Alibaba Cloud Resource Orchestration Service

Best Practices

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Generic conventions

Table -1: Style conventions

Style	Description	Example
	This warning information indicates a situation that will cause major system changes, faults, physical injuries, and other adverse results.	 Danger: Resetting will result in the loss of user configuration data.
	This warning information indicates a situation that may cause major system changes, faults, physical injuries, and other adverse results.	 Warning: Restarting will cause business interruption. About 10 minutes are required to restore business.
	This indicates warning information, supplementary instructions, and other content that the user must understand.	 Notice: Take the necessary precautions to save exported data containing sensitive information.
	This indicates supplemental instructions, best practices, tips, and other content that is good to know for the user.	 Note: You can use Ctrl + A to select all files.
>	Multi-level menu cascade.	Settings > Network > Set network type
Bold	It is used for buttons, menus , page names, and other UI elements.	Click OK.
`Courier font`	It is used for commands.	Run the `cd / d C :/ windows` command to enter the Windows system folder.
Italics	It is used for parameters and variables.	`bae log list --instanceid` *Instance_ID*
[] or [a|b]	It indicates that it is a optional value, and only one item can be selected.	`ipconfig` *[-all|-t]*

Style	Description	Example
{} or {a|b}	It indicates that it is a required value, and only one item can be selected.	`swich {stand | slave}`

Contents

1 ROS support for the cloud assistant to manage ECS instances

This topic describes two new resource types: ALIYUN::ECS::Command and ALIYUN::ECS::Invocation. These resource types are provided by ROS for the cloud assistant, which is a client that enables you to manage your ECS instances more securely.

- ALIYUN::ECS::Command: Creates a command.
- ALIYUN::ECS::Invocation: Runs a command.

You can use these ROS resource types to compile scripts and run these scripts on one or more ECS instances at a time. Specifically, you can run Bat or PowerShell scripts on ECS instances on which Windows is installed, or run Shell scripts on ECS instances on which Linux is installed.

Additionally, by using this client, you can specify the intervals at which a command is run. By doing so, you can keep your ECS instances in a specific state, while also obtaining the monitoring and log information from the ECS instance or implementing a daemon process. The cloud assistant does not initiate any operation, allowing all operations to be in your control.

Resource types

ROS is encapsulated by using the APIs in the cloud assistant to provide these two resource types.

1. Create a cloud assistant command

   The following example shows how to create a cloud assistant command by using an ROS resource stack template:

```
{
  " ROSTemplat  eFormatVer  sion " : " 2015 - 09 - 01 ",
  " Resources " : {
    " MyCommand ": {
      " Type ": " ALIYUN :: ECS :: Command ",
      " Properties ": {
        ' Name ': ' my - command ',
        ' Type ': ' RunShellSc  ript ',
        ' Descriptio  n ': ' my - command - descriptio  n ',
        ' CommandCon  tent ': ' ZWNobyAxMj  M ='
      }
    }
  },
  " Outputs ": {
    " CommandId ": {
```

```
        " Value " : {" Fn :: GetAtt ": [" MyCommand ", " CommandId
 "]}
    }
  }
}
```

In this example, the `Type` parameter is set to `ALIYUN :: ECS :: Command`. The options in the `Properties` parameter are as follows:

- `Name`: the name of the command. Value: `my - command`.
- `Type`: the type of the command. Value: `RunShellSc ript`.
- `Descriptio n`: the description of the command. Value: `my - command - descriptio n`.
- `CommandCon tent`: the Base64-encoded content of the command. The content size cannot exceed 16 KB. In this option, the `ZWNobyAxMj M` field indicates the Base64 code that is obtained by using the `echo 123` command.

The `CommandId` is returned in the `Outputs` tag.

