Programming Guide

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VMware, Inc.
3401 Hillview Ave.
Palo Alto, CA 94304
www.vmware.com

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Contents

vRealize Automation Programming Guide 8

Updated Information 9

1 Overview of the vRealize Automation REST API 10
- REST API Services 10
- Using the vRealize Automation REST API 13
- About the API Use Cases 13

2 REST API Authentication 15
- About HTTP Bearer Tokens 15
- Configure the Duration of an HTTP Bearer Token 16
- Request an HTTP Bearer Token 16
  - Syntax for Requesting an HTTP Bearer Token 18
- Validate an HTTP Bearer Token 19
- Delete an HTTP Bearer Token 20

3 Creating a Tenant 22
- Prerequisites for Creating a Tenant 22
- Create a Tenant With Parameters Inline 22
- Create a Tenant With a JSON File 25
- Identity Service Examples for Creating a Tenant 27
  - Syntax for Displaying Your Current Tenants 28
  - Syntax for Requesting a New Tenant 30
  - Syntax for Listing All Tenant Identity Stores 33
  - Syntax for Linking an Identity Store to the Tenant 35
  - Syntax for Searching LDAP or Active Directory for a User 39
  - Syntax for Assigning a User to a Role 41
  - Syntax for Displaying all Roles Assigned to a User 41

4 Requesting a Machine 45
- Request a Machine 45
- Catalog Service Examples for Requesting a Machine 47
  - Syntax for Listing Shared and Private Catalog Items 47
  - Syntax for Getting Information for a Catalog Item 51
  - Syntax for Getting a Template Request for a Catalog Item 55
  - Syntax for Requesting a Machine 59
  - Syntax for Viewing Details of a Machine Request 62

5 Approving a Machine Request 67

Approve a Machine Request 67

Work Item Service Examples for Approving a Machine Request 68

Syntax for Listing Work Items 69

Syntax for Getting Work Item Details 75

Syntax for Constructing a JSON File to Approve a Machine Request 80

Syntax for Approving a Submitted Machine Request 84

Syntax for Updating Price Information 86

6 Listing Provisioned Resources 90

Prerequisites for Listing Provisioned Resources 90

Display Your Provisioned Resources Example 90

Display Provisioned Resources by Resource Type Example 94

Display All Available Resource Types Example 97

Display Provisioned Resources by Business Groups You Manage Example 100

View Machine Details Example 108

7 Managing Provisioned Deployments 113

Manage Provisioned Deployments 113

Power Off 114

Change Lease 116

Catalog Service Examples for Managing Provisioned Deployments 117

Syntax for Getting Deployment Details 117

Syntax for Navigating to the Children of a Deployed Resource 121

8 Working with Reservations 129

Prerequisites for Working With Reservations 130

Create a Reservation 130

Display a List of Supported Reservation Types 131

Displaying a Schema Definition for a Reservation 134

Get the Business Group ID for a Reservation 160

Get a Compute Resource for the Reservation 162

Getting a Resources Schema by Reservation Type 164

Creating a Reservation By Type 169

Verify a Reservation and Get Reservation Details 179

Display a List of Reservations 187

Update a Reservation 192

Delete a Reservation 197

Service Examples for Working with Reservations 197

Syntax for Displaying a List of Reservations 199

Syntax for Displaying a Schema Definition for a vSphere Reservation 205

Syntax for Displaying a Schema Definition for an Amazon Reservation 212
Syntax for Displaying a Schema Definition for a vCloud Air Reservation 227
Syntax for Getting the Business Group ID for a Reservation 239
Syntax for Getting a Compute Resource for a Reservation 242
Syntax for Getting Resources Schema for a vSphere Reservation 246
Syntax for Getting Resources Schema for an Amazon Reservation 249
Syntax for Getting Resources Schema for a vCloud Air Reservation 252
Syntax for Creating a vSphere Reservation 255
Syntax for Creating an Amazon Reservation 260
Syntax for Creating a vCloud Air Reservation 263
Syntax for Verifying a Reservation and Getting Reservation Details 268
Syntax for Displaying a List of Supported Reservation Types 277
Syntax for Updating a Reservation 282
Syntax for Deleting a Reservation 287

9 Working with Reservation Policies 289
Prerequisites for Working with Reservation Policies 289
List Reservation Policies Example 289
Create a Reservation Policy Example 291
Display a Reservation Policy by ID Example 293
Update a Reservation Policy Example 294
Deleting a Reservation Policy Example 295

10 Working with Key Pairs 297
Prerequisites for Working with Key Pairs 297
Get a Key Pair List Example 297
Create a Key Pair Example 300
Query a Key Pair Example 303
Update a Key Pair Example 305
Delete a Key Pair Example 306

11 Working with Network Profiles 308
Prerequisites for Working With Network Profiles 310
Get a Network Profile List Example 310
Create an External Network Profile Without IPAM Example 319
Create an External Network Profile Using External IPAM Example 321
Query a Network Profile Example 323
Update a Network Profile Example 328
Delete a Network Profile Example 329

12 Getting a List of Available IP Ranges 331

Get a List of Available IP Ranges for an IPAM Provider 331

13 Importing and Exporting Content 349

Prerequisites for Importing and Exporting Content 350

List Supported Content Types Example 350

List Available Content Example 354

Filter Content by Content Type Example 359

Create a Package for Export Example 360

List Packages in the Content Service Example 362

Export a Package Example 365

Validate a Content Bundle Before Importing example 365

Import a Package Example 368

Export XaaS Content Example 370

Import XaaS Content Example 371

14 Updating Tenancy on a Security Object 373

Update the Tenancy for a Security Group 373

Network Service Examples for Updating Tenancy 374

Syntax for Retrieving Security Groups 375

Syntax for Updating a Tenant ID 376

15 Triggering an Active Directory Synchronization 380

Trigger Sync to an Active Directory 380

Identity Service Examples for Triggering Active Directory Synchronization 381

Syntax for Retrieving Directories 382

Syntax for Synchronizing the Active Directory 383

Syntax for Checking the Synchronization Process 384

16 Retrieving Health Test Results 386

Retrieve Health Test Results 386

Health Broker Proxy Server Examples to Obtain Test Results 389

Syntax for Requesting a Health Services Token 390

Syntax to Retrieve a List of Configurations 390

Syntax to Filter for Latest Execution of a Configuration 391

Syntax to Find All Individual Results 393

17 Related Tools and Documentation 397

Using vRealize CloudClient 397

Enabling vRealize CloudClient Multi-Factor Authentication for vRealize Automation Users 397

Using Third Party Tools 401

18 Filtering and Formatting REST API Information 403

vRealize Automation Programming Guide

The *Programming Guide* provides information about the vRealize Automation REST APIs, including how to use the REST API services and resources, create HTTP bearer tokens for authentication and authorization, and construct REST API service calls.

Intended Audience

This information is intended for administrators and programmers who want to configure and manage vRealize Automation programmatically using the vRealize Automation REST API. The guide focuses on common use cases. For related information about all available REST API services, see the *vRealize Automation API Reference* at https://code.vmware.com/apis/vrealize-automation.

Updated Information

This *Programming Guide* is updated with each release of the product or when necessary.

This table provides the update history of the *Programming Guide*.

Revision	Description
24 APR 2019	Corrected syntax in command to obtain existing client secret in Creating the New OAuth2 Client .
12 APR 2018	Initial release.

Overview of the vRealize Automation REST API

1

The vRealize Automation REST API provides consumer, administrator, and provider-level access to the service catalog with the same services that support the vRealize Automation console user interface. You can perform vRealize Automation functions programmatically by using REST API service calls.

This chapter includes the following topics:

- REST API Services
- Using the vRealize Automation REST API
- About the API Use Cases

REST API Services

The vRealize Automation REST API offers the following services and functions.

Table 1-1. vRealize Automation REST API Services

Service	Description
Advanced Designer Service	The advanced designer service selection on the *vRealize Automation API Reference* landing page selects the documentation for the XaaS service. Manages XaaS elements such as forms, endpoints, XaaS blueprints, tenants, vRealize Orchestrator imports, workflows, and work items.
Approval Service	Retrieve, create, update, and delete approval policies, policy types, policy instances, and policy requests.
Branding Service	Change the background and text colors, company logo, company name, product name, tenant name, and other resources in the console.
Catalog Service	Retrieve global and entitled catalog items, and entitlements for a catalog item and its service that the current user can review. A consumer can retrieve, edit, and submit a request form for a catalog item. A provider can retrieve, register, update, and delete catalog items. Provision and manage systems.
Component Registry Service	Access and manage all services and serves as the central view for all service lookups.

Table 1-1. vRealize Automation REST API Services (continued)

Service	Description
Composition Service	Allows vRealize Automation services to register application components, which the composition service manages so that they can be used in composite blueprints.
Container Service	Request provisioning of an application, described through a high-level definition or blueprint. The Provisioning service reduces to a model of resources with code to run, requirements, and relationships.
Content Service	Access and manage the content controller and package controller for export and import processes. This includes export and import for blueprints and software.
Endpoint Configuration Service	Create, read, update and delete endpoint types, endpoint categories, and endpoints.
Event Broker Service	Provide a central location and a consistent way of recording events and querying for events.
Extensibility Service	Manage extensions, plugins, and wizard states.
Forms Service	Used internally by the vRealize Automation system to create, read, update, and delete (perform CRUD operations on) request forms for XaaS components.
IaaS Proxy Provider Service	Run a proxy service that acts as a bridge between the service catalog and the IaaS provider to call other services, such as the catalog service, composition service, reservation service, and event broker service.
Identity Service	Manage tenants, business groups, SSO and custom groups, users, and identity stores.
IP Address Management Service	Allocate and deallocate IP addresses from IP address management (IPAM) providers.
Licensing Service	Retrieve permissions and post serial keys.
Network Service	Access and manage application network and security settings for creating and configuring NAT and routed networks; creating load balancers; and adding and configuring security groups, security tags and security policies for application components.
Notification Service	Configure and send notifications for several types of events such as the successful completion of a catalog request or a required approval.
Orchestration (o11n) Gateway Service	Provides a gateway to VMware Realize Orchestrator (vRO) for services running on vRealize Automation. By using the gateway, consumers of the API can access a vRO instance, and initiate workflows or script actions without having to deal directly with the vRO APIs.

Table 1-1. vRealize Automation REST API Services (continued)

Service	Description
Placement Service	Provides vRealize Automation with recommendations for the placement of deployments. With cluster health information from an external service such as vRealize Operations Manager, the service suggests reservations to use for the provisioning of blueprint components.
Portal Service	Retrieve, create, update, and delete a portal resource.
Properties Service	Manage custom properties, property groups, and property definitions. Properties specify items that can be added to blueprints to trigger vRealize Orchestrator actions.
Reclamation Service	Retrieve work item forms, callbacks, and tasks. Manage endpoint details including tenant, password, user name, and endpoint URL. Retrieve performance metrics. Retrieve and cancel reclamation requests.
Reservation Service	Retrieve, create, update, and delete a reservation or reservation policy.
Software Service	Triggers the execution life cycle of software components using the software agent, registers software agents, and manages the creation, modification and deletion of software component, software component types, software resource requests, and nodes (machines).
vRA Orchestrator Service	Manage vRealize Orchestrator actions, tasks, packages, and workflows. Browse system and plug-in inventories.
Work Item Service	Retrieve, create, update, complete, cancel, and delete a work item. Also retrieve form data, metadata, detail forms, and submission forms from service providers.

In addition, the vRealize Health Broker is used to execute integration level tests. It runs application health checks and can be queried to provide the status of individual tests so that health issues are identified early.

API References

API services are installed with the product. References are available with the following URLs.

- To access a list of general services in the vRealize Automation API Explorer.

  ```
  https://$vRA/component-registry/services/docs#!/apis
  ```

- To access a list of installation and configuration services as a Swagger document.

  ```
  https://$vRA:5480/config/
  ```

- To access a list of health broker services as a Swagger document.

  ```
  https://$vRA:8090/discovery/swagger
  ```

$vRA denotes an instance of vRealize Automation.

Using the vRealize Automation REST API

To make vRealize Automation REST API service calls, you can use a browser application or an HTTP client program to send requests and review responses.

