
    label: Function
    type: integer
  xrole:
    description: The agency of the function. It should be created in advance.
    label: Function
    type: string
  api_name:
    constraints:
      regex: '^[a-zA-Z]([a-zA-Z0-9_-]*[a-zA-Z0-9])?$'
    description: The name of API.
    label: APIG trigger
    type: string
  apig_auth:
```

```
        default: IAM
        constraints:
         valid_values:
          - APP
          - IAM
          - NONE
        description: 'Security authentication type.Valid values are IAM, APP and NONE.'
        label: APIG trigger
        type: string
      apig_protocol:
        default: HTTPS
        constraints:
         valid_values:
          - HTTPS
          - HTTP
        description: Request protocol. Valid values are HTTP and HTTPS.
        label: APIG trigger
        type: string
      apig_timeout:
        default: 5000
        constraints:
         in_range:
          - 1
          - 60000
        description: Maximum time that the backend can run before it is killed in milliseconds.
        label: APIG trigger
        type: integer
      apig_group_name:
        description: API group name
        label: APIG
        type: string
    node_templates:
      fgsf36en:
        properties:
         codeUrl:
          get_input: codeUrl
         handler:
          get_input: handler
         memorySize:
          get_input: memorySize
         name:
          get_input: name
         role:
          get_input: xrole
         runtime:
          get_input: runtime
         timeout:
          get_input: timeout
         code: ''
         codeType: obs
        type: HuaweiCloud.FGS.Function
      apiga246:
        type: HuaweiCloud.APIG.ApiGroup
        properties:
         name:
          get_input: apig_group_name
      fgsaet46:
        type: HuaweiCloud.FGS.ApigEventMap
        properties:
         protocol:
          get_input: apig_protocol
         name:
          get_input: api_name
         apigroup_id:
          get_reference: apiga246
         env_name: RELEASE
         sl_domain:
          get_attribute:
           - apiga246
```

```
          - slDomain
        auth:
          get_input: apig_auth
        timeout:
          get_input: apig_timeout
        env_id: DEFAULT_ENVIRONMENT_RELEASE_ID
        funcId:
          get_reference: fgsf36en
      requirements:
        - apigroup_id:
            node: apiga246
        - funcId:
            node: fgsf36en
outputs:
  function-urn:
    description: function URN
    value:
      get_attribute:
        - fgsf36en
        - refID
  api-group-name:
    description: api group name
    value:
      get_attribute:
        - apiga246
        - refName
  apig_trigger_info:
    description: APIG trigger info
    value:
      get_attribute:
        - fgsaet46
        - apigEventMap
```

2.2.54 FGS.CtsEventMap

Element Description

The **FGS.CtsEventMap** element is used to create Cloud Trace Service (CTS) trigger resources for FunctionGraph. CTS triggers depend on the CTS service. To create CTS triggers, you need to enable the CTS service. Based on CTS events, CTS triggers can trigger function execution.

Element Properties

Table 2-115 Property Description

Property	Required	Descripiton
operations	Yes	Tracker custom operations **Type:** dict **Value Description:** The field must be selected. For details of tracker operations, see the CTS documentation . **Suggestion:** The field needs to be manually configured. It is recommended to refer to the CTS document and fill it in.

Property	Required	Descripiton
name	Yes	CTS trigger name **Type:** string **Value Description:** Supports customization. **Value Constraint:** You can begin with chinese characters, english letters, numbers and underlines. The length can not exceed 64 characters. **Suggestion:** Use the get_input function to import this field. The value can be automatically obtained on the AOS page.
funcId	Yes	function urn. **Type:** string **Value Description:** The field is automatically retrieved from the refID field of type HuaweiCloud.FGS.Function element by the get_reference function. The field must be selected. **Suggestion:** Using the default configuration.

Relationships Between Elements

Table 2-116 Relationship description

Description	Target
Contained In	**FGS.Function**

Return Value

None.

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
 codeUrl:
   description: >-
     The address of the function code package on OBS. You need to upload the
     function code to OBS barrel in advance.
   label: Function
   type: string
 handler:
   default: index.handler
   description: >-
     The Execution Entry of the function. Default value is index. handler. It
     can be configured independently by code file name and entry function name.
   label: Function
   type: string
```

```
    memorySize:
      constraints:
        valid_values:
          - 128
          - 256
          - 512
          - 768
          - 1024
          - 1280
          - 1536
      default: 128
      description: The memory size of the function.
      label: Function
      type: integer
    name:
      constraints:
        regex: '^[a-zA-Z]([a-zA-Z0-9_-]*[a-zA-Z0-9])?$'
      default: image_watermark
      description: The name of the function.
      label: Function
      type: string
    runtime:
      constraints:
        valid_values:
          - Node.js6.10
          - Python2.7
          - Python3.6
          - Java8
          - Go1.8
          - Node.js8.10
      description: The runtime of the function.
      label: Function
      type: string
    timeout:
      constraints:
        in_range:
          - 3
          - 300
      default: 3
      description: The timeout of the function. The effective range is 3~300.
      label: Function
      type: integer
    xrole:
      description: The agency of the function. It should be created in advance.
      label: Function
      type: string
    cts_trigger_Name:
      description: CTS trigger name.
      label: CTS trigger
      type: string
      constraints:
        regex: '^[\u4e00-\u9fa5a-zA-Z0-9_]+([a-zA-Z0-9_]*[a-zA-Z0-9_]*)?$'
        min_length: 1
        max_length: 64
node_templates:
  fgsf36en:
    properties:
      codeUrl:
        get_input: codeUrl
      handler:
        get_input: handler
      memorySize:
        get_input: memorySize
      name:
        get_input: name
      role:
        get_input: xrole
      runtime:
        get_input: runtime
```

```
         timeout:
          get_input: timeout
        code: ''
        codeType: obs
      type: HuaweiCloud.FGS.Function
  fgsce4yo:
    type: HuaweiCloud.FGS.CtsEventMap
    properties:
      operations:
        AOS:
          quota:
            - updateQuota
          stack:
            - deleteStack
            - createStack
      name:
        get_input: cts_trigger_Name
      funcId:
        get_reference: fgsf36en
      requirements:
       - funcId:
          node: fgsf36en
outputs:
  function-urn:
    description: function URN
    value:
      get_attribute:
        - fgsf36en
        - refID
  cts_trigger_info:
    description: CTS trigger info
    value:
      get_attribute:
        - fgsce4yo
        - ctsEventMap
```

2.2.55 FGS.DisEventMap

Element Description

The **FGS.DisEventMap** element is used to create Data Ingestion Service (DIS) trigger resources for FunctionGraph. DIS triggers depend on the DIS service. Based on DIS events, DIS triggers can trigger function execution. To create DIS triggers, you need to enable the DIS service and configure Identity and Access Management (IAM) agencies for accessing the DIS service.

Element Properties

Table 2-117 Property Description

Property	Required	Descripiton
pollingInterval	No	Interval at which data is pulled from the stream. **Type:** integer **Value Description:** The field is optional. When the field is not configured, the default period of pulling data from the stream is 30 seconds. **Default:** 30 **Value Constraint:** The effective range is 1 to 60. **Suggestion:** Use the get_input function to import this field. The value can be automatically obtained on the AOS page.
batchSize	No	Maximum number of records that your function will read from the stream. **Type:** integer **Value Description:** The field is optional. When the field is not configured, the default value is 100. **Default:** 100 **Value Constraint:** The effective range is 1 to 10000. **Suggestion:** Use the get_input function to import this field. The value can be automatically obtained on the AOS page.
streamName	Yes	Dis stream name. **Type:** string **Value Description:** The field must be selected. The field is obtained from the created DIS stream. **Suggestion:** Use the get_input function to import this field. The value can be automatically obtained on the AOS page.
shardIteratorType	No	Position in the stream from which to start reading data. **Type:** string **Value Description:** The field is optional. Support "TRIM_HORIZON"and"LATEST". When the field is not configured, the default value is "TRIM_HORIZON". **Default:** TRIM_HORIZON **Value Constraint:** Valid values can only be "TRIM_HORIZON","LATEST". **Suggestion:** Use the get_input function to import this field. The value can be automatically obtained on the AOS page.

Property	Required	Descripiton
funcId	Yes	function urn. **Type:** string **Value Description:** The field is automatically retrieved from the refID field of type HuaweiCloud.FGS.Function element by the get_reference function. The field must be selected. **Suggestion:** Using the default configuration.

Relationships Between Elements

Table 2-118 Relationship description

Description	Target
Contained In	**FGS.Function**

Return Value

None.

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  fgsde1gr_streamName:
    description: Stream name
    label: ''
  fgsfrgxk_codeType:
    description: Type of the function code to be uploaded
    label: ''
  fgsfrgxk_name:
    description: Function name
    label: ''
  fgsfrgxk_runtime:
    description: Runtime environment of the function
    label: ''
node_templates:
  fgsde1gr:
    properties:
      funcId:
        get_reference: fgsfrgxk
      streamName:
        get_input: fgsde1gr_streamName
    requirements:
      - funcId:
          node: fgsfrgxk
    type: HuaweiCloud.FGS.DisEventMap
  fgsfrgxk:
    properties:
      code: >-
        exports.handler = function (event, context, callback) { const error =
        null; const output = `Hello message: ${JSON.stringify(event)}`;
```

```
      callback(error, output); }
   codeType:
     get_input: fgsfrgxk_codeType
   codeUrl: ''
   handler: index.handler
   memorySize: 128
   name:
     get_input: fgsfrgxk_name
   runtime:
     get_input: fgsfrgxk_runtime
   timeout: 3
   role: dis
 type: HuaweiCloud.FGS.Function
```

2.2.56 FGS.DmsEventMap

Element Description

The **FGS.DmsEventMap** element is used to create Distributed Message Service (DMS) trigger resources for FunctionGraph. DMS triggers depend on the DMS service. Based on DMS events, DMS triggers can trigger function execution. To create DMS triggers, you need to enable the DMS service and configure the IAM agencies for accessing the DMS service.

Element Properties

Table 2-119 Property Description

Property	Required	Descripiton
pollingInterval	No	Interval at which data is pulled from the stream. **Type:** integer **Value Description:** The field is an optional field in seconds. When the field is not configured, the default period of pulling data from the stream is 30 seconds. **Default:** 30 **Value Constraint:** The effective range is 1 to 60. **Suggestion:** Use the get_input function to import this field. The value can be automatically obtained on the AOS page.
queueId	Yes	Dms queue id. **Type:** string **Value Description:** The field must be selected. The field is obtained from the created DMS queue. **Suggestion:** Use the get_input function to import this field. The value can be automatically obtained on the AOS page.

Property	Required	Descripiton
consumer GroupId	Yes	Dms consumer group id. **Type:** string **Value Description:** The field must be selected. The field is obtained from the created DMS consumer group. **Suggestion:** Use the get_input function to import this field. The value can be automatically obtained on the AOS page.
funcId	Yes	function urn. **Type:** string **Value Description:** The field is automatically retrieved from the refID field of type HuaweiCloud.FGS.Function element by the get_reference function. The field must be selected. **Suggestion:** Using the default configuration.

Relationships Between Elements

Table 2-120 Relationship description

Description	Target
Contained In	**FGS.Function**

Return Value

None.

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  codeUrl:
    description: >-
      The address of the function code package on OBS. You need to upload the
      function code to OBS barrel in advance.
    label: Function
    type: string
  handler:
    default: index.handler
    description: >-
      The Execution Entry of the function. Default value is index. handler. It
      can be configured independently by code file name and entry function name.
    label: Function
    type: string
  memorySize:
    constraints:
```

```
      valid_values:
        - 128
        - 256
        - 512
        - 768
        - 1024
        - 1280
        - 1536
    default: 128
    description: The memory size of the function.
    label: Function
    type: integer
  name:
    constraints:
      regex: '^[a-zA-Z]([a-zA-Z0-9_-]*[a-zA-Z0-9])?$'
    default: image_watermark
    description: The name of the function.
    label: Function
    type: string
  runtime:
    constraints:
      valid_values:
        - Node.js6.10
        - Python2.7
        - Python3.6
        - Java8
        - Go1.8
        - Node.js8.10
    description: The runtime of the function.
    label: Function
    type: string
  timeout:
    constraints:
      in_range:
        - 3
        - 300
    default: 3
    description: The timeout of the function. The effective range is 3~300.
    label: Function
    type: integer
  xrole:
    description: The agency of the function. It should be created in advance.
    label: Function
    type: string
  dms_queue_id:
    description: Dms queue id.
    label: DMS trigger
    type: string
  dms_consumerGroup_id:
    description: Dms consumer group id.
    label: DMS trigger
    type: string
  dms_polling_interval:
    description: Interval at which messages are pulled from a DMS queue.
    default: 30
    type: integer
    constraints:
      in_range:
        - 1
        - 60
node_templates:
  fgsf36en:
    properties:
      codeUrl:
        get_input: codeUrl
      handler:
        get_input: handler
      memorySize:
        get_input: memorySize
```

```
          name:
            get_input: name
          role:
            get_input: xrole
          runtime:
            get_input: runtime
          timeout:
            get_input: timeout
          code: ''
          codeType: obs
      type: HuaweiCloud.FGS.Function
  fgsde1t5:
    type: HuaweiCloud.FGS.DmsEventMap
    properties:
      consumerGroupId:
        get_input: dms_consumerGroup_id
      queueId:
        get_input: dms_queue_id
      funcId:
        get_reference: fgsf36en
      pollingInterval:
        get_input: dms_polling_interval
      requirements:
        - funcId:
            node: fgsf36en
outputs:
  function-urn:
    description: function URN
    value:
      get_attribute:
        - fgsf36en
        - refID
  dms_trigger_info:
    description: DMS trigger info
    value:
      get_attribute:
        - fgsde1t5
        - dmsEventMap
```

2.2.57 FGS.Function

Element Description

HuaweiCloud.FGS.Function is used to create function resources for
FunctionGraph.

Element Properties

Table 2-121 Property Description

Property	Required	Descripiton
code	Yes	The function code. **Type:** string **Value Description:** When codeType is inline, the field must be selected, and the code size is no more than 10K. When codeType is obs, the field is empty. Edit the function code block directly in the template, using the special symbol"|"to preserve the carriage return and space in the function code block. YAML writing specifications please refer to: http://yaml.org/spec/1.2/spec.html **Default:** " **Value Constraint:** If you upload the function code by online editing, the size of the code can not exceed 10K. If the code is large, the obs type is recommended to upload the code to the OBS bucket, and then configure the codeUrl attribute. **Suggestion:** Fill in the field by copying and paste the correct function code completed by the editor.
description	No	The description of the function. **Type:** string **Value Description:** The field is optional, and the description information is not more than 512 characters. **Suggestion:** Use the get_input function to import this field. The value can be automatically obtained on the AOS page.
memorySize	Yes	Size of the memory allocated per invocation in MB. **Type:** integer **Value Description:** The unit is MB. The value is a multiplier of 128. **Default:** 128 **Value Constraint:** Valid values can only be 128, 256, 512, 768, 1024, 1280, 1536 **Suggestion:** Use the get_input function to import this field. The value can be obtained on the AOS page.

Property	Required	Descripiton
environment	No	Environment variables in key-value pair format. **Type: FGS.Environment** **Value Description:** User defined key/value environment variable information, parameters used in functions. For example: if a function wants to access a host, you can set the environment variable: "Host": "192.168.1.1". A function can have a maximum of 20 key-value pairs, and their total length cannot exceed 2048 characters. To avoid information leakage, do not include sensitive information, such as accounts and passwords, in environment variables. **Default:** {u'variables': {}}
dependencyPkg	No	Dependency package of the function code. **Type:** string **Value Description:** The field is optional. Before configuring this field, please upload a third-party dependent library to OBS. If multiple dependent libraries are needed, package and upload them through a ZIP file. **Suggestion:** Use the get_input function to import this field. The value can be automatically obtained on the AOS page.
handler	Yes	Function within your code that is called to begin execution. **Type:** string **Value Description:** Rule: xx.xx, must be included ".". For example: for the node.js function, the function execution entry: myfunction.handler, the file name of the function is myfunction.js, and the execution of the entry function is named handler. **Default:** index.handler **Suggestion:** Use the get_input function to import this field. The value can be automatically obtained on the AOS page.
role	No	The Huawei IAM execution role to access to other Huawei Cloud services. **Type:** string **Value Description:** IAM service support is required and a delegate is created on the IAM interface. When the function needs to access other services, it must provide the field.

Property	Required	Descripiton
timeout	Yes	Maximum time that the function can run before it is killed in seconds. **Type:** integer **Value Description:** If timeout, the function will be forced to stop. **Default:** 3 **Value Constraint:** The value ranges from 3 to 300 days. **Suggestion:** Use the get_input function to import this field. The value can be obtained on the AOS page.
codeType	Yes	The type of uploading the function code **Type:** string **Value Description:** Support inline and obs. The inline type represents the online editing of the function code. The obs type uploads the function code to the OBS bucket in advance, and then configures the codeUrl property. **Value Constraint:** Valid values can only be "inline", "obs" **Suggestion:** Use the get_input function to import this field. The value can be obtained on the AOS page.
runtime	Yes	Runtime language **Type:** string **Value Description:** Support Node.js6.10, Python2.7, Python3.6, Java8, Go1.8, Node.js8.10, C#(.NET Core 2.0), C#(.NET Core 2.1). **Value Constraint:** Valid values can only be "Node.js6.10", "Python2.7", "Python3.6", "Java8", "Go1.8", "Node.js8.10","C#(.NET Core 2.0)","C#(.NET Core 2.1)" **Suggestion:** Use the get_input function to import this field. The value can be obtained on the AOS page.
codeUrl	Yes	Url location of the function code. **Type:** string **Value Description:** When CodeType is OBS, the field must be selected. The value is the address of the function code package on OBS. When CodeType is inline, the field is empty. **Default:** '' **Suggestion:** Use the get_input function to import this field. The value can be automatically obtained on the AOS page.

Property	Required	Descripiton
name	Yes	Function name **Type:** string **Value Description:** Supports customization. **Value Constraint:** You can only begin with uppercase letters, and contain only letters, numbers, underlines, and middle scribe, ending with letters or numbers. **Suggestion:** Use the get_input function to import this field. The value can be automatically obtained on the AOS page.

Relationships Between Elements

None.

Return Value

Property	Type	Description
refID	string	function ID

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
 codeUrl:
   description: >-
     The address of the function code package on OBS. You need to upload the
     function code to OBS barrel in advance.
   label: Function
   type: string
 handler:
   default: index.handler
   description: >-
     The Execution Entry of the function. Default value is index. handler. It
     can be configured independently by code file name and entry function name.
   label: Function
   type: string
 memorySize:
   constraints:
     valid_values:
       - 128
       - 256
       - 512
       - 768
       - 1024
       - 1280
       - 1536
   default: 128
   description: The memory size of the function.
   label: Function
   type: integer
 name:
   constraints:
     regex: '^[a-zA-Z]([a-zA-Z0-9_-]*[a-zA-Z0-9])?$'
```

```
        default: image_watermark
        description: The name of the function.
        label: Function
        type: string
      runtime:
        constraints:
          valid_values:
            - Node.js6.10
            - Python2.7
            - Python3.6
            - Java8
            - Go1.8
            - Node.js8.10
        description: The runtime of the function.
        label: Function
        type: string
      timeout:
        constraints:
          in_range:
            - 3
            - 300
        default: 3
        description: The timeout of the function. The effective range is 3~300.
        label: Function
        type: integer
      xrole:
        description: The agency of the function. It should be created in advance.
        label: Function
        type: string
    node_templates:
      fgsf36en:
        properties:
          codeUrl:
            get_input: codeUrl
          handler:
            get_input: handler
          memorySize:
            get_input: memorySize
          name:
            get_input: name
          role:
            get_input: xrole
          runtime:
            get_input: runtime
          timeout:
            get_input: timeout
          code: ''
          codeType: obs
          environment:
            variables:
              key1: value1
              key2: value2
        type: HuaweiCloud.FGS.Function
    outputs:
      function-urn:
        description: function URN
        value:
          get_attribute:
            - fgsf36en
            - refID
```

2.2.58 FGS.LtsEventMap

Element Description

The **FGS.LtsEventMap** element is used to create Log Tank Service (LTS) trigger resources for FunctionGraph. LTS triggers depend on the LTS service. To create LTS

triggers, you need to enable the LTS service. Based on LTS events, LTS triggers can trigger function execution.

Element Properties

Table 2-122 Property Description

Property	Required	Descripiton
groupName	Yes	Lts log group name. **Type:** string **Value Description:** The field must be selected. The field is obtained from the created LTS log group. **Suggestion:** Use the get_input function to import this field. The value can be automatically obtained on the AOS page.
funcId	Yes	function urn. **Type:** string **Value Description:** The field is automatically retrieved from the refID field of type HuaweiCloud.FGS.Function element by the get_reference function. The field must be selected. **Suggestion:** Using the default configuration.
groupId	Yes	Lts log group id. **Type:** string **Value Description:** The field must be selected. The field is obtained from the created LTS log group. **Suggestion:** Use the get_input function to import this field. The value can be automatically obtained on the AOS page.
topicName	Yes	Lts log topic name. **Type:** string **Value Description:** The field must be selected. The field is obtained from the created LTS log topic. **Suggestion:** Use the get_input function to import this field. The value can be automatically obtained on the AOS page.
topicId	Yes	Lts log topic id. **Type:** string **Value Description:** The field must be selected. The field is obtained from the created LTS log topic. **Suggestion:** Use the get_input function to import this field. The value can be automatically obtained on the AOS page.

Relationships Between Elements

Table 2-123 Relationship description

Description	Target
Contained In	**FGS.Function**

Return Value

None.

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
 codeUrl:
  description: >-
    The address of the function code package on OBS. You need to upload the
    function code to OBS barrel in advance.
  label: Function
  type: string
 handler:
  default: index.handler
  description: >-
    The Execution Entry of the function. Default value is index. handler. It
    can be configured independently by code file name and entry function name.
  label: Function
  type: string
 memorySize:
  constraints:
   valid_values:
    - 128
    - 256
    - 512
    - 768
    - 1024
    - 1280
    - 1536
  default: 128
  description: The memory size of the function.
  label: Function
  type: integer
 name:
  constraints:
   regex: '^[a-zA-Z]([a-zA-Z0-9_-]*[a-zA-Z0-9])?$'
  default: image_watermark
  description: The name of the function.
  label: Function
  type: string
 runtime:
  constraints:
   valid_values:
    - Node.js6.10
    - Python2.7
    - Python3.6
    - Java8
    - Go1.8
    - Node.js8.10
  description: The runtime of the function.
  label: Function
```

```
    type: string
  timeout:
    constraints:
      in_range:
        - 3
        - 300
    default: 3
    description: The timeout of the function. The effective range is 3~300.
    label: Function
    type: integer
  xrole:
    description: The agency of the function. It should be created in advance.
    label: Function
    type: string
  lts_group_id:
    description: Lts log group id.
    label: LTS trigger
    type: string
  lts_group_name:
    description: Lts log group name.
    label: LTS trigger
    type: string
  lts_topic_id:
    description: Lts log topic id.
    label: LTS trigger
    type: string
  lts_topic_name:
    description: Lts log topic name.
    label: LTS trigger
    type: string
node_templates:
  fgsf36en:
    properties:
      codeUrl:
        get_input: codeUrl
      handler:
        get_input: handler
      memorySize:
        get_input: memorySize
      name:
        get_input: name
      role:
        get_input: xrole
      runtime:
        get_input: runtime
      timeout:
        get_input: timeout
      code: ''
      codeType: obs
    type: HuaweiCloud.FGS.Function
  fgslet5c:
    type: HuaweiCloud.FGS.LtsEventMap
    properties:
      groupName:
        get_input: lts_group_name
      topicName:
        get_input: lts_topic_name
      groupId:
        get_input: lts_group_id
      topicId:
        get_input: lts_topic_id
      funcId:
        get_reference: fgsf36en
    requirements:
      - funcId:
          node: fgsf36en
outputs:
  function-urn:
    description: function URN
```

```
            value:
              get_attribute:
                - fgsf36en
                - refID
        lts_trigger_info:
          description: LTS trigger info
          value:
            get_attribute:
              - fgslet5c
              - ltsEventMap
```

2.2.59 FGS.ObsEventMap

Element Description

HuaweiCloud.FGS.ObsEventMap is used to create Object Storage Service (OBS) trigger resources for FunctionGraph. OBS triggers depend on the OBS service. Based on OBS trigger events, OBS triggers can trigger function execution.