The cloud assistant supports the following three types of scripts:

- Bat script for ECS instances on which Windows is installed: `RunBatScri pt`
- PowerShell script for ECS instances on which Windows is installed: `RunPowerSh ellScript`
- Shell script for ECS instances on which Linux is installed: `RunShellSc ript`

2. Run a cloud assistant command

The following example shows how to run a cloud assistant command by using an ROS resource stack template:

```
{
  " ROSTemplat eFormatVer sion " : " 2015 - 09 - 01 ",
  " Resources " : {
    " MyCommand ": {
      " Type ": " ALIYUN :: ECS :: Command ",
      " Properties ": {
        ' Name ': ' my - command ',
        ' Type ': ' RunShellSc ript ',
        ' Descriptio n ': ' my - command - descriptio n ',
        ' CommandCon tent ': ' ZWNobyAxMj M ='
      }
    },
    " MyInvocati on ": {
      " Type ": " ALIYUN :: ECS :: Invocation ",
      " Properties ": {
        ' CommandId ': { " Fn :: GetAtt " : [ " MyCommand ", "
 CommandId " ] },
        ' InstanceId s ': [
```

```
            " i - 2zefq1f3yn  nrr89qkzg9 "
          ],
          ' Timed ':  true ,
          ' Frequency ': ' 0 / 10   0 / 1  * * * ?'
        }
      }
    },
    " Outputs ": {
      " CommandId ": {
          " Value " : {" Fn :: GetAtt ": [" MyCommand ", " CommandId
 "]}
      },
      " InvokeId ": {
          " Value " : {" Fn :: GetAtt ": [" MyInvocati  on ", "
 InvokeId "]}
      }
    }
}
```

In this example, the `Type` parameter is set to `ALIYUN :: ECS :: Invocation`. The options in the `Properties` parameter are as follows:

- `CommandId`: the ID of the command. The system calls the `Fn :: GetAtt` built-in function to obtain the value of this option.
- `InstanceId  s`: the IDs of the ECS instances on which the command is run. Up to 20 ECS instance IDs are allowed. The ECS instances must run in Virtual Private Clouds (VPCs).
- `Timed`: Specifies whether to run the command periodically.
- `Frequency`: the interval at which the command is run. Set this option following Cron expressions. For more information, see Cron expressions.

The `CommandId` and `InvokeId` of the command are returned in the `Outputs` tag.

Create a cloud assistant resource stack

1. Log on to the ROS console.
2. Log on to the .
3. In the left-side navigation pane, click Stack Management.
4. In the upper right area of the displayed page, click New Resource Stack.
5. Enter the template region, source, and data. Then click Next

If the cloud assistant resource stack failed to be created, the system automatically rolls back the resources of the entire stack.

2 ROS support for Elastic Network Interface

This topic describes three new resource types that are provided by ROS for Elastic Network Interface (ENI): ALIYUN::ECS::NetworkInterface, ALIYUN::ECS::NetworkInterfaceAttachment, and ALIYUN::ECS::NetworkInterfacePermission.

- ALIYUN::ECS::NetworkInterface: Creates an ENI.
- ALIYUN::ECS::NetworkInterfaceAttachment: Attaches an ENI to an ECS instance.
- ALIYUN::ECS::NetworkInterfacePermission: Grants a user the permission to attach an ENI to an ECS instance.

You can use these ROS resource types to orchestrate ENIs and other cloud resources into an ROS resource stack template. By using this template, you can easily deploy the ENIs and cloud resources.

Create an ENI

The ROS resource type ALIYUN::ECS::NetworkInterface provides the same capabilities as the #unique_5 API. The following example shows how to use this resource type to create an ROS resource stack template, and then use this template to create an ENI.

```
{
  " ROSTemplat  eFormatVer  sion " : " 2015 - 09 - 01 ",
  " Resources " : {
    " EniInstanc  e ": {
      " Type ": " ALIYUN :: ECS :: NetworkInt  erface ",
      " Properties ": {
        ' VSwitchId ': ' vsw - 2zetgeiqle  myok9z5 ****',
        ' SecurityGr  oupId ': ' sg - 2ze3yg7oo9  0ejude ****',
        ' NetworkInt  erfaceName ': ' my - eni - name '
        ' Descriptio  n ': ' eni - name - descriptio  n '
      }
    }
  },
  " Outputs ": {
    " NetworkInt  erfaceId ": {
        " Value " : {" Fn :: GetAtt ": [" EniInstanc  e ", "
 NetworkInt  erfaceId "]}
    }
  }
}
```

You only need to specify the VSwitch ID (`VSwitchId`) and security group ID (`SecurityGr  oupId`) of the ENI. You can also specify the ENI name (`NetworkInt`

erfaceName) and descriptive information (Descriptio n) as needed. The ENI ID (NetworkInt erfaceId) is returned in the Outputs tag.