REST Client Applications

Any client application that can send HTTPS requests is an appropriate tool for developing REST applications with the vRealize Automation API. The following open-source applications are commonly used:

- cURL. http://curl.haxx.se
- Postman application. http://www.getpostman.com

Ensuring Backwards Compatibility

If a client deployed with an earlier version of the catalog service REST API is making a call to a server running a later version of the API, you must include a version header in the request so that the server correctly recognizes the client and sends a compatible response.

In the following example, the client running version 6.2 of the catalog service REST API is making a call to a server running a later version of the API.

```
curl --insecure -H "version:6.2" -H "Accept: application/json" -H "Content-Type: application/
json" -H
"Authorization: Bearer $token" https://$vRA/catalog-service/api/consumer/requests/
7aaf9bafaa4e-
47c4-997b-edd7c7983a5b
```

About the API Use Cases

The following REST API use cases provide the prerequisite, command line options and format, and sample results to help you perform a variety of vRealize Automation functions, such as requesting a machine or creating a reservation. Each includes service examples that provide syntax for the calls referenced in the use case.

- Chapter 3 Creating a Tenant
- Chapter 4 Requesting a Machine
- Chapter 5 Approving a Machine Request
- Chapter 6 Listing Provisioned Resources
- Chapter 7 Managing Provisioned Deployments
- Chapter 8 Working with Reservations

- Chapter 9 Working with Reservation Policies
- Chapter 10 Working with Key Pairs
- Chapter 11 Working with Network Profiles
- Chapter 12 Getting a List of Available IP Ranges
- Chapter 13 Importing and Exporting Content
- Chapter 14 Updating Tenancy on a Security Object
- Chapter 15 Triggering an Active Directory Synchronization
- Chapter 16 Retrieving Health Test Results

curl is used for example requests. Request headers required by the API are included in example requests that are not fragments of a larger example. The variable *$vRA* represents the `appliance name.domain name` of the vRealize Automation server in all URLs. The variable *$tenantId* identifies a tenant for the endpoint. Many examples use a fictional tenant identified as **`rainpole`**.

Most example responses show only those elements and attributes that are relevant to the operation being discussed. Ellipses (...) indicate omitted content within response bodies.

Postman collections are not used in the API examples, but are available from the Code Samples section for the vRealize Automation API at VMware{code} or, https://code.vmware.com/apis/vrealize-automation.

REST API Authentication

2

In the REST API, vRealize Automation requires HTTP bearer tokens in request headers for authentication of consumer requests. A consumer request applies to tasks that you can perform in the vRealize Automation console, such as requesting a machine.

To acquire an HTTP bearer token, you authenticate with an identity service that manages the communication with the SSO server. The identity service returns an HTTP bearer token that you include in all request headers until the token expires, or you delete it. An HTTP bearer token expires in 24 hours by default, but you can configure the token with a different duration.

This chapter includes the following topics:

- About HTTP Bearer Tokens
- Configure the Duration of an HTTP Bearer Token
- Request an HTTP Bearer Token
- Validate an HTTP Bearer Token
- Delete an HTTP Bearer Token

About HTTP Bearer Tokens

You use HTTP bearer tokens for tasks that you can also perform in the vRealize Automation console. You create a request header with the `curl` command or with some other utility.

You use POST, HEAD, and DELETE methods to manage HTTP bearer tokens.

Method	URL	Description
POST	/tokens	Authenticate the user with the identity service /tokens and generate a new token.
HEAD	/tokens/*tokenID*	Validate the token *tokenID*.
DELETE	/tokens/*tokenID*	Delete the token *tokenID*.

Use the following root URL for HTTP bearer token calls:

```
https://$vRA/identity/api/tokens
```

The variable *$vRA* represents the `appliance name.domain name` of the vRealize Automation server such as, vra-appliance-name.company.com.

Configure the Duration of an HTTP Bearer Token

You set the duration of HTTP bearer tokens in the `/etc/vcac/security.properties` file on the vRealize Automation appliance.

The effective duration or lifetime of an HTTP bearer token depends on the duration of its corresponding SAML token, which the SSO server creates at request time. An HTTP bearer token expires when it reaches the end of its configured duration, or at the end of the configured duration of the SAML token, whichever comes first. For example, if the configured duration is three days for the HTTP bearer token and two days for the SAML token, the HTTP bearer token expires in two days. A configuration setting on the SSO server determines the duration of SAML tokens.

Prerequisites

- Log in to the vRealize Automation appliance with SSH as root. The password is the one you specified when you deployed the appliance.
- The `/etc/vcac/security.properties` file on the appliance must be editable.

Procedure

1. Open the `/etc/vcac/security.properties` file for editing.
2. Add the following lines to the file, where *N* is an integer specifying the duration of the token in hours.

```
identity.basic.token.lifetime.hours=N
#The number is in hours.
```

3. Save and close the file.
4. Log out of the vRealize Automation appliance.

Results

The new value applies the next time someone requests an HTTP bearer token.

Request an HTTP Bearer Token

You use an HTTP bearer token to authenticate a vRealize Automation REST API consumer request.

A consumer request must specify the correct component registry service and resource. For example, the URL to obtain an HTTP bearer token must specify the identity service and token resource.

For details regarding input, output, and response codes, see Syntax for Requesting an HTTP Bearer Token.

Prerequisites

- Secure a channel between the web browser and the vRealize Automation server. Open a browser and enter the URL such as:

  ```
  https://vra-appliance-name.company.com
  ```

  The system warns that your connection is not private. Click through to confirm the security exception and establish an SSL handshake.
- Log in to vRealize Automation using the applicable credentials. For example, to assign a user to a role, log in as a tenant administrator.
- Verify that the appliance name and fully qualified domain name of the vRealize Automation instance are available.

Procedure

1. Enter the command to request the HTTP bearer token.

   ```
   curl --insecure -H "Accept: application/json" -H 'Content-Type:
   application/json' --data '{"username":"vra-user@company.com","password":"vra-user-
   password","tenant":"company.com"}' https://$vRA/identity/api/tokens
   ```

   In this example, `$vRA` is an instance of vRealize Automation. The `--insecure` flag is included so that the request will return a response even if the traffic is not secured with a trusted certificate.
2. Examine the response.

   A successful request returns an HTTP bearer token that you include in subsequent API requests.
3. For convenience, store the token in a variable.

   ```
   export token="EXAMPLE-TOKEN-TEXT"
   ```

Example: Token Request and Response

The following sample displays output based on the example request.

```
curl --insecure -H "Accept: application/json" -H 'Content-Type: application/json' --data
'{"username":"vra-user@company.com","password":"vra-user-password","tenant":"company.com"}'
https://$vRA/identity/api/tokens
{"expires":"2017-04-14T04:46:43.000Z","id":"MTQ5Mj ... M2RmMA==","tenant":"company.com"}
```

The `id` is the bearer token to store for future use.

```
export token="MTQ5Mj ... M2RmMA=="
```

If the credentials supplied in the Authorization header are invalid, the response includes status code 401 as in the following output.

```
<!DOCTYPE html><html><head><title>Error report</title></head><body><h1>HTTP Status 401 -
Authentication required</h1></body></html>
```

Syntax for Requesting an HTTP Bearer Token

An HTTP bearer token is required by the REST client to use the vRealize Automation REST API. You obtain a bearer token by authenticating to the identity service.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/identity/api/tokens
$vRA	*appliance name.domain name* of the vRealize Automation server.
usrname	Tenant administrator user name.
passwd	Tenant administrator password.
tenantURLtoken	Tenant URL token determined by the system administrator when creating the tenant such as, support.

Output

The following information is displayed as a result of your HTTP bearer token request.

Parameter	Description
expires	Contains the ISO 8601 timestamp indicating when the token expires.
id	Contains the HTTP bearer token to use in Authorization header in subsequent requests.
tenant	Displays the tenant ID associated with the token.

Response Status Codes

One of the following codes are displayed as a result of your HTTP bearer token request.

Status Code	Description
200 OK	Your request succeeded and the resource was updated. The response body contains the full representation of the resource.
400 BAD REQUEST	The data you provided in the POST failed validation. Inspect the response body for details.
401 UNAUTHORIZED	The request could not authenticate the user or authentication credentials required.

Example: curl Command to Request HTTP Bearer Token

The following example command requests an HTTP bearer token.

```
curl --insecure -H "Accept: application/json" -H 'Content-Type: application/json'
--data '{"username":"usrname","password":"passwd","tenant":"tenantURLtoken"}' https://$vRA/
identity/api/tokens
```

When your request succeeds, the system returns the expiration date and time of the token, and the HTTP bearer token.

Validate an HTTP Bearer Token

You can validate an existing HTTP bearer token.

Prerequisites

- Request an HTTP Bearer Token.

Procedure

1. Enter the command to validate the HTTP bearer token.

```
curl --insecure -I -H "Accept: application/json" -H "Authorization:  Bearer $token" -H
"Cache-Control: no-cache" "https://$vRA/identity/api/tokens/$token"
```

2. Examine the response.

   A successful request returns status code 204.

Example: Validate Token Request and Response

The following sample displays output based on the example request.

```
curl --insecure -I -H "Accept: application/json" -H "Authorization:  Bearer $token" -H "Cache-
Control: no-cache" "https://$vRA/identity/api/tokens/$token"
HTTP/1.1 204
Cache-Control: no-cache, no-store, max-age=0, must-revalidate
Pragma: no-cache
Expires: 0
Strict-Transport-Security: max-age=31536000 ; includeSubDomains
```

```
X-XSS-Protection: 1; mode=block
X-Frame-Options: DENY
X-Content-Type-Options: nosniff
Content-Type: application/json;charset=UTF-8
Date: Thu, 13 Apr 2017 21:56:02 GMT
X-Frame-Options: SAMEORIGIN
```

The server returns one of the following status codes.

Table 2-1. Status Codes for Validate a Bearer Token

Status Code	Description
204 NO CONTENT	The request succeeded.
401 UNAUTHORIZED	You must have authentication credentials to access the resource. All requests must be authenticated.
403 FORBIDDEN	Your authentication credentials do not provide sufficient access to the resource.
404 NOT FOUND	Could not locate the resource based on the specified URI.
405 METHOD NOT ALLOWED	The HEAD method is not supported for the resource.
500 SERVER ERROR	Could not create or update the resource because of an internal server error.

Delete an HTTP Bearer Token

You can delete an HTTP bearer token.

Prerequisites

- Request an HTTP Bearer Token.

Procedure

1. Enter the command to delete the HTTP bearer token, as in the following example.

```
curl --insecure -X DELETE -H "Accept: application/json" -H "Authorization:  Bearer $token"
-H "Cache-Control: no-cache" "https://$vRA/identity/api/tokens/$token"
```

2. Examine the response.

   A successful request returns status code 204.

Example: Delete Token Request and Response

The following sample displays output based on the example request.

```
curl --insecure -X DELETE -H "Accept: application/json" -H "Authorization:  Bearer $token" -H
"Cache-Control: no-cache" "https://$vRA/identity/api/tokens/$token"
204 NO CONTENT
```

The server returns one of the following status codes.

Table 2-2. Status Codes for Delete a Bearer Token

Status Code	Description
204 NO CONTENT	The request succeeded. The resource has been deleted.
401 UNAUTHORIZED	You must have authentication credentials to access the resource. All requests must be authenticated.
403 FORBIDDEN	Your authentication credentials do not provide sufficient access to the resource.
404 NOT FOUND	Could not locate the resource based on the specified URI.
405 METHOD NOT ALLOWED	The DELETE method is not supported for the resource.
500 SERVER ERROR	Could not create or update the resource because of an internal server error.

Creating a Tenant

3

You use the identity service to create a tenant.

The identity service is comprised of two components: authentication and authorization. The authentication component manages tenants, groups, users, and identity stores. Creating a tenant is an authentication example.

Two use cases show how to create a tenant, either with parameters inline or with input values in a JSON file. After creating a tenant, you can use other service examples to perform additional authentication and authorization functions.

For general information about creating and working with tenants, see *Configuring vRealize Automation* in the vRealize Automation information center.

This chapter includes the following topics:

- Prerequisites for Creating a Tenant
- Create a Tenant With Parameters Inline
- Create a Tenant With a JSON File
- Identity Service Examples for Creating a Tenant

Prerequisites for Creating a Tenant

Satisfy the following conditions before performing any tasks for this use case.