Element Properties

Table 2-124 Property Description

Property	Required	Descripiton
filter	No	OBS filter. Decide on which OBS objects will the events can trigger the function. Optional for OBS eventSource. **Type: FGS.OBSFilter** **Value Description:** If you need to configure filter rules, the field must be selected. If filter rules are not configured, the field does not need to be configured.. **Default:** {u'object': {u'filterRules': []}} **Suggestion:** Use the get_input function to import filter value. The value can be automatically selected on the AOS page.
eventType	Yes	OBS triggering event list. **Type:** string Array **Value Description:** The field is a list type, and the field is selected. The optional value should be in accordance with the OBS service regulations. For example: ["ObjectCreated:*", "ObjectRemoved:*"] **Value Constraint:** The field must be selected. The field is a list type, and the valid value is ["ObjectCreated:*", "ObjectCreated:Put", "ObjectCreated:Post", "ObjectCreated:Copy", "ObjectCreated:CompleteMultipartUpload", "ObjectRemoved:*", "ObjectRemoved:Delete", "ObjectRemoved:DeleteMarkerCreated"] **Suggestion:** You are advised to enter ["ObjectCreated:*", "ObjectRemoved:*"]

Property	Required	Descripiton
bucketNa me	Yes	OBS bucket name. **Type:** string **Value Description:** The field is automatically retrieved from the refName field of type HuaweiCloud.OBS.Bucket element by the get_reference function. It is necessary to ensure that the OBS bucket name is unique under the same namespace. The field must be selected. **Suggestion:** Using the default configuration.
funcId	Yes	function urn. **Type:** string **Value Description:** The field is automatically retrieved from the refID field of type HuaweiCloud.FGS.Function element by the get_reference function. The field must be selected. **Suggestion:** Using the default configuration.

Relationships Between Elements

Table 2-125 Relationship description

Descripti on	Target
Connecte d	**OBS.Bucket**
Contained In	**FGS.Function**

Return Value

None.

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  codeUrl:
    description: >-
      The address of the function code package on OBS. You need to upload the
      function code to OBS barrel in advance.
    label: Function
    type: string
  handler:
    default: index.handler
    description: >-
      The Execution Entry of the function. Default value is index. handler. It
```

```
          can be configured independently by code file name and entry function name.
        label: Function
        type: string
      memorySize:
        constraints:
          valid_values:
          - 128
          - 256
          - 512
          - 768
          - 1024
          - 1280
          - 1536
        default: 128
        description: The memory size of the function.
        label: Function
        type: integer
      name:
        constraints:
          regex: '^[a-zA-Z]([a-zA-Z0-9_-]*[a-zA-Z0-9])?$'
        default: image_watermark
        description: The name of the function.
        label: Function
        type: string
      runtime:
        constraints:
          valid_values:
          - Node.js6.10
          - Python2.7
          - Python3.6
          - Java8
          - Go1.8
          - Node.js8.10
        description: The runtime of the function.
        label: Function
        type: string
      timeout:
        constraints:
          in_range:
          - 3
          - 300
        default: 3
        description: The timeout of the function. The effective range is 3~300.
        label: Function
        type: integer
      xrole:
        description: The agency of the function. It should be created in advance.
        label: Function
        type: string
    node_templates:
      fgsf36en:
        properties:
          codeUrl:
            get_input: codeUrl
          handler:
            get_input: handler
          memorySize:
            get_input: memorySize
          name:
            get_input: name
          role:
            get_input: xrole
          runtime:
            get_input: runtime
          timeout:
            get_input: timeout
          code: ''
          codeType: obs
        type: HuaweiCloud.FGS.Function
```

```
fgsoe4tm:
  type: HuaweiCloud.FGS.ObsEventMap
  properties:
    eventType:
      - 'ObjectCreated:*'
      - 'ObjectRemoved:*'
    bucketName:
      get_reference: obsb17cb
    funcId:
      get_reference: fgsf36en
    requirements:
      - bucketName:
          node: obsb17cb
      - funcId:
          node: fgsf36en
obsb17cb:
  type: HuaweiCloud.OBS.Bucket
  properties:
    acl: private
outputs:
  function-urn:
    description: function URN
    value:
      get_attribute:
        - fgsf36en
        - refID
  bucket-name:
    description: OBS bucket name
    value:
      get_attribute:
        - obsb17cb
        - refName
  obs_trigger_info:
    description: OBS trigger info
    value:
      get_attribute:
        - fgsoe4tm
        - obsEventMap
```

2.2.60 FGS.TimerEventMap

Element Description

HuaweiCloud.FGS.TimerEventMap is used to create timer trigger resources for FunctionGraph. Timer triggers can periodically trigger function execution.

Element Properties

Table 2-126 Property Description

Property	Required	Descripiton
name	Yes	TIMER trigger name **Type:** string **Value Description:** Supports customization. **Value Constraint:** You can only begin with english letters , and contain only letters, numbers, underlines, and middle scribe. The length can not exceed 64 characters. **Suggestion:** Use the get_input function to import this field. The value can be automatically obtained on the AOS page.
schedule	Yes	Trigger schedule **Type:** string **Value Description:** The field must be selected.When the schedule type is Rate, you can set schedule at a fixed rate of minutes, hours, or days, and each type only supports integer configuration. You can set a fixed rate from 1 to 60 minutes, 1 to 24 hours, or 1 to 30 days. When the schedule type is Cron, you can set schedule at the Cron expression. Examples of schedule rules: Rate schedule rule: "3m","1h","1d"; Cron schedule rule: "0 0/30 * * * ?", "@every 30m". For details of timing schedule, see the FGS documentation at https://support.huaweicloud.com/eu/usermanual-functiongraph/functiongraph_01_0207.html. **Suggestion:** Use the get_input function to import this field. The value can be automatically obtained on the AOS page.
trigger_status	No	Trigger status. **Type:** string **Value Description:** The field is optional. When the field is not configured, the default trigger state ACTIVE is used. Support "DISABLED", "ACTIVE". "DISABLED" means closing the trigger, and "ACTIVE" means the trigger is turned on. **Default:** ACTIVE **Value Constraint:** Valid values can only be "DISABLED", "ACTIVE". **Suggestion:** Use the get_input function to import this field. The value can be automatically obtained on the AOS page.

Property	Required	Descripiton
schedule_ type	Yes	Trigger schedule type. **Type:** string **Value Description:** Support "Rate", "Cron". For details of timing schedule, see the FGS documentation at https://support.huaweicloud.com/eu/usermanual-functiongraph/functiongraph_01_0207.html. **Default:** Rate **Value Constraint:** Valid values can only be "Rate","Cron". **Suggestion:** Use the get_input function to import this field. The value can be automatically obtained on the AOS page.
user_even t	No	User Annex information. **Type:** string **Value Description:** The field is optional. When the attachment information is entered, the information of the attachment will be included in the execution event when the trigger function of the Timer trigger is executed. The size of the attachment information is less than 2KB **Default:** '' **Suggestion:** Use the get_input function to import this field. The value can be automatically obtained on the AOS page.
funcId	Yes	function urn. **Type:** string **Value Description:** The field is automatically retrieved from the refID field of type HuaweiCloud.FGS.Function element by the get_reference function. The field must be selected. **Suggestion:** Using the default configuration.

Relationships Between Elements

Table 2-127 Relationship description

Descripti on	Target
Contained In	**FGS.Function**

Return Value

None.

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
 codeUrl:
  description: >-
    The address of the function code package on OBS. You need to upload the
    function code to OBS barrel in advance.
  label: Function
  type: string
 handler:
  default: index.handler
  description: >-
    The Execution Entry of the function. Default value is index. handler. It
    can be configured independently by code file name and entry function name.
  label: Function
  type: string
 memorySize:
  constraints:
   valid_values:
    - 128
    - 256
    - 512
    - 768
    - 1024
    - 1280
    - 1536
  default: 128
  description: The memory size of the function.
  label: Function
  type: integer
 name:
  constraints:
    regex: '^[a-zA-Z]([a-zA-Z0-9_-]*[a-zA-Z0-9])?$'
  default: image_watermark
  description: The name of the function.
  label: Function
  type: string
 runtime:
  constraints:
   valid_values:
    - Node.js6.10
    - Python2.7
    - Python3.6
    - Java8
    - Go1.8
    - Node.js8.10
  description: The runtime of the function.
  label: Function
  type: string
 timeout:
  constraints:
   in_range:
    - 3
    - 300
  default: 3
  description: The timeout of the function. The effective range is 3~300.
  label: Function
  type: integer
 xrole:
  description: The agency of the function. It should be created in advance.
  label: Function
  type: string
 timer_name:
  description: TIMER trigger name.
```

```
        label: TIMER trigger
        type: string
      timer_schedule_type:
        default: Rate
        constraints:
          valid_values:
            - Rate
            - Cron
        description: 'Trigger schedule type. Valid values:["Rate","Cron"].'
        label: TIMER trigger
        type: string
      timer_schedule:
        description: Trigger schedule.
        label: TIMER trigger
        type: string
  node_templates:
    fgsf36en:
      properties:
        codeUrl:
          get_input: codeUrl
        handler:
          get_input: handler
        memorySize:
          get_input: memorySize
        name:
          get_input: name
        role:
          get_input: xrole
        runtime:
          get_input: runtime
        timeout:
          get_input: timeout
        code: ''
        codeType: obs
      type: HuaweiCloud.FGS.Function
    fgste1cr:
      type: HuaweiCloud.FGS.TimerEventMap
      properties:
        name:
          get_input: timer_name
        schedule:
          get_input: timer_schedule
        schedule_type:
          get_input: timer_schedule_type
        funcId:
          get_reference: fgsf36en
      requirements:
        - funcId:
            node: fgsf36en
  outputs:
    function-urn:
      description: function URN
      value:
        get_attribute:
          - fgsf36en
          - refID
    timer_trigger_info:
      description: TIMER trigger info
      value:
        get_attribute:
          - fgste1cr
          - timerEventMap
```

2.2.61 FGS.SmnEventMap

Element Description

The **FGS.SmnEventMap** element is used to create Simple Message Notification (SMN) trigger resources for FunctionGraph. SMN triggers depend on the SMN service. To create SMN triggers, you need to enable the SMN service. Based on SMN events, SMN triggers can trigger function execution.

Element Properties

Table 2-128 Property Description

Property	Required	Descripiton
remark	No	Subscription remark. **Type:** string **Value Description:** The field is optional. When the field is not configured, the default value is "APItest". **Default:** APItest **Suggestion:** Use the get_input function to pass this parameter. Its value can then be automatically selected when you create a stack on the AOS console.
topicName	Yes	SMN topic to which you want to subscribe. **Type:** string **Value Description:** The field must be selected. The field is obtained from the created LTS log group. **Suggestion:** Use the get_input function to pass this parameter. Its value can then be automatically selected when you create a stack on the AOS console.
funcId	Yes	function urn. **Type:** string **Value Description:** The field is automatically retrieved from the refID field of type HuaweiCloud.FGS.Function element by the get_reference function. The field must be selected. **Suggestion:** Using the default configuration.

Relationships Between Elements

Table 2-129 Relationship description

Descripti on	Target
Contained In	**FGS.Function**

Return Value

None.

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  codeUrl:
    description: >-
      The address of the function code package on OBS. You need to upload the
      function code to OBS barrel in advance.
    label: Function
    type: string
  handler:
    default: index.handler
    description: >-
      The Execution Entry of the function. Default value is index. handler. It
      can be configured independently by code file name and entry function name.
    label: Function
    type: string
  memorySize:
    constraints:
      valid_values:
        - 128
        - 256
        - 512
        - 768
        - 1024
        - 1280
        - 1536
    default: 128
    description: The memory size of the function.
    label: Function
    type: integer
  name:
    constraints:
      regex: '^[a-zA-Z]([a-zA-Z0-9_-]*[a-zA-Z0-9])?$'
    default: image_watermark
    description: The name of the function.
    label: Function
    type: string
  runtime:
    constraints:
      valid_values:
        - Node.js6.10
        - Python2.7
        - Python3.6
        - Java8
        - Go1.8
        - Node.js8.10
    description: The runtime of the function.
    label: Function
```

```
        type: string
      timeout:
        constraints:
          in_range:
            - 3
            - 300
        default: 3
        description: The timeout of the function. The effective range is 3~300.
        label: Function
        type: integer
      xrole:
        description: The agency of the function. It should be created in advance.
        label: Function
        type: string
      smn_topicName:
        description: SMN topic to which you want to subscribe.
        label: SMN trigger
        type: string
  node_templates:
    fgsf36en:
      properties:
        codeUrl:
          get_input: codeUrl
        handler:
          get_input: handler
        memorySize:
          get_input: memorySize
        name:
          get_input: name
        role:
          get_input: xrole
        runtime:
          get_input: runtime
        timeout:
          get_input: timeout
        code: ''
        codeType: obs
      type: HuaweiCloud.FGS.Function
    fgsse1fs:
      type: HuaweiCloud.FGS.SmnEventMap
      properties:
        topicName:
          get_input: smn_topicName
        funcId:
          get_reference: fgsf36en
        requirements:
        - funcId:
            node: fgsf36en
  outputs:
    function-urn:
      description: function URN
      value:
        get_attribute:
          - fgsf36en
          - refID
    smn_trigger_info:
      description: SMN trigger info
      value:
        get_attribute:
          - fgsse1fs
          - smnEventMap
```

2.2.62 HSS.Instance

Element Description

The **HSS.Instance** element is used to create HSS resources.

Element Properties

Table 2-130 Property Description

Property	Required	Descripiton
instances	Yes	Number of subscriptions. **Type:** integer
resourceSpecCode	Yes	Resource specifications for users to purchase cloud service products. **Type:** string **Default:** hss.version.enterprise **Value Constraint:** The value can be hss.version.enterprise, hss.version.basic, or hss.version.wtp.
hostIds	No	ECS ID **Type:** string Array **Value Description:** Indicates the ID (character string array) of the backend ECS of the listener, for example, 8abbd7a9-c1f8-440d-96ff-376ee7382082 or 855dfe22-3366-4d3e-a45c-3478d6d0954a. **Suggestion:** You are advised to drag the object to the ECS.CloudServer and use the get_reference function to automatically generate the value. Alternatively, query the ECS instance ID on the ECS page and enter it accordingly.

Relationships Between Elements

Table 2-131 Relationship description

Description	Target
Connected	**ECS.CloudServer**

Return Value

Property	Type	Description
resources	string	HSS Instance resources

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  hssi3q1p:
    type: HuaweiCloud.HSS.Instance
    properties:
      instances:
        get_input: hssi3q1p_instances
      resourceSpecCode: hss.version.enterprise
    metadata:
      Designer:
        id: 23ccbaab-f867-4914-a0e7-0e4aca6a20e1
inputs:
  hssi3q1p_instances:
    description: Order quantity
    label: ''
policies: {}
```

2.2.63 IAM.Agency

Element Description

The **IAM.Agency** element is used to create agencies on IAM, specify entrusted accounts, and grant rights. After an administrator assigns agent operator permissions to an entrusted account user, the user can manage corresponding resources.

Element Properties

Table 2-132 Property Description

Property	Required	Descripiton
trustDomainName	Yes	Agency domain name **Type:** string **Value Constraint:** Supports a 1-64 string, the string that consists of letters, digits. **Suggestion:** Customize the value.
name	No	Agency name **Type:** string **Value Description:** Is an English character string, for example, sample_admin_trust. **Value Constraint:** Supports a 1-64 string, the string that consists of letters, digits. **Suggestion:** Customize the value.
roles	Yes	role of agency. **Type: IAM.Agency.Role** Array
description	No	Agency detail inforAmation **Type:** string **Suggestion:** English character string, max length 255.

Relationships Between Elements

None.

Return Value

Property	Type	Description
refName	string	Name of the agency
refID	string	ID of the agency

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  iamaq9jx:
    type: HuaweiCloud.IAM.Agency
    properties:
      trustDomainName:
        get_input: iamaq9jx_trustDomainName
      roles:
        - roleId:
            get_input: iamaq9jx_roles_0_roleId
        - roleId:
            get_input: iamaq9jx_roles_1_roleId
          projectId:
            get_input: iamaq9jx_roles_1_projectId
      name:
        get_input: iamaq9jx_name
      description:
        get_input: iamaq9jx_description
inputs:
  iamaq9jx_trustDomainName:
    description: Agency domain name
    label: ''
  iamaq9jx_roles_0_roleId:
    description: 'Role id of agency'
    label: ''
  iamaq9jx_roles_1_roleId:
    description: 'Role id of agency'
    label: ''
  iamaq9jx_roles_1_projectId:
    description: ID of the project
    label: ''
  iamaq9jx_name:
    description: Name of the agency
    label: ''
  iamaq9jx_description:
    description: Agency detail inforAmation
    label: ''
```

2.2.64 IAM.UserGroup

Element Description

The **IAM.UserGroup** element is used to create a user group.

Element Properties

Table 2-133 Property Description

Property	Required	Descripiton
description	No	user group detail inforAmation **Type:** string **Suggestion:** English character string, max length 255.
roles	Yes	role of user group. **Type: IAM.Agency.Role** Array
name	Yes	user group name **Type:** string **Value Description:** Is an English character string **Value Constraint:** Supports a 1-64 string, the string that consists of letters, digits. **Suggestion:** Customize the value.

Relationships Between Elements

None.

Return Value

Property	Type	Description
refName	string	Name of the user group
refID	string	ID of the user group

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  iamugm9y:
    type: HuaweiCloud.IAM.UserGroup
    properties:
      name:
        get_input: iamugm9y_name
      roles:
        - roleId:
            get_input: iamugm9y_roles_0_roleId
          projectId:
            get_input: iamugm9y_roles_0_projectId
      description:
        get_input: iamugm9y_description
inputs:
  iamugm9y_name:
    description: user group name
    label: ''
  iamugm9y_roles_0_roleId:
```

```
    description: 'role id'
    label: ''
  iamugm9y_roles_0_projectId:
    description: project id
    label: ''
  iamugm9y_description:
    description: user group detail information
    label: ''
```

2.2.65 MRS.Cluster

Element Description

MapReduce Service (MRS) allows you to deploy and manage the Hadoop system in HUAWEI CLOUD. With MRS, Hadoop clusters can be deployed with just a few clicks. You can create a cluster using **MRS.Cluster** and specify the type of the cluster for offline data analysis or stream processing or both. You can also set ECS specifications, instance count, data disk type (common I/O, high I/O, or ultra-high I/O), and components to be installed (such as Hadoop, Spark, HBase, Hive, Kafka, and Storm) for the cluster. Bootstrap actions can be taken to execute a script on a specified node before or after the cluster is started. The script will automatically install additional third-party software, modify the cluster running environment, and perform other customizations.

Element Properties

Table 2-134 Property Description

Property	Required	Descripiton
vpcId	Yes	ID of the VPC where the subnet locates **Type:** HuaweiCloud.VPC.VPC.Id
clusterVersion	Yes	Version of the cluster **Type:** string **Suggestion:** On the MRS management console, click Create Cluster and view the cluster versions supported by the current region in the Cluster Version drop-down list.
coreNodeSize	Yes	Instance specification of a Core node **Type:** string **Value Constraint:** MRS supports host specifications determined by CPU, memory, and disk space. For details about the instance specifications, refer to the ECS specifications used by MRS at https://support.huaweicloud.com/eu/api-mrs/mrs_01_9006.html.
nodePublicCertName	No	Name of a key pair. You can use a key to log in to the Master node in the cluster. **Type:** HuaweiCloud.ECS.KeyPair.Name

Property	Required	Descripiton
clusterMasterSecret	No	Password of user root for logging in to a cluster node **Type:** password **Value Constraint:** Must be 8 to 26 characters long. Must contain at least three of the following: uppercase letters, lowercase letters, digits, and special characters (!@$%^-_=+[{}]:\,./?), but must not contain spaces. Cannot be the username or the username spelled backwards.
subnetId	Yes	Subnet ID **Type:** HuaweiCloud.VPC.Subnet.Id
securityGroupsId	No	Security group ID of the cluster **Type:** string **Value Constraint:** If this parameter is left blank, MRS automatically creates a security group, whose name starts with mrs_ {cluster_name}.If this parameter is not left blank, a fixed security group is used to create a cluster. The transferred ID must be the security group ID owned by the current tenant.
taskNodeGroups	No	List of Task nodes **Type:** **MRS.TaskNodeGroups** Array
logCollection	No	Whether logs are collected when cluster installation fails **Type:** string **Default:** Yes **Value Constraint:** No: not collected; Yes: collected. The default value is Yes. OBS buckets will be created and only used to collect logs that record MRS cluster creation failures.
clusterType	No	Type of the cluster **Type:** string **Default:** AnalysisCluster **Value Constraint:** Currently, analysis cluster, streaming cluster are supported.
masterDataVolumeCount	No	Number of data disks of the Master node **Type:** integer **Default:** 1 **Value Constraint:** The value can be set to 1 only.

Property	Required	Descripiton
volumeSize	Yes	Data disk size of the Core node **Type:** integer **Default:** 100 **Value Constraint:** The value ranges from 100 GB to 32,000 GB.
coreData VolumeTy pe	No	Data disk storage type of the Core node **Type:** string **Value Constraint:** Currently, SATA, SAS, and SSD are supported.
coreNode Num	Yes	Number of Core nodes **Type:** integer **Value Description:** Integers are supported. **Value Constraint:** The value ranges from 1 to 500. A maximum of 500 Core nodes are supported by default. If more than 500 Core nodes are required, increase the quota. For more information, visit https://support.huaweicloud.com/eu/usermanual-iaas/en-us_topic_0040259342.html. **Suggestion:** Customize the value.
safeMode	Yes	MRS cluster running mode **Type:** string **Default:** CommonMode **Value Constraint:** CommonMode: The value indicates that the Kerberos authentication is disabled. Users can use all functions provided by the cluster. SafeMode: safe mode. The value indicates that the Kerberos authentication is enabled. Common users cannot use the file management or job management functions of an MRS cluster and cannot view cluster resource usage or the job records of Hadoop and Spark. To use these functions, the users must obtain the relevant permissions from the MRS Manager administrator.
bootstrap Scripts	No	Bootstrap action script information **Type: MRS.BootstrapScripts** Array **Value Constraint:** MRS 1.7.1 or later supports this parameter.
tags	No	Cluster tag information **Type: MRS.Tags** Array **Value Constraint:** A cluster can contain a maximum of 10 tags. A tag name (key) must be unique. The key or value of a tag cannot contain the following characters: =*<>\,|/

Property	Required	Descripiton
clusterNa me	Yes	Cluster name **Type:** string **Value Description:** Cluster name, which is unique and contains only 1 to 64 characters. Only letters, digits, hyphens (-), and underscores (_) are allowed. **Suggestion:** Customize the value.
masterDa taVolume Size	No	Data disk size of the Master node. Disks can be purchased at the same time when a cluster is created to enlarge storage capacity. **Type:** integer **Value Constraint:** The value ranges from 100 GB to 32,000 GB.
masterNo deNum	Yes	Number of Master nodes **Type:** integer **Default:** 2 **Value Constraint:** If cluster HA is enabled, set this parameter to 2. If cluster HA is disabled, set this parameter to 1.
clusterAd minSecret	Yes	Password of the MRS Manager administrator **Type:** password **Value Constraint:** Must be 8 to 32 characters long. Must contain at least three of the following lowercase letters, uppercase letters, digits, spaces, and special characters `~!@#$%^&*()-_=+|[{}];:'",<.>/, . Cannot be the username or the username spelled backwards.
vpc	Yes	Name of the VPC where the subnet locates **Type:** string
coreData VolumeC ount	No	Number of data disks of the Core node **Type:** integer **Default:** 1 **Value Constraint:** The value ranges from 1 to 10.
availableZ oneId	Yes	ID of an available zone **Type:** string
masterDa taVolume Type	No	Data disk storage type of the Master node **Type:** string **Value Constraint:** Currently, SATA, SAS, and SSD are supported.

Property	Required	Descripiton
loginMode	No	Cluster login mode **Type:** string **Default:** KeyPair **Value Constraint:** The default value is keyPair. If login_mode is set to password, the request body contains the cluster_master_secret field. If login_mode is set to key pair, the request body contains the nodePublicCertName field.
volumeType	Yes	Type of disks **Type:** string **Value Constraint:** Currently, SATA, SAS, and SSD are supported.
coreData VolumeSize	No	Data disk size of the Core node. Disks can be purchased at the same time when a cluster is created to enlarge storage capacity. **Type:** integer **Value Constraint:** The value ranges from 100 GB to 32,000 GB.
components	Yes	Service component list **Type:** **MRS.Components** Array
masterNodeSize	Yes	Instance specification of a Master node **Type:** string **Value Constraint:** MRS supports host specifications determined by CPU, memory, and disk space. For details about the instance specifications, refer to the ECS specifications used by MRS at https://support.huaweicloud.com/intl/en-us/api-mrs/mrs_01_9006.htmlhttps://support.huaweicloud.com/eu/api-mrs/mrs_01_9006.html.
subnetName	Yes	Name of the subnet **Type:** string

Relationships Between Elements

Table 2-135 Relationship description

Description	Target
Connected	**VPC.Subnet**

Descripti on	Target
Contained In	**VPC.VPC**

Return Value

None.