Attach an ENI to an ECS instance

The ROS resource type ALIYUN::ECS::NetworkInterfaceAttachment provides the same capabilities as the AttachNetworkInterface API. The following example shows how to use this resource type to create an ROS resource stack template, and then use this template to attach an ENI to an ECS instance.

```
{
  " ROSTemplat  eFormatVer  sion " : " 2015 - 09 - 01 ",
  " Resources " : {
    " EniInstanc  e ": {
      " Type ": " ALIYUN :: ECS :: NetworkInt  erfaceAtta  chment ",
      " Properties ": {
        ' NetworkInt  erfaceId ': ' eni - 2zefnmihs8  r13tqd ****',
        ' InstanceId ': ' i - 2ze8m2j71r  b2m8sa ****'
        }
    }
  }
}
```

You only need to specify the ENI ID (NetworkInt erfaceId) and the ECS instance ID (InstanceId).

Grant a user the permission to attach an ENI to an ECS instance

The ROS resource type ALIYUN::ECS::NetworkInterfacePermission provides the same capabilities as the CreateNetworkInterfacePermission API. The following example shows how to use this resource type to create an ROS resource stack template, and then use this template to grant a user the permission to attach an ENI to an ECS instance.

```
{
  " ROSTemplat  eFormatVer  sion " : " 2015 - 09 - 01 ",
  " Resources " : {
    " EniPermiss  ionInstanc  e ": {
      " Type ": " ALIYUN :: ECS :: NetworkInt  erfacePerm  ission ",
      " Properties ": {
        ' AccountId ': ' 1754580903  49 ****',
        ' NetworkInt  erfaceId ': ' eni - 2zehcsxova  eso7iv ****'
      }
    }
  },
  " Outputs ": {
    " NetworkInt  erfacePerm  issionId ": {
        " Value " : {" Fn :: GetAtt ": [" EniPermiss  ionInstanc  e ",
 " NetworkInt  erfacePerm  issionId "]}
    }
  }
```

```
}
```

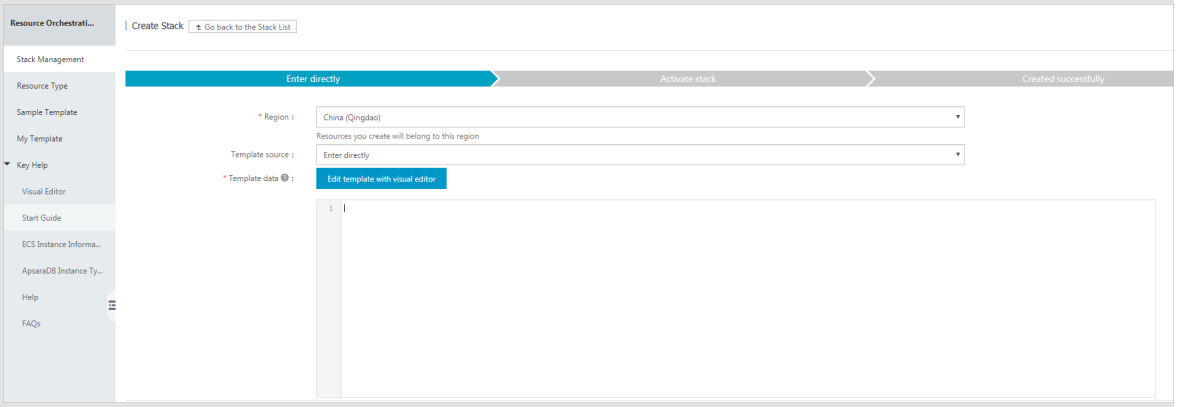
You must specify the ENI ID (`NetworkInterfaceId`) and the user ID (`AccountId`). The permission ID (`NetworkInterfacePermissionId`) required for attaching the ENI to an ECS instance is returned in the `Outputs` tag.

Use an ROS resource stack template to create an ECS instance and attach an ENI to the ECS instance

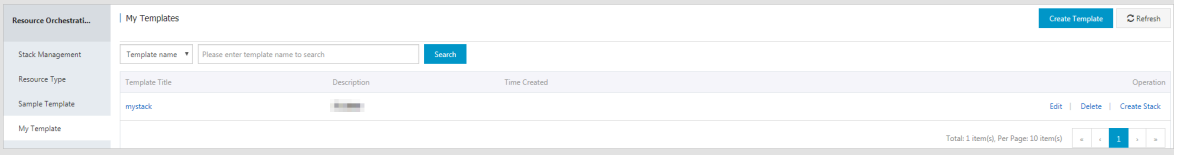
1. Compile an ROS resource stack template. For more information, see the following Appendix: Example of ROS resource stack template (to create an ECS instance and attach an ENI to it).
2. Create a resource stack, and enter information such as the image ID, instance type , and region required for creating an ECS instance.