- Log in to vRealize Automation as a **system administrator** or a **tenant administrator**.
- Verify that the appliance name and fully qualified domain name of the vRealize Automation instance are available.
- Verify that you have a valid HTTP bearer token that matches your login credentials. See Chapter 2 REST API Authentication.

Create a Tenant With Parameters Inline

To create a tenant with parameters inline, you first display all available tenants then request a new tenant with input parameters specified inline.

Prerequisites

In addition to the Prerequisites for Creating a Tenant, verify that you have parameter values for the new tenant.

Procedure

1 Use the identity service to display all the available tenants.

```
curl --insecure -H "Accept:application/json" -H "Authorization: Bearer $token" https://
$vRA/identity/api/tenants
```

For details regarding input and output of this sample, see Syntax for Displaying Your Current Tenants .

2 Examine the response to verify that the tenant you plan to create is not listed.

See the output of the request to display all tenants Create a Tenant With Parameters Inline.

3 Submit a request for a new tenant with parameters inline.

```
curl -X PUT --insecure -H "Accept:application/json" -H "Content-Type: application/json" -H
"Authorization: Bearer $token" https://$vRA/identity/api/tenants/rainpole --data
'{"@type":"Tenant","id":"rainpole","urlName":"rainpole","name":"rainpoleTenant","descriptio
n":"New Custom Tenant","contactEmail":"admin@vmware.com","defaultTenant":false}'
```

For details regarding input and output of this sample, see Syntax for Requesting a New Tenant

4 Use the identity service to display all the available tenants again.

```
curl --insecure -H "Accept:application/json" -H "Authorization: Bearer $token" https://
$vRA/identity/api/tenants
```

5 Examine the response to verify that the tenant you requested is listed.

See the output of the request to verify the new tenant is created Create a Tenant With Parameters Inline.

Example: Create a Tenant With Parameters Inline

The following sample output for Step 1 lists three tenants.

```
curl --insecure -H "Accept:application/json" -H "Authorization: Bearer $token" https://$vRA/
identity/api/tenants
{
   "links":[],
   "content"[
      {"@type":"Tenant",
       "id":"vsphere.local",
       "urlName":"vsphere.local",
       "name":"vsphere.local",
       "description":null,
       "contactEmail":null,
       "password":"",
```

```
        "defaultTenant":true},
       {"@type":"Tenant",
        "id":"qe",
        ...},
       {"@type":"Tenant",
        "id":"management",
        ...}
    ],
    "metadata":{"size":20,"totalElements":3,"totalPages":1,"number":1,"offset":0}
}
```

The following sample output for Step 3 shows that the tenant named rainpole has been created.

```
curl -X PUT --insecure -H "Accept:application/json" -H "Content-Type: application/json" -H
"Authorization: Bearer $token" https://$vRA/identity/api/tenants/rainpole --data
'{"@type":"Tenant","id":"rainpole","urlName":"rainpole","name":"rainpoleTenant","description":
"New Custom Tenant","contactEmail":"admin@vmware.com","defaultTenant":false}'
{
   "id":"rainpole",
   "urlName":"rainpole",
   "name":"rainpoleTenant",
   "description":"New Custom Tenant",
   "contactEmail":"admin@vmware.com",
   "defaultTenant":false
}
```

The following sample output for Step 4 lists four tenants including rainpole.

```
curl --insecure -H "Accept:application/json" -H "Authorization: Bearer $token" https://$vRA/
identity/api/tenants
{
   "links":[],
   "content":[
      {"@type":"Tenant",
       "id":"vsphere.local",
       ...},
      {"@type":"Tenant",
       "id":"qe",
       ...},
      {"@type":"Tenant",
       "id":"management",
       ...},
      {"@type":"Tenant",
       "id":"rainpole",
       ...}
   ],
   "metadata":{"size":20,"totalElements":4,"totalPages":1,"number":1,"offset":0}
}
```

Create a Tenant With a JSON File

To create a tenant with a JSON file, you first display all available tenants then request a new tenant with input parameters. The input parameters are specified in a separate JSON file that you call from the request.

Prerequisites

In addition to the Prerequisites for Creating a Tenant, verify that you have parameter values for the new tenant required for the JSON file input.

Procedure

1 Use the identity service to display all the available tenants.

```
curl --insecure -H "Accept:application/json" -H "Authorization: Bearer $token" https://
$vRA/identity/api/tenants
```

For details regarding input and output of this sample, see Syntax for Displaying Your Current Tenants .

2 Examine the response to verify that the tenant you plan to create is not listed.

See the output of the request to display all tenants Create a Tenant With a JSON File.

3 Create a JSON file for the new tenant request to call.

The `newTenant.json` file contains information about the new tenant.

```
{
   "@type":"Tenant",
   "id":"rainpole",
   "urlName":"rainpole",
   "name":"rainpoleTenant",
   "description":"New Custom Tenant",
   "contactEmail":"admin@vmware.com",
   "defaultTenant":false
}
```

4 Submit a request for a new tenant that calls the JSON file.

```
curl -X PUT --insecure -H "Accept:application/json" -H "Content-Type:application/json" -H
"Authorization: Bearer $token" https://$vRA/identity/api/tenants/rainpole --data @C:/Temp/
newTenant.json
```

For details regarding input and output of this sample, see Syntax for Requesting a New Tenant

5 Use the identity service to display all the available tenants again.

```
curl --insecure -H "Accept:application/json" -H "Authorization: Bearer $token" https://
$vRA/identity/api/tenants
```

6 Examine the response to verify that the tenant you requested is listed.

See the output of the request to verify the new tenant is created Create a Tenant With a JSON File.

Example: Create a Tenant With a JSON File

The following sample output for Step 1 lists three tenants.

```
curl --insecure -H "Accept:application/json" -H "Authorization: Bearer $token" https://$vRA/
identity/api/tenants
{
   "links":[],
   "content"[
      {"@type":"Tenant",
       "id":"vsphere.local",
       "urlName":"vsphere.local",
       "name":"vsphere.local",
       "description":null,
       "contactEmail":null,
       "password":"",
       "defaultTenant":true},
      {"@type":"Tenant",
       "id":"qe",
       ...},
      {"@type":"Tenant",
       "id":"management",
       ...}
   ],
   "metadata":{"size":20,"totalElements":3,"totalPages":1,"number":1,"offset":0}
}
```

The following sample output for Step 4, shows that the tenant named rainpole has been created.

```
curl -X PUT --insecure -H "Accept:application/json" -H "Content-Type:application/json"
-H "Authorization: Bearer $token" https://$vRA/identity/api/tenants/rainpole --data @C:/Temp/
newTenant.json
{
   "id": "rainpole",
   "urlName":"rainpole",
   "name":"rainpoleTenant",
   "description":"New Custom Tenant",
   "contactEmail":"admin@vmware.com",
   "password":"",
   "defaultTenant":false
}
```

The following sample output for Step 5 lists four tenants including rainpole.

```
curl --insecure -H "Accept:application/json" -H "Authorization: Bearer $token" https://$vRA/
identity/api/tenants
{
   "links":[],
   "content":[
```

```
        {"@type":"Tenant",
         "id":"vsphere.local",
         ...},
        {"@type":"Tenant",
         "id":"qe",
         ...},
        {"@type":"Tenant",
         "id":"management",
         ...},
        {"@type":"Tenant",
         "id":"rainpole",
         ...}
    ],
    "metadata":{"size":20,"totalElements":4,"totalPages":1,"number":1,"offset":0}
}
```

Identity Service Examples for Creating a Tenant

Syntax for each service example lists input parameters, output parameters, and curl commands.

- Syntax for Displaying Your Current Tenants

  `GET /api/tenants` lists all the vRealize Automation tenants in your system.

- Syntax for Requesting a New Tenant

  `PUT /api/tenants/{tenantId}` submits a request to create or update a tenant. You can specify request parameters using JSON command line input or by calling an existing JSON file from the command line.

- Syntax for Listing All Tenant Identity Stores

  `GET /api/tenants/{tenantId}/directories` lists all available identity stores for a named vRealize Automation tenant, such as the default tenant vsphere.local.

- Syntax for Linking an Identity Store to the Tenant

  `PUT /api/tenants/{tenantId}/directories/{id}` links an LDAP, Active Directory, or Native Active Directory identity store to the vRealize Automation tenant.

- Syntax for Searching LDAP or Active Directory for a User

  `GET /api/tenants/{tenantId}/principals/{userId}` searches the configured LDAP directory, Active Directory, or Native Active Directory for a user.

- Syntax for Assigning a User to a Role

  `PUT /api/authorization/tenants/{tenantId}/principals/{principalId}/scopes/{scopeId}/roles/{scopeRoleId}` assigns a user to a role.

- Syntax for Displaying all Roles Assigned to a User

  `GET /api/authorization/tenants/{tenantId}/principals/{principalId}/roles` displays all of the roles assigned to a user.

Syntax for Displaying Your Current Tenants

`GET /api/tenants` lists all the vRealize Automation tenants in your system.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/identity/api/tenants
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.

Output

The command output contains property names and values based on the command input parameters.

Parameter	Description

Links	Specifies an array of link objects, each of which contains the following parts:
	■ rel: Specifies the name of the link.
	  ■ `Self` refers to the object that was returned or requested. This parameter does not appear when you query a single profile.
	  ■ `First`, `Previous`, `Next`, and `Last` refer to corresponding pages of pageable lists.
	  ■ Specifies the application or service that determines the other names.
	■ href: Specifies the URL that produces the result.

Content	Specifies an array of data rows, each of which represents one of the tenant objects returned in a pageable list. Each tenant object can contain the following information: ■ Id: Specifies the unique tenant identifier. ■ urlName: Specifies the name of the tenant as it appears in URLs. ■ Name: Specifies the name of the tenant for display purposes. ■ description: Specifies the long description of the tenant. ■ contactEmail: Specifies the primary contact email address. ■ Password: Unused ■ defaultTenant: Is set to True if the corresponding tenant is the default tenant (vsphere.local).
Metadata	Specifies the following paging-related data: ■ Size: Specifies the maximum number of rows per page. ■ totalElement: Specifies the number of rows returned. This parameter is not output when you query for a single profile. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped. ■ Size: Specifies the maximum number of rows per page. ■ totalElement: Specifies the number of rows returned. This parameter is not output when you query for a single profile. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped.

Example: curl Command to Display Current Tenants

The following example command displays all available tenants.

```
curl --insecure -H "Accept:application/json" -H "Authorization: Bearer $token" https://$vRA/
identity/api/tenants
```

The response in JSON lists the current tenants. Format the output to improve its readability. For information about formatting output, see Chapter 18 Filtering and Formatting REST API Information.


```
{
   "links":[],
   "content"[
      {
         "@type":"Tenant",
         "id":"vsphere.local",
         "urlName":"vsphere.local",
         "name":"vsphere.local",
         "description":null,
         "contactEmail":null,
         "password":"",
         "defaultTenant":true
      },
      {
         "@type":"Tenant",
         "id":"qe",
         "urlName":"qe",
         "name":"QETenant",
         "description":"Precreated test tenant",
         "contactEmail":null,
         "password":"",
         "defaultTenant":false
      }
      {
         "@type":"Tenant",
         "id":"management",
         "urlName":"management",
         "name":"Management-ITTenant",
         "description":"Precreated test tenant",
         "contactEmail":null,
         "password":"",
         "defaultTenant":false
      }
   ],
   "metadata":{
      "size":20,
      "totalElements":3,
      "totalPages":1,
      "number":1,
      "offset":0
   }
}
```


Syntax for Requesting a New Tenant

`PUT /api/tenants/{tenantId}` submits a request to create or update a tenant. You can specify request parameters using JSON command line input or by calling an existing JSON file from the command line.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/identity/api/tenants/*$tenantId* --data @*$inputFileName*.json
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$tenantId	Specifies the ID of the tenant.
$tenantURL	Specifies the URL of the tenant.
$tenantName	Specifies the name of the tenant.
$description	Specifies a description of the tenant.
$emailAddress	Specifies the contact email address for the tenant.
$password	Optional password for the new tenant. If blank, no password is required.