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
 mrs_availableZoneId:
  description: ID of the availability zone
 mrs_clusterAdminSecret:
  description: the password of the MRS Manager administrator
 mrs_clusterName:
  description: cluster name
 mrs_clusterType:
  description: cluster type
  default: AnalysisCluster
 mrs_clusterVersion:
  description: cluster version
 mrs_components_0_componentName:
   description: component name
 mrs_coreNodeNum:
  description: number of Core nodes
 mrs_coreNodeSize:
  description: specifications of Core nodes
 mrs_masterNodeNum:
  description: number of master nodes
 mrs_masterNodeSize:
  description: specifications of master nodes
 mrs_nodePublicCertName:
  description: name of the AK/SK pair used to access the cluster nodes
 mrs_safeMode:
  description: mode in which the MRS cluster will run
 mrs_subnetId:
  description: subnet ID
 mrs_subnetName:
  description: subnet name
 mrs_volumeSize:
  description: data disk space of the Core nodes
 mrs_volumeType:
  description: disk storage type
 mrs_vpc:
  description: name of the VPC to which the subnet belongs
 mrs_vpcId:
  description: ID of the VPC to which the subnet belongs
node_templates:
 mrs:
  type: HuaweiCloud.MRS.Cluster
  properties:
   availableZoneId:
    get_input: mrs_availableZoneId
   clusterAdminSecret:
    get_input: mrs_clusterAdminSecret
   clusterName:
    get_input: mrs_clusterName
   clusterType:
    get_input: mrs_clusterType
   clusterVersion:
```

```
      get_input: mrs_clusterVersion
  components:
    - componentName:
        get_input: mrs_components_0_componentName
  coreNodeNum:
    get_input: mrs_coreNodeNum
  coreNodeSize:
    get_input: mrs_coreNodeSize
  masterNodeNum:
    get_input: mrs_masterNodeNum
  masterNodeSize:
    get_input: mrs_masterNodeSize
  nodePublicCertName:
    get_input: mrs_nodePublicCertName
  safeMode:
    get_input: mrs_safeMode
  subnetId:
    get_input: mrs_subnetId
  subnetName:
    get_input: mrs_subnetName
  volumeSize:
    get_input: mrs_volumeSize
  volumeType:
    get_input: mrs_volumeType
  vpc:
    get_input: mrs_vpc
  vpcId:
    get_input: mrs_vpcId
```

2.2.66 NAT.Instance

Element Description

The **NAT.Instance** element is used to create a NAT gateway instance.

Element Properties

Table 2-136 Property Description

Property	Required	Descripiton
subnetId	Yes	ID of the Subnet to which the NatGateWay belongs **Type:** HuaweiCloud.VPC.Subnet.Id **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** Use the get_input function to pass this parameter. Its value can then be automatically selected when you create a stack on the AOS console. Connect to a subnet object and use the get_reference function to the ID of the newly created subnet.
flavor	Yes	NatGateWay specification **Type:** string **Default:** small **Value Constraint:** The NAT specification and definition must be complied with **Suggestion:** Valid value:[small middle large xlarge]

Property	Required	Descripiton
vpcId	Yes	ID of the VPC to which the NatGateWay belongs **Type:** HuaweiCloud.VPC.VPC.Id **Value Description:** Supports the use of an existing or new VPC ID. To use a new VPC ID, you need to define the VPC object in the template and establish the dependency relationship. You are advised to drag the object to the VPC to automatically establish the dependency relationship. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** Use the get_input function to pass this parameter. Its value can then be automatically selected when you create a stack on the AOS console. Use the get_reference function to reference a VPC.VPC element created by the current stack. The group ID can then be automatically specified when you use the designer to create a dependency on the VPC.VPC element. Obtain the ID of the created VPC on the VPC console at https://console.huaweicloud.com/vpc?&locale=en-us.
description	No	NatGateWay instance **Type:** string **Value Description:** Supports customization. **Value Constraint:** The value contains a maximum of 255 characters, including letters and digits. **Suggestion:** Customize the value.
name	Yes	Name of the NatGateWay instance **Type:** string **Value Description:** Supports customization, for example, my-nat. **Value Constraint:** The value must contain 1 to 64 characters and meet the following requirement: [-_a-zA-Z0-9]*$. **Suggestion:** Customize the value.

Relationships Between Elements

Table 2-137 Relationship description

Description	Target
Connected	**VPC.Subnet**

Descripti on	Target
Contained In	**VPC.VPC**

Return Value

Property	Type	Description
refName	string	NAT Instance Name
refID	string	ID of NAT Instance

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  nat:
    type: HuaweiCloud.NAT.Instance
    properties:
      subnetId:
        get_input: nat_subnetId
      flavor: small
      vpcId:
        get_input: nat_vpcId
      name:
        get_input: nat_name
  snatrule:
    type: HuaweiCloud.NAT.SNatRule
    properties:
      subnetId:
        get_input: snatrule_subnetId
      floatingIpId:
        get_input: snatrule_floatingIpId
      natGatewayId:
        get_reference: nat
    requirements:
      - natGatewayId:
          node: nat
inputs:
  nat_subnetId:
    description: ID of the subnet to which the NAT gateway belongs
    label: ''
  nat_vpcId:
    description: ID of the VPC to which the NAT gateway belongs
    label: ''
  nat_name:
    description: NAT name
    label: ''
  snatrule_subnetId:
    description: ID of the subnet to which the source NAT rule belongs
    label: ''
  snatrule_floatingIpId:
    description: ID of the user's elastic IP address
    label: ''
```

2.2.67 NAT.SNatRule

Element Description

The **NAT.SNatRule** element is used to create a source NAT rule, which specifies the network segment for accessing the external network.

Element Properties

Table 2-138 Property Description

Property	Required	Descripiton
subnetId	Yes	ID of the Subnet to which the SNatRule belongs **Type:** HuaweiCloud.VPC.Subnet.Id **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** Use the get_input function to pass this parameter. Its value can then be automatically selected when you create a stack on the AOS console. Connect to a subnet object and use the get_reference function to the ID of the newly created subnet.
floatingIp Id	Yes	User EIP ID **Type:** HuaweiCloud.VPC.EIP.Id **Value Description:** Supports the ID of an existing or new public elastic IP address. **Suggestion:** 1. Use the get_attribute function to obtain the ID of the elastic public IP address created by the template. 2. On the public elastic IP address page (https://console.huaweicloud.com/vpc?&locale=en-us), obtain the ID of the created IP address.
natGatew ayId	Yes	ID of the NatGateWay **Type:** string **Value Description:** Obtains the natgateway ID from the NAT service or put snatrule in the natgateway to automatically establish the dependency relationship. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** Use the get_input function to pass this parameter. Its value can then be automatically selected when you create a stack on the AOS console. Use the get_reference function to obtain the NatGateWay ID.

Relationships Between Elements

Table 2-139 Relationship description

Description	Target
Connected	**VPC.Subnet**
Contained In	**NAT.Instance**
Connected	**VPC.EIP**

Return Value

Property	Type	Description
refID	string	NAT sNatRule ID

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  nat:
    type: HuaweiCloud.NAT.Instance
    properties:
      subnetId:
        get_input: nat_subnetId
      flavor: small
      vpcId:
        get_input: nat_vpcId
      name:
        get_input: nat_name
  snatrule:
    type: HuaweiCloud.NAT.SNatRule
    properties:
      subnetId:
        get_input: snatrule_subnetId
      floatingIpId:
        get_input: snatrule_floatingIpId
      natGatewayId:
        get_reference: nat
    requirements:
      - natGatewayId:
          node: nat
inputs:
  nat_subnetId:
    description: ID of the subnet to which the NAT gateway belongs
    label: ''
  nat_vpcId:
    description: ID of the VPC to which the NAT gateway belongs
    label: ''
  nat_name:
    description: NAT name
    label: ''
  snatrule_subnetId:
```

```
      description: ID of the subnet to which the source NAT rule belongs
    label: ''
  snatrule_floatingIpId:
    description: ID of the user's elastic IP address
    label: ''
```

2.2.68 OBS.Bucket

Element Description

The **OBS.Bucket** element is used to deploy bucket resources for HUAWEI CLOUD Object Storage Service (OBS). OBS provides a lot of secure, reliable, and low-cost data storage capabilities. Buckets are containers used to store objects.

Element Properties

Table 2-140 Property Description

Property	Required	Descripiton
location	No	Region where the OBS bucket is located **Type:** string **Value Description:** Supports cn-north-1, cn-east-2, cn-south-1, or other values. **Suggestion:** You are not advised to set the value. The system automatically allocates the value to the current region.
name	No	OBS bucket name **Type:** string **Value Description:** Supports customization, for example, my-bucket. **Value Constraint:** The value is globally unique. This value contains 3 to 63 characters and meets the following requirement: ^[a-z] ([-a-z0-9]*[a-z0-9]) ?$. **Suggestion:** Customize the value.
acl	Yes	ACL policy of the OBS bucket **Type:** string **Value Description:** Supports private, public-read, and public-read-write. **Default:** private **Value Constraint:** The value can be private, public-read, or public-read-write. **Suggestion:** Set the value based on specifications and requirements.

Table 2-141 Description of pre-defined permission control policies in OBS

Pre-defined Access Control Policy	Description
private	Indicates that the owner of a bucket or object has the **FULL_CONTROL** permission for the bucket or object. Other users have no permission to access the bucket or object.
public-read	Indicates that the owner of a bucket or object has the **FULL_CONTROL** permission for the bucket or object. Other users including anonymous users have the **READ** permission.
public-read-write	Indicates that the owner of a bucket or object has the **FULL_CONTROL** permission for the bucket or object. Other users including anonymous users have the **READ** and **WRITE** permissions.
authenticated-read	Indicates that the owner of a bucket or object has the **FULL_CONTROL** permission for the bucket or object. Other OBS users have the **READ** permission.
bucket-owner-read	Indicates that the owner of an object has the **FULL_CONTROL** permission for the object and the owner of the bucket where the object resides has the **READ-ONLY** permission.
bucketowner-full-control	Indicates that the owner of an object has the **FULL_CONTROL** permission for the object and the owner of the bucket where the object resides has **FULL_CONTROL** permission for the object.

Relationships Between Elements

None.

Return Value

Property	Type	Description
refName	string	Bucket name

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
```

```
inputs:
  bucket-name:
    default: my-first-bucket
  bucket-acl:
    default: public-read
  bucket-location:
    default: southchina

node_templates:
  my-bucket:
    type: HuaweiCloud.OBS.Bucket
    properties:
      name: {get_input: bucket-name}
      acl: {get_input: bucket-acl}
      location: {get_input: bucket-location}
```

2.2.69 RDS.MySQL

Element Description

Relational Database Service (RDS) is a cloud-based web service that is reliable, scalable, easy to manage, and ready to use out-of-the-box.

RDS provides an optimized performance monitoring system, multiple security protection measures, and a professional database management platform, helping you easily configure, operate, and expand the relational database. On the RDS console, you can execute all necessary tasks without programming, which simplifies the operation process and reduces routine O&M workload. Therefore, you can focus on application development and service development.

Element Properties

Table 2-142 Property Description

Property	Required	Descripiton
dbPort	No	Port for accessing the instance **Type:** integer **Value Description:** Supports 2100-9500. This field is invalid now. **Default:** 3306 **Suggestion:** Set the value within the port range based on requirements.

Property	Required	Descripiton
availabilit yZone	Yes	AZ where the instance is located **Type:** HuaweiCloud.ECS.AvailabilityZone.Name **Value Description:** Indicates the AZ where the to-be-created ECS is located. The name of the AZ needs to be specified, for example, cn-north-1a. **Value Constraint:** The value varies depending on the belonged region. **Suggestion:** 1. Use the get_input function to import this field. The value can be automatically selected when creating stack to fill in input parameters on the AOS page. 2. For details about the AZ of each region, visit https://developer.huaweicloud.com/en-us/ endpoint.
name	No	Instance name **Type:** string **Value Description:** Supports customization. **Default:** '' **Value Constraint:** 1. The value must contain 4 to 64 characters and start with a letter. It is case-insensitive, and can only contain letters, digits, hyphens (-), and underscores (_). 2. The instance name of the same type under the same tenant must be unique. **Suggestion:** Customize the value.
dataBase	No	Configuration of the database of the instance **Type: MySQL.DataBase** **Default:** {u'characterSet': u'utf8', u'name': u'unset', u'collate': u'utf8_general_ci'} **Suggestion:** Select the dataBase field in the component part, and then fill in the field based on prompts.
paramsGr oupId	No	parameters group id of rds instance **Type:** HuaweiCloud.RDS.ParamsGroup.Id **Suggestion:** It is recommended to set it to the get_input form and select it from the drop-down list. It also supports filling in a default parameter group Id which needs to be obtained from the RDS page.

Property	Required	Descripiton
securityGroupId	Yes	ID of the security group to which the instance belongs **Type:** HuaweiCloud.VPC.SecurityGroup.Id **Value Description:** Obtains the security group ID from the VPC service or connects to the VPC.SecurityGroup to automatically generate the security group ID. **Value Constraint:** None **Suggestion:** 1. Use the get_input function to import this field. The value can be automatically selected on the AOS page. 2. Use the get_reference function to obtain the VPC.SecurityGroup created by the stack. The element is automatically specified when you use the designer to establish the dependency relationship. 3. Obtain the created security group ID on the VPC page.see https://console.huaweicloud.com/vpc/?locale=en-us
dbUser	No	Configuration of the user of the instance **Type: MySQL.DBUser** **Default:** {u'userPassword': u'unset', u'name': u'unset'} **Suggestion:** Select the dbUser field in the component part, and then fill in the field based on prompts.
dbRootPassword	Yes	Password of the root user of the instance. The value is not empty. It contains 8-32 characters and is not a weak password. It contains letters, digits, and the following special characters: ~!@#%^*-_=+? **Type:** password **Value Description:** Supports customization. **Value Constraint:** 1. The parameter must be written into inputs and imported using the get_input function. 2. The value is not empty. It contains 8-32 characters and is not a weak password. It contains letters, digits, and the following special characters: ~!@#%^*-_=+? suggestion: 'You are advised to use the get_input function to obtain the value and avoid plaintext passwords to ensure security.' **Suggestion:** You are advised to use the get_input function to obtain the value and avoid plaintext passwords to ensure security.
volume	Yes	Information about the data disk used by the instance **Type: RDS.Volume** **Default:** {u'volumetype': u'COMMON', u'size': 100} **Suggestion:** Select the volume field in the component part, and then fill in the field based on prompts.

Property	Required	Descripiton
timeZone	No	timeZone where the instance id located(Only used by pakage,not on deamond) **Type:** string **Value Description:** When this property is left unspecified, the time zone of the Chinese mainland and international sites of the MySQL and PostgreSQL engines all use UTC by default. When setting this property, set it to an integer ranging from UTC-12:00 to UTC+12:00, for example, UTC+08:00 instead of UTC+08:30. **Suggestion:** Use the get_input function to import this field. The value can be automatically selected on the AOS page.
backupStrategy	Yes	Backup policy of the instance **Type: RDS.BackupStrategy** **Default:** {u'keepDays': 0, u'endTime': u'02:00', u'startTime': u'01:00'} **Value Constraint:** Set the value based on specifications.
subnetId	Yes	ID of the subnet to which the instance belongs **Type:** HuaweiCloud.VPC.Subnet.Id **Value Description:** Supports the use of an existing or new subnet ID. To use a new subnet ID, you need to define the subnet object in the template and establish the dependency relationship. You are advised to connect the VPC.Subnet to automatically establish the dependency relationship. **Value Constraint:** The subnet must correspond to the VPC. **Suggestion:** 1. Use the get_input function to import this field. The value is automatically selected on the AOS page. 2. Use the get_reference function to obtain the VPC.Subnet element created by the stack. The element is automatically specified when you use the designer to establish the dependency relationship. 3. Obtain the created subnet ID on the VPC page. See https://console.huaweicloud.com/vpc?&locale=en-us

Property	Required	Descripiton
slaveAvailabilityZone	No	AZ where the instance is located **Type:** HuaweiCloud.ECS.AvailabilityZone.Name **Value Description:** Indicates the AZ where the to-be-created ECS is located. The name of the AZ needs to be specified, for example, cn-north-1a.. **Value Constraint:** The value varies depending on the belonged region. For details, visit https://developer-intl.huaweicloud.com/en-us/endpoint. For the North China region, the value can be cn-north-1a or cn-north-1b. **Suggestion:** 1. Use the get_input function to import this field. The value can be automatically selected on the AOS page. 2. For details about the AZ of each region, visit https://developer-intl.huaweicloud.com/en-us/endpoint.
dataStore	Yes	Database information **Type: MySQL.DataStore** **Default:** {u'dbtype': u'MySQL', u'version': u'5.7'} **Suggestion:** Select the dataStore field in the component part, and then fill in the field based on prompts.
HA	Yes	HA configuration of the instance **Type: RDS.HA.Mysql** **Default:** {u'replicationMode': u'semisync', u'enable': u'unset'} **Suggestion:** Select the HA field in the component part, and then fill in the field based on prompts.

Property	Required	Descripiton
vpcId	Yes	ID of the VPC to which the instance belongs **Type:** HuaweiCloud.VPC.VPC.Id **Value Description:** Supports the use of an existing or new VPC ID. To use a new VPC ID, you need to define the VPC object in the template and establish the dependency relationship. You are advised to drag the object to the VPC to automatically establish the dependency relationship. **Value Constraint:** The value must satisfy the UUID generation rule. **Suggestion:** 1. Use the get_input function to import this field. The value can be automatically selected on the AOS page. 2. Use the get_reference function to obtain the VPC.VPC element created by the stack. The element is automatically specified when you use the designer to establish the dependency relationship. 3. Obtain the created VPC ID on the VPC page. See https://console.huaweicloud.com/vpc?&locale=en-us
flavor	Yes	Instance specification **Type:** HuaweiCloud.RDS.Flavor.Id **Value Description:** Indicates the flavor ID of the to-be-created database instance, which is generated based on the instance size and user project. **Value Constraint:** FlavorIDs vary depending on the project. The property must match the database type and version. For example, in the resource specification code rds.mysql.m1.xlarge, rds indicates the RDS database. mysql indicates the database engine. m1.xlarge indicates high memory, a performance specification. When the value contains rr, it indicates specifications for a read replica. Values without rr indicate specifications for single or primary/standby database instances. **Suggestion:** You are advised to obtain the value by using the RDS API. For details, visit https://support.huaweicloud.com/eu/api-rds/rds_06_0002.html.

Relationships Between Elements

Table 2-143 Relationship description

Description	Target
Connected	**VPC.Subnet**
Connected	**VPC.SecurityGroup**
Contained In	**VPC.VPC**

Return Value

Property	Type	Description
refIP	string	Access IP address of the RDS MySQL instance
refPort	integer	Access port of the RDS MySQL instance
refName	string	Name of the RDS MySQL instance
refID	string	ID of the RDS MySQL instance
chargeMode	string	Billing mode of the RDS MySQL instance

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  rdsms528:
    type: HuaweiCloud.RDS.MySQL
    properties:
      dataStore:
        dbtype: MySQL
        version: '5.7'
      dbPort: 3306
      vpcId:
        get_input: rdsms528_vpcId
      securityGroupId:
        get_input: rdsms528_securityGroupId
      availabilityZone:
        get_input: rdsms528_availabilityZone
      dbRootPassword:
        get_input: rdsms528_dbRootPassword
      volume:
        volumetype: COMMON
        size: 100
      backupStrategy:
        keepDays: 0
        endTime: '02:00'
        startTime: '01:00'
      subnetId:
```

```
        get_input: rdsms528_subnetId
      flavor:
        get_input: rdsms528_flavor
      HA:
        replicationMode: semisync
        enable:
          get_input: rdsms528_HA_enable
  inputs:
   rdsms528_vpcId:
     description: ID of the VPC to which the instance belongs
     label: ''
   rdsms528_securityGroupId:
     description: ID of the security group to which the instance belongs
     label: ''
   rdsms528_availabilityZone:
     description: AZ to which the instance belongs
     label: ''
   rdsms528_dbRootPassword:
     description: 'Password of the root user of the instance. The password must be 8 to 32 characters long
and cannot be easily guessed. Only letters, digits, and special characters (~!@#%^*-_=+?) are allowed.'
     label: ''
   rdsms528_subnetId:
     description: ID of the subnet to which the instance belongs
     label: ''
   rdsms528_flavor:
     description: Instance flavor
     label: ''
   rdsms528_HA_enable:
     description: Whether HA is supported
     label: ''
```

2.2.70 RDS.MySQL.DataBase

Element Description

A database instance can contain multiple databases created by database users and can be accessed using the client tool and application program that are the same as those of an independent database instance. The **RDS.MySQL.DataBase** element can be used to create a database in a specified RDS instance.

Element Properties

Table 2-144 Property Description

Property	Required	Descripiton
instanceId	Yes	ID of the RDS instance **Type:** string **Value Constraint:** 1. Instance ID needs to be entered,The RDS instance ID displayed on the RDS page. 2. You can connect to the RDS instance to automatically establish the get_reference dependency relationship and obtain the value. **Suggestion:** Customize the value.

Property	Required	Descripiton
dataBase	Yes	Database configuration **Type: MySQL.DataBase** **Default:** {u'characterSet': u'utf8', u'name': u'unset', u'collate': u'utf8_general_ci'} **Suggestion:** Select the dataBase field in the component part, and then fill in the field based on prompts.

Relationships Between Elements

Table 2-145 Relationship description

Description	Target
Connected	**RDS.MySQL**
Connected	**RDS.PostgreSQL**
Depends On	**RDS.MySQL.DataBase**

Return Value

Property	Type	Description
refName	string	Name of the created database

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
 inputs:
  securityGroupId:
    description: ID of the security group to which the instance belongs
  dbRootPassword:
    description: Password of the root user of the instance
  availabilityZone:
    description: AZ where the instance is located
  subnetId:
    description: ID of the subnet to which the instance belongs
  dbVersion:
    description: Database version
    default: 5.7.21
  HAEnable:
    description: Whether HA is supported
  vpcId:
    description: ID of the VPC to which the instance belongs
  flavor:
```

```
        description: Instance specifications
      dataBaseName:
        description: Name of the database that the user can access
      dbUserPassword:
        description: Password for logging in to the database
      dbUserName:
        description: Username
    node_templates:
      rds-ins:
        type: HuaweiCloud.RDS.MySQL
        properties:
          dbPort: 3306
          backupStrategy:
            keepDays: 0
            endTime: '02:00'
            startTime: '01:00'
          securityGroupId:
            get_input: securityGroupId
          dbRootPassword:
            get_input: dbRootPassword
          volume:
            volumetype: COMMON
            size: 100
          availabilityZone:
            get_input: availabilityZone
          subnetId:
            get_input: subnetId
          dataStore:
            dbtype: MySQL
            version:
              get_input: dbVersion
          HA:
            replicationMode: semisync
            enable:
              get_input: HAEnable
          vpcId:
            get_input: vpcId
          flavor:
            get_input: flavor
      rds-db:
        type: HuaweiCloud.RDS.MySQL.DataBase
        properties:
          instanceId:
            get_reference: rds-ins
          dataBase:
            characterSet: utf8
            collate: utf8_general_ci
            name:
              get_input: dataBaseName
        metadata:
          Designer:
            id: fd1ae0f5-ce98-487e-be2c-828c4b11e676
        requirements:
          - instanceId:
              node: rds-ins
      rds-user:
        type: HuaweiCloud.RDS.MySQL.User
        properties:
          instanceId:
            get_reference: rds-ins
          dbUser:
            userPassword:
              get_input: dbUserPassword
            name:
              get_input: dbUserName
            userDatabase:
              - name:
                  get_input: dataBaseName
        requirements:
```

```
        - instanceId:
            node: rds-ins
        - dependency:
            node: rds-db
```

2.2.71 RDS.MySQL.User

Element Description

Database user accounts are used to connect to database instances and control the access to the database instances. The MySQL database is used as an example. During database instance creation, the root user account is created by default.

Element Properties

Table 2-146 Property Description

Property	Required	Descripiton
instanceId	Yes	ID of the RDS instance **Type:** string **Value Constraint:** 1. Instance ID needs to be entered,The RDS Instance ID displayed on the RDS page 2. You can connect to the RDS instance to automatically establish the get_reference dependency relationship and obtain the value. **Suggestion:** Customize the value.
dbUser	Yes	User configuration **Type:** **MySQL.DBLinkedUser** **Default:** {u'userPassword': u'unset', u'name': u'unset'} **Suggestion:** Select the dbUser field in the component part, and then fill in the field based on prompts.