Note:

- When creating the resource stack, the system also creates a VPC, a VSwitch, a security group, an ECS instance, and an ENI. The system grants a specified user the permission to attach the ENI to an ECS instance and attaches the ENI to the created ECS instance. During the whole process, you only need to enter the required information, and the system automatically completes all the other work to do.



- If the resource stack failed to be created, the system automatically rolls back the resources of the entire stack.
- If the resource stack was created, you can save the ROS resource stack template for future use.



Appendix: Example of ROS resource stack template (to create an ECS instance and attach an ENI to it)

```
{
    " ROSTemplat  eFormatVer  sion ": " 2015 - 09 - 01 ",
    " Descriptio  n ": " One   VPC ,  VSwitch ,  security   group ,
 ECS   instance ,  and   route .  The   user   needs   to   specify
 the   image   ID .",
    " Parameters ": {
        " ImageId ": {
            " Default ": " centos_7 ",
            " Type ": " String ",
            " Descriptio  n ": " Image   Id ,  represents   the
 image   resource   to   startup   the   ECS   instance , < a   href
 ='#/ product / cn - shenzhen / list / imageList '  target =' _blank
 '> View   image   resources </ a >"
        },
        " InstanceTy  pe ": {
            " Type ": " String ",
            " Descriptio  n ": " The   ECS   instance   type , < a
  href ='#/ product / cn - shenzhen / list / typeList '  target ='
 _blank '> View   instance   types </ a >",
            " Default ": " ecs . sn1ne . large "
        },
        " AccountId ":{
            " Type ": " String ",
            " Descriptio  n ": " The   account   id "
        },
        " ZoneId ": {
            " Type ": " String ",
            " Descriptio  n ": " The   available   zone , < a   href
 ='#/ product / cn - shenzhen / list / zoneList '  target =' _blank '>
 View   available   zones </ a >"
        },
        " SecurityGr  oupName ": {
            " Type ": " String ",
            " Descriptio  n ": " The   security   group   name ",
            " Default ": " my - sg - name "
        },
        " NetworkInt  erfaceName ": {
            " Type ": " String ",
            " Descriptio  n ": " The   Network   interface   name ",
            " Default ": " my - eni - name "
        },
        " VpcName ": {
            " Type ": " String ",
            " Descriptio  n ": " The   VPC   name ",
            " MinLength ":  2 ,
            " MaxLength ":  128 ,
            " Constraint  Descriptio  n ": "[ 2 ,  128 ]  English   or
  Chinese   letters ",
            " Default ": " my - vpc - name "
        },
        " IoOptimize  d ": {
            " AllowedVal  ues ": [
                " none ",
                " optimized "
            ],
            " Descriptio  n ": " IO   optimized ,  optimized   is
 for   the   IO   optimized   instance   type ",
            " Type ": " String ",
            " Default ": " optimized "
```

```
        },
        " SystemDisk  Category ": {
            " AllowedVal  ues ": [
                " cloud ",
                " cloud_effi  ciency ",
                " cloud_ssd "
            ],
            " Descriptio  n ": " System   disk   category :  average
  cloud   disk ( cloud ),  efficient   cloud   disk ( cloud_effi
ciency )  or   SSD   cloud   disk ( cloud_ssd )",
            " Type ": " String ",
            " Default ": " cloud_ssd "
        },
        " VpcCidrBlo  ck ": {
            " Type ": " String ",
            " AllowedVal  ues ": [
                " 192 . 168 . 0 . 0 / 16 ",
                " 172 . 16 . 0 . 0 / 12 ",
                " 10 . 0 . 0 . 0 / 8 "
            ],
            " Default ": " 10 . 0 . 0 . 0 / 8 "
        },
        " VSwitchCid  rBlock ": {
            " Type ": " String ",
            " Descriptio  n ": " The   VSwitch   subnet   which   must
  be   within   VPC ",
            " Default ": " 10 . 0 . 10 . 0 / 24 "
        }
    },
    " Resources ": {
        " Vpc ": {
            " Type ": " ALIYUN :: ECS :: VPC ",
            " Properties ": {
                " CidrBlock ": {
                    " Ref ": " VpcCidrBlo  ck "
                },
                " VpcName ": {
                    " Ref ": " VpcName "
                }
            }
        },
        " VSwitch ": {
            " Type ": " ALIYUN :: ECS :: VSwitch ",
            " Properties ": {