JSON Input File Template

To simplify command line input, you can call a JSON file with input parameters from the command line. You create the JSON file using a text editor, replacing italicized variables in the following template with your specific values.

```
{
   "@type" : "Tenant",
   "id" : "$tenantId",
   "urlName" : "$tenantURL",
   "name" : "$tenantName",
   "description" : "$description",
   "contactEmail" : "$emailAddress",
   "password": "$password",
   "defaultTenant" : false
}
```

Output

The command output contains property names and values based on the command input parameters.

Parameter	Description

Links	Specifies an array of link objects, each of which contains the following parts:
	■ rel: Specifies the name of the link.
	  ■ `Self` refers to the object that was returned or requested. This parameter does not appear when you query a single profile.
	  ■ `First`, `Previous`, `Next`, and `Last` refer to corresponding pages of pageable lists.
	  ■ Specifies the application or service that determines the other names.
	■ href: Specifies the URL that produces the result.

Content	Specifies an array of data rows, each of which represents one of the tenant objects returned in a pageable list. Each tenant object can contain the following information: ■ Id: Specifies the unique tenant identifier. ■ urlName: Specifies the name of the tenant as it appears in URLs. ■ Name: Specifies the name of the tenant for display purposes. ■ description: Specifies the long description of the tenant. ■ contactEmail: Specifies the primary contact email address. ■ Password: Unused ■ defaultTenant: Is set to True if the corresponding tenant is the default tenant (vsphere.local).
Metadata	Specifies the following paging-related data: ■ Size: Specifies the maximum number of rows per page. ■ totalElement: Specifies the number of rows returned. This parameter is not output when you query for a single profile. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped.

Example: curl Command to Request a New Tenant With JSON File

The following sample `newTenant.json` file contains parameters for the tenant request.

```
{
    "@type" : "Tenant",
    "id" : "rainpole",
    "urlName" : "rainpole",
    "name" : "rainpoleTenant",
    "description" : "New Custom Tenant",
    "contactEmail" : null,
    "password": "",
    "defaultTenant" : true
}
```

The following example command requests a new tenant by calling the `newTenant.json` file.

```
curl --insecure -H "Content-Type: application/json" -H "Authorization: Bearer $token" https://
$vRA/identity/api/tenants/rainpole --data @C:\Temp\newTenant.json
```

Example: curl Command to Request a New Tenant With Parameters Inline

The following example command requests a new tenant with input parameters specified inline.

```
curl --insecure -H "Accept: application/json" -H "Content-Type: application/json"
-H "Authorization: Bearer $token" https://$vRA/identity/api/tenants/rainpole --data
'{"@type":"Tenant","id":"rainpole","urlName":"rainpole","name":"rainpoleTenant",
"description":"New Custom Tenant","contactEmail":null,"defaultTenant":false}'
```

Syntax for Listing All Tenant Identity Stores

`GET /api/tenants/{tenantId}/directories` lists all available identity stores for a named vRealize Automation tenant, such as the default tenant vsphere.local.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/identity/api/tenants/*$tenantId*/directories
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$tenantId	Specifies the ID of the tenant.

Output

The command output contains property names and values based on the command input parameters.

Parameter	Description

Links	Specifies an array of link objects, each of which contains the following parts:
	■ rel: Specifies the name of the link.
	  ■ `Self` refers to the object that was returned or requested. This parameter does not appear when you query a single profile.
	  ■ `First`, `Previous`, `Next`, and `Last` refer to corresponding pages of pageable lists.
	  ■ Specifies the application or service that determines the other names.
	■ href: Specifies the URL that produces the result.

Content	Specifies an array of data rows, each of which represents one of the tenant objects returned in a pageable list. Each tenant object can contain the following information: ■ Id: Specifies the unique tenant identifier. ■ urlName: Specifies the name of the tenant as it appears in URLs. ■ Name: Specifies the name of the tenant for display purposes. ■ description: Specifies the long description of the tenant. ■ contactEmail: Specifies the primary contact email address. ■ Password: Unused ■ defaultTenant: Is set to True if the corresponding tenant is the default tenant (vsphere.local).
Metadata	Specifies the following paging-related data: ■ Size: Specifies the maximum number of rows per page. ■ totalElement: Specifies the number of rows returned. This parameter is not output when you query for a single profile. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped. ■ Size: Specifies the maximum number of rows per page. ■ totalElement: Specifies the number of rows returned. This parameter is not output when you query for a single profile. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped.

Example: curl Command to List All Identity Stores for the Tenant

The following example command lists the identity stores.

```
curl --insecure -H "Accept: application/json" -H 'Content-Type: application/json' -H
"Authorization: Bearer $token" https://$vRA/identity/api/tenants/MYCOMPANY/directories
```

The following JSON output is returned based on the command input.

```
{
   "links":[],
```

```
    "content":[
       {
          "@type":"IdentityStore",
          "domain":"vcac.mycompany.com",
          "name":"openLDAPPromocom",
          "description":null,
          "alias":"promocom.com",
          "type":"LDAP",
          "userNameDn":"cn=promocomadmin,ou=promocom,dc=vcac,dc=mycompany,dc=com",
          "password":null,
          "url":"ldap://10.000.00.000:389",
          "groupBaseSearchDn":"ou=promocom,dc=vcac,dc=mycompany,dc=com",
          "userBaseSearchDn":"ou=promocom,dc=vcac,dc=mycompany,dc=com"
       },
       {
          "@type":"IdentityStore",
          "domain":"example.mycompany.com",
          "name":"openLDAPDemo",
          "description":null,
          "alias":"example.com",
          "type":"LDAP",
          "userNameDn":"cn=demoadmin,ou=demo,dc=example,dc=mycompany,dc=com",
          "password":null,
          "url":"ldap://10.000.00.000:389",
          "groupBaseSearchDn":"ou=demo,dc=example,dc=mycompany,dc=com",
          "userBaseSearchDn":"ou=demo,dc=example,dc=mycompany,dc=com"
       }
    ],
    "metadata":{
       "size":20,
       "totalElements":2,
       "totalPages":1,
       "number":1,
       "offset":0
    }
 }
```


Syntax for Linking an Identity Store to the Tenant

`PUT /api/tenants/{tenantId}/directories/{id}` links an LDAP, Active Directory, or Native Active Directory identity store to the vRealize Automation tenant.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/identity/api/tenants/*$tenantId*/directories/*$domainName* --data @*$inputFileName*.json
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.

Parameter	Description
$tenantId	Specifies the ID of the tenant.
userId	Specifies the ID of the user in the form name@domain.
$domainAlias	Specifies the domain alias.
$domainName	Specifies the domain of the identity store.
$grpBaseSearchDn	Specifies the group search base Distinguished Name.
$identityStoreName	Specifies a description of the new tenant.
$password	Specifies the password.
$identityStoreType	Specifies the identity store type for the tenant. The following values are supported: ■ LDAP ■ AD ■ NATIVE_AD
$identityServerUrl	Specifies the URL of the identity server.
$usrBaseSearchDn	Specifies the user search base Distinguished Name.
$usrNameDn	Specifies the Distinguished Name for the login user.

JSON Input File Template

Use this template to create a JSON input file. Replace the variables in the template with actual values in the file.

```
{
    "alias": "$domainAlias",
    "domain": "$domainName",
    "groupBaseSearchDn": "$grpBaseSearchDn",
    "name": "$identityStoreName",
    "password": "$password",
    "type": "$identityStoreType",
    "url": "$identityServerUrl",
    "userBaseSearchDn": "$usrBaseSearchDn",
    "userNameDn": "$usrNameDn"
}
```

Output

The command output contains property names and values based on the command input parameters.

Parameter	Description

Links	Specifies an array of link objects, each of which contains the following parts:
	■ rel: Specifies the name of the link.
	  ■ `Self` refers to the object that was returned or requested. This parameter does not appear when you query a single profile.
	  ■ `First`, `Previous`, `Next`, and `Last` refer to corresponding pages of pageable lists.
	  ■ Specifies the application or service that determines the other names.
	■ href: Specifies the URL that produces the result.

Content	Specifies an array of data rows, each of which represents one of the tenant objects returned in a pageable list. Each tenant object can contain the following information: ■ Id: Specifies the unique tenant identifier. ■ urlName: Specifies the name of the tenant as it appears in URLs. ■ Name: Specifies the name of the tenant for display purposes. ■ description: Specifies the long description of the tenant. ■ contactEmail: Specifies the primary contact email address. ■ Password: Unused ■ defaultTenant: Is set to True if the corresponding tenant is the default tenant (vsphere.local).
Metadata	Specifies the following paging-related data: ■ Size: Specifies the maximum number of rows per page. ■ totalElement: Specifies the number of rows returned. This parameter is not output when you query for a single profile. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped. ■ Size: Specifies the maximum number of rows per page. ■ totalElement: Specifies the number of rows returned. This parameter is not output when you query for a single profile. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped.

Example: curl Command to Link an Identity Store to a Tenant

The following sample `ldap.json.txt` file contains parameters for the tenant request.

```
{
    "alias": "example.com",
    "domain": "example.mycompany.com",
    "groupBaseSearchDn": "ou=demo,dc=example,dc=mycompany,dc=com",
    "name": "openLDAPDemo",
    "password": "password",
    "type": "LDAP",
    "url": "ldap://10.000.00.000:389",
    "userBaseSearchDn": "ou=demo,dc=example,dc=mycompany,dc=com",
```

```
    "userNameDn": "cn=demoadmin,ou=demo,dc=example,dc=mycompany,dc=com"
}
```

The following example command links an identity store to a tenant by calling the example JSON text file.

```
curl --insecure -H "Content-Type: application/json" -H "Authorization: Bearer $token" https://
$vRA/identity/api/tenants/development/directories/example.mycompany.com
--data @C:\Temp\ldap.json.txt
```

The command also tests that vRealize Automation can connect to the identity store successfully. If the command finishes successfully,vRealize Automation succeeded in connecting to the identity store.

This response in JSON indicates that an identity store is successfully linked to the specified tenant.

```
Request Headers
{
       Content-Type = application/json
             Accept = application/json
     Content-Length = 413
     Accept-Charset = big5, big5-hkscs, euc-jp, euc-kr, gb18030, gb2312, gbk,
ibm-thai, ibm00858, ibm01140, ibm01141, ibm01142, ibm01143, ibm01144, ibm01145,
ibm01146, ibm01147, ibm01148, ibm01149, ibm037, ibm1026, ibm1047, ibm273, ibm277,
ibm278, ibm280, ibm284, ibm285, ibm290, ibm297, ibm420, ibm424, ibm437, ibm500,
ibm775, ibm850, ibm852, ibm855, ibm857, ibm860, ibm861, ibm862, ibm863, ibm864,
ibm865, ibm866, ibm868, ibm869, ibm870, ibm871, ibm918, iso-2022-cn, iso-2022-jp,
iso-2022-jp-2, iso-2022-kr, iso-8859-1, iso-8859-13, iso-8859-15, iso-8859-2,
iso-8859-3, iso-8859-4, iso-8859-5, iso-8859-6, iso-8859-7, iso-8859-8, iso-8859-9,
jis_x0201, jis_x0212-1990, koi8-r, koi8-u, shift_jis, tis-620, us-ascii, utf-16,
utf-16be, utf-16le, utf-32, utf-32be, utf-32le, utf-8, windows-1250, windows-1251,
windows-1252, windows-1253, windows-1254, windows-1255, windows-1256, windows-1257,
windows-1258, windows-31j, x-big5-hkscs-2001, x-big5-solaris, x-compound_text,
x-euc-jp-linux, x-euc-tw, x-eucjp-open, x-ibm1006, x-ibm1025, x-ibm1046, x-ibm1097,
x-ibm1098, x-ibm1112, x-ibm1122, x-ibm1123, x-ibm1124, x-ibm1364, x-ibm1381,
x-ibm1383, x-ibm300, x-ibm33722, x-ibm737, x-ibm833, x-ibm834, x-ibm856, x-ibm874,
x-ibm875, x-ibm921, x-ibm922, x-ibm930, x-ibm933, x-ibm935, x-ibm937, x-ibm939,
x-ibm942, x-ibm942c, x-ibm943, x-ibm943c, x-ibm948, x-ibm949, x-ibm949c, x-ibm950,
x-ibm964, x-ibm970, x-iscii91, x-iso-2022-cn-cns, x-iso-2022-cn-gb, x-iso-8859-11,
x-jis0208, x-jisautodetect, x-johab, x-macarabic, x-maccentraleurope, x-maccroatian,
x-maccyrillic, x-macdingbat, x-macgreek, x-machebrew, x-maciceland, x-macroman,
x-macromania, x-macsymbol, x-macthai, x-macturkish, x-macukraine, x-ms932_0213,
x-ms950-hkscs, x-ms950-hkscs-xp, x-mswin-936, x-pck, x-sjis_0213, x-utf-16le-bom,
x-utf-32be-bom, x-utf-32le-bom, x-windows-50220, x-windows-50221, x-windows-874,
x-windows-949, x-windows-950, x-windows-iso2022jp
}
Response Headers
{
                Date = Wed, 29 Oct 2014 22:41:57 GMT
       Content-Type = application/json;charset=UTF-8
     Content-Length = 0
                Vary = Accept-Encoding,User-Agent
```

```
        Keep-Alive = timeout=15, max=100
        Connection = Keep-Alive
}
Successful
```

Unlinked Identity Store Error

If an identity store is not linked to the specified tenant, the response includes status code 400 such as in the following output.

```
Command failed [Rest Error]: {Status code: 400}, {Error code: 90027} , {Error
Source: null}, {Error Msg: Cannot connect to the directory service.}, {System
Msg: 90027-Connection to directory service can’t be established}
```

To resolve the problem, correct the identity store and connection details in the JSON input file and rerun the command.

Syntax for Searching LDAP or Active Directory for a User

`GET /api/tenants/{tenantId}/principals/{userId}` searches the configured LDAP directory, Active Directory, or Native Active Directory for a user.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/identity/api/tenants/*$tenantId*/principals/*$userId*
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$tenantId	Specifies the ID of the tenant.
$userId	Specifies the ID of the user in the form name@domain.

Output

The command output contains property names and values based on the command input parameters.

Parameter	Description
Links	Specifies an array of link objects, each of which contains the following parts: ■ rel: Specifies the name of the link. ■ `Self` refers to the object that was returned or requested. This parameter does not appear when you query a single profile. ■ `First`, `Previous`, `Next`, and `Last` refer to corresponding pages of pageable lists. ■ Specifies the application or service that determines the other names. ■ href: Specifies the URL that produces the result.
@type	Specifies the user name.
firstName	Specifies the first name of the user.
lastName	Specifies the last name of the user.
description	Specifies the description of the user.
emailAddress	Specifies the email address of the user.
locked	Specifies the Boolean flag indicating if the user is locked out.
disabled	Specifies the Boolean flag indicating if the user is disabled.
principalId	Specifies the principal ID of the user in username@domain format.
tenantName	Specifies the name of tenant to which user belongs.
name	Specifies the first and last name concatenated.

Example: curl Command to Search LDAP or Active Directory for a User

The following example command queries the configured LDAP directory for a specific user.

```
curl --insecure -H "Accept:text/xml" -H "Authorization: Bearer $token" https://$vRA/
identity/api/tenants/$tenantId/principals/$userId
```

The following JSON output is returned based on the command input.

```
{
   "links" : [ ],
   "content" : [
      {
         "@type" : "User",
         "firstName" : "Tony",
         "lastName" : "Anteater",
         "emailAddress" : "tony@example.mycompany.com",
         "locked" : false,
         "disabled" : false,
         "principalId" :
            {
               "domain" : "example.mycompany.com",
```

```
                "name" : "susan"
            },
        "tenantName" : "MYCOMPANY1",
        "name" : "Tony Anteater"
    }
  ]
}
```

Syntax for Assigning a User to a Role

`PUT /api/authorization/tenants/{tenantId}/principals/{principalId}/scopes/{scopeId}/roles/{scopeRoleId}` assigns a user to a role.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/identity/api/authorization/tenants/*$tenantId*/principals/*$principalId*/roles/*roleId*
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$tenantId	Specifies the ID of the tenant.
$principalId	Specifies the ID of the user in name@domain format.
$roleId	Specifies the ID of the user role.

Example: curl Command to Assign a User to a Role

The following example command string submits a request to assign the user **`tony`** in the domain **`example.mycompany.com`** to the tenant administrator role. It provides empty braces for the required JSON payload. For more information about getting the user name and domain values, see Syntax for Searching LDAP or Active Directory for a User .

```
curl --insecure -H "Content-Type: application/json" -H "Authorization:
Bearer $token" "https://$vRA/identity/api/authorization/tenants/development/principals/
susan@example.mycompany.com/roles/CSP_TENANT_ADMIN/" --data "{}"
```

If the command is successful, the HTTP response body is empty except for a `204 No Content` status statement.

Syntax for Displaying all Roles Assigned to a User

`GET /api/authorization/tenants/{tenantId}/principals/{principalId}/roles` displays all of the roles assigned to a user.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/identity/api/authorization/tenants/*$tenantId*/principals/*$principalId*/roles
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$tenantId	Specifies the ID of the tenant.
principalId	Specifies the ID of the user in the form name@domain.

Output

The command output contains property names and values based on the command input parameters.

Parameter	Description
id	Specifies the role ID.
name	Specifies the role name.
description	Specifies the role description.
status	Specifies the status of this role.
assignedPermissions	Specifies the set of permissions that are implied by this role assignment.

Example: curl Command to Display all Roles Assigned to a User

The following example command lists all the roles that are assigned to **`tony@example.mycompany.com`**.

```
curl --insecure -H "Content-Type: application/json" -H "Authorization:
Bearer $token" https://$vRA/identity/api/authorization/tenants/development/principals/
tony@example.mycompany.com/roles
```

The following JSON output is returned based on the command input.

```
{
   "links" : [ ],
   "content" : [
      {
         "@type" : "SystemRole",
         "id" : "ABX_TENANT_ADMIN",
         "name" : "Tenant Administrator",
         "description" : "ABX Tenant Administrator",
```

```
         "assignedPermissions" : [ {
         "id" : "CATALOG_CONSUME_TENANT_MGMT",
         "name" : "Catalog Consume Tenant Management",
         "description" : "Consume services, resources and manage requests ... within a
Tenant",
         "prereqAdminPermissions" : null
      },
      {
         "id" : "MY_TENANT_MANAGEMENT",
         "name" : "My Tenant Management",
         "description" : "Manage my tenant.",
         "prereqAdminPermissions" : null
      },
      {
         "id" : "CATALOG_AUTHOR_TENANT",
         "name" : "Catalog Tenant-level Author",
         "description" : "Create, update and publish services, catalog ... across a Tenant.",
         "prereqAdminPermissions" : null
      },
      {
         "id" : "GUI_MY_TENANT_MANAGEMENT",
         "name" : "My Tenant Administration User Interface",
         "description" : "Access my tenant administration GUI.",
         "prereqAdminPermissions" : null
      },
      {
         "id" : "CATALOG_ENTITLE_TENANT",
         "name" : "Catalog Tenant-level Entitlement Management",
         "description" : "Entitle services, catalog items and actions ... users within a
tenant.",
         "prereqAdminPermissions" : null
      },
      {
         "id" : "FILE_EDIT_TENANT",
         "name" : "Manage Tenant Files",
         "description" : "Upload and delete files belonging to this tenant.",
         "prereqAdminPermissions" : null
      },
      {
         "id" : "TENANT_USER_DATA_MANAGEMENT",
         "name" : "Manage user data (requests, items, tasks etc) within a tenant.",
         "description" : "Manage user created objects belonging to the tenant.",
         "prereqAdminPermissions" : null
      },
      {
         "id" : "TENANT_ADMIN_ROLE_ASSIGNMENT",
         "name" : "Tenant Administrator Role Assignment",
         "description" : "Assign the tenant administrator role to other users.",
         "prereqAdminPermissions" : null
      },
      {
         "id" : "GUI_MY_TENANT_TUG_MANAGEMENT",
         "name" : "My Tenant Identity Stores, Groups and Users Administration User
Interfaces",
         "description" : "Access my tenant identity stores, groups ... users administration
```

```
GUIs.",
         "prereqAdminPermissions" : null
      }
   ],
   "metadata" : {
   "size" : 20,
   "totalElements" : 1,
   "totalPages" : 1,
   "number" : 1,
   "offset" : 0
   }
}
```

Requesting a Machine

4

You use the catalog service to perform tasks related to requesting a machine.

The catalog service is comprised APIs for the consumer, service providers, and service administrators. It is designed to be used by consumers and providers of the service catalog. For example, a consumer would request a catalog item such as a machine. The service provider would fulfill the request.

The catalog service includes Hypermedia as the Engine of Application State (HATEOAS) links. The links function as templates that you can use to complete common tasks supported by the API.

For example, if you submit a template request for a given context, such as: `catalog-service/api/consumer/entitledCatalogItems/dc808d12-3786-4f7c-b5a1-d5f997c8ad66/requests/template`. You use the returned template, either as-is or modified, to create a request that you POST or PUT to the target API, such as: `catalog-service/api/consumer/entitledCatalogItems/dc808d12-3786-4f7c-b5a1-d5f997c8ad66/requests`.

This chapter includes the following topics:

- Request a Machine
- Catalog Service Examples for Requesting a Machine

Request a Machine

To request a machine, you first list all shared catalog items to find the machine, then make the request for that item using a template.

Prerequisites

- Log in to vRealize Automation as a consumer or current business group user.
- Verify that the appliance name and fully qualified domain name of the vRealize Automation instance are available.
- Verify that you have a valid HTTP bearer token that matches your login credentials. See Chapter 2 REST API Authentication.

Procedure

1 List all shared catalog items in the catalog.

```
curl --insecure -H "Accept: application/json" -H "Content-Type: application/
json" -H "Authorization: Bearer $token" https://$vRA/catalog-service/api/consumer/
entitledCatalogItemViews
```

For details regarding input and output for this request, see Syntax for Listing Shared and Private Catalog Items .

2 Examine the response to find the *catalogItemId*

3 Get a template request for a catalog item.

Use the *catalogItemId* to submit the template request for this catalog item. In this example, the *catalogItemId* is dc808d12-3786-4f7c-b5a1-d5f997c8ad66.

```
curl --insecure -H "Accept: application/json" -H "Content-Type: application/
json" -H "Authorization: Bearer $token" https://$vRA/catalog-service/api/consumer/
entitledCatalogItems/dc808d12-3786-4f7c-b5a1-d5f997c8ad66/requests/template
```

For details regarding input and output for this request, see Syntax for Getting a Template Request for a Catalog Item.

A template request for the catalog item is created. The fields and default values are populated based on the configuration of the underlying blueprint. By default, requestMachine.json is the name of the template request.

4 Review and edit the template request.

Review the contents of the template request and edit the values if you want to change them from the default prior to submitting the request for a machine. For example, you can specify a value for the description field or change the values for the machine resources if the blueprint allows for a range.

5 Submit the request for a machine.

```
curl --insecure -H "Content-Type: application/json"
-H "Authorization: Bearer $token”
https://$vRA/catalog-service/api/consumer/entitledCatalogItems/dc808d12-3786-4f7c-b5a1-
d5f997c8ad66/requests --verbose --data
@C:/Temp/requestMachine.json
{
     $contentsOfTemplateFromPrecedingSections
}
```

For details regarding input and output for this request see Syntax for Requesting a Machine .

6 (Optional) View the details of your request.

You can perform a GET on the URI in the Location header to retrieve the updated request details. In this example, the *URI-in-Location-header* is 7aaf9baf-aa4e-47c4-997b-edd7c7983a5b.

```
curl --insecure -H "Accept: application/json" -H "Content-Type: application/json" -H
"Authorization: Bearer $token" https://$vRA/catalog-service/api/consumer/requests/7aaf9baf-
aa4e-47c4-997b-edd7c7983a5b
```

For details regarding input and output for this request, see Syntax for Viewing Details of a Machine Request .

Catalog Service Examples for Requesting a Machine

Syntax for each service example lists input parameters, output parameters, and curl commands.

- Syntax for Listing Shared and Private Catalog Items

  `GET /api/consumer/entitledCatalogItemViews` retrieves a list of all shared viewable catalog items for the current user. Shared catalog items do not belong to a specific business group. This service also retrieves a list of all shared and private catalog items that can be viewed, including their business groups.

- Syntax for Getting Information for a Catalog Item

  `GET /api/consumer/entitledCatalogItemViews/{id}` gets information about a specific catalog item.

- Syntax for Getting a Template Request for a Catalog Item

  `GET /api/consumer/entitledCatalogItems/{id}/requests/template` retrieves a template request for a specific catalog item. VMware supplies a number of templates to help you create different types of machine requests.

- Syntax for Requesting a Machine

  `POST /api/consumer/entitledCatalogItems/{id}/requests` submits a request for a specific catalog item with input provided in a JSON file.

- Syntax for Viewing Details of a Machine Request

  `GET /api/consumer/requests/{requestId}` provides the details of a machine request, where *requestId* is the URI in the Location header.

Syntax for Listing Shared and Private Catalog Items

`GET /api/consumer/entitledCatalogItemViews` retrieves a list of all shared viewable catalog items for the current user. Shared catalog items do not belong to a specific business group. This service also retrieves a list of all shared and private catalog items that can be viewed, including their business groups.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/catalog-service/api/consumer/entitledCatalogItemViews
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
page number	The page number. Default is 1.
limit	The number of entries per page. The default is 20.
$orderby	Multiple comma-separated properties sorted in ascending or descending order. Valid OData properties include the following: ■ name - filter based on catalog item name. ■ status - filter based on catalog item status. ■ service/id - filter based on catalog item service id. ■ service/name - filter based on catalog item service name. ■ organization/subTenant/id - filter based on catalog item business group ID, which you can find in the catalogItem payload under `organization > subtenantRef` ■ organization/subTenant/name - filter based on catalog item business group name, which you can find in catalogItem payload under `organization >subtenantLabel` ■ outputResourceType/id - filter based on catalog item output resource type ID, for example : Infrastructure.Virtual ■ outputResourceType/name - Filter based on catalog item output resource type name, for example: "VirtualMachine". ■ catalogItemType/id - filter based on catalog item type ID, for example: "Infrastructure.Virtual". ■ catalogItemType/name - filter based on catalog item type name, for example: "VirtualMachine". ■ icon/id - filter based on catalog item icon ID.
$top	Sets the number of returned entries from the top of the response
$skip	Sets the number of entries to skip.

Parameter	Description
$filter	Boolean expression for whether a particular entry should be included in the response. Valid OData properties include the following: ■ name - filter based on catalog item name. ■ status - filter based on catalog item status. ■ service/id - filter based on catalog item service id. ■ service/name - filter based on catalog item service name. ■ organization/subTenant/id - filter based on catalog item business group ID, which you can find in the catalogItem payload under `organization > subtenantRef` ■ organization/subTenant/name - filter based on catalog item business group name, which you can find in catalogItem payload under `organization >subtenantLabel` ■ outputResourceType/id - filter based on catalog item output resource type ID, for example : Infrastructure.Virtual ■ outputResourceType/name - Filter based on catalog item output resource type name, for example: "VirtualMachine". ■ catalogItemType/id - filter based on catalog item type ID, for example: "Infrastructure.Virtual". ■ catalogItemType/name - filter based on catalog item type name, for example: "VirtualMachine". ■ icon/id - filter based on catalog item icon ID.
serviceId	(Optional) Query parameter to filter the returned catalog items by one specific service.
onBehalfOf	(Optional) Query parameter that provides the value of the user ID when making a request on behalf of another user.

Output

The command output contains property names and values based on the command input parameters.

Property	Description
outputResourceTypeRef	Specifies the type of the resource that results from requesting the catalog item.
catalogItemId	Specifies the catalog item identifier.
name	Specifies the user friendly name of the catalog item. Specifies the property type is string.
description	Specifies a short description of the catalog item. Specifies the property type is string.
catalogItemTypeRef	Specifies the type of the catalog item.
serviceRef	Specifies the catalog service that contains the catalog item.
iconId	Specifies the associated icon representing this item.
isNoteworthy	Specifies if the catalog item should be highlighted to users for a period of time.
dateCreated	Specifies the date that this item was created in the catalog.

Property	Description
lastUpdatedDate	Specifies the date that this item was last updated in the catalog.
entitledOrganizations	Specifies the organizations in which the catalog item can be consumed by the current user.

Example: curl Command to List All Shared Catalog Items

The following example command retrieves information about all shared catalog items of type `ConsumerEntitledCatalogItemView`.

```
curl --insecure -H "Content-Type: application/json"
-H "Authorization: Bearer $token”  https://$vRA/catalog-service/api/consumer/
entitledCatalogItemViews
```

If backward compatibility is required, use the following example command instead.

```
curl --insecure -H "Content-Type: application/json"
-H "Authorization: Bearer $token” https://$vRA/catalog-service/api/consumer/
entitledCatalogItems
```

The following JSON output is returned based on the command input.


```
{
    "links": [],
    "content": [
        {
            "@type": "ConsumerEntitledCatalogItemView",
            "links": [
                {
                    "@type": "link",
                    "rel": "GET: Request Template",
                    "href": "https://$vRA/catalog-service/api/consumer/entitledCatalogItems/
7c8275d6-1bd6-452a-97c4-d6c053e4baa4/requests/template"
                },
                {
                    "@type": "link",
                    "rel": "POST: Submit Request",
                    "href": "https://$vRA/catalog-service/api/consumer/entitledCatalogItems/
7c8275d6-1bd6-452a-97c4-d6c053e4baa4/requests"
                }
            ],
            "entitledOrganizations": [
                {
                    "tenantRef": "mycompany",
                    "tenantLabel": "mycompany",
                    "subtenantRef": "c0683388-6db2-4cb5-9033-b24d15ad3766",
                    "subtenantLabel": "Demo Group"
                }
            ],
            "catalogItemId": "dc808d12-3786-4f7c-b5a1-d5f997c8ad66",
            "name": "Linux",
            "description": "Linux blueprint for API demo",
```

```
            "isNoteworthy": false,
            "dateCreated": "2015-07-29T03:54:28.141Z",
            "lastUpdatedDate": "2015-07-29T12:46:56.405Z",
            "iconId": "cafe_default_icon_genericCatalogItem",
            "catalogItemTypeRef": {
                "id": "com.vmware.csp.component.cafe.composition.blueprint",
                "label": "Composite Blueprint"
            },
            "serviceRef": {
                "id": "057d4095-95f1-47da-b14b-641ac9010c97",
                "label": "Infrastructure Services"
            },
            "outputResourceTypeRef": {
                "id": "composition.resource.type.deployment",
                "label": "Deployment"
            }
        }
    ],
    "metadata": {
        "size": 20,
        "totalElements": 1,
        "totalPages": 1,
        "number": 1,
        "offset": 0
    }
}
```

Example: curl Command to Locate the Details of a Specific Catalog Item

To search for specific catalog item, add the `$catalogItemId`. The following example command retrieves information about a catalog item with the name `$catalogItemName`.

```
curl --insecure -H "Content-Type: application/json"
-H "Authorization: Bearer $token" https://$vRA/catalog-service/api/consumer/
entitledCatalogItemViews?$filter=name+eq+%27$catalogItemName%27
```

Syntax for Getting Information for a Catalog Item

`GET /api/consumer/entitledCatalogItemViews/{id}` gets information about a specific catalog item.

REST API Catalog Service

The REST API supports OData filtering. For more information about supported OData filters, see the **Important Notes About catalog-service and OData Queries** section located on the **Overview** page of the Catalog Service API.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/catalog-service/api/consumer/entitledCatalogItemViews/{id}
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
page number	The page number. Default is 1.
limit	The number of entries per page. The default is 20.
$orderby	Multiple comma-separated properties sorted in ascending or descending order. Valid OData properties include the following: ■ name - filter based on catalog item name. ■ status - filter based on catalog item status. ■ service/id - filter based on catalog item service id. ■ service/name - filter based on catalog item service name. ■ organization/subTenant/id - filter based on catalog item business group ID, which you can find in the catalogItem payload under `organization > subtenantRef` ■ organization/subTenant/name - filter based on catalog item business group name, which you can find in catalogItem payload under `organization >subtenantLabel` ■ outputResourceType/id - filter based on catalog item output resource type ID, for example : Infrastructure.Virtual ■ outputResourceType/name - Filter based on catalog item output resource type name, for example: "VirtualMachine". ■ catalogItemType/id - filter based on catalog item type ID, for example: "Infrastructure.Virtual". ■ catalogItemType/name - filter based on catalog item type name, for example: "VirtualMachine". ■ icon/id - filter based on catalog item icon ID.
$top	Sets the number of returned entries from the top of the response
$skip	Sets the number of entries to skip.

Parameter	Description
$filter	Boolean expression for whether a particular entry should be included in the response. Valid OData properties include the following: ■ name - filter based on catalog item name. ■ status - filter based on catalog item status. ■ service/id - filter based on catalog item service id. ■ service/name - filter based on catalog item service name. ■ organization/subTenant/id - filter based on catalog item business group ID, which you can find in the catalogItem payload under `organization > subtenantRef` ■ organization/subTenant/name - filter based on catalog item business group name, which you can find in catalogItem payload under `organization >subtenantLabel` ■ outputResourceType/id - filter based on catalog item output resource type ID, for example : Infrastructure.Virtual ■ outputResourceType/name - Filter based on catalog item output resource type name, for example: "VirtualMachine". ■ catalogItemType/id - filter based on catalog item type ID, for example: "Infrastructure.Virtual". ■ catalogItemType/name - filter based on catalog item type name, for example: "VirtualMachine". ■ icon/id - filter based on catalog item icon ID.
serviceId	(Optional) Query parameter to filter the returned catalog items by one specific service.
onBehalfOf	(Optional) Query parameter that provides the value of the user ID when making a request on behalf of another user.

Output

The command output contains property names and values based on the command input parameters.

Property	Description
outputResourceTypeRef	Specifies the type of the resource that results from requesting the catalog item.
catalogItemId	Specifies the catalog item identifier.
name	Specifies the user friendly name of the catalog item. Specifies the property type is string.
description	Specifies a short description of the catalog item. Specifies the property type is string.
catalogItemTypeRef	Specifies the type of the catalog item.
serviceRef	Specifies the catalog service that contains the catalog item.
iconId	Specifies the associated icon representing this item.
isNoteworthy	Specifies if the catalog item should be highlighted to users for a period of time.
dateCreated	Specifies the date that this item was created in the catalog.

Property	Description
lastUpdatedDate	Specifies the date that this item was last updated in the catalog.
entitledOrganizations	The list of organizations in which the current user can consume the catalog item.

Example: curl Command to Get Information for a Catalog Item

The following example command retrieves information catalog item with the name `$filter=name+eq+%27$catalogItemName%27`.

```
curl --insecure -H "Content-Type: application/json"
-H "Authorization: Bearer $token"  https://$vRA/catalog-service/api/consumer/
entitledCatalogItemViews?$filter=name+eq+%27$catalogItemName%27
```

The following JSON output is returned based on the command input.


```
{
    "links": [],
    "content": [
        {
            "@type": "ConsumerEntitledCatalogItemView",
            "links": [
                {
                    "@type": "link",
                    "rel": "GET: Request Template",
                    "href": "https://$vRA/catalog-service/api/consumer/entitledCatalogItems/
7c8275d6-1bd6-452a-97c4-d6c053e4baa4/requests/template"
                },
                {
                    "@type": "link",
                    "rel": "POST: Submit Request",
                    "href": "https://$vRA/catalog-service/api/consumer/entitledCatalogItems/
7c8275d6-1bd6-452a-97c4-d6c053e4baa4/requests"
                }
            ],
            "entitledOrganizations": [
                {
                    "tenantRef": "mycompany",
                    "tenantLabel": "mycompany",
                    "subtenantRef": "c0683388-6db2-4cb5-9033-b24d15ad3766",
                    "subtenantLabel": "Demo Group"
                }
            ],
            "catalogItemId": "7c8275d6-1bd6-452a-97c4-d6c053e4baa4",
            "name": "Linux",
            "description": "Linux blueprint for API demo",
            "isNoteworthy": false,
            "dateCreated": "2015-07-29T03:54:28.141Z",
            "lastUpdatedDate": "2015-07-29T12:46:56.405Z",
            "iconId": "cafe_default_icon_genericCatalogItem",
            "catalogItemTypeRef": {
                "id": "com.vmware.csp.component.cafe.composition.blueprint",
                "label": "Composite Blueprint"
```

```
            },
            "serviceRef": {
                "id": "057d4095-95f1-47da-b14b-641ac9010c97",
                "label": "Infrastructure Services"
            },
            "outputResourceTypeRef": {
                "id": "composition.resource.type.deployment",
                "label": "Deployment"
            }
        }
    ],
    "metadata": {
        "size": 20,
        "totalElements": 1,
        "totalPages": 1,
        "number": 1,
        "offset": 0
    }
}
```

Syntax for Getting a Template Request for a Catalog Item

`GET /api/consumer/entitledCatalogItems/{id}/requests/template` retrieves a template request for a specific catalog item. VMware supplies a number of templates to help you create different types of machine requests.

Overview

In the entitledCatalogItemViews response, a link field contains a value similar to the following.

```
    {
            "@type":"link",
            "href":"https://$vRA/catalog-service/api/consumer/entitledCatalogItems/
dc808d12-3786-4f7c-b5a1-d5f997c8ad66/requests/template",
            "rel":"GET: Request Template"
        }
```

This URL is a HATEOAS link for a template request for this catalog item. The `rel` field provides a description of the link (request template) and indicates the HTTP method to use with the URI in the `href` field (GET). By using these HATEOAS links, you can make follow-on API calls without having to consult the API documentation for the URI syntax or construct the links programmatically.

Review and Edit the Template Request

The returned template request is specific to the applicable catalog item. The fields and default values are populated based on the configuration of the underlying blueprint.

You can review the contents of the template and optionally edit the values if you want to change them from the default prior to submitting the request. For example, you can specify a value for the description field or change the values for the machine resources if the blueprint allows for a range.

Input

Use the supported input parameters to control the command output.

Parameter	Description
id	The UUID of the catalog item.

Output

The command output contains property names and values based on the command input parameters.

Property	Description
entitledOrganizations	The list of organizations in which the current user can consume the catalog item.
catalogItemId	Specifies the catalog item identifier.

Example: curl Command to Get a Template Request for a Catalog Item

The following example command retrieves a template request for the catalog item with ID `dc808d12-3786-4f7c-b5a1-d5f997c8ad66`.

```
curl --insecure -H "Content-Type: application/json"
-H "Authorization: Bearer $token"  https://$vRA/catalog-service/api/consumer/
entitledCatalogItems/dc808d12-3786-4f7c-b5a1-d5f997c8ad66/requests/template
```

The following JSON output is returned based on the command input.

Note Price is referred to as `cost` in API commands and output.


```
{
    "type": "com.vmware.vcac.catalog.domain.request.CatalogItemProvisioningRequest",
    "catalogItemId": "7c8275d6-1bd6-452a-97c4-d6c053e4baa4",
    "requestedFor": "csummers@example.com",
    "businessGroupId": "c0683388-6db2-4cb5-9033-b24d15ad3766",
    "description": null,
    "reasons": null,
    "data": {
        "Existing_Network_1": {
            "componentTypeId": "com.vmware.csp.component.cafe.composition",
            "componentId": null,
            "classId": "Blueprint.Component.Declaration",
            "typeFilter": "LinuxDemo*Existing_Network_1",
            "data": {
                "_cluster": 1,
```

```
                "_hasChildren": false,
                "description": null,
                "name": "Existing Network",
                "networkname": "Existing Network",
                "subnetmask": "255.255.255.0"
            }
        },
        "vSphere-Linux": {
            "componentTypeId": "com.vmware.csp.component.cafe.composition",
            "componentId": null,
            "classId": "Blueprint.Component.Declaration",
            "typeFilter": "LinuxDemo*vSphere-Linux",
            "data": {
                "Cafe.Shim.VirtualMachine.MaxCost": 0,
                "Cafe.Shim.VirtualMachine.MinCost": 0,
                "_cluster": 1,
                "_hasChildren": false,
                "action": "FullClone",
                "allow_storage_policies": false,
                "archive_days": 0,
                "blueprint_type": "1",
                "cpu": 1,
                "custom_properties": [],
                "daily_cost": 0,
                "datacenter_location": null,
                "description": null,
                "disks": [
                    {
                        "componentTypeId": "com.vmware.csp.iaas.blueprint.service",
                        "componentId": null,
                        "classId": "Infrastructure.Compute.Machine.MachineDisk",
                        "typeFilter": null,
                        "data": {
                            "capacity": 6,
                            "id": 0,
                            "initial_location": "",
                            "is_clone": false,
                            "label": "",
                            "storage_reservation_policy": "",
                            "userCreated": true,
                            "volumeId": 0
                        }
                    }
                ],
                "display_location": false,
                "guest_customization_specification": null,
                "lease_days": 0,
                "machine_actions": [
                    "DESTROY",
                    "POWER_ON",
                    "CONNECT_RDP_SSH",
                    "REPROVISION",
                    "POWER_CYCLE",
                    "EXPIRE",
                    "SUSPEND",
```

```
            "CONNECT_REMOTE_CONSOLE",
            "CONNECT_USING_VDI"
        ],
        "machine_prefix": {
            "componentId": null,
            "classId": "Infrastructure.Compute.MachinePrefix",
            "id": "Use group default"
        },
        "max_network_adapters": 0,
        "max_per_user": 0,
        "max_volumes": 60,
        "memory": 4096,
        "nics": [
            {
                "componentTypeId": "com.vmware.csp.iaas.blueprint.service",
                "componentId": null,
                "classId": "Infrastructure.Compute.Machine.Nic",
                "typeFilter": null,
                "data": {
                    "address": "",
                    "assignment_type": "DHCP",
                    "custom_properties": null,
                    "id": 0,
                    "load_balancing": "",
                    "network_profile": "Existing Network"
                }
            }
        ],
        "number_of_instances": 1,
        "os_arch": "x86_64",
        "os_distribution": null,
        "os_type": "Linux",
        "os_version": null,
        "platform_name": "vsphere",
        "platform_type": "virtual",
        "property_groups": [
            null
        ],
        "provisioning_workflow": {
            "componentId": null,
            "classId": "Infrastructure.Compute.ProvisioningWorkflow",
            "id": "CloneWorkflow"
        },
        "reservation_policy": {
            "componentId": null,
            "classId": "Infrastructure.Reservation.Policy.ComputeResource",
            "id": "None"
        },
        "security_groups": [],
        "security_tags": [],
        "source_machine": null,
        "source_machine_external_snapshot": null,
        "source_machine_name": "cbpcentos_63_x86",
        "source_machine_vmsnapshot": null,
        "storage": 6
```

```
            }
        }
    }
}
```

Syntax for Requesting a Machine

`POST /api/consumer/entitledCatalogItems/{id}/requests` submits a request for a specific catalog item with input provided in a JSON file.

Prepare your Request

From the entitledCatalogItemViews response, locate the link field that contains a value similar to the following:

```
    {
            "@type":"link",
            "href":"https://$vRA/catalog-service/api/consumer/entitledCatalogItems/
dc808d12-3786-4f7c-b5a1-d5f997c8ad66/requests",
            "rel":"POST: Submit Request"
        }
```

Use the information in this response to edit the template construct the URI to request the desired catalog item using a POST command.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/catalog-service/api/consumer/entitledCatalogItems/*$catalogId*/requests
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
catalogItemId	The identifier of a catalog item. Typically, this is provided by users via the REST URI when making an entitledCatalogItem provisioning request.
requestedFor	The user for whom this request is being made. Must be the fully qualified user ID. Typically this is provided by the REST URI when making an entitledCatalogItem provisioning request.
businessGroupId	The business group identifier associated with the request. Typically this is provided via the REST URI when making the request.
description	The catalog item description.
reasons	
data	Context-specific properties. Obtain the consumerEntitledCatalogItem template request to identify the properties available for a given context.

Output

The command output contains property names and values based on the command input parameters.

Property	Description
version	Displays the object version number.
state	Specifies the item state, such as submitted.
approvalStatus	Specifies a status indicating whether this request has been approved, rejected, or is still pending some form of approval.
waitingStatus	Specifies a status indicating whether this request is waiting on any external users or services before it is able to progress.
requestNumber	Specifies a more user-friendly identifier for this request.
executionStatus	Specifies the current execution status of the request.
stateName	Specifies the localized state name.
phase	Specifies the current phase of the request, which is more coarse grained and easier for users to understand.
id	Specifies the unique identifier of this resource.
iconId	Specifies an icon for this request based on the requested object type.
description	Contains a brief description of this request.
reasons	Specifies the business reasons entered by the requestor or owner of this request.
requestedFor	Specifies the ID of the user for whom this request is logged.
requestedBy	Specifies the ID of the user who actually submitted the request
organization	Subtenant and/or tenant owner of this request.
requestorEntitlementId	Specified the value of the requestorEntitlement setting.
preApprovalId	Specifies the ID of the preApproval setting.
postApprovalId	Specifies the ID of the approval generated for the post-provisioning workflow step.
dateCreated	Specifies the date when this request was sent to the catalog.
lastUpdated	Specifies the date when this request was last updated.
dateSubmitted	Specifies the date when this request was first submitted.
dateApproved	Specifies the date when this request was approved.
dateCompleted	Specifies the date when this request was completed.
quote	Contains a quote made by the provider defining the estimated price(es) associated with the request and/or any resources provisioned as a result of the request.

Property	Description
requestCompletion	Contains additional request completion information.
requestData	Contains a map of the provider-specific field-value pairs collected for this request.
retriesRemaning	Specifies the number of attempts remaining to move this request from its current state to the next state in the request workflow. Some state transitions require calls to external services. These calls may fail due to transient errors such as momentary network errors. In these cases, the catalog will retry the call a number of times before failing. This property defines the number of retries remaining for the current state transition. When it reaches 0, the catalog will stop retrying and mark the request as failed. This property is reset to the default number of retries for every new operation that is triggered.
requestedItemName	Specifies the item name.
requestedItemDescription	Specifies the item description.
components	Returns the list of components associated with the request. The provider supplies this list of components after request initialization.

Example: curl Command to Request a Machine

To construct your request, refer to the entitledCatalogItemViews response received when you ran the request described in Syntax for Getting a Template Request for a Catalog Item, locate a link field that contains a value similar to the following:

```
    {
            "@type":"link",
            "href":"https://$vRA/catalog-service/api/consumer/entitledCatalogItems/
f89fcbbf-7716-4a61-addd-a822dd4206f6/requests",
            "rel":"POST: Submit Request"
        }
```

The following example command submits a machine request using appropriately edited template content from the entitledCatalogItemViews response.

```
curl --insecure -H "Content-Type: application/json"
-H "Authorization: Bearer $token”
https://$vRA/catalog-service/api/consumer/entitledCatalogItems/f89fcbbf-7716-4a61-addd-
a822dd4206f6/requests
{
     $contentsOfTemplateFromPrecedingSections
}
```

Example: Output with Request and Response Headers

The following sample displays the request and response headers and the command output. Use the indicated JSON text file or inline text as input.

```
{
Accept = application/json
Content-Type = application/json
Content-Length = 2806
}
Response Headers
{
Date = Wed, 03 Dec 2014 20:58:34 GMT
ETag = "0"
Location = https://$vRA/catalog-service/api/consumer/requests/7aaf9baf-aa4e-47c4-997b-
edd7c7983a5b
{
    $requestObjectDetails
}

Content-Type = application/json;charset=UTF-8
Content-Length = 0
Vary = Accept-Encoding,User-Agent
Keep-Alive = timeout=15, max=100
Connection = Keep-Alive
}
null
```

Syntax for Viewing Details of a Machine Request

`GET /api/consumer/requests/{requestId}` provides the details of a machine request, where *requestId* is the URI in the Location header.

Request Status

Typically, the request status information is the most important part of request details. The phase field corresponds to the status displayed in the Requests tab in the interface. You can rerun this command multiple times to monitor the state of a machine request.

Table 4-1. Request Phase Status

Phase	Description	End State?
UNSUBMITTED	Request was saved but not submitted.	No
PENDING_PRE_APPROVAL	Request is subject to approval - pre-provisioning approval required.	No
IN_PROGRESS	Request is in progress, machine is being provisioned.	No
PENDING_POST_APPROVAL	Request is subject to approval, post-provisioning approval required.	No

Table 4-1. Request Phase Status (continued)

Phase	Description	End State?
SUCCESSFUL	Request completed successfully. The machine is available under provisioned resources on the Items tab.	Yes
FAILED	Request failed.	Yes
REJECTED	Request approval was rejected and will not complete.	Yes

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/catalog-service/api/consumer/requests/*$requestId*
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$requestId	Specifies the request ID. See Display Your Provisioned Resources Example to view all of your requests and search for a request ID. The required request ID is located at the end of the Location URL in the response header. The request ID is located in the `Location` field of the response header if you submitted the request with the –headers flag.

Output

The command output contains property names and values based on the command input parameters.

Property	Description
version	Displays the object version number.
state	Specifies the item state, such as submitted.
approvalStatus	Specifies a status indicating whether this request has been approved, rejected, or is still pending some form of approval.
waitingStatus	Specifies a status indicating whether this request is waiting on any external users or services before it is able to progress.
requestNumber	Specifies a more user-friendly identifier for this request.
executionStatus	Specifies the current execution status of the request.
stateName	Specifies the localized state name.
phase	Specifies the current phase of the request, which is more coarse grained and easier for users to understand.

Property	Description
id	Specifies the unique identifier of this resource.
iconId	Specifies an icon for this request based on the requested object type.
description	Contains a brief description of this request.
reasons	Specifies the business reasons entered by the requestor or owner of this request.
requestedFor	Specifies the ID of the user for whom this request is logged.
requestedBy	Specifies the ID of the user who actually submitted the request
organization	Subtenant and/or tenant owner of this request.
requestorEntitlementId	Specified the value of the requestorEntitlement setting.
preApprovalId	Specifies the ID of the preApproval setting.
postApprovalId	Specifies the ID of the approval generated for the post-provisioning workflow step.
dateCreated	Specifies the date when this request was sent to the catalog.
lastUpdated	Specifies the date when this request was last updated.
dateSubmitted	Specifies the date when this request was first submitted.
dateApproved	Specifies the date when this request was approved.
dateCompleted	Specifies the date when this request was completed.
quote	Contains a quote made by the provider defining the estimated price(es) associated with the request and/or any resources provisioned as a result of the request.
requestCompletion	Contains additional request completion information.
requestData	Contains a map of the provider-specific field-value pairs collected for this request.
retriesRemaning	Specifies the number of attempts remaining to move this request from its current state to the next state in the request workflow. Some state transitions require calls to external services. These calls may fail due to transient errors such as momentary network errors. In these cases, the catalog will retry the call a number of times before failing. This property defines the number of retries remaining for the current state transition. When it reaches 0, the catalog will stop retrying and mark the request as failed. This property is reset to the default number of retries for every new operation that is triggered.
requestedItemName	Specifies the item name.
requestedItemDescription	Specifies the item description.
components	Returns the list of components associated with the request. The provider supplies this list of components after request initialization.

Example: curl Command to View the Details of the Machine Request

The following example command displays details of a request.

```
curl --insecure -H "Content-Type: application/json" -H "Authorization: Bearer $token”
https://$vRA/catalog-service/api/consumer/requests/7aaf9baf-aa4e-47c4-997b-edd7c7983a5b
```

The following sample output contains information about the catalog item request 7aaf9baf-aa4e-47c4-997b-edd7c7983a5b.


```
{
    "@type": "CatalogItemRequest",
    "id": "7aaf9baf-aa4e-47c4-997b-edd7c7983a5b",
    "iconId": "cafe_default_icon_genericCatalogItem",
    "version": 6,
    "requestNumber": 8,
    "state": "SUCCESSFUL",
    "description": "API test",
    "reasons": null,
    "requestedFor": "csummers@example.com",
    "requestedBy": "csummers@example.com",
    "organization": {
        "tenantRef": "mycompany",
        "tenantLabel": "mycompany",
        "subtenantRef": "c0683388-6db2-4cb5-9033-b24d15ad3766",
        "subtenantLabel": "Demo Group"
    },
    "requestorEntitlementId": "1b409157-152c-43c4-b4cc-1cdef7f6adf8",
    "preApprovalId": null,
    "postApprovalId": null,
    "dateCreated": "2015-07-29T13:50:33.689Z",
    "lastUpdated": "2015-07-29T13:55:35.951Z",
    "dateSubmitted": "2015-07-29T13:50:33.689Z",
    "dateApproved": null,
    "dateCompleted": "2015-07-29T13:55:35.949Z",
    "quote": {},
    "requestCompletion": {
        "requestCompletionState": "SUCCESSFUL",
        "completionDetails": null
    },
    "requestData": {
        $detailsOfSubmittedRequest
    },
    "retriesRemaining": 3,
    "requestedItemName": "Linux",
    "requestedItemDescription": "Linux blueprint for API demo",
    "stateName": "Successful",
    "approvalStatus": "POST_APPROVED",
    "executionStatus": "STOPPED",
    "waitingStatus": "NOT_WAITING",
    "phase": "SUCCESSFUL",
    "catalogItemRef": {
        "id": "7c8275d6-1bd6-452a-97c4-d6c053e4baa4",
```

```
        "label": "Linux"
    }
}
```

Note In the request details, the phase field corresponds to the status that is displayed in the Requests tab in the user interface.

Approving a Machine Request

5

You use a series of work item service commands to approve a machine request.

Basic components of the work item service are the work item and the assignment. The work item service provides a standard way to present work items to users. For example, a user can view all work items and select the item to perform such as approving a machine request.

This chapter includes the following topics:

- Approve a Machine Request
- Work Item Service Examples for Approving a Machine Request

Approve a Machine Request

To approve a machine request, you first get a work item ID, then specify the ID in the approval.

Prerequisites

- Log in to vRealize Automation as an approver with at least one of the following qualifications:
  - You are designated as an approver in an approval policy.
  - You belong to a group which has been designated as an approval group in an approval policy.
  - You are designated as a delegate for someone who is an approver.
- Verify that the appliance name and fully qualified domain name of the vRealize Automation instance are available.
- Verify that you have a valid HTTP bearer token that matches your login credentials. See Chapter 2 REST API Authentication.

Procedure

1 List all available work item IDs.

```
curl --insecure -H "Content-Type: application/json"
-H "Authorization: Bearer $token"
https://$vRA/workitem-service/api/workitems
```

For details regarding input and output for this request, see Syntax for Listing Work Items.

2 Examine the response to find the *workItemId*

3 Get details for a specific work item ID.

Use the *workItemId* to get the details for this work item. In this example, the *workItemId* is 5e3e9519-78ea-4409-a52c-e4aa3bc56511.

```
curl --insecure -H "Content-Type: application/json"
-H "Authorization: Bearer $token"
https://$vRA/workitem-service/api/workitems/5e3e9519-78ea-4409-a52c-e4aa3bc56511
```

For details regarding input and output for this request, see Syntax for Getting Work Item Details.

4 Construct a JSON file that contains the work item ID information that you need to approve a machine request.

a Copy the appropriate JSON input file template to a new file in an XML editor that maintains formatting.

b Substitute the input variables in the template with the values you obtained for your specific work item ID, for example 5e3e9519-78ea-4409-a52c-e4aa3bc56511.

c Save the file with a new name, for example, `approve.json`.

For details regarding input and output for this request, see Syntax for Constructing a JSON File to Approve a Machine Request.

5 Approve the submitted machine request by specifying the work item ID and including the JSON file as part of the command line.

```
curl --insecure -H "Content-Type:application/json"
-H "Authorization: Bearer $token"
https://$vRA/workitem-service/api/workitems/5e3e9519-78ea-4409-
a52c-e4aa3bc56511/actions/com.mycompany.csp.core.approval.action.approve
--d @approve.json
```

For details regarding input and output for this request, see Syntax for Approving a Submitted Machine Request.

Results

If the command is successful, the HTTP status is `201 Created`. If the command is not successful, the HTTP status is `204 No Content`.

Work Item Service Examples for Approving a Machine Request

Syntax for each service example lists input parameters, output parameters, and curl commands.

- Syntax for Listing Work Items

  `GET /api/workitems` lists the unique IDs of all available work items.

- Syntax for Getting Work Item Details

  `GET /api/workitems/{id}` retrieves the details of a pending work item. You need these details to submit a completion request.

- Syntax for Constructing a JSON File to Approve a Machine Request

  You can specify a JSON file in your vRealize Automation REST API command line input. For example, when you enter a command to approve a machine request, you can include the name of a JSON file that contains all the parameters required to approve the request and complete the work item.

- Syntax for Approving a Submitted Machine Request

  `PUT /api/workitems/{id}` approves a submitted work item request to complete the request. To construct the approval command, you add work item and work item form details to a JSON file, and call that JSON file from the command line. Use a template to correctly format the JSON file content.

- Syntax for Updating Price Information

  `POST /api/blueprints/{id}/costs/upfront` of the composition service, updates and displays price information for a deployment. The price of a deployment is based on which blueprint you request plus details of the specific request. For example, if the blueprint allows for a range of CPU, memory, or storage values, the price depends on the value requested.

Syntax for Listing Work Items

`GET /api/workitems` lists the unique IDs of all available work items.

Inputs

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/workitem-service/api/workitems
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.

Output

The command output contains property names and values based on the command input parameters.

Property	Description

Links	Specifies an array of link objects, each of which contains the following parts:
	■ rel: Specifies the name of the link.
	  ■ `Self` refers to the object that was returned or requested. This property does not exist when you query for a single profile.
	  ■ `First`, `Previous`, `Next`, and `Last` refer to corresponding pages of pageable lists.
	  ■ Specifies the application or service that determines the other names.
	■ href: Specifies the URL that produces the result.

work itemNumber	Displays a reference number for the work item.
id	Specifies the unique identifier of this resource.
version	Displays the object version number.
assignees	Displays the list of work item assignees.
subTenantId	Optionally associates the work item with a specific business group granting users with management responsibilities over that business group permission to see the approval.
tenantId	Specifies the tenant ID for the work item.
callbackEntityId	Specifies the callback entity ID for the work item.
work itemType	Specifies the work item type for the work item.
completedDate	Specifies the date when the work item was completed.
assignedDate	Specifies the date when the work item was assigned.
createdDate	Specifies the created date of this instance.
assignedOrCompletedDate	Specifies the date to be displayed on UI.
formUrl	Specifies the URL from which the layout for this work item can be retrieved.
serviceId	Specifies the service ID that generated this work item instance.
work itemRequest	Specifies the corresponding work item request object.
status	Specifies the status of the work item.
completedBy	Specifies the principal ID of user who completed the work item.
availableActions	Contains a list of relevant work item actions.
Metadata	Specifies the paging-related data: ■ Size: Specifies the maximum number of rows per page. ■ totalElement: Specifies the number of rows returned. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped.

Example: `curl` Command

The following example command retrieves all the available work item IDs.

```
curl --insecure -H "Content-Type: application/json"
-H "Authorization: Bearer $token”
https://$vRA/workitem-service/api/workitems
```

Example: JSON Output

The following JSON output is returned based on the command input.

Note Price is referred to as `cost` in API commands and output.


```
{
  "links" : [ ],
  "content" : [ {
    "@type" : "WorkItem",
    "id" : "1755ef1a-d6f0-4901-9ecd-d03352ae4a05",
    "version" : 1,
    "workItemNumber" : 1,
    "assignees" : [ {
      "principalId" : "tony@example.mycompany.com",
      "principalType" : "USER"
    } ],
    "tenantId" : "MYCOMPANY",
    "callbackEntityId" : "1",
    "workItemType" : {
      "id" : "com.mycompany.cafe.samples.travel.workItem",
      "name" : "Workspace Assignment",
      "pluralizedName" : "Workspace Assignments",
      "description" : "Location Specific Workspace Assignment",
      "serviceTypeId" : "com.mycompany.cafe.samples.travel.api",
      "actions" : [ {
        "id" : "com.mycompany.cafe.samples.travel.workItem.complete",
        "name" : "Reserve Workspace",
        "stateName" : "Completed",
        "icon" : {
          "id" : "baa623db-0ca0-4db7-af41-9a301bc9e152",
          "name" : "Complete Action Icon",
          "contentType" : "image/png",
          "image" : null
        }
      }, {
        "id" : "com.mycompany.cafe.samples.travel.workItem.cancel",
        "name" : "Workspace Unavailable",
        "stateName" : "Cancelled",
        "icon" : {
          "id" : "b03f994a-e1ec-4aae-8fae-e747ed680a5e",
          "name" : "Cancel Action Icon",
          "contentType" : "