Relationships Between Elements

Table 2-147 Relationship description

Description	Target
Connected	**RDS.MySQL**
Connected	**RDS.PostgreSQL**
Depends On	**RDS.MySQL.User**

Descripti on	Target
Depends On	**RDS.MySQL.DataBase**

Return Value

Property	Type	Description
refName	string	Created username

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  securityGroupId:
    description: ID of the security group to which the instance belongs
  dbRootPassword:
    description: Password of the root user of the instance
  availabilityZone:
    description: AZ where the instance is located
  subnetId:
    description: ID of the subnet to which the instance belongs
  dbVersion:
    description: Database version
    default: 5.7.21
  HAEnable:
    description: Whether HA is supported
  vpcId:
    description: ID of the VPC to which the instance belongs
  flavor:
    description: Instance specifications
  dataBaseName:
    description: Name of the database that the user can access
  dbUserPassword:
    description: Password for logging in to the database
  dbUserName:
    description: Username
node_templates:
  rds-ins:
    type: HuaweiCloud.RDS.MySQL
    properties:
      dbPort: 3306
      backupStrategy:
        keepDays: 0
        endTime: '02:00'
        startTime: '01:00'
      securityGroupId:
        get_input: securityGroupId
      dbRootPassword:
        get_input: dbRootPassword
      volume:
        volumetype: COMMON
        size: 100
      availabilityZone:
        get_input: availabilityZone
      subnetId:
        get_input: subnetId
      dataStore:
        dbtype: MySQL
```

```
          version:
            get_input: dbVersion
        HA:
          replicationMode: semisync
          enable:
            get_input: HAEnable
        vpcId:
          get_input: vpcId
        flavor:
          get_input: flavor
  rds-db:
    type: HuaweiCloud.RDS.MySQL.DataBase
    properties:
      instanceId:
        get_reference: rds-ins
      dataBase:
        characterSet: utf8
        collate: utf8_general_ci
        name:
          get_input: dataBaseName
    metadata:
      Designer:
        id: fd1ae0f5-ce98-487e-be2c-828c4b11e676
    requirements:
      - instanceId:
          node: rds-ins
  rds-user:
    type: HuaweiCloud.RDS.MySQL.User
    properties:
      instanceId:
        get_reference: rds-ins
      dbUser:
        userPassword:
          get_input: dbUserPassword
        name:
          get_input: dbUserName
        userDatabase:
          - name:
              get_input: dataBaseName
    requirements:
      - instanceId:
          node: rds-ins
      - dependency:
          node: rds-db
```

2.2.72 RDS.PostgreSQL

Element Description

RDS is a cloud-based web service that is reliable, scalable, easy to manage, and
ready to use out-of-the-box.

RDS provides an optimized performance monitoring system, multiple security
protection measures, and a professional database management platform, helping
you easily configure, operate, and expand the relational database. On the RDS
console, you can execute all necessary tasks without programming, which
simplifies the operation process and reduces routine O&M workload. Therefore,
you can focus on application and service development.

Element Properties

Table 2-148 Property Description

Property	Required	Descripiton
dbPort	No	Port for accessing the instance **Type:** integer **Value Description:** Supports 2100-9500. This field is invalid now. **Default:** 5432 **Suggestion:** Set the value within the port range based on requirements.
backupStrategy	Yes	Backup policy of the instance **Type: RDS.BackupStrategy** **Default:** {u'keepDays': 0, u'endTime': u'02:00', u'startTime': u'01:00'} **Value Constraint:** Set the value based on specifications.
name	No	Instance name **Type:** string **Value Description:** Supports customization. **Default:** '' **Value Constraint:** 1. The value must contain 4 to 64 characters and start with a letter. It is case-insensitive, and can only contain letters, digits, hyphens (-), and underscores (_). 2. The instance name of the same type under the same tenant must be unique. **Suggestion:** Customize the value.
paramsGroupId	No	parameters group id of rds instance **Type:** HuaweiCloud.RDS.ParamsGroup.Id **Suggestion:** It is recommended to set it to the get_input form and select it from the drop-down list. It also supports filling in a default parameter group Id which needs to be obtained from the RDS page.

Property	Required	Descripiton
securityGr oupId	Yes	ID of the security group to which the instance belongs **Type:** HuaweiCloud.VPC.SecurityGroup.Id **Value Description:** Obtains the security group ID from the VPC service or connects to the VPC.SecurityGroup to automatically generate the security group ID. **Value Constraint:** None **Suggestion:** 1. Use the get_input function to import this field. The value can be automatically selected on the AOS page. 2. Use the get_reference function to obtain the VPC.SecurityGroup created by the stack. The element is automatically specified when you use the designer to establish the dependency relationship. 3. Obtain the created security group ID on the VPC page.See https://console.huaweicloud.com/vpc? &locale=en-us
dbRootPa ssword	Yes	Password of the root user of the instance **Type:** password **Value Description:** Supports customization. **Value Constraint:** 1. The parameter must be written into inputs and imported using the get_input function. 2. The value is not empty. It contains 8-32 characters and is not a weak password. It contains letters, digits, and the following special characters: ~!@#%^*-_=+? **Suggestion:** You are advised to use the get_input function to obtain the value and avoid plaintext passwords to ensure security.
volume	Yes	Information about the data disk used by the instance **Type:** **RDS.Volume** **Default:** {u'volumetype': u'COMMON', u'size': 100} **Suggestion:** Select the volume field in the component part, and then fill in the field based on prompts.
slaveAvail abilityZon e	No	AZ where the instance is located **Type:** HuaweiCloud.ECS.AvailabilityZone.Name **Value Description:** Indicates the AZ where the to-be-created ECS is located. The name of the AZ needs to be specified, for example, cn-north-1a. **Value Constraint:** The value varies depending on the belonged region. **Suggestion:** 1. Use the get_input function to import this field. The value can be automatically selected on the AOS page. 2. For details about the AZ of each region, visit https://developer.huaweicloud.com/ endpoint.

Property	Required	Descripiton
subnetId	Yes	ID of the subnet to which the instance belongs **Type:** HuaweiCloud.VPC.Subnet.Id **Value Description:** Supports the use of an existing or new subnet ID. To use a new subnet ID, you need to define the subnet object in the template and establish the dependency relationship. You are advised to connect the VPC.Subnet to automatically establish the dependency relationship. **Value Constraint:** The subnet must correspond to the VPC. **Suggestion:** 1. Use the get_input function to import this field. The value is automatically selected on the AOS page. 2. Use the get_reference function to obtain the VPC.Subnet element created by the stack. The element is automatically specified when you use the designer to establish the dependency relationship. 3. Obtain the created subnet ID on the VPC page (https://console.huaweicloud.com/vpc?&locale=en-us).
timeZone	No	timeZone where the instance id located(Only used by pakage,not on deamond) **Type:** string **Suggestion:** Use the get_input function to import this field. The value can be automatically selected on the AOS page.
dataStore	Yes	Database information **Type:** **PostgreSQL.DataStore** **Default:** {u'dbtype': u'PostgreSQL', u'version': u'11'} **Suggestion:** Select the dataStore field in the component part, and then fill in the field based on prompts.
HA	Yes	HA configuration of the instance **Type:** **RDS.HA.PostgreSQL** **Default:** {u'replicationMode': u'sync', u'enable': u'unset'} **Suggestion:** Select the HA field in the component part, and then fill in the field based on prompts.

Property	Required	Descripiton
vpcId	Yes	ID of the VPC to which the instance belongs **Type:** HuaweiCloud.VPC.VPC.Id **Value Description:** Supports the use of an existing or new VPC ID. To use a new VPC ID, you need to define the VPC object in the template and establish the dependency relationship. You are advised to drag the object to the VPC to automatically establish the dependency relationship. **Value Constraint:** The value must satisfy the UUID generation rule. **Suggestion:** 1. Use the get_input function to import this field. The value can be automatically selected on the AOS page. 2. Use the get_reference function to obtain the VPC.VPC element created by the stack. The element is automatically specified when you use the designer to establish the dependency relationship. 3. Obtain the created VPC ID on the VPC page.See https://console.huaweicloud.com/vpc?&locale=en-us
flavor	Yes	Instance specification **Type:** HuaweiCloud.RDS.Flavor.Id **Value Description:** Indicates the flavor ID of the to-be-created database instance, which is generated based on the instance size and user project. **Value Constraint:** FlavorIDs vary depending on the project. The property must match the database type and version. For example, in the resource specification code rds.mysql.m1.xlarge, rds indicates the RDS database. mysql indicates the database engine. m1.xlarge indicates high memory, a performance specification. When the value contains rr, it indicates specifications for a read replica. Values without rr indicate specifications for single or primary/standby database instances. **Suggestion:** You are advised to obtain the value by using the RDS API. For details, visit **https://support.huaweicloud.com/eu/api-rds/rds_06_0002.html**.

Property	Required	Descripiton
availabilit yZone	Yes	AZ where the instance is located **Type:** HuaweiCloud.ECS.AvailabilityZone.Name **Value Description:** Indicates the AZ where the to-be-created ECS is located. The name of the AZ needs to be specified, for example, cn-north-1a. **Value Constraint:** The value varies depending on the belonged region. **Suggestion:** 1. Use the get_input function to import this field. The value can be automatically selected on the AOS page. 2. For details about the AZ of each region, visit https://developer-intl.huaweicloud.com/en-us/endpoint.

Relationships Between Elements

Table 2-149 Relationship description

Description	Target
Connected	**VPC.Subnet**
Connected	**VPC.SecurityGroup**
Contained In	**VPC.VPC**

Return Value

Property	Type	Description
refIP	string	Access IP address of the RDS PostgreSQL instance
chargeMode	string	Billing mode of the RDS PostgreSQL instance
refPort	integer	Access port of the RDS PostgreSQL instance
refID	string	ID of the RDS PostgreSQL instance
refName	string	Name of the RDS PostgreSQL instance

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
```

```
rdsps24w:
  type: HuaweiCloud.RDS.PostgreSQL
  properties:
    dbPort: 3306
    vpcId:
      get_input: rdsps24w_vpcId
    securityGroupId:
      get_input: rdsps24w_securityGroupId
    dbRootPassword:
      get_input: rdsps24w_dbRootPassword
    volume:
      volumetype: COMMON
      size: 100
    backupStrategy:
      keepDays: 0
      endTime: '02:00'
      startTime: '01:00'
    subnetId:
      get_input: rdsps24w_subnetId
    dataStore:
      dbtype: PostgreSQL
      version: '10.0'
    HA:
      replicationMode: sync
      enable:
        get_input: rdsps24w_HA_enable
    flavor:
      get_input: rdsps24w_flavor
    availabilityZone:
      get_input: rdsps24w_availabilityZone
inputs:
  rdsps24w_vpcId:
    description: ID of the VPC to which the instance belongs
    label: ''
  rdsps24w_securityGroupId:
    description: ID of the security group to which the instance belongs
    label: ''
  rdsps24w_dbRootPassword:
    description: Password of the root user of the instance
    label: ''
  rdsps24w_subnetId:
    description: ID of the subnet to which the instance belongs
    label: ''
  rdsps24w_HA_enable:
    description: Whether HA is supported
    label: ''
  rdsps24w_flavor:
    description: Instance flavor
    label: ''
  rdsps24w_availabilityZone:
    description: AZ to which the instance belongs
    label: ''
```

2.2.73 SCM.Cert

Element Description

The **SCM.Cert** element is used to create certificate resources.

Element Properties

Table 2-150 Property Description

Property	Required	Descripiton
instances	Yes	Number of purchased certificates. **Type:** integer **Default:** 1 **Value Constraint:** The value ranges from 1 to 3000.
resourceSpecCode	Yes	Certificate product name. Format: Certificate Authority.Domain Type.Certificate Type.Validity Period (number of years) **Type:** string **Default:** symantec.single.ov.1 **Value Constraint:** Only available certificates can be selected.
resourceSize	Yes	Number of domain names that can be added to the purchased certificate. You can add 2 to 100 domain names for a multi-domain certificate and only 1 domain name for certificates of other domain types. **Type:** integer **Default:** 1 **Value Constraint:** The value ranges from 1 to 100.

Relationships Between Elements

None.

Return Value

Property	Type	Description
refID	string	ID of SCM Cert

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  cert-product:
    constraints:
      valid_values:
        - symantec.multi.ov.1
        - symantec.multi.ov.2
        - symantec.multi.ovpro.1
        - symantec.multi.ovpro.2
        - cfca.multi.ev.1
        - geotrust.multi.ev.1
```

```
            - geotrust.multi.ev.2
            - globalsign.multi.ev.1
            - symantec.multi.ev.1
            - symantec.multi.ev.2
            - symantec.multi.evpro.1
            - symantec.multi.evpro.2
            - cfca.multi.ov.1
            - globalsign.multi.ev.2
            - globalsign.multi.ov.1
            - geotrust.multi.ov.1
            - symantec.wildcard.ovpro.2
            - globalsign.multi.ov.2
            - geotrust.multi.ov.2
            - geotrust.single.dv.1
            - cfca.single.ov.1
            - cfca.wildcard.ov.1
            - geotrust.single.ov.1
            - geotrust.wildcard.ov.1
            - globalsign.single.ov.1
            - globalsign.wildcard.ov.1
            - symantec.single.ov.1
            - symantec.wildcard.ov.1
            - symantec.single.ovpro.1
            - symantec.wildcard.ovpro.1
            - cfca.single.ev.1
            - geotrust.single.ev.1
            - globalsign.single.ev.1
            - symantec.single.ev.1
            - symantec.single.evpro.1
            - symantec.single.dv.1
            - geotrust.single.ov.2
            - geotrust.wildcard.ov.2
            - geotrust.single.dv.2
            - globalsign.wildcard.ov.2
            - symantec.single.evpro.2
            - symantec.single.ev.2
            - globalsign.single.ev.2
            - geotrust.single.ev.2
            - symantec.single.ovpro.2
            - symantec.wildcard.ov.2
            - symantec.single.ov.2
            - globalsign.single.ov.2
          default: symantec.single.ov.1
          description: >-
            Certificate product name. Format: Certificate Authority.Domain
            Type.Certificate Type.Validity Period (number of years)
          type: string
        domain-number:
          constraints:
            in_range:
            - 1
            - 100
          default: 1
          description: >-
            Number of domain names that can be added to the purchased certificate. You
            can add 2 to 100 domain names for a multi-domain certificate and only 1
            domain name for certificates of other domain types.
          type: integer
        order-number:
          constraints:
            in_range:
            - 1
            - 3000
          default: 1
          description: Number of purchased certificates.
          type: integer
      node_templates:
        my-scm:
          properties:
```

```
    chargeMode: 1
    instances:
      get_input: order-number
    periodNum: 1
    periodType: 6
    resourceSize:
      get_input: domain-number
    resourceSpecCode:
      get_input: cert-product
  type: HuaweiCloud.SCM.Cert
```

2.2.74 ServiceStage.Agent

The **ServiceStage.Agent** element is compatible with original functions of ServiceStage. This element is about to be removed from AOS. You are advised to use CCE-related resources or the to-be-released **AOS.Application** element.

2.2.75 ServiceStage.AppGroup

The **ServiceStage.AppGroup** element is compatible with original functions of ServiceStage. This element is about to be removed from AOS. You are advised to use CCE-related resources or the to-be-released **AOS.Application** element.

2.2.76 ServiceStage.ContainerComponent

The **ServiceStage.ContainerComponent** element is compatible with the original functions of ServiceStage. This element is about to be removed from AOS. You are advised to use CCE-related resources or the to-be-released **AOS.Application** element.

2.2.77 ServiceStage.Job

The **ServiceStage.Job** element is compatible with the original functions of ServiceStage. This element is about to be removed from AOS. You are advised to use CCE-related resources or the to-be-released **AOS.Application** element.

2.2.78 ServiceStage.StatefulApplication

The **ServiceStage.StatefulApplication** element is compatible with the original functions of ServiceStage. This element is about to be removed from AOS. You are advised to use CCE-related resources or the to-be-released **AOS.Application** element.

2.2.79 ServiceStage.StatelessApplication

The **ServiceStage.StatelessApplication** element is compatible with the original functions of ServiceStage. This element is about to be removed from AOS. You are advised to use CCE-related resources or the to-be-released **AOS.Application** element.

2.2.80 SFS.FileSystem

Element Description

SFS provides high-performance file storage which supports on-demand scaling. It can be shared by multiple ECSs.

Element Properties

Table 2-151 Property Description

Property	Required	Descripiton
size	Yes	Storage space size (unit: GB). The minimum value is 1 and the maximum value is 511800. **Type:** integer **Value Description:** The value ranges from 1 to 511800. **Default:** 1 **Value Constraint:** [1, 511800]
vpcId	Yes	ID of the belonged VPC. Only ECSs in the VPC can access the SFS file system. **Type:** HuaweiCloud.VPC.VPC.Id **Value Description:** Supports the use of an existing or new VPC ID. **Value Constraint:** The value must satisfy the UUID generation rule. **Suggestion:** 1. Use the get_input function to import this field. The value can be automatically selected on the AOS page. 2. Obtain the created VPC ID on the VPC page,See https://console.huaweicloud.com/vpc?&locale=en-us.
descriptio n	Yes	Shared description **Type:** string **Value Description:** Supports customization. **Default:** " **Value Constraint:** [0, 255]
name	Yes	SFS instance name **Type:** string **Value Description:** Supports customization. **Default:** " **Value Constraint:** [0, 255]
availabilit yZone	Yes	AZ to which the fileSystem belongs **Type:** HuaweiCloud.ECS.AvailabilityZone.Name **Value Description:** Indicates the AZ where the to-be-created ECS is located. The name of the AZ needs to be specified, for example, cn-north-1a.For details, visit https://developer-intl.huaweicloud.com/en-us/endpoint. **Value Constraint:** The value varies depending on the belonged region.

Property	Required	Descripiton
accessLev el	Yes	Permission level of the shared access **Type:** string **Value Description:** Supports customization. **Default:** rw **Value Constraint:** Supports ro and rw. ro indicates read-only, and rw indicates read and write.

Relationships Between Elements

Table 2-152 Relationship description

Descripti on	Target
Contained In	**VPC.VPC**

Return Value

Property	Type	Description
ShareAcc essId	string	Share Access Id
export_lo cation	string	Share Access Path
refID	string	SYS FileSystem ID
export_lo cations	string	Share Access Path

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  name:
    default: my-sfs
  availabilityZone:
    type: HuaweiCloud.ECS.AvailabilityZone.Name
  vpcId:
    type: HuaweiCloud.VPC.VPC.Id
  accessLevel:
    default: "ro"
  size:
    default: 10
node_templates:
  my-sfs:
    type: HuaweiCloud.SFS.FileSystem
```

```
properties:
  name: {get_input: name}
  size: {get_input: size}
  availabilityZone: {get_input: availabilityZone}
  accessLevel: {get_input: accessLevel}
  vpcId: {get_input: vpcId}
```

2.2.81 SMN.Subscription

Element Description

The **SMN.Subscription** element is used to subscribe for SMN.

Element Properties

Table 2-153 Property Description

Property	Required	Descripiton
remark	No	Remarks **Type:** string **Value Description:** The value must be a character string in UTF-8 format. Otherwise, Chinese characters cannot be displayed.
endpoint	Yes	Access point for receiving messages **Type:** string **Value Description:** For the HTTP protocol, the access point must start with http://. For the HTTPS protocol, the access point must start with https://. For the email protocol, the access point must be an email address. For the SMS protocol, the access point must be a phone number.
protocol	Yes	The way endpoint pushes **Type:** string **Value Description:** Currently only supported ["email", "sms", "http", "https"] **Default:** email **Value Constraint:** Supports "email", "sms", "http", "https"
topicUrn	Yes	Unique resource Identification of the topic. **Type:** string **Value Description:** Supports an English character string, such as c51567523b744d098a8a81ede51894ac:gcs-haha.

Relationships Between Elements

Table 2-154 Relationship description

Description	Target
Contained In	**SMN.Topic**

Return Value

Property	Type	Description
topicUrn	string	Unique resource Identification of topic
subscriptionUrn	string	Unique resource Identification of the subscription

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  smns33gi_topicUrn:
    description: Unique resource Identification of the topic
    label: ''
  smns33gi_endpoint:
    description: Access point for receiving messages
    label: ''
node_templates:
  smns33gi:
    type: HuaweiCloud.SMN.Subscription
    properties:
      topicUrn:
        get_input: smns33gi_topicUrn
      endpoint:
        get_input: smns33gi_endpoint
      protocol: email
```

2.2.82 SMN.Topic

Element Description

The **SMN.Topic** element is used to create an SMN topic.

Element Properties

Table 2-155 Property Description

Property	Required	Descripiton
displayName	No	Name of a topic displaying. **Type:** string **Value Description:** The name consists of 192byte or 64 Chinese characters.
name	Yes	The name of topic which you want to create **Type:** string **Value Description:** The value must contain only uppercase and lowercase ASCII letters, digits, underscores (_), and hyphens (-). The value must contain 1 to 256 characters.

Relationships Between Elements

None.

Return Value

Property	Type	Description
topicUrn	string	Unique resource Identification of the topic.
refName	string	Unique resource name of the topic.

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  smnt1k1a:
    type: HuaweiCloud.SMN.Topic
    properties:
      name:
        get_input: smn_name
      displayName:
        get_input: displayName
inputs:
  smn_name:
    description: The name of topic which you want to create
    label: ''
  displayName:
    description: Name of a topic displaying
    label: ''
```

2.2.83 ULB.Healthmonitor

Element Description

The **ULB.HealthMonitor** element is a health check component of a shared load balancer. One pool corresponds to one HealthMonitor, and one HealthMonitor can manage multiple ECSs. You can add or delete the HealthMonitor as required.

Element Properties

Table 2-156 Property Description

Property	Required	Descripiton
monitorPort	No	Health check port **Type:** integer **Value Description:** Supports customization. The value is an integer between 1 and 65535, for example, 8089. If this parameter is left blank, the backend port of the ECS is used by default. **Value Constraint:** Supports 1-65535 **Suggestion:** Set the value based on specifications and requirements.
name	No	Name of a health check job **Type:** string **Value Description:** Supports customization. **Value Constraint:** The value supports a maximum of 64 characters and can only contain digits, letters, underscores (_), and hyphens (-). **Suggestion:** Customize the value.
urlPath	No	URI for health check. This parameter is valid when the type is set to HTTP. You are advised to perform check on the static page. **Type:** string **Value Description:** Supports customization, for example, / or /index.html. **Value Constraint:** The value must contain 1 to 80 characters and must start with a slash (/). It consists of letters, digits, and the following special characters: -/.%?#&_=In addition, it must meet the following requirement: ^/[0-9a-zA-Z-_?/.?#&=]* **Suggestion:** Set the value based on specifications and requirements.

Property	Required	Descripiton
delay	Yes	Interval for health check (unit: s) **Type:** integer **Value Description:** Supports customization. The value is an integer between 0 and 2147483647, for example, 5. **Default:** 5 **Value Constraint:** Supports 0-2147483647 **Suggestion:** Set the value based on specifications and requirements.
httpMeth od	No	HTTP method for health check. This parameter is valid when the type is set to HTTP. **Type:** string **Value Description:** GET|HEAD|POST|PUT|DELETE|TRACE|OPTIONS|CONNECT|PATCH **Value Constraint:** Supports "GET", "HEAD", "POST", "PUT", "DELETE", "TRACE", "OPTIONS", "CONNECT", "PATCH" **Suggestion:** Set the value based on specifications and requirements.
timeout	Yes	Maximum timeout duration for health check (unit: s) **Type:** integer **Value Description:** Supports customization. The value is an integer between 0 and 2147483647, for example, 10. **Default:** 10 **Value Constraint:** Supports 0-2147483647 **Suggestion:** Set the value based on specifications and requirements.
poolId	Yes	ECS group ID **Type:** string **Value Description:** Indicates the ECS group ID. **Suggestion:** Use the get_reference function to automatically generate the value.

Property	Required	Descripiton
maxRetries	Yes	Threshold for determining whether to change the health check status. That is, change the health check status of the backend ECS from success to fail upon certain consecutive failures, and from fail to success upon certain consecutive successes. **Type:** integer **Value Description:** Supports customization. The value is an integer between 1 and 10, for example, 3. **Default:** 3 **Value Constraint:** Supports 1-10 **Suggestion:** Set the value based on specifications and requirements.
expected Code	No	HTTP status code used to determine the health status of a backend ECS. This parameter is valid when the type is set to HTTP. **Type:** string **Value Description:** Supports customization. For example, 200. **Value Constraint:** Supports 1-250 **Suggestion:** Set the value based on specifications and requirements.
type	Yes	Health check protocol **Type:** string **Value Description:** HTTP|TCP|HTTPS|PING|TLS-HELLO **Value Constraint:** Supports"TCP","HTTP","HTTPS","PING","TLS-HELLO" **Suggestion:** Set the value based on specifications and requirements.

Relationships Between Elements

Table 2-157 Relationship description

Description	Target
Contained In	**ULB.Pool**

Return Value

Property	Type	Description
refID	string	ID of a health check instance

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  pool_protocol:
    description: 'ECS group protocol, which must be consistent with the listener protocol'
  pool_listenerId:
    description: Belonged listener ID
  pool_lbAlgorithm:
    description: Allocation policy type
  delay:
    description: Interval for health check (unit: s)
  timeout:
    description: Maximum timeout duration for health check (unit: s)
  max_retries:
    description: Threshold for determining whether to change the health check status. That is, change the
health check status of the backend ECS from success to fail upon certain consecutive failures, and from fail
to success upon certain consecutive successes.
    description: Health check protocol
node_templates:
  pool:
    type: HuaweiCloud.ULB.Pool
    properties:
      protocol:
        get_input: pool_protocol
      listenerId:
        get_input: pool_listenerId
      lbAlgorithm:
        get_input: pool_lbAlgorithm
  health-monitor:
    type: HuaweiCloud.ULB.Healthmonitor
    properties:
      delay:
        get_input: delay
      timeout:
        get_input: timeout
      maxRetries:
        get_input: max_retries
      type:
        get_input: type
      poolId:
        get_reference: pool
    requirements:
    - poolId:
        node: pool
```

2.2.84 ULB.Listener

Element Description

The **ULB.Listener** element indicates the listener under a shared load balancer. One shared load balancer corresponds to multiple listeners. You can add or delete listeners as required.

Element Properties

Table 2-158 Property Description

Property	Required	Descripiton
protocol	Yes	Listening protocol **Type:** string **Value Description:** This value can be TCP or HTTP. **Value Constraint:** Supports"TCP", "HTTP" **Suggestion:** Set the value based on specifications and requirements.
description	No	Description **Type:** string **Value Description:** Supports customization. **Value Constraint:** The value supports a maximum of 255 characters. **Suggestion:** Customize the value.
connectionLimit	No	Maximum number of connections of the listener **Type:** integer **Value Description:** If the number of connections is -1, there is no constraints. **Value Constraint:** Supports [-1, 2147483647] **Suggestion:** Set the value based on specifications and requirements.
loadBalancerId	Yes	ID of the belonged ULB **Type:** string **Value Description:** Indicates the ID generated after a ULB instance is created, for example, 8abbd7a9-c1f8-440d-96ff-376ee7382082. **Value Constraint:** The ID must be the ID of an existing ULB instance. **Suggestion:** You are advised to drag the object to the ULB.LoadBalancer and use the get_reference function to automatically generate the value. Alternatively, query the ULB instance ID on the ULB page and enter it accordingly.
port	Yes	Listening port **Type:** integer **Value Description:** [1, 65535] **Value Constraint:** Supports [1, 65535] **Suggestion:** Set the value based on specifications and requirements.

Property	Required	Descripiton
name	No	Listener name **Type:** string **Value Description:** Supports customization. **Value Constraint:** The value supports a maximum of 64 characters and can only contain digits, letters, underscores (_), and hyphens (-). **Suggestion:** Customize the value.

Relationships Between Elements

Table 2-159 Relationship description

Description	Target
Contained In	**ULB.LoadBalancer**

Return Value

Property	Type	Description
refName	string	Listener instance name
refID	string	Listener instance ID

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  listener_protocol:
    description: Listening protocol
    label: ''
  listener_port:
    description: Listening port
    label: ''
  listener_loadBalancerId:
    description: ID of the belonged ULB
    label: ''
node_templates:
  listener:
    type: HuaweiCloud.ULB.Listener
    properties:
      protocol:
        get_input: listener_protocol
      port:
        get_input: listener_port
      loadBalancerId:
        get_input: listener_loadBalancerId
```

2.2.85 ULB.LoadBalancer

Element Description

The **ULB.LoadBalancer** element can be used to deploy a shared load balancer resource object at the PaaS layer. By creating such an object, you can provide a unified entry address for a group of containerized applications with the same functions, and distribute requests in load balancing mode to backend container applications. Shared load balancers are applicable to web services with high access traffic. They forward the requests based on domain names or URLs, making request routing more flexible. Compared with classic load balancers, shared load balancers provide stronger HTTP and HTTPS forwarding capabilities, and better forwarding performance and stability.

Element Properties

Table 2-160 Property Description

Property	Required	Descripiton
vipAddress	No	IP address of the VPC where the shared load balancer is located **Type:** ip **Value Description:** Indicates the IP address that is not used in the selected subnet. **Value Constraint:** The value must be an IP address.
description	No	Description **Type:** string **Value Description:** Supports customization. **Value Constraint:** The value supports a maximum of 255 characters. **Suggestion:** Customize the value.
publicIpId	No	ID of the elastic IP address that can be bound to the shared load balancer **Type:** string **Value Description:** Indicates the ID of the elastic IP address that can be bound to the VPC. **Suggestion:** Query the binding status and ID of the elastic IP address on the elastic IP address page of the VPC service.

Property	Required	Descripiton
subnetId	Yes	ID of the subnet that allocates VIP addresses to the shared load balancer **Type:** HuaweiCloud.VPC.Subnet.All.Id **Value Description:** Indicates the ID of the subnet of the VPC. **Value Constraint:** You can view the subnet ID in the VPC details page. **Suggestion:** Drag the object to VPC.Subnet and use {get_attribute: [element name, neutron_subnet_id]} to automatically generate the value.
name	No	Name of the shared load balancer **Type:** string **Value Description:** Supports customization. **Value Constraint:** The value supports a maximum of 64 characters and can only contain digits, letters, underscores (_), and hyphens (-). **Suggestion:** Customize the value.

Relationships Between Elements

Table 2-161 Relationship description

Description	Target
Connected	**VPC.Subnet**
Connected	**VPC.EIP**

Return Value

Property	Type	Description
vip_port_id	string	PORT_ID of the VPC where the shared load balancer is located
refName	string	Name of the shared load balancer
refID	string	ID of the shared load balancer
vip_address	string	IP address of the VPC where the shared load balancer is located

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  subnetId:
    description: ID of the subnet that allocates VIP addresses to the shared load balancer (subnet ID rather
than subnet network ID)
node_templates:
  ulb:
    properties:
      description: ulb load balancer
      subnetId:
        get_input: subnetId
    type: HuaweiCloud.ULB.LoadBalancer
```

2.2.86 ULB.Member

Element Description

For ECSs under a shared load balancer, one pool corresponds to multiple ECSs. You can add or delete ECSs as required.

Element Properties

Table 2-162 Property Description

Property	Required	Descripiton
weight	No	Weight of an ECS, which determines the proportion of requests to be forwarded compared with other members in the same ECS group **Type:** integer **Value Description:** Supports customization. The value is an integer between 1 and 256, for example, 3. **Suggestion:** Set the value based on specifications and requirements.
address	No	Private IP address of the backend ECS added to the listener **Type:** ip Array **Value Description:** Indicates the private network IP address generated after an ECS is created, for example, 192.168.0.45. **Value Constraint:** The IP address must be the private network IP address of the existing ECS instance. The ECS and listener must be in the same subnet. Address and serverId have one and only one item can be filled in. **Suggestion:** You are advised to drag the object to the ECS.CloudServer and use {get_attribute: [ECS element, privateIps]} to automatically generate the value. Alternatively, query the private network IP address on the ECS page and enter it accordingly.

Property	Required	Descripiton
poolId	Yes	ID of the ECS group to which the ECS is to be added **Type:** string **Value Description:** Indicates the ID of the ECS group to which the ECS is to be added. **Suggestion:** Use the get_reference function to automatically generate the value.
subnetId	Yes	ID of the subnet where the ECS and listener are located **Type:** HuaweiCloud.VPC.Subnet.All.Id **Value Description:** Indicates the ID of the subnet of the VPC. **Value Constraint:** The subnet ID must be the same as that in the listener. **Suggestion:** Drag the object to the VPC.Subnet object and use {get_attribute: [element name, neutron_subnet_id]} to automatically generate the value. Alternatively, query the subnet ID on the VPC details page.
serverId	No	ID of the backend ECS added to the listener **Type:** string Array **Value Description:** Indicates the ID generated after an ECS is created, for example, b7a65ad3-c031-43cc-93ac-ac6dbdbd2295. **Value Constraint:** The ID must be the ID of the existing ECS instance. The ECS and listener must be in the same subnet. Address and serverId have one and only one item can be filled in. **Suggestion:** You are advised to drag the object to the ECS.CloudServer and use {get_attribute: [ECS element, refID]} to automatically generate the value. Alternatively, query the ID on the ECS page and enter it accordingly.
port	Yes	Backend port of the ECS **Type:** integer **Value Description:** Supports customization. The value is an integer between 1 and 65535, for example, 8089. **Suggestion:** Set the value based on specifications and requirements.

Relationships Between Elements

Table 2-163 Relationship description

Description	Target
Connected	**VPC.Subnet**
Connected	**ECS.CloudServer**
Contained In	**ULB.Pool**

Return Value

Property	Type	Description
refID	string	Backend ECS instance ID
poolId	string	ID of the ECS group to which the backend ECS belongs

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  pool_protocol:
    description: 'ECS group protocol, which must be consistent with the listener protocol'
  pool_listenerId:
    description: Belonged listener ID
  pool_lbAlgorithm:
    description: Allocation policy type
  delay:
    description: Interval for health check (unit: s)
  timeout:
    description: Maximum timeout duration for health check (unit: s)
  max_retries:
    description: Threshold for determining whether to change the health check status. That is, change the
health check status of the backend ECS from success to fail upon certain consecutive failures, and from fail
to success upon certain consecutive successes.
    description: Health check protocol
  subnetId:
    description: "ID of the subnet to which the ECS and listener belong (subnet ID rather than subnet
network ID"
  address:
    description: Private IP address of the backend ECS added to the listener
  port:
    description: Backend port of the ECS
node_templates:
  pool:
    type: HuaweiCloud.ULB.Pool
    properties:
      protocol:
        get_input: pool_protocol
      listenerId:
        get_input: pool_listenerId
      lbAlgorithm:
```

```
      get_input: pool_lbAlgorithm
  health-monitor:
    type: HuaweiCloud.ULB.Healthmonitor
    properties:
      delay:
        get_input: delay
      timeout:
        get_input: timeout
      maxRetries:
        get_input: max_retries
      type:
        get_input: type
      poolId:
        get_reference: pool
    requirements:
      - poolId:
          node: pool
  member:
    type: HuaweiCloud.ULB.Member
    properties:
      subnetId:
        get_input: subnetId
      address:
        - get_input: address
      port:
        get_input: port
      poolId:
        get_reference: pool
    requirements:
      - poolId:
          node: pool
```

2.2.87 ULB.Pool

Element Description

For ECS groups under a shared load balancer, one listener corresponds to multiple ECS groups. You can add or delete ECS groups as required. An ECS group consists of multiple ECSs.

Element Properties

Table 2-164 Property Description

Property	Required	Descripiton
sessionPersistence	No	Session persistence setting **Type: ULB.StickySession** **Value Description:** If this option is selected, the session persistence function is enabled by default. **Default:** {u'type': u'SOURCE_IP'} **Suggestion:** Set the value based on specifications and requirements.

Property	Required	Descripiton
protocol	Yes	ECS group protocol **Type:** string **Value Description:** Supports HTTP and TCP. **Value Constraint:** The value can be HTTP or TCP. The value must be consistent with the listener protocol. **Suggestion:** Set the value based on specifications and requirements.
name	No	ECS group name **Type:** string **Value Description:** Supports customization. **Value Constraint:** The value supports a maximum of 64 characters and can only contain digits, letters, underscores (_), and hyphens (-). **Suggestion:** Customize the value.
lbAlgorithm	Yes	Allocation policy type **Type:** string **Value Description:** ROUND_ROBIN: indicates the weighted round robin algorithm. LEAST_CONNECTIONS: indicates the weighted least connection. SOURCE_IP: indicates the source IP algorithm. **Default:** ROUND_ROBIN **Value Constraint:** Supports "ROUND_ROBIN","LEAST_CONNECTIONS","SOURCE_IP" **Suggestion:** Set the value based on specifications and requirements.
listenerId	Yes	ID of the belonged listener **Type:** string **Value Description:** Indicates the ID generated after a ULB instance is created, for example, 8abbd7a9-c1f8-440d-96ff-376ee7382082. **Value Constraint:** The ID must be the listener ID of an existing ULB instance. **Suggestion:** You are advised to drag the object to the ULB.Listener and use the get_reference function to automatically generate the value. Alternatively, query the ULB listener ID on the ULB page and enter it accordingly.

Relationships Between Elements

Table 2-165 Relationship description

Description	Target
Contained In	**ULB.Listener**

Return Value

Property	Type	Description
refID	string	ECS group instance ID

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  pool_protocol:
    description: ECS group protocol, which must be consistent with the listener protocol
  pool_listenerId:
    description: Belonged listener ID
  pool_lbAlgorithm:
    description: Allocation policy type
node_templates:
  pool:
    type: HuaweiCloud.ULB.Pool
    properties:
      protocol:
        get_input: pool_protocol
      listenerId:
        get_input: pool_listenerId
      lbAlgorithm:
        get_input: pool_lbAlgorithm
```

2.2.88 VPCEndpoint.Endpoint

Element Description

The **VPCEndpoint.Endpoint** element is used to create a VPC endpoint. VPC endpoints are channels for connecting VPCs to VPC endpoint services. You can create an application in your VPC and configure it as an endpoint service. An endpoint can be created in another VPC in the same region and then used as a channel to access the endpoint service.

Element Properties

Table 2-166 Property Description

Property	Required	Descripiton
subnetId	Yes	**Type:** string
vpcId	Yes	**Type:** HuaweiCloud.VPC.VPC.Id
endpointServiceId	Yes	**Type:** string
enableDns	No	**Type:** boolean **Default:** True

Relationships Between Elements

Table 2-167 Relationship description

Description	Target
Contained In	**VPCEndpoint.EndpointService**

Return Value

Property	Type	Description
subnetId	string	
vpcId	string	Value of the VPCendpoint's VPC ID
endpointServiceId	string	

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  my-endpoint:
    type: HuaweiCloud.VPCEndpoint.Endpoint
    properties:
      subnetId:
        get_input: my-subnet
      vpcId:
        get_input: my-vpc
      endpointServiceId:
        get_input: my-endpointserviceid
inputs:
  my-subnet:
```

```
      description: ID of the created network
  my-vpc:
    description: ID of the VPC
  my-endpointserviceid:
    description: ID of the VPC endpoint service
```

2.2.89 VPCEndpoint.EndpointService

Element Description

The **VPCEndpoint.EndpointService** element is used to create a VPC endpoint service. VPC endpoint services are cloud services or users' private services configured in VPCEP.

Element Properties

Table 2-168 Property Description

Property	Required	Descripiton
serviceType	No	**Type:** string
vpcId	No	**Type:** HuaweiCloud.VPC.VPC.Id
portId	No	**Type:** string
dnsNames	No	**Type:** string Array
approvalEnabled	No	**Type:** boolean
serverType	Yes	**Type:** string
ports	Yes	**Type: VPCEndpoint.Ports** Array

Relationships Between Elements

Table 2-169 Relationship description

Description	Target
Contained In	**VPC.VPC**

Return Value

Property	Type	Description
serverType	string	Type of the VPCendpoint's server

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  my-vpc:
    description: ID of the VPC to which the backend resources of the VPC endpoint service belongs
  my-endpointservice_serverType:
    description: endpoint service type
  my-endpointservice_portId:
    description: ID of the backend resources of the VPC endpoint service
node_templates:
  my-endpointservice:
    type: HuaweiCloud.VPCEndpoint.EndpointService
    properties:
      vpcId:
        get_input: my-vpc
      ports:
        - clientPort: 8080
          serverPort: 80
          protocol: TCP
      serverType:
        get_input: my-endpointservice_serverType
      portId:
        get_input: my-endpointservice_portId
```

2.2.90 VPC.EIP

Element Description

VPC.EIP is used to create a public elastic IP address. A public elastic IP address is a static IP address. You can bind or unbind an elastic IP address to an Elastic Cloud Server (ECS) in a subnet. An ECS in a Virtual Private Cloud (VPC) can access the Internet through a fixed public IP address.

Element Properties

Table 2-170 Property description

Property	Mandatory	Description
publicIP	Yes	**Type**: **VPC.PublicIP** **Default value**: {u 'type': u '5_sbgp'}
bandwidth	Yes	**Type**: **VPC.BandWidth** **Default value**: {u'shareType': u'PER'}

Relationships Between Elements

Table 2-171 Relationship description

Description	Target
Depends On	**VPC.VIP**
Depends On	**CCE.NodePool**
Depends On	**ECS.CloudServer**

Return Value

Property	Type	Description
refIP	string	Elastic IP address.
floatingIp Id	string	ID of the elastic IP address.
refID	string	ID of the elastic IP address.
refName	string	Name of the elastic IP address.

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  publicip-type:
    default: 5_bgp
    description: Public IP type.
  size:
    default: 1
    description: bandwidth
node_templates:
  eip:
    properties:
      bandwidth:
        name: test-eip
        shareType: PER
        size:
          get_input: size
      publicIP:
        type:
          get_input: publicip-type
    type: HuaweiCloud.VPC.EIP
```

2.2.91 VPC.FirewallGroup

Element Description

A firewall group (a logical group) is an access control policy system for one or more subnets. Based on the ingress and egress rules of associated subnets, firewalls determine whether data packets can be received by or sent into associated subnets.

Element Properties

Table 2-172 Property Description

Property	Required	Descripiton
description	No	ACL group description **Type:** string **Value Description:** Supports customization. **Value Constraint:** The value supports a maximum of 255 characters.
egressFirewallPolicyId	No	ACL policy in the outbound direction **Type:** string **Value Description:** You are advised to use the get_input function to obtain the value, or connect to the FirewallPolicy object and use the get_reference function to obtain the value from the VPC.FirewallPolicy object.
adminStateUp	No	Whether the ACL rule is controlled by administrators **Type:** boolean **Value Description:** Supports customization.
subnetId	No	Information about the NIC to which the network ACL group-bound port ID list belongs **Type:** HuaweiCloud.VPC.Subnet.All.Id Array **Value Description:** Get the Subnet ID Via VPC service or automatically generate it by connecting to VPC.Subnet **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** 1. Set to get_input mode, then select through the AOS console. 2. Get the ID of the newly created subnet by connecting to the VPC.Subnet object.

Property	Required	Descripiton
ingressFir ewallPolic yId	No	ACL policy in the inbound direction **Type:** string **Value Description:** You are advised to use the get_input function to obtain the value, or connect to the FirewallPolicy object and use the get_reference function to obtain the value from the VPC.FirewallPolicy object.
name	No	ACL group name **Type:** string **Value Description:** Supports customization. **Value Constraint:** The value supports a maximum of 255 characters.

Relationships Between Elements

Table 2-173 Relationship description

Description	Target
Connected	**VPC.Subnet**
Connected	**VPC.FirewallPolicy.Egress**
Connected	**VPC.FirewallPolicy.Ingress**

Return Value

Property	Type	Description
refName	string	ACL group name
refID	string	ACL group ID

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  vpcfg273:
    type: HuaweiCloud.VPC.FirewallGroup
    properties:
      subnetId:
        - get_input: subnet_name
```

```
          egressFirewallPolicyId:
            get_reference: vpcfp2gy
          ingressFirewallPolicyId:
            get_reference: vpcfp3np
          requirements:
          - egressFirewallPolicyId:
              node: vpcfp2gy
          - ingressFirewallPolicyId:
              node: vpcfp3np
      vpcfp2gy:
        type: HuaweiCloud.VPC.FirewallPolicy.Egress
        properties:
          firewallRulesIds:
          - get_reference: vpcfr3uk
          requirements:
          - firewallRulesIds:
              node: vpcfr3uk
      vpcfp3np:
        type: HuaweiCloud.VPC.FirewallPolicy.Ingress
        properties:
          firewallRulesIds:
          - get_reference: vpcfr3uk
          requirements:
          - firewallRulesIds:
              node: vpcfr3uk
      vpcfr3uk:
        type: HuaweiCloud.VPC.FirewallRule
        properties: {}
inputs:
  subnet_name:
    description: ID of the VPC to which the subnet belongs
    label: ''
outputs:
  firegroupId:
    value:
      get_attribute: [vpcfg273, refID]
```

2.2.92 VPC.FirewallPolicy.Egress

Element Description

ACL policies in the outbound direction belong to ACL group members. One policy can contain multiple ACL rules.

Element Properties

Table 2-174 Property Description

Property	Required	Descripiton
firewallRulesIds	No	ACL rule ID referenced by the policy **Type:** string Array **Value Description:** You are advised to use the get_input function to obtain the value, or connect to the FirewallPolicy object and use the get_reference function to obtain the value from the VPC.FirewallRule object.

Property	Required	Descripiton
audited	No	Audit flag **Type:** boolean **Value Description:** True or false.
name	No	ACL policy name **Type:** string **Value Description:** Supports customization. **Value Constraint:** The value supports a maximum of 255 characters.
description	No	ACL policy description **Type:** string **Value Description:** Supports customization. **Value Constraint:** The value supports a maximum of 255 characters.

Relationships Between Elements

Table 2-175 Relationship description

Description	Target
Connected	**VPC.FirewallRule**

Return Value

Property	Type	Description
refName	string	ACL policy name
refID	string	ACL policy ID

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  vpcfg273:
    type: HuaweiCloud.VPC.FirewallGroup
    properties:
      subnetId:
        - get_input: subnet_name
      egressFirewallPolicyId:
        get_reference: vpcfp2gy
      ingressFirewallPolicyId:
        get_reference: vpcfp3np
```

```
      requirements:
        - egressFirewallPolicyId:
            node: vpcfp2gy
        - ingressFirewallPolicyId:
            node: vpcfp3np
  vpcfp2gy:
    type: HuaweiCloud.VPC.FirewallPolicy.Egress
    properties:
      firewallRulesIds:
        - get_reference: vpcfr3uk
      requirements:
        - firewallRulesIds:
            node: vpcfr3uk
  vpcfp3np:
    type: HuaweiCloud.VPC.FirewallPolicy.Ingress
    properties:
      firewallRulesIds:
        - get_reference: vpcfr3uk
      requirements:
        - firewallRulesIds:
            node: vpcfr3uk
  vpcfr3uk:
    type: HuaweiCloud.VPC.FirewallRule
    properties: {}
inputs:
  subnet_name:
    description: ID of the VPC to which the subnet belongs
    label: ''
outputs:
  firegroupId:
    value:
      get_attribute: [vpcfg273, refID]
```

2.2.93 VPC.FirewallPolicy.Ingress

Element Description

ACL policies in the inbound direction belong to ACL group members. One policy can contain multiple ACL rules.

Element Properties

Table 2-176 Property Description

Property	Required	Descripiton
firewallRulesIds	No	ACL rule ID referenced by the policy **Type:** string Array **Value Description:** You are advised to use the get_input function to obtain the value, or connect to the FirewallPolicy object and use the get_reference function to obtain the value from the VPC.FirewallRule object.
audited	No	Audit flag **Type:** boolean **Value Description:** True or false

Property	Required	Descripiton
name	No	ACL policy name **Type:** string **Value Description:** Supports customization. **Value Constraint:** The value supports a maximum of 255 characters.
descriptio n	No	ACL policy description **Type:** string **Value Description:** Supports customization. **Value Constraint:** The value supports a maximum of 255 characters.

Relationships Between Elements

Table 2-177 Relationship description

Description	Target
Connecte d	**VPC.FirewallRule**

Return Value

Property	Type	Description
refID	string	ACL policy ID
refName	string	ACL policy name

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  vpcfg273:
    type: HuaweiCloud.VPC.FirewallGroup
    properties:
      subnetId:
        - get_input: subnet_name
      egressFirewallPolicyId:
        get_reference: vpcfp2gy
      ingressFirewallPolicyId:
        get_reference: vpcfp3np
    requirements:
      - egressFirewallPolicyId:
          node: vpcfp2gy
      - ingressFirewallPolicyId:
          node: vpcfp3np
```

```
vpcfp2gy:
  type: HuaweiCloud.VPC.FirewallPolicy.Egress
  properties:
    firewallRulesIds:
      - get_reference: vpcfr3uk
    requirements:
      - firewallRulesIds:
          node: vpcfr3uk
vpcfp3np:
  type: HuaweiCloud.VPC.FirewallPolicy.Ingress
  properties:
    firewallRulesIds:
      - get_reference: vpcfr3uk
    requirements:
      - firewallRulesIds:
          node: vpcfr3uk
vpcfr3uk:
  type: HuaweiCloud.VPC.FirewallRule
  properties: {}
inputs:
  subnet_name:
    description: ID of the VPC to which the subnet belongs
    label: ''
outputs:
  firegroupId:
    value:
      get_attribute: [vpcfg273, refID]
```

2.2.94 VPC.FirewallRule

Element Description

The **VPC.FirewallRule** element can be used to create ACL rules for subnet access control.

Element Properties

Table 2-178 Property Description

Property	Required	Descripiton
enable	No	Whether to enable the ACL rule **Type:** boolean **Value Description:** Supports true and false. **Default:** True **Suggestion:** Set the value based on specifications and requirements.
protocol	No	Rule protocol **Type:** string **Value Description:** Supports TCP, UDP, and ICMP. If this parameter is not specified, any protocol can be used. **Suggestion:** Set the value based on specifications and requirements.
description	No	ACL rule description **Type:** string

Property	Required	Descripiton
sourceIpAddr	No	Source IP address or network segment **Type:** string **Value Description:** Needs to be configured based on requirements. For example, 198.168.0.0/16. **Suggestion:** Set the value based on specifications and requirements.
destIpAddr	No	Destination IP address or network segment **Type:** string **Value Description:** Needs to be configured based on requirements. For example, 198.168.0.0/16. **Suggestion:** Set the value based on specifications and requirements.
ipVersion	No	IP protocol version **Type:** integer **Value Description:** Supports 4. **Default:** 4 **Suggestion:** You are advised to leave this parameter blank or set it to 4.
sourcePort	No	Source port number or range **Type:** string **Value Description:** Supports an integer between 1 and 65535 or a port number range, for example, 20:22. **Value Constraint:** The value must be an integer between 1 and 65535 or a port number range, for example, 20:22. **Suggestion:** Set the value based on specifications and requirements.
action	No	Action to be performed on the traffic matching the ACL rule **Type:** string **Value Description:** Supports ALLOW, DENY, and REJECT. **Default:** DENY **Suggestion:** Set the value based on specifications and requirements.

Property	Required	Descripiton
destPort	No	Destination port number or range **Type:** string **Value Description:** Supports an integer between 1 and 65535 or a port number range, for example, 20:22. **Value Constraint:** The value must be an integer between 1 and 65535 or a port number range, for example, 20:22. **Suggestion:** Set the value based on specifications and requirements.
name	No	ACL rule name **Type:** string **Value Description:** Supports customization. **Suggestion:** Customize the value.

Relationships Between Elements

None.

Return Value

Property	Type	Description
refID	string	ACL rule ID

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  name:
    default: my-firewall-rule
  protocol:
    default: TCP
  src-port:
    default: 80
  dest-port:
    default: 80
  src-ip:
    type: string
  dest-ip:
    type: string
  action:
    default: ALLOW
node_templates:
  my-rule:
    type: HuaweiCloud.VPC.FirewallRule
    properties:
      name: {get_input: name}
      protocol: {get_input: protocol}
      sourcePort: {get_input: src-port}
      destPort: {get_input: dest-port}
      ipVersion: 4
```

```
sourceIpAddr: {get_input: src-ip}
destIpAddr: {get_input: dest-ip}
action: {get_input: action}
enable: true
```

2.2.95 VPC.SecurityGroup

Element Description

A security group (a logical group) is a collection of access control policies for ECSs that have the same security protection requirements and are mutually trusted in a VPC.

Element Properties

Table 2-179 Property Description

Property	Required	Descripiton
name	No	Name of the SecurityGroup **Type:** string **Value Description:** Supports customization, for example, my-securitygroup. **Value Constraint:** The value must contain 1 to 64 characters and meet the following requirement: ^[-_a-zA-Z0-9\.]*$ **Suggestion:** Customize the value.

Relationships Between Elements

Table 2-180 Relationship description

Description	Target
Contained In	**VPC.VPC**

Return Value

Property	Type	Description
refID	string	Security group instance ID
refName	string	Security group instance name

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  sg-name:
    default: my-security-group
node_templates:
  my-sg:
    type: HuaweiCloud.VPC.SecurityGroup
    properties:
      name:
        get_input: sg-name
outputs:
  sg-id:
    value:
      get_attribute: [my-sg, refID]
```

2.2.96 VPC.SecurityGroupRule

Element Description

A security group rule is an access policy added for an ECS to implement access control.

Element Properties

Table 2-181 Property Description

Property	Required	Descripiton
direction	Yes	Ingress or egress control direction (that is, ingress or egress) **Type:** string **Value Description:** Supports egress or ingress. **Default:** ingress
protocol	No	Protocol type (TCP or UDP) **Type:** string **Value Description:** Supports ICMP, TCP, and UDP. When this property is left blank, all protocols are supported.
remoteSecurityGroupId	No	Peer security group ID **Type:** HuaweiCloud.VPC.SecurityGroup.Id **Value Description:** Get the security group ID to the VPC service or automatically generate it through VPC.SecurityGroup **Value Constraint:** The value conflicts with remoteIpPrefix. **Suggestion:** It is recommended to obtain SecurityGroup object IDS by Get_input function input or by get_reference method

Property	Required	Descripiton
ethertype	No	Protocol type of the IP address **Type:** string **Value Description:** Supports IPv4. **Default:** IPv4
securityGroupId	Yes	ID of the security group **Type:** HuaweiCloud.VPC.SecurityGroup.Id **Value Description:** Obtains the security group ID from the VPC service or connects to the VPC.SecurityGroup to automatically generate the security group ID. **Value Constraint:** The value must meet the UUID generation rule and be the ID of an existing security group of the tenant. **Suggestion:** You are advised to use the get_input function to obtain the value, or connect the SecurityGroup object and use the get_reference function to automatically generate the value.
remoteIp Prefix	No	Remote IP address **Type:** string **Value Description:** Indicates the address of the terminal that accesses the VM when the direction is egress, or indicates the address of the to-be-accessed VM when the direction is ingress. **Value Constraint:** The value can be in the CIDR format or an IP address.The value conflicts with remoteSecurityGroup.
maxPort	No	Destination port number **Type:** integer **Value Description:** Supports customization. The value ranges from 1 to 65535. **Suggestion:** If the protocol is not ICMP, the value cannot be smaller than the value of minPort. When minPort and maxPort are left blank, all port numbers are supported.If the protocol field is ICMP, set the value range by referring to **https://support.huaweicloud.com/eu/api-vpc/vpc_api_0009.html**.

Property	Required	Descripiton
minPort	No	Start port number **Type:** integer **Value Description:** Supports customization. The value ranges from 1 to 65535. **Suggestion:** The value cannot be greater than the value of maxPort. When minPort and maxPort are left blank, all port numbers are supported. If the protocol field is ICMP, set the value range by referring to **https://support.huaweicloud.com/eu/api-vpc/vpc_api_0009.html**.

Table 2-182 Relationship description

Description	Target
Contained In	**VPC.SecurityGroup**

Return Value

Property	Type	Description
refName	string	Security group rule name
refID	string	Security group rule ID

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  sg-id:
    type: HuaweiCloud.VPC.SecurityGroup.Id
  direction:
    default: ingress
    type: string
  ethertype:
    default: IPv4
    type: string
  protocol:
    default: TCP
    type: string
  minPort:
    default: 80
    type: integer
  maxPort:
    default: 80
    type: integer
  remoteSecurityGroup:
    type: HuaweiCloud.VPC.SecurityGroup.Id
node_templates:
```

```
my-rule:
  type: HuaweiCloud.VPC.SecurityGroupRule
  properties:
    securityGroupId: {get_input: sg-id}
    direction: {get_input: direction}
    ethertype: {get_input: ethertype}
    protocol: {get_input: protocol}
    minPort: {get_input: minPort}
    maxPort: {get_input: maxPort}
    remoteSecurityGroup: {get_input: remoteSecurityGroup}
outputs:
  rule-id:
    value:
      get_attribute: [my-rule, refID]
```

2.2.97 VPC.Subnet

Element Description

The **VPC.Subnet** element is used to create a subnet on a Huawei VPC.

Element Properties

Table 2-183 Property Description

Property	Required	Descripiton
dnsList	No	IP address set of the DNS server on the subnet. Use this field if you want to use more than two DNS servers. **Type:** ip Array **Value Description:** Must be an IP address array, for example, ["8.8.8.8", "4.4.4.4", "6.6.6.6"]. **Value Constraint:** The value must be an IP address array and contain the values of primaryDns and secondaryDns. **Suggestion:** If a DNS server is needed in a subnet, one of the primaryDns and dnsLists must be filled in; if primaryDns, secondaryDns and dnsLists are not filled in, the created subnet will not have a DNS server.

Property	Required	Descripiton
vpcId	Yes	ID of the VPC to which the subnet belongs **Type:** HuaweiCloud.VPC.VPC.Id **Value Description:** Supports the use of an existing or new VPC ID. To use a new VPC ID, you need to define the VPC object in the template and establish the dependency relationship. You are advised to drag the object to the VPC to automatically establish the dependency relationship. **Value Constraint:** The value must be in the CIDR format, for example, 192.168.0.0/16. **Suggestion:** 1. You are advised to use the get_input function to assign values so that you can select an existing VPC when creating a stack. 2. To obtain the VPC information about this template, you are advised to use the get_reference function. Such information is automatically generated when you use the designer to establish the relationship between the VPC and subnet. 3. You can obtain the created VPC ID on the VPC page (https://console.huaweicloud.com/vpc?&locale=en-us).
name	Yes	Subnet name **Type:** string **Value Description:** Supports customization, for example, musubnet. **Default:** '' **Value Constraint:** The value contains 1 to 64 characters. This value is unique in a VPC. Only letters, digits, underscores (_), and hyphens (-) are allowed. **Suggestion:** Customize the value. If this parameter is left blank, the system automatically assigns a name.
secondary Dns	No	IP address 2 of the DNS server on the subnet **Type:** ip **Value Description:** Must be in the IP address format, for example, 4.4.4.4. **Value Constraint:** The value must be an IP address.

Property	Required	Descripiton
gateway	Yes	Subnet gateway **Type:** ip **Value Description:** Indicates the gateway address within the subnet CIDR address range. **Default:** 192.168.1.1 **Value Constraint:** The value must be an IP address and comply with the gateway IP address rule, for example, 192.168.1.1. **Suggestion:** Customize the value based on the IP address range as required.
availabilit yZone	No	AZ to which the subnet belongs **Type:** HuaweiCloud.ECS.AvailabilityZone.Name **Value Description:** Indicates the AZ where the to-be-created ECS is located. The name of the AZ needs to be specified, for example, cn-north-1a. See Regions and Endpoints at https://developer-intl.huaweicloud.com/en-us/endpoint. **Value Constraint:** The value varies depending on the belonged region. For details, visit https://developer-intl.huaweicloud.com/en-us/endpoint. For the North China region, the value can be cn-north-1a or cn-north-1b. **Suggestion:** You are advised to use the get_input function to assign values so that you can select a value from the list when creating a stack.
primaryD ns	No	IP address 1 of the DNS server on the subnet **Type:** ip **Value Description:** Must be in the IP address format, for example, 8.8.8.8. **Value Constraint:** The value must be an IP address. **Suggestion:** If a DNS server is needed in a subnet, one of the primaryDns and dnsLists must be filled in; if primaryDns, secondaryDns and dnsLists are not filled in, the created subnet will not have a DNS server.

Property	Required	Descripiton
dhcpEnab le	Yes	Whether to enable DHCP for the VPC subnet **Type:** boolean **Value Description:** true: Enables the DHCP function. After an ECS using the VPC starts, the ECS automatically obtains an IP address using the DHCP protocol. false: Disables the DHCP function. After an ECS using this VPC starts, the ECS cannot automatically obtain an IP address. You must manually assign an IP address to the ECS. **Default:** True **Value Constraint:** The value is true or false. **Suggestion:** Set the value based on requirements. You are advised to enable the function.
cidr	Yes	Range of available addresses in a subnet **Type:** string **Value Description:** Range: 10.0.0.0/8-10.255.255.0/24, 172.16.0.0/12-172.31.255.0/24, or 192.168.0.0/16-192.168.255.0/24. **Default:** 192.168.1.0/24 **Value Constraint:** The value must be in the CIDR format, for example, 192.168.0.0/16. The value must be within the VPC CIDR block. **Suggestion:** Customize the value based on the IP address range as required.

Relationships Between Elements

Table 2-184 Relationship description

Description	Target
Contained In	**VPC.VPC**

Return Value

Property	Type	Description
neutron_n etwork_id	string	OpenStack network ID
vpcId	string	ID of the VPC to which the subnet belongs

Property	Type	Description
neutron_subnet_id	string	OpenStack subnet ID
refName	string	Subnet name
refID	string	Subnet ID

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
 vpc-name:
   default: vpc
   type: string
 vpc-cidr:
   default: 192.168.0.0/16
   type: string
 subnet-name:
   type: string
   default: subnet
 subnet-cidr:
   default: 192.168.0.0/24
   type: string
 subnet-gateway:
   type: ip
   default: 192.168.0.1
 dhcenable:
   type: boolean
   default: true
 availabilityZone:
   description: Name of az
   label: ''
node_templates:
 my-vpc:
   type: HuaweiCloud.VPC.VPC
   properties:
    name:
      get_input: vpc-name
    cidr:
      get_input: vpc-cidr
 my-subnet:
   type: HuaweiCloud.VPC.Subnet
   properties:
    name:
      get_input: subnet-name
    cidr:
      get_input: subnet-cidr
    gateway:
      get_input: subnet-gateway
    dhcpEnable:
      get_input: dhcenable
    dnsList: [114.114.114.115,114.114.114.114]
    vpcId:
      get_attribute: [my-vpc,refID]
    availabilityZone:
      get_input: availabilityZone
   requirements:
   - vpcId:
      node: my-vpc
      relationship: HuaweiCloud.Relationships.ContainedIn
```

2.2.98 VPC.VIP

Element Description

The **VPC.VIP** element is used to create a virtual IP address, that is, an IP address which has not been allocated to an ECS NIC. The ECS can be accessed through this virtual IP address.

Element Properties

Table 2-185 Property Description

Property	Required	Descripiton
subnetId	Yes	Subnet ID to which the floating IP belongs **Type:** HuaweiCloud.VPC.Subnet.All.Id **Value Description:** Set this property to the ID of an existing subnet in the VPC to which the cloud host belongs. Get the Subnet ID Via VPC service or automatically generate it by connecting to VPC.Subnet **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters.
ipAddress	No	The specified floating IP, note that it belongs to the subnet segment.Available and unassigned IP addresses in the subnet segment. If this property is not specified, the system automatically assigns an IP address. Available and unassigned IP addresses in the subnet segment. If this property is not specified, the system automatically assigns an IP address. **Type:** ip **Value Description:** None **Value Constraint:** The value must be an IP address array

Relationships Between Elements

Table 2-186 Relationship description

Description	Target
Connected	**VPC.Subnet**

Return Value

Property	Type	Description
refIP	string	virtual IP
refID	string	ID of virtual IP

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
node_templates:
  vpcvip:
    type: HuaweiCloud.VPC.VIP
    properties:
      subnetId:
        get_input: vpcvip_subnetId
inputs:
  vpcvip_subnetId:
    description: Subnet ID to which the floating IP belongs
```

2.2.99 VPC.VPC

Element Description

VPC.VPC is used to create a VPC network for Huawei public cloud products.

Element Properties

Table 2-187 Property Description

Property	Required	Descripiton
cidr	Yes	Range of available subnets in the VPC **Type:** string **Value Description:** Range: 10.0.0.0/8-10.255.255.0/24, 172.16.0.0/12-172.31.255.0/24, or 192.168.0.0/16-192.168.255.0/24. **Default:** 192.168.0.0/16 **Value Constraint:** The value must be in the CIDR format, for example, 192.168.0.0/16. **Suggestion:** Customize the value based on the IP address range as required.

Property	Required	Descripiton
name	Yes	VPC name **Type:** string **Value Description:** Supports customization, for example, myvpc. **Default:** '' **Value Constraint:** The value is a string of no more than 64 characters. Only letters, digits, underscores (_), hyphens (-), and periods (.) are allowed. When you specify a VPC name, ensure that it is unique within the account. **Suggestion:** Customize the value. If this parameter is left blank, the system automatically assigns a name.

Relationships Between Elements

None.

Return Value

Property	Type	Description
refID	string	VPC ID
refName	string	VPC name

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
inputs:
  vpc-name:
    default: vpc
    type: string
  vpc-cidr:
    default: 192.168.0.0/16
    type: string
node_templates:
  my-vpc:
    type: HuaweiCloud.VPC.VPC
    properties:
      name:
        get_input: vpc-name
      cidr:
        get_input: vpc-cidr
```

2.2.100 VSS.WebScan

Element Description

VSS provides one-stop security detection services, including website vulnerability scanning, OS vulnerability scanning, asset compliance check, configuration

baseline scanning, and weak password scanning, meeting standards compliance requirements.

Element Properties

Table 2-188 Property Description

Property	Required	Descripiton
resources	Yes	A list of resources to create. Currently, the length of list should not be larger than 1. **Type: VSS.Resource** Array

Relationships Between Elements

None.

Return Value

None.

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
description: Vulnerability Scan Service
inputs:
  domain-num:
    type: integer
node_templates:
  webscan-app:
    type: HuaweiCloud.VSS.WebScan
    properties:
      resources:

        -
          cloudServiceType: hws.service.type.webscan
          resourceType: hws.resource.type.webscan
          resourceSpecCode: webscan.professional
          resourceSize:
            get_input: domain-num
outputs:
  waf-deployment:
    description: The container app name in cce
    value: { get_attribute: [ webscan-app, Deployment, name ] }
```

2.2.101 WAF.service

Element Description

WAF examines and protects website service traffic from multiple dimensions. Together with deep learning, WAF intelligently identifies malicious requests and prevents unknown threats. It also avoids common attacks such as SQL injection and cross-site scripting so that these attacks will not affect availability or security, or consume too much resources, reducing the risk of data tampering and theft.

Element Properties

Table 2-189 Property Description

Property	Required	Descripiton
wafBand widthPac kage	No	Bandwidth external package of WAF service. **Type: WAF.Bandwidth** **Default:** {u'resourceType': u'hws.resource.type.waf.bandwidth', u'resourceSize': 0}
versionTy pe	Yes	The version of WAF service. **Type:** string **Value Description:** WAF service offers 5 versions, including "devcloud","basic","professional","enterprise" and "ultimate". **Default:** professional **Value Constraint:** The value can only be "devcloud", "basic", "professional", "enterprise", "ultimate"
wafServic ePackage	Yes	Fundamental package of WAF service. **Type: WAF.Service** **Default:** {u'resourceType': u'hws.resource.type.waf'}
wafDoma inPackage	No	Domain external package of WAF service. **Type: WAF.Domain** **Default:** {u'resourceType': u'hws.resource.type.waf.domain', u'resourceSize': 0}

Relationships Between Elements

None.

Return Value

Property	Type	Description
refID	string	WAF service ID

Blueprint Example

```
tosca_definitions_version: huaweicloud_tosca_version_1_0
description: Web Application Firewall
inputs:
  version:
    description: The version of WAF service
    constraints:
      valid_values: ["devcloud", "basic", "professional", "enterprise", "ultimate"]
  domain-pack-num:
    type: integer
```

```
        description: The number of the domain external packages
      bandwidth-pack-num:
        type: integer
        description: The number of the bandwidth external packages
node_templates:
  waf-app:
    type: HuaweiCloud.WAF.service
    properties:
      wafServicePackage:
        cloudServiceType: hws.service.type.waf
        resourceType: hws.resource.type.waf
        resourceSpecCode: waf
        isMainResource: 1
      wafDomainPackage:
        cloudServiceType: hws.service.type.waf
        resourceType: hws.resource.type.waf.domain
        resourceSpecCode: waf.expack.domain
        resourceSize:
          get_input: domain-pack-num
        isMainResource: 0
      wafBandwidthPackage:
        cloudServiceType: hws.service.type.waf
        resourceType: hws.resource.type.waf.bandwidth
        resourceSpecCode: waf.expack.bandwidth
        resourceSize:
          get_input: bandwidth-pack-num
        isMainResource: 0
      versionType:
        get_input: version
outputs:
  waf-deployment:
    description: The container app name in cce
    value: { get_attribute: [ waf-app, Deployment, name ] }
```

2.3 Data Structure

2.3.1 AOS.BatchItem

Property Description

Table 2-190 Property description

Property	Mandatory	Type	Description
values	No	dict	Variable defined in the batch template. Ensure that each key in the internal structure complies with the following requirement: "^[a-zA-Z_][a-zA-Z0-9_]*$".
properties	Yes	string	Attribute template of the Batch element. The template format is jinja. Based on the basic template, you can reconstruct a template to the YAML format (character strings) and define variables as required (that is, using the {{}} format). The built-in variables include {{item}}, {{limit}}, and {{offset}}.

Property	Mandatory	Type	Description
element	Yes	string	Basic object of the Batch element **Value Constraint:** The value must be true and complete and match the item relationship.

2.3.2 APIG.BackendApi

Property Description

Table 2-191 Property description

Property	Required	Type	Description
remark	No	string	Description of the backend API **Value Description:** Supports a maximum of 255 characters. **Value Constraint:** Supports a maximum of 255 characters. **Suggestion:** None
urlDomain	Yes	string	Access domain name **Value Description:** Consists of the backend service address and port, and supports a maximum of 255 characters. **Value Constraint:** Supports a maximum of 255 characters. **Suggestion:** None
reqUri	Yes	string	Request address of the backend API **Value Description:** Supports a maximum of 512 characters and meets the URI specifications. **Value Constraint:** The value range from 3 to 512. **Suggestion:** None

Property	Required	Type	Description
timeout	No	integer	Timeout interval for the API gateway to request backend services **Value Description:** Supports the maximum value of 60000 and the minimum value of 1 (unit: ms). **Value Constraint:** The value range from 1 to 60000. **Suggestion:** None
reqMethod	Yes	string	Request mode of the backend API **Value Description:** Supports the following methods: GET, POST, PATCH, DELETE, OPTIONS, PUT, HEAD, and ANY. **Value Constraint:** Supports GET, POST, DELETE, PUT, PATCH, HEAD, OPTIONS, ANY **Suggestion:** None
reqProtocol	Yes	string	Protocol type of the backend API **Value Description:** Supports HTTP and HTTPS. **Value Constraint:** Supports HTTP, HTTPS **Suggestion:** If sensitive information needs to be transferred, you are advised to use HTTPS.

2.3.3 APIG.FuncInfo

Property Description

Table 2-192 Property description

Property	Required	Type	Description
remark	No	string	Description **Value Description:** Supports a maximum of 255 characters. **Value Constraint:** Supports a maximum of 255 characters. **Suggestion:** None
version	No	string	Version **Value Description:** Indicates the version. **Suggestion:** None

Property	Required	Type	Description
invocatio nType	Yes	string	Invocation type **Value Description:** async: asynchronous; sync: synchronous **Value Constraint:** Supports async, sync **Suggestion:** None
functionU rn	Yes	string	Function URN **Value Description:** Indicates the URN address of the corresponding function during interconnection of the function service. **Suggestion:** None
timeout	No	integer	Timeout interval for the API gateway to request function services **Value Description:** Supports the maximum value of 60000 and the minimum value of 1 (unit: ms). **Value Constraint:** The value range from 1 to 60000. **Suggestion:** None

2.3.4 APIG.MockInfo

Property Description

Table 2-193 Property description

Property	Required	Type	Description
resultCon tent	No	string	Mock returned result **Value Description:** Indicates the mock returned result. **Suggestion:** None

2.3.5 APM.AutoscalerAction

Property Description

Table 2-194 Property description

Property	Required	Type	Description
type	Yes	string	Auto scaling action type **Value Description:** Indicates whether scale-in or scale-out is required. **Value Constraint:** Only scale_out_k8s and scale_in_k8s are supported, which indicate application scale-out and scale-in respectively. **Suggestion:** Set the value based on requirements.
parameters	Yes	**APM.AutoscalerActionParameters**	Auto scaling action parameter, which describes how a scaling action is executed. For example, how many instances can be scaled at a time. **Value Description:** Indicates the structure type of APM.AutoscalerActionParameters. **Value Constraint:** The definition of the APM.AutoscalerActionParameters structure type is met. **Suggestion:** Select the parameters field in the component part, and then fill in the field based on prompts.

2.3.6 APM.AutoscalerActionParameters

Property Description

Table 2-195 Property description

Property	Required	Type	Description
scaleUnit	Yes	integer	Step of the auto scaling action, that is, the number of instances that can be scaled at a time **Value Description:** Supports an integer ranging from 1 to 100. **Value Constraint:** The value must be an integer ranging from 1 to 100. **Suggestion:** Set the value based on specifications and requirements.

2.3.7 APM.AutoscalerCondition

Property Description

Table 2-196 Property description

Property	Required	Type	Description
evaluationPeriods	Yes	integer	Number of measurement periods of a performance condition metric (that is, the scaling action is triggered when the number of consecutive periods reaches the threshold) **Value Description:** Supports an integer ranging from 1 to 5. **Value Constraint:** Only 1, 2, 3, 4, and 5 are supported. **Suggestion:** Set the value based on specifications and requirements.
metricUnit	Yes	string	Unit of the performance condition metric **Value Description:** Supports the unit of Percent only. **Value Constraint:** Currently, only Percent is supported. **Suggestion:** Use the default value.

Property	Required	Type	Description
period	Yes	integer	Measurement period of a performance condition metric **Value Description:** Supports the following specifications: 60, 300, 900, and 3600 (unit: s). **Value Constraint:** Currently, only the following specifications are supported: 60, 300, 900, and 3600. **Suggestion:** Use the default value.
metricOperation	Yes	string	Comparison rule of performance condition metrics (">" or " <") **Value Description:** Specifies the scaling triggering condition, that is, whether the CPU or memory usage is greater than or smaller than the performance metric. **Value Constraint:** The value can be angle brackets (>) and (<). **Suggestion:** Set the value based on requirements.
metricThreshold	Yes	float	Threshold for performance condition metric comparison **Value Description:** Used for measured performance metric comparison. Scaling is triggered based on the comparison results. **Value Constraint:** The value must be an integer ranging from 0 to 100 (unit: %). **Suggestion:** Set the value based on specifications and requirements.
metricNamespace	Yes	string	Namespace to which a performance condition belongs **Value Description:** Fixed to be PAAS.CONTAINER. **Value Constraint:** Currently, only PAAS.CONTAINER is supported. **Suggestion:** Use the default value.

Property	Required	Type	Description
statistic	Yes	string	Measurement method of a performance condition metric (currently, only the average value can be measured) **Value Description:** Indicates the performance data measurement method. Currently, only the average value can be measured. **Value Constraint:** Currently, only average is supported. **Suggestion:** Use the default value.
metricNa me	Yes	string	Performance condition name **Value Description:** Supports cpuUsage and memUsage only, indicating the CPU usage and memory usage respectively. **Value Constraint:** Currently, only ALARM is supported. **Suggestion:** Use the default value.

2.3.8 APM.AutoscalerRule

Property Description

Table 2-197 Property description

Property	Required	Type	Description
policyTyp e	No	string	Scaling policy rule type **Value Description:** Supports ALARM only, indicating that scaling is performed based on performance metric alarms. **Value Constraint:** Currently, only ALARM is supported. **Suggestion:** Use the default value.
conditio ns	Yes	**APM.Aut oscalerCo ndition**	Scaling policy execution condition **Value Description:** Indicates the APM.AutoscalerCondition array. **Value Constraint:** The definition of the APM.AutoscalerCondition type is met. **Suggestion:** Select the conditions field in the component part, and then fill in the field based on prompts.

Property	Required	Type	Description
name	Yes	string	Scaling policy rule name **Value Description:** Supports customization. **Value Constraint:** The value must start with a letter. Only letters, digits, underscores (_), and hyphens (-) are allowed.
actions	Yes	**APM.AutoscalerAction**	Scaling policy execution action **Value Description:** Indicates the APM.AutoscalerAction array. **Value Constraint:** The definition of the APM.AutoscalerAction type is met. **Suggestion:** Select the actions field in the component part, and then fill in the field based on prompts.

2.3.9 Basic.KeyValuePair

Property Description

Table 2-198 Property description

Property	Required	Type	Description
key	Yes	string	Key of KeyValuePair
value	Yes	string	Value of KeyValuePair

2.3.10 Basic.Label

Property Description

Table 2-199 Property description

Property	Required	Type	Description
value	Yes	string	Value of Label
key	Yes	string	Key of Label

2.3.11 Basic.LabelSelector

Property Description

Table 2-200 Property description

Property	Required	Type	Description
values	Yes	string	Values of labelSelector
key	Yes	string	Key of LabelSelector
op	Yes	string	Op of the labelSelector, Supports "In", "NotIn", "Exists", "DoesNotExist", "Gt", "Lt"

2.3.12 Basic.NameAndSecretValue

Property Description

Table 2-201 Property description

Property	Required	Type	Description
name	Yes	string	Name of NameAndSecretValue
value	Yes	secret	Value of NameAndSecretValue

2.3.13 Basic.NameKeyPair

Property Description

Table 2-202 Property description

Property	Required	Type	Description
name	Yes	string	Name of NameKeyPair
key	Yes	string	Key of NameKeyPair

2.3.14 Basic.NameValuePair

Property Description

Table 2-203 Property description

Property	Required	Type	Description
name	Yes	string	Name of NameValuePair
value	Yes	string	Value of NameValuePair

2.3.15 CCE.Addon.AutoScaler.Node

Property Description

Table 2-204 Property description

Property	Required	Type	Description
flavor	Yes	HuaweiCloud.CCE.Node.Flavor.Name	node flavor
az	Yes	HuaweiCloud.ECS.AvailabilityZone.Name	node AZ
os	Yes	string	node OS
taints	No	CCE.Addon.AutoScaler.Taints	node taints

2.3.16 CCE.DataVolume

Property Description

Table 2-205 Property description

Property	Required	Type	Description
multiAttach	No	boolean	Information about the shared disk **Value Description:** true: indicates a shared EVS disk. false: indicates a common EVS disk. **Value Constraint:** The value can only be true or false. **Suggestion:** Set the value based on specifications and requirements. For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.
volumeType	Yes	HuaweiCloud.EVS.Volume.Type.Name	Data disk type corresponding to the ECS. The data disk type must match the disk type provided by the system. **Value Description:** Indicates the data disk type corresponding to the ECS. The data disk type must match the disk type provided by the system. **Value Constraint:** SATA: common I/O disk type; SAS: high I/O disk type; SSD: ultra-high I/O disk type; co-pl: high I/O (performance-optimized I) disk type; uh-l1: ultra-high I/O (latency-optimized) disk type **Suggestion:** Set the value based on specifications and requirements. For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.
hw:passthrough	No	string	Data disk type **Value Description:** true: indicates the SCSI type. If this field does not exist, the VBD type is used by default. **Value Constraint:** The value can only be true, or this field is not provided. **Suggestion:** Set the value based on specifications and requirements. For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.

Property	Required	Type	Description
size	Yes	integer	Data disk size **Value Description:** Indicates the data disk size (unit: GB). **Value Constraint:** [10, 32768] **Suggestion:** Set the value based on specifications and requirements. For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.

2.3.17 CCE.HelmChart

Property Description

Table 2-206 Property description

Property	Required	Type	Description
version	Yes	string	The version of the chart, default value is empty string.
name	Yes	string	The name of the chart, default value is empty string.

2.3.18 CCE.Labels

Property Description

Table 2-207 Property description

Property	Required	Type	Description
scope	No	integer	The Scope of Label **Value Description:** Please enter an integer. The maximum value cannot exceed the number of node. If it is obtained by get_input, set its type to integer, for example: type: integer **Suggestion:** Supports customization.

Property	Required	Type	Description
key	No	string	The Value of Label's Key **Value Description:** Supports customization. **Suggestion:** Supports customization.
value	No	string	The Value of Label's Value **Value Description:** Supports customization. **Suggestion:** Supports customization.

2.3.19 CCE.NodePool

Property Description

Table 2-208 Property Description

Property	Required	Type	Description
dataVolumes	Yes	**CCE.DataVolume**	Data disk of the created node **Value Description:** Supports customization, for example, [{"volumeType":"SATA","size":100}]. **Value Constraint:** Array format. Currently, only one object is supported. **Suggestion:** Customize the value. For details, visit https://support.huaweicloud.com/eu/tr-aos/datatypes-cce-datavolume.html.

Property	Required	Type	Description
availabilityZone	Yes	HuaweiCloud.ECS.AvailabilityZone.Name	AZ where the node is located **Value Description:** AZ where the to-be-created ECS is located. The name of the AZ needs to be specified, for example, cn-north-1a. For details, see the Regions and Endpoints. **Value Constraint:** The value varies depending on the belonged region. For details, visit https://developer.huaweicloud.com/intl/en-us/endpoint. **Suggestion:** 1. Use the **get_input** function to pass this parameter. Its value can then be automatically selected when you create a stack on the AOS console. 2. For details about the AZ of each region, visit https://developer.huaweicloud.com/intl/en-us/endpoint.
name	No	string	Name of the created node **Value Description:** Supports customization. **Value Constraint:** The value contains 4 to 32 characters and must start with a lowercase letter. Only lowercase letters, digits, and underscores (_) are allowed. **Suggestion:** Customize the value. Generally, the stack name is used as the node name.
publicKey	No	HuaweiCloud.ECS.KeyPair.PublicKey	Public key of the key pair in the duration-based billing mode **Value Description:** Selects an existing public key. **Suggestion:** Use the **get_input** function to pass this parameter. Its value can then be automatically selected based on parameter **sshKeyName** when you create a stack on the AOS console.
postInstall	No	string	Node post-installation script **Value Description:** Supports customization. **Value Constraint:** The script you specify here will be executed after Kubernetes software is installed. **Suggestion:** The script is usually used to modify container parameters.

Property	Required	Type	Description
labels	No	dict	Labels of the created node **Value Description:** Supports customization, for example, {"key": "aos","value": "app","scope":[1,2]}. **Suggestion:** Enter the key, value, and scope as required.
preInstall	No	string	Node pre-installation script **Value Description:** Supports customization. **Value Constraint:** The script you specify here will be executed before K8S software is installed. Note that if the script is incorrect, Kubernetes software may not be installed successfully. **Suggestion:** The script is usually used to format data disks.
publicIp	No	**CCE.PublicIP**	Virtual IP address of the created node **Value Description:** Supports customization, for example, {"eip": {"bandwidth:{" shareType":PER}, 5_sbgp"}}. **Value Constraint:** Only one elastic IP address can be defined for each node. **Suggestion:** Customize the value. For details, visit https://support.huaweicloud.com/eu/tr-aos/datatypes-cce-publicip.html.
instances	Yes	integer	Number of the created nodes **Value Description:** Supports customization. The value ranges from 1 to 50. **Value Constraint:** {u'in_range': [1, 50]} **Suggestion:** Set the value based on specifications and requirements.
rootVolume	Yes	**ECS.RootVolume**	System disk of the created node **Value Description:** Supports customization, for example, {"volumeType":"SATA","size":40}. **Suggestion:** Customize the value. For details, visit https://support.huaweicloud.com/eu/tr-aos/datatypes-ecs-rootvolume.html.

Property	Required	Type	Description
os	No	string	os of the created node **Value Description:** ["EulerOS 2.2", "CentOS 7.4"] **Value Constraint:** Customize the value. This parameter is EulerOS 2.2 by default. **Suggestion:** Supports EulerOS 2.2 and CentOS 7.4.
nodePasswd	No	password	Password of the nodes' root **Value Description:** Supports customization. **Value Constraint:** 1. The parameter must be written into **inputs** and set using the **get_input** function. 2. The value cannot be empty or a weak password. Enter 8 to 26 characters. Only uppercase and lowercase letters, digits, and special characters !@$%^-_=+[{}]:,./? are allowed. The value must contain at least two types of characters. 3. 3. Using both **sshkeyName** and **nodePasswd** is not supported **Suggestion:** You are advised to use the **get_input** function to obtain the value and avoid plaintext passwords to ensure security.
flavor	Yes	HuaweiCloud.CCE.Node.Flavor.Name	Container node specifications **Value Description:** System flavor ID of the ECS to be created. For example, c1.medium indicates 1 vCPU | 1 GB, and c2.large indicates 2 vCPU | 4 GB. For details about the available flavors, see ECS Specifications at https://support.huaweicloud.com/eu/productdesc-ecs/ecs_01_0014.html. You are advised to use the **get_input** function to pass this parameter. **Suggestion:** Select the node specification during node creation on the CCE console. In the node template, you can set **inputs** to specify the node specification.

Property	Required	Type	Description
sshKeyName	Yes	HuaweiCloud.ECS.KeyPair.Name	Key pair used for logging in to a node, which needs to be kept properly **Value Description:** Must be created on the ECS console in advance. **Value Constraint:** Using both sshkeyName and nodePasswd is not supported. **Suggestion:** 1. You are advised to use the **get_input** function to assign values so that you can select a value when using the template. 2. Query information on the ECS page and then enter such information accordingly.
annotations	No	dict	Annotations of Node **Value Description:** Supports customization, for example, {"app": "aos"}. **Suggestion**: Enter multiple key-value pairs to customize the value.

2.3.20 CCE.PublicIP

Property Description

Table 2-209 Property description

Property	Required	Type	Description
eip	No	CCE.EIP	Configuration parameter for creating an elastic IP address that will be automatically assigned to the ECS **Value Description:** Indicates the CCE.EIP type. **Value Constraint:** The value must meet the CCE.EIP type. **Suggestion:** For details, see the documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.

Property	Required	Type	Description
ids	No	string	ID of the existing elastic IP address list assigned to the to-be-created cluster node **Value Description:** Must be in the UUID format. Only elastic IP addresses in the DOWN state can be assigned. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** For details, see the ECS documentation at https://support.huaweicloud.com/intl/en-us/api-ecs/en-us_topic_0020212668.html.

2.3.21 CCI.Network

Property Description

Table 2-210 Property description

Property	Required	Type	Description
vpcId	Yes	HuaweiCloud.VPC.VPC.Id	Network is VPC's ID **Value Description:** Supports customization. **Suggestion:** Set the value based on requirements.
securityGroupId	Yes	HuaweiCloud.VPC.SecurityGroup.Id	Network corresponds to the subnet security group ID. The security group rules will affect the network access policy of the service under namespace. It is suggested to choose according to the actual needs. **Value Description:** Supports customization. **Suggestion:** Security group rules will affect the network access policy of the service under namespace. It is suggested to configure according to the default security group of cci: kubernetes.io-default-sg. To use the service component, make sure that TCP and udp are on in the security group.

Property	Required	Type	Description
availableZone	Yes	HuaweiCloud.ECS.AvailabilityZone.Name	CCI's Network corresponds to the available area of the subnet **Value Description:** Supports customization. **Value Constraint:** Currently, only CN North-Beijing1, CN North-Beijing4, and CN East-Shanghai1 are supported. **Suggestion:** Set the value based on requirements.
subnetId	Yes	HuaweiCloud.VPC.Subnet.Id	Network corresponds to the network ID of the subnet **Value Description:** Supports customization. **Suggestion:** Set the value based on requirements.
networkType	Yes	string	Network network type, currently only supports underlay_neutron network mode **Value Description:** Supports customization. **Suggestion:** Set the value based on requirements.

2.3.22 CDN.Source

Property Description

Table 2-211 Property description

Property	Required	Type	Description
activeStandby	Yes	string	Active/standby status **Value Description:** The master source server is mandatory while the slave source server is optional. master: indicates the master source server. slave: indicates the slave source server.
originType	Yes	string	Source server type **Value Description:** Supports ipaddr (source IP address) and domain (source domain name).
ipOrDomain	Yes	string	Source IP address or domain name

2.3.23 CDN.CacheRule

Property Description

Table 2-212 Property description

Property	Required	Type	Description
priority	Yes	integer	Weight value of the configuration **Value Description:** Supports the default value of 1. A larger value indicates a higher priority. The value ranges from 1 to 100.
content	No	string	Cache matching configuration **Value Description:** When rule_type is 0, the value is null. When rule_type is 1, the value is the file suffix. If multiple suffixes exist, they need to be separated by semicolons (;). For example, .jps;.js. When rule_type is 2, the value is the directory. If multiple directories exist, they are separated by semicolons (;). For example, /www/html;/www/anc/.
ruleType	Yes	string	Cache type **Value Description:** any: indicates that all types of files are matched. It is the default value. file: indicates that files are matched based on their suffixes.directory: indicates that files are matched based on directories.
ttlType	Yes	string	Cache time unit **Value Description:** Supports a maximum of 365 days.
ttl	Yes	integer	Cache time **Value Description:** Supports a maximum of 365 days.

2.3.24 DCS.InstanceBackupPolicy

Property Description

Table 2-213 Property description

Property	Required	Type	Description
extendParam	Yes	**DCS.PeriodicalBackupPlan**	extend Param of DCS InstanceBackupPolicy
backupType	Yes	string	Backup type **Value Description:** Supports customization. **Value Constraint:** The value can be auto or manual. auto: indicates automatic backup. manual: indicates manual backup. **Suggestion:** Use the default value.
saveDays	Yes	integer	Backup retention days **Value Description:** Supports customization. **Value Constraint:** The value ranges from 1 to 7 days. **Suggestion:** Use the default value.

2.3.25 DCS.PeriodicalBackupPlan

Property Description

Table 2-214 Property description

Property	Required	Type	Description
backupAt	Yes	string	Day in a week when backup starts **Value Description:** Supports customization. **Value Constraint:** The value ranges from 1 to 7. The value 1 indicates Monday and the value 7 indicates Sunday. **Suggestion:** You are advised to enter 1.

Property	Required	Type	Description
beginAt	Yes	string	Backup execution time. For example, 00 indicates 24:00, and 08 indicates 08:00. **Value Description:** Supports customization. **Value Constraint:** Currently, the value can only be 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, or 23. **Suggestion:** Use the default value.
periodType	Yes	string	Backup period type **Value Description:** Supports customization. **Value Constraint:** Currently, the value can only be weekly. **Suggestion:** Use the default value.

2.3.26 DDS.BackupStrategy

Property Description

Table 2-215 Property description

Property	Required	Type	Description
keepDays	No	integer	Backup retention period, which specifies the number of days for which backup files can be stored **Value Description:** Supports 0-35 days. If this parameter is not specified or set to 0, the automatic backup policy is disabled. **Suggestion:** Set the value based on specifications and requirements.
endTime	Yes	string	Latest time when the backup task is executed **Value Description:** Supports customization. For example, 23:30. **Value Constraint:** This parameter cannot be left blank. It is valid only when the format is hh:mm. The current time is the UTC time. **Suggestion:** Set the value based on specifications and requirements.

Property	Required	Type	Description
startTime	Yes	string	Earliest time when the backup task is executed. Automatic backup will be triggered after the earliest time expires. **Value Description:** Supports customization. For example, 22:30. **Value Constraint:** This parameter cannot be left blank. It is valid only when the format is hh:mm. The current time is the UTC time. • HH must be 1 larger than hh. • The values of mm and M M must be the same and must be 00, 15, 30 or 45. **Suggestion:** Set the value based on specifications and requirements.

2.3.27 DDS.CommunityReplicaSetOrSingleMode.Flavor

Property Description

Table 2-216 Property description

Property	Required	Type	Description
nodeOneset	Yes	**DDS.DDS CommunityReplicaOrSingle.Flavor**	replica or single node flavor information **Suggestion:** Select the nodeOneset field in the component part, and then fill in the field based on prompts.

2.3.28 DDS.DDSCommunity.DataStore

Property Description

Table 2-217 Property description

Property	Required	Type	Description
storageEngine	Yes	string	Database storage engine name **Value Description:** wiredTiger **Value Constraint:** The value can only be wiredTiger. **Suggestion:** Set the value based on specifications and requirements.

Property	Required	Type	Description
dbtype	Yes	string	Database type **Value Description:** DDS-Community **Value Constraint:** The value can only be DDS-Community. **Suggestion:** Set the value based on specifications and requirements.
version	Yes	string	Database version **Value Description:** DDS-Community engine supports versions 4.0 and 3.0 and 3.2. Examples of values:4.0. **Suggestion:** Set the value based on specifications and requirements.

2.3.29 DDS.DDSCommunityReplicaOrSingle.Flavor

Property Description

Table 2-218 Property description

Property	Required	Type	Description
nodeType	Yes	string	Database node type **Value Description:** replica or single **Value Constraint:** The value can only be replica or single. **Suggestion:** Set the value based on specifications and requirements.
num	Yes	integer	Specifies node quantity **Value Constraint:** The value can only be 1.
storage	Yes	string	Disk type **Value Description:** ULTRAHIGH **Value Constraint:** The value can only be ULTRAHIGH.

Property	Required	Type	Description
specCode	Yes	HuaweiCloud.DDS.SpecCode	Instance specification **Value Description:** Indicates the specifications code of the to-be-created database instance, which is generated based on the instance size and user project. **Value Constraint:** The property must match the database type and version. For example, in the resource specification code dds.c3.xlarge.2.replica, dds indicates the DDS database. c3.xlarge.2 indicates high memory, a performance specification. replica indicates the node type. **Suggestion:** You are advised to obtain the value by using the DDS API. For details, visit https://support.huaweicloud.com/eu/api-dds/dds_instance_specification.html.
size	Yes	integer	Disk size **Value Description:** Supports 10-2000 GB. **Value Constraint:** 10-2000 GB. The value must be an integer multiple of 10. **Suggestion:** Set the value based on requirements.

2.3.30 ECS.DataVolume

Property Description

Table 2-219 Property description

Property	Required	Type	Description
multiAttach	No	boolean	Information about the shared disk **Value Description:** true: indicates a shared EVS disk. false: indicates a common EVS disk.SATA:Ordinary IO disk type. SAS:High IO Disk Type. SSD:Ultra High IO Disk Type. co-p1:High IO(Performance optimization type I). uh-l1:Ultra High IO(Delay Optimization). **Value Constraint:** The value can only be true or false. **Suggestion:** Set the value based on specifications and requirements. For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.
volumeType	Yes	HuaweiCloud.EVS.Volume.Type.Name	Data disk type corresponding to the ECS. The data disk type must match the disk type provided by the system. **Value Description:** Indicates the data disk type corresponding to the ECS. The data disk type must match the disk type provided by the system. **Value Constraint:** The value can only be SATA, SAS, SSD, co-pl, or uh-l1. **Suggestion:** Set the value based on specifications and requirements. For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.
hw:passthrough	No	string	Data disk type **Value Description:** true: indicates the SCSI type. If this field does not exist, the VBD type is used by default. **Value Constraint:** The value can only be true, or this field is not provided. **Suggestion:** Set the value based on specifications and requirements. For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.

Property	Required	Type	Description
size	Yes	integer	Data disk size **Value Description:** Indicates the data disk size (unit: GB). **Value Constraint:** [10, 32768] **Suggestion:** Set the value based on specifications and requirements. For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.

2.3.31 ECS.EIP

Property Description

Table 2-220 Property description

Property	Required	Type	Description
bandwidth	Yes	**VPC.Band Width**	IP address bandwidth **Value Description:** VPC.BandWidth type **Value Constraint:** The value must meet the definition of the **VPC.BandWidth** type. **Suggestion**: For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.
ipProductId	No	string	Product ID corresponding to the IP address **Value Description:** ID of the elastic IP address assigned to the ECS to be created. The value is in UUID format. **Value Constraint**: Only EIPs in **DOWN** status can be assigned. **Suggestion**: For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.

Property	Required	Type	Description
ipType	Yes	HuaweiCloud.VPC.EIP.Spec.Name	Type of the virtual IP address **Value Description**: 5_bgp: dynamic VPC BGP; 5_sbgp: static VPC BGP; 5_telcom: China Telecom; 5_union: China Unicom. **Value Constraint**: The value can only be 5_telcom, 5_union, 5_bgp, or 5_sbgp. CN Northeast-Dalian: 5_telcom or 5_union; CN South-Guangzhou: 5_bgp; CN East-Shanghai2: 5_sbgp; CN North-Beijing1: 5_bgp or 5_sbgp; CN-Hong Kong: 5_bgp. **Suggestion**: For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.

2.3.32 ECS.ExtendParam

Property Description

Table 2-221 Property description

Property	Required	Type	Description
CB_CSBS_BACKUP	No	string	Back up information **Value Description:** Customize the value. **Suggestion:** None
imageproductid	No	string	Image product ID **Value Description:** Customize the value. **Suggestion:** None
productId	No	string	product ID **Value Description:** Customize the value. **Suggestion:** None

2.3.33 ECS.MountedVolumes

Property Description

Table 2-222 Property description

Property	Required	Type	Description
mountPath	Yes	string	the path mount to ecs, e.g. /dev/sdb, /dev/sdc, /dev/sdd.The newly added disk mount point cannot be the same as an existing disk mount point.
volumeId	Yes	string	the existing volume id which need mount to ecs

2.3.34 ECS.NICS

Property Description

Table 2-223 Property description

Property	Required	Type	Description
subnetId	Yes	HuaweiCloud.VPC.Subnet.Id	Information about the NIC of the ECS **Value Description:** Obtains the subnet ID from the VPC service or connects to the ECS.Subnet to automatically establish the dependency relationship. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** 1. Use the get_input function to import this field. The value can be automatically selected on the AOS page. 2. Connect to the subnet object and use the get_reference function to obtain a new subnet ID. For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.
allowedAddressPairs	No	ECS.AddressPair	Allow AddressPairs **Value Description:** According to the actual situation **Suggestion:** None

Property	Required	Type	Description
ipAddress	No	ip	IP address of the NIC of the to-be-created ECS **Value Description:** Indicates an IP address. If this field is left blank or is set to an empty string, an IP address will be automatically assigned. **Value Constraint:** IPv4 format. If this parameter is left blank or is an empty string, an unused IP address in the subnet of this network is automatically assigned as the IP address of the NIC. If this parameter is specified, its value must be an unused IP address in the network segment of the subnet in this network. **Suggestion:** For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.
ipCheck	No	boolean	ip check **Value Description:** According to the actual situation **Suggestion:** None
portSecurityEnabled	No	boolean	Enable portSecurity **Value Description:** According to the actual situation **Suggestion:** None

2.3.35 ECS.Personality

Property Description

Table 2-224 Property description

Property	Required	Type	Description
path	Yes	string	path
contents	Yes	string	contents

2.3.36 ECS.PublicIP

Property Description

Table 2-225 Property description

Property	Required	Type	Description
eip	No	**ECS.EIP**	Configuration parameter for creating an elastic IP address that will be automatically assigned to the ECS **Value Description:** Indicates the ECS.EIP type. **Value Constraint:** The value must meet the ECS.EIP type. **Suggestion:** For details, see the ECS documentation at **https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html**.
id	No	string	ID of the existing elastic IP address assigned to the to-be-created ECS **Value Description:** Must be in the UUID format. Only elastic IP addresses in the DOWN state can be assigned. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** For details, see the ECS documentation at **https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html**.

◫ **NOTE**

You can configure either but not both of **id** and **eip** in the **publicip** field.

2.3.37 ECS.RootVolume

Property Description

Table 2-226 Property description

Property	Required	Type	Description
volumeType	Yes	HuaweiCloud.EVS.Volume.Type.Name	System disk type **Value Description:** Indicates the system disk type. SATA:Ordinary IO disk type. SAS:High IO Disk Type. SSD:Ultra High IO Disk Type. co-p1:High IO(Performance optimization type I). uh-l1:Ultra High IO(Delay Optimization). **Value Constraint:** The value can only be SATA, SAS, SSD, co-pl, or uh-l1. **Suggestion:** Set the value based on specifications and requirements. For details, see the ECS documentation at **https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html**.
size	Yes	integer	System disk size **Value Description:** Indicates the system disk size (unit: GB). **Value Constraint:** [40,1024] **Suggestion:** Set the value based on specifications and requirements. For details, see the ECS documentation at **https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html**.

2.3.38 ECS.SecurityGroup

Property Description

Table 2-227 Property description

Property	Required	Type	Description
id	Yes	HuaweiCloud.VPC.SecurityGroup.Id	ID of the security group corresponding to the ECS. This ID takes effect for the NIC configured on the ECS. **Value Description:** Specifies the ID of an existing security group. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** 1. Use the get_input function to import this field. The value can be automatically selected on the AOS page. 2. See the ECS documentation at **https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html**.

2.3.39 ECS.ServerTags

Property Description

Table 2-228 Property description

Property	Required	Type	Description
value	Yes	string	Specifies the tag value. **Value Constraint:** One ECS supports up to 10 tags. The value can contain a maximum of 43 Unicode characters and can be left blank. It cannot contain ASCII (0-31) or the following characters: =*<>\,|/
key	Yes	string	Specifies the tag key. **Value Constraint:** One ECS supports up to 10 tags. The key contains a maximum of 36 Unicode characters. This field cannot be left blank. It cannot contain ASCII (0-31) or the following characters: "=*<>\,|/".

2.3.40 ECS.VolumeExtendParam

Property Description

Table 2-229 Property description

Property	Required	Type	Description
resourceType	No	string	resource Type **Value Description:** Customize the value. **Suggestion:** None
resourceSpecCode	No	string	Specifies the code of the disk specifications **Value Description:** Customize the value. **Suggestion:** None
productId	No	string	product ID **Value Description:** Customize the value. **Suggestion:** None

2.3.41 EVS.Metadata

Property Description

Table 2-230 Property description

Property	Required	Type	Description
systemCmkid	No	string	Encrypted cmkid field **Value Description:** When systemEncrypted is also used, encryption is required. The value must contain 36 characters.
systemEncrypted	No	string	Whether to enable the encryption function **Value Description:** true: indicates encryption. false: indicates no encryption. If this field does not exist, no encryption is performed by default.
hw:passthrough	No	string	EVS disk type **Value Description:** true: indicates the SCSI type. false: indicates the VBD type. If this field does not exist, the VBD type is used by default.

2.3.42 FGS.Environment

Property Description

Table 2-231 Property description

Property	Required	Type	Description
variables	Yes	dict	User defined environment variables. **Value Description:** Support customization. The data type is dict.

2.3.43 FGS.OBSFilter

Property Description

Table 2-232 Property description

Property	Required	Type	Description
object	Yes	FGS.OBSFilterObject	Define the object of the filter element **Value Description:** Support matching prefix and suffix.

2.3.44 FGS.VpcConfig

Property Description

Table 2-233 Property description

Property	Required	Type	Description
subnetIds	Yes	HuaweiCloud.VPC.Subnet.Id	Vpc subnet id. **Value Description:** List type. The data type of Id is HuaweiCloud.VPC.Subnet.Id.
vpcSecurityGroupIds	Yes	HuaweiCloud.VPC.VPC.Id	Vpc Security Group Id **Value Description:** List type. The data type of Id is HuaweiCloud.VPC.SecurityGroup.Id.

2.3.45 IAM.Agency.Role

Property Description

Table 2-234 Property description

Property	Required	Type	Description
projectId	No	string	If you want to delegate permissions globally, you don't need to fill in this field.
roleId	Yes	string	Ids of roles.

2.3.46 K8S.PodSecurityContext

Property Description

Table 2-235 Property description

Property	Required	Type	Description
runAsUser	No	integer	RunAsUser of the context
supplementalGroups	No	integer	SupplementalGroups of the context
fsGroup	No	integer	FsGroups of the context
hostNetwork	No	boolean	Enable Host Network
runAsNonRoot	No	boolean	RunAsNonRoot of the context
seLinuxOptions	No	**K8S.SecurityContext.SeLinuxOptions**	Selinux Options
hostIPC	No	boolean	Enable Host IPC
hostPID	No	boolean	Enable host PID

2.3.47 K8S.SecurityContext.SeLinuxOptions

Property Description

Table 2-236 Property description

Property	Required	Type	Description
type	No	string	Type of Selinux
role	No	string	Role of Selinux
user	No	string	User of Selinux
level	No	string	Level of Selinux

2.3.48 MRS.BootstrapScripts

Property Description

Table 2-237 Property description

Property	Required	Type	Description
activeMaster	No	boolean	Whether the bootstrap action script runs only on active Master nodes. **Value Constraint:** The default value is false, indicating that the bootstrap action script can run on all Master nodes.
name	Yes	string	Name of a bootstrap action script **Value Constraint:** A name of a bootstrap action script must be unique in a cluster. The value can contain only digits, letters, spaces, hyphens (-), and underscores (_) and cannot start with a space. The value can contain a maximum of 1 to 64 characters.
beforeComponentStart	No	boolean	Time when the bootstrap action script is executed. **Value Constraint:** Currently, the script can be executed before and after the component is started. The default value is false, indicating that the bootstrap action script is executed after the component is started.

Property	Required	Type	Description
uri	Yes	string	Path of a bootstrap action script **Value Constraint:** Set this parameter to an OBS bucket path or a local VM path. For an OBS bucket path, enter a script path manually. For example, enter the path of the public sample script provided by MRS, such as s3a://bootstrap/presto/presto-install.sh. If dualroles is installed, the parameter of the presto-install.sh script is dualroles. If worker is installed, the parameter of the presto-install.sh script is worker. Based on the Presto usage habit, you are advised to install dualroles on the active Master nodes and worker on the Core nodes. For a local VM path, enter a script path. The script path must start with a slash (/) and end with .sh.
failAction	Yes	string	Whether to continue to execute subsequent scripts and create a cluster after the bootstrap action script fails to be executed. **Value Constraint:** The value can only be continue or errorout. **Suggestion:** You are advised to set this parameter to continue in the debugging phase so that the cluster can continue to be installed and started no matter whether the bootstrap action is successful.
nodes	Yes	string	Type of a node where the bootstrap action script is executed **Value Constraint:** Node types are Master, Core, and Task.
parameters	No	string	Bootstrap action script parameters

2.3.49 MRS.Components

Property Description

Table 2-238 Property description

Property	Required	Type	Description
compone ntName	Yes	string	Component name **Value Constraint:** Hadoop, Spark, HBase, Hive, Tez, Hue, Loader, Flume, Kafka and Storm are supported by MRS 2.0.0. Presto, Hadoop, Spark, HBase, Hive, Hue, Loader, Flume, Kafka, KafkaManager and Storm are supported by MRS 1.8.3. Hadoop, Spark, HBase, Hive, Hue, Loader, Flume, Kafka and Storm are supported by versions earlier than MRS 1.8.3.

2.3.50 MRS.TaskNodeGroups

Property Description

Table 2-239 Property description

Property	Required	Type	Description
dataVolu meType	Yes	string	Data disk storage type of the Task node **Value Constraint:** Currently, SATA, SAS, and SSD are supported.
nodeNum	Yes	integer	Number of Task nodes **Value Constraint:** The value ranges from 0 to 500. The total number of Core and Task nodes cannot exceed 500.
dataVolu meCount	Yes	integer	Number of data disks of the Task node **Value Constraint:** The value ranges from 0 to 10.
nodeSize	Yes	string	Instance specification of a Task node **Value Constraint:** MRS supports host specifications determined by CPU, memory, and disk space. For details about the instance specifications, refer to the ECS specifications used by MRS at https://support.huaweicloud.com/eu/api-mrs/mrs_01_9006.html.

Property	Required	Type	Description
dataVolu meSize	Yes	integer	Data disk size of the Task node **Value Constraint:** The value ranges from 100 GB to 32,000 GB.

2.3.51 MRS.Tags

Property Description

Table 2-240 Property description

Property	Required	Type	Description
key	No	string	Tag key **Value Constraint:** A tag key cannot contain the following special characters: =*<>\,|/
value	No	string	Tag value **Value Constraint:** A tag value cannot contain the following special characters: =*<>\,|/

2.3.52 MySQL.DBUser

Property Description

Table 2-241 Property description

Property	Required	Type	Description
userPassword	Yes	password	Password for logging in to the database. The value is not empty. It contains 8-32 characters and is not a weak password. It contains letters, digits, and the following special characters: ~!@#%^*-_=+? **Value Description:** Supports customization. **Value Constraint:** 1. The parameter must be written into inputs and imported using the get_input function. 2. The value contains 8-32 characters and is not a weak password. It contains letters, digits, and the following special characters: ~!@#%^*-_=+? suggestion: 'You are advised to use the get_input function to obtain the value and avoid plaintext passwords to ensure security.'
name	Yes	string	Username **Value Description:** Cannot be the following fields: root, rdsadmin, rdsbackup, or rdsrepl. If this parameter is left blank, no user is created. **Value Constraint:** The value must meet MySQL user name requirements. **Suggestion:** Customize the value.

2.3.53 MySQL.DBLinkedUser

Property Description

Table 2-242 Property description

Property	Required	Type	Description
userPassword	Yes	password	Password for logging in to the database. The value is not empty. It contains 8-32 characters and is not a weak password. It contains letters, digits, and the following special characters: ~!@#%^*-_=+? **Value Description:** Supports customization. **Value Constraint:** 1. The parameter must be written into inputs and imported using the get_input function. 2. The value is not empty. It contains 8-32 characters and is not a weak password. It contains letters, digits, and the following special characters: ~!@#%^*-_=+? suggestion: 'You are advised to use the get_input function to obtain the value and avoid plaintext passwords to ensure security.'
name	Yes	string	Username **Value Description:** Cannot be the following fields: root, rdsadmin, rdsbackup, or rdsrepl. If this parameter is left blank, no user is created. **Value Constraint:** The value must meet MySQL user name requirements. **Suggestion:** Customize the value.
userDatabase	No	**MySQL.UserDatabase**	Configuration of the database that the user can access **Suggestion:** Select the dbUser field in the component part, and then fill in the field based on prompts.

2.3.54 MySQL.DataBase

Property Description

Table 2-243 Property description

Property	Required	Type	Description
character Set	Yes	string	Character set of the database **Value Description:** Supports the value based on RDS support conditions, for example, utf8 or gbk. **Suggestion:** 1. You can view the attribute of the character_set_database field on the parameter group management page of the RDS console.
name	Yes	string	Database name **Value Description:** Cannot be the following fields: mysql, information_schema, or performance_schema. If this parameter is left blank, no database is created. **Value Constraint:** The value must meet MySQL database name requirements. **Suggestion:** Customize the value.
collate	Yes	string	Encoding format of the database **Value Description:** Supports the value based on RDS support conditions, for example, utf8_general_ci, utf8_bin, utf8_unicode_ci, or gbk_bin. **Suggestion:** 1. You can view the attribute of the collation_server field on the parameter group management page of the RDS console.

2.3.55 MySQL.DataStore

Property Description

Table 2-244 Property description

Property	Required	Type	Description
dbtype	Yes	string	Database type **Value Description:** MySQL **Value Constraint:** The value can only be MySQL. **Suggestion:** Set the value based on specifications and requirements.
version	Yes	string	Database version **Value Description:** MySQL engine supports versions 5.6 and 5.7 and 8.0. Examples of values:5.7. **Suggestion:** Set the value based on specifications and requirements.

2.3.56 MySQL.UserDatabase

Property Description

Table 2-245 Property description

Property	Required	Type	Description
name	Yes	string	Name of the database that the user can access

2.3.57 PostgreSQL.DataStore

Property Description

Table 2-246 Property description

Property	Required	Type	Description
dbtype	Yes	string	Database type **Value Description:** PostgreSQL **Value Constraint:** The value can only be PostgreSQL. **Suggestion:** Set the value based on specifications and requirements.
version	Yes	string	Database version **Value Description:** 11, 10, 9.6, 9.5, 1.0 **Suggestion:** Set the value based on specifications and requirements.

2.3.58 RDS.BackupStrategy

Property Description

Table 2-247 Property description

Property	Required	Type	Description
keepDays	Yes	integer	Backup retention period, which specifies the number of days for which backup files can be stored **Value Description:** Supports 0-35 days. If this parameter is not specified or set to 0, the automatic backup policy is disabled. **Suggestion:** Set the value based on specifications and requirements.

Property	Required	Type	Description
endTime	Yes	string	Latest time when the backup task is executed **Value Description:** Supports customization. For example, 23:30. **Value Constraint:** This parameter cannot be left blank. It is valid only when the format is hh:mm. The current time is the UTC time. **Suggestion:** Set the value based on specifications and requirements.
startTime	Yes	string	Earliest time when the backup task is executed. Automatic backup will be triggered after the earliest time expires. **Value Description:** Supports customization. For example, 22:30. **Value Constraint:** This parameter cannot be left blank. It is valid only when the format is hh:mm. The current time is the UTC time. • HH must be 1 larger than hh. • The values of mm and M M must be the same and must be 00, 15, 30 or 45. **Suggestion:** Set the value based on specifications and requirements.

2.3.59 RDS.HA

Property Description

Table 2-248 Property description

Property	Required	Type	Description
enable	Yes	string	Whether HA is supported **Value Description:** Supports true and false. **Value Constraint:** 1. The HA parameter must be consistent with the specification parameter. 2. Note that the parameter must be in the character string format. When a YAML template is used, quotation marks (" ") must be added because the true/false are considered as Boolean values in the YAML template. **Suggestion:** If the instance flavor name contains the HA parameter, set this parameter to true. Otherwise, set this parameter to false. Please refer to RDS documentation - Obtain the flavor information about a specified instance.

2.3.60 RDS.HA.Mysql

Property Description

Table 2-249 Property description

Property	Required	Type	Description
replicatio nMode	Yes	string	Synchronization parameter of the standby node **Value Description:** Supports async and semisync for the MySQL instance. async indicates the asynchronous mode while semisync indicates the semi-synchronous mode. **Suggestion:** Set the value based on specifications and requirements.

Property	Required	Type	Description
enable	Yes	string	Whether HA is supported **Value Description:** Supports true and false. **Value Constraint:** 1. The HA parameter must be consistent with the specification parameter. 2. Note that the parameter must be in the character string format. When a YAML template is used, quotation marks (" ") must be added because the true/false are considered as Boolean values in the YAML template. **Suggestion:** If the instance flavor name contains the HA parameter, set this parameter to true. Otherwise, set this parameter to false. Please refer to RDS documentation - Obtain the flavor information about a specified instance.

2.3.61 RDS.HA.PostgreSQL

Property Description

Table 2-250 Property description

Property	Required	Type	Description
replicatio nMode	Yes	string	Synchronization parameter of the standby node **Value Description:** Supports async and sync for the PostgreSQL instance. async indicates the asynchronous mode while sync indicates the synchronous mode. **Suggestion:** Set the value based on specifications and requirements.

Property	Required	Type	Description
enable	Yes	string	Whether HA is supported **Value Description:** Supports true and false. **Value Constraint:** 1. The HA parameter must be consistent with the specification parameter. 2. Note that the parameter must be in the character string format. When a YAML template is used, quotation marks (" ") must be added because the true/false are considered as Boolean values in the YAML template. **Suggestion:** If the instance flavor name contains the HA parameter, set this parameter to true. Otherwise, set this parameter to false. Please refer to RDS documentation - Obtain the flavor information about a specified instance.

2.3.62 RDS.Volume

Property Description

Table 2-251 Property description

Property	Required	Type	Description
volumetype	Yes	HuaweiCloud.RDS.Volume.Type.Name	Disk type **Value Description:** Supports COMMON (SATA), HIGH (SAS), and ULTRAHIGH (SSD). These values are case sensitive. **Value Constraint:** Set the value based on requirements. **Suggestion:** Set the value based on specifications.
size	Yes	integer	Disk size **Value Description:** Supports 40-4000 GB. **Value Constraint:** 40-4000 GB. The value must be an integer multiple of 10. **Suggestion:** Set the value based on specifications.

2.3.63 ULB.StickySession

Property Description

Table 2-252 Property description

Property	Required	Type	Description
type	Yes	string	Session persistence type **Value Description:** Indicates the source IP address. **Value Constraint:** ["SOURCE_IP"] **Suggestion:** Use the default value.

2.3.64 VPCEndpoint.Ports

Property Description

Table 2-253 Property description

Property	Mandatory	Type	Description
clientPort	Yes	integer	Port accessed by the VPC endpoint. Range: 1-65535 VPC endpoints are provided for users to access VPC endpoint services.
protocol	Yes	string	Port Mapping Protocol. TCP and UDP are supported. The default value is **TCP**.
serverPort	Yes	integer	Port of the VPC endpoint service. Range: 1-65535 VPC endpoint services are bound with backend resources. Services are provided through the ports.

2.3.65 VPC.BandWidth

Property Descriptione

Table 2-254 Property description

Property	Mandatory	Type	Description
name	No	string	Created bandwidth name **Value Description:** Consists of hyphens (-), underscores (_), letters, and digits, and supports a maximum of 64 characters. **Value Constraint:** The value contains 1 to 64 characters. This value is unique under a tenant, and must meet the following requirement: {"regex":"^[a-zA-Z][0-9a-zA-Z-_]*$","min_length":1,"max_length":64}. **Suggestion:** For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.
shareType	Yes	string	Bandwidth type **Value Description:** Supports two bandwidth types: "PER" and "WHOLE".When the bandwidth is exclusive, set this property to PER. When it is shared, set it to WHOLE. **Value Constraint:** The value can only be PER or WHOLE. **Suggestion:** For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.
chargeMode	No	string	Billing mode **Value Description:** Supports two billing modes: "bandwidth" and "traffic". **Value Constraint:** The value can only be bandwidth or traffic. **Suggestion:** For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.

Property	Mandatory	Type	Description
productId	No	string	Product ID **Value Description:** Satisfies the UUID rule and supports a maximum of 64 characters. **Value Constraint:** Satisfies the UUID rule and supports a maximum of 64 characters. **Suggestion:** For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.
id	No	string	Existing bandwidth ID **Value Description:** Satisfies the UUID rule and supports a maximum of 64 characters. **Value Constraint:** The value must satisfy the UUID rule and support a maximum of 64 characters. **Suggestion:** For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.
size	No	integer	Bandwidth **Value Description:** Specifies the bandwidth (Mbit/s). The value ranges from 1 to 300. This parameter is mandatory when share_type is set to PER and is optional when share_type is set to WHOLE with an ID specified. **Value Constraint:** The value must range from 1 to 300 (bandwidth unit: Mbit/s). **Suggestion:** For details, see the ECS documentation at https://support.huaweicloud.com/eu/api-ecs/en-us_topic_0020212668.html.

2.3.66 VPC.PublicIP

Property Description

Table 2-255 Property description

Property	Required	Type	Description
type	Yes	HuaweiCloud.VPC.EIP.Spec.Name	Type of the public elastic IP address **Value Description**: 5_bgp: dynamic VPC BGP; 5_sbgp: static VPC BGP; 5_telcom: China Telecom; 5_union: China Unicom. **Value Constraint**: The value can only be 5_telcom, 5_union, 5_bgp, or 5_sbgp. CN Northeast-Dalian: 5_telcom or 5_union; CN South-Guangzhou: 5_bgp; CN East-Shanghai2: 5_sbgp; CN North-Beijing1: 5_bgp or 5_sbgp; CN-Hong Kong: 5_bgp; CN North-Beijing4: 5_bgp. **Suggestions:** For details, visit https://support.huaweicloud.com/eu/api-eip/eip_api_0001.html#eip_api_0001__en-us_topic_0201534274_table4491214.
ipAddress	No	string	Public elastic IP address to be applied. If no address is specified, the system automatically assigns one. **Value Constraint**: The value must be an IP address and in the available address range. **Suggestion:** For details, visit https://support.huaweicloud.com/eu/api-eip/eip_api_0001.html#eip_api_0001__en-us_topic_0201534274_table4491214.

2.3.67 VSS.Resource

Property Description

Table 2-256 Property description

Property	Required	Type	Description
resourceSpecCode	Yes	string	Resource Specification Type **Value Description:** "webscan.professional" stands for "VSS Professional" **Value Constraint:** The value can only be "webscan.professional"

Property	Required	Type	Description
resourceSize	Yes	integer	Resource size. The VSS domain number purchased by user.

2.3.68 WAF.Bandwidth

Property Description

Table 2-257 Property description

Property	Required	Type	Description
resourceType	Yes	string	Resource Type **Value Description:** "hws.resource.type.waf.bandwidth" stands for WAF bandwidth external package. **Value Constraint:** The value can only be "hws.resource.type.waf.bandwidth"
resourceSize	Yes	integer	Resource size. The external package number purchased by user.

2.3.69 WAF.Domain

Property Description

Table 2-258 Property description

Property	Required	Type	Description
resourceSize	Yes	integer	Resource size. The external package number purchased by user.
resourceType	Yes	string	Resource Type **Value Description:** "hws.resource.type.waf.domain" stands for WAF domain external package. **Value Constraint:** The value can only be "hws.resource.type.waf.domain"

2.3.70 WAF.Service

Property Description

Table 2-259 Property description

Property	Required	Type	Description
resourceType	Yes	string	Resource Type **Value Description:** "hws.resource.type.waf" stands for WAF package. **Value Constraint:** The value can only be "hws.resource.type.waf"

2.4 Appendix

2.4.1 YAML Syntax

YAML is a simple and powerful language. It is designed to make the language easy to read.

Basic Syntax Rules

- Characters are case-sensitive.

- Indentation is used to represent hierarchical relationships.

- Only spaces can be used for indentation.

- The number of spaces used for indentation does not matter. Elements of the same level must be aligned on the left side.

- Lines that start with a number sign (#) are comments.

YAML supports three types of data structures.

- Object: A set of key-value pairs, which is also called mapping, hashes, or dictionary.

- Array: A group of values arranged in sequence, which is also called a sequence or list.

- Scalar: A single and irreducible value, which is the minimum data unit.

Object

An object is a group of key-value pairs. For key: value, the colon (:) must be followed by a space or newline character. The valid expression is as follows:

```
animal: pets
plant:
  tree
```

You can also write multiple key-value pairs into an inline object.

```
hash: {name: Steve, foo: bar}
```

However, an error occurs in the following scenario:

```
foo: somebody said I should put a colon here: so I did
windows_drive: c:
```

To resolve the issue, you can use single quotation marks (' '), as shown in the following:

```
foo: 'somebody said I should put a colon here: so I did'
windows_drive: 'c:'
```

Array

An array is represented by a hyphen (-) and space. The valid expression is as follows:

```
animal:
- Goldfish
```

You can also use the inline representation.

```
animal: [Cat, Dog, Goldfish]
```

Objects and arrays can be used in combination to form a composite structure.

```
languages:
 - Ruby
 - Perl
 - Python
websites:
 YAML: yaml.org
 Ruby: ruby-lang.org
 Python: python.org
 Perl: use.perl.org
```

Scalar

Scalar data types include string, Boolean value, integer, floating-point number, null, time, and date.

- String:

  By default, a string is not enclosed in quotation marks.

  ```
  str: This_is_a_line
  ```

  If a string contains spaces or special characters, the string needs to be enclosed in quotation marks.

  ```
  str: 'content: a string'
  ```

  Both single and double quotation marks can be used. The difference between them is that the former can identify escape characters while the latter cannot convert special characters.

  ```
  s1: 'content:\n a string'
  s2: "content:\n a string"
  ```

  If there is a single quotation mark between two single quotation marks, ensure that two single quotation marks are used consecutively to achieve conversion.

  ```
  str: 'labor''s day'
  ```

  Strings can be written into multiple lines. The lines except the first line must be indented with one space. The newline character will be converted to a space.

```
str: This_is
 a_multi_line
```

- Integer:

```
int_value: 314
```

- Floating-point number:

```
float_value: 3.14
```

- Null:

```
parent: ~
```

- Time:

The time is in the ISO8601 format.

```
iso8601: 2018-12-14t21:59:43.10-05:00
```

- Date:

The date is in the compound ISO8601 format: year-month-day.

```
date: 1976-07-31
```

Special Symbols

- **---**: indicates the start of a YAML file. **...**: indicates the end of a YAML file.

```
---
# A list of delicious fruits
- Apple
- Strawberry
- Mango
...
```

- You can use two exclamation marks (!) to forcibly convert an integer, a floating-point number, or a Boolean value.

```
strbool: !!str true
strint: !!str 10
```

- For a string in multiple lines, you can use a literal block scalar (|) to start new lines or folded block scalar (>) to fold new lines. The two symbols are often used in the character strings of YAML files.

```
this: |
 Foo
 Bar
that: >
 Foo
 Bar
```

The corresponding objects are as follows:

```
{ this: 'Foo\nBar\n', that: 'Foo Bar\n' }
```

It is recommended that "|" be used to meet the requirements of most scenarios.

Comment

YAML supports comments. This is an advantage of YAML compared with JSON.

The comment of YAML starts with a number sign (#), as shown in the following:

```
languages:
 - Ruby            # Indicates the Ruby language.
 - Go              # Indicates the Go language.
  --  PythonPy          # Indicates the Python language.
```

Reference Documents

- **YAML 1.2 Specifications**
- **Ansible YAML Syntax**