                " CidrBlock ": {
                    " Ref ": " VSwitchCid  rBlock "
                },
                " ZoneId ": {
                    " Ref ": " ZoneId "
                },
                " VpcId ": {
                    " Fn :: GetAtt ": [
                        " Vpc ",
                        " VpcId "
                    ]
                }
            }
        },
        " WebServer ": {
            " Type ": " ALIYUN :: ECS :: Instance ",
            " Properties ": {
                " ImageId ": {
                    " Ref ": " ImageId "
                },
```

```
                " InstanceTy  pe ": {
                    " Ref ": " InstanceTy  pe "
                },
                " SecurityGr  oupId ": {
                    " Ref ": " SecurityGr  oup "
                },
                " VpcId ": {
                    " Fn :: GetAtt ": [
                        " Vpc ",
                        " VpcId "
                    ]
                },
                " VSwitchId ": {
                    " Ref ": " VSwitch "
                },
                " IoOptimize  d ": {
                    " Ref ": " IoOptimize  d "
                },
                " SystemDisk  _Category ": {
                    " Ref ": " SystemDisk  Category "
                }
            }
        },
        " SecurityGr  oup ": {
            " Type ": " ALIYUN :: ECS :: SecurityGr  oup ",
            " Properties ": {
                " SecurityGr  oupName ": {
                    " Ref ": " SecurityGr  oupName "
                },
                " VpcId ": {
                    " Ref ": " Vpc "
                }
            }
        },
        " ENI ": {
            " Type ": " ALIYUN :: ECS :: NetworkInt  erface ",
            " Properties ": {
                " VSwitchId ": {
                    " Ref ": " VSwitch "
                },
                " SecurityGr  oupId ": {
                    " Ref ": " SecurityGr  oup "
                },
                " NetworkInt  erfaceName ": {
                    " Ref ": " NetworkInt  erfaceName "
                }
            }
        },
        " EniAttach ": {
            " Type ": " ALIYUN :: ECS :: NetworkInt  erfaceAtta
chment ",
            " Properties ": {
                " NetworkInt  erfaceId ": {
                    " Ref ": " ENI "
                },
                " InstanceId ": {
                    " Ref ": " WebServer "
                }
            }
        },
        " EniPermiss  ionInstanc  e ": {
            " Type ": " ALIYUN :: ECS :: NetworkInt  erfacePerm
ission ",
            " Properties ": {
```

```
                " AccountId ": {
                    " Ref ":" AccountId "
                },
                " NetworkInt  erfaceId ": {
                    " Ref ": " ENI "
                },
                " Permission ": " InstanceAt  tach "
            }
        }
    },
    " Outputs ": {
        " InstanceId ": {
            " Value ": {
                " Fn :: GetAtt ": [
                    " WebServer ",
                    " InstanceId "
                ]
            }
        },
        " PublicIp ": {
            " Value ": {
                " Fn :: GetAtt ": [
                    " WebServer ",
                    " PublicIp "
                ]
            }
        },
        " SecurityGr  oupId ": {
            " Value ": {
                " Fn :: GetAtt ": [
                    " SecurityGr  oup ",
                    " SecurityGr  oupId "
                ]
            }
        },
        " VpcId ": {
            " Value ": {
                " Fn :: GetAtt ": [
                    " Vpc ",
                    " VpcId "
                ]
            }
        },
        " VSwitchId ": {
            " Value ": {
                " Fn :: GetAtt ": [
                    " VSwitch ",
                    " VSwitchId "
                ]
            }
        },
        " NetworkInt  erfaceId ": {
            " Value ": {
                " Fn :: GetAtt ": [
                    " ENI ",
                    " NetworkInt  erfaceId "
                ]
            }
        },
        " NetworkInt  erfacePerm  issionId ": {
            " Value ": {
                " Fn :: GetAtt ": [
                    " EniPermiss  ionInstanc  e ",
                    " NetworkInt  erfacePerm  issionId "
```

```
                    ]
                }
            }
        }
}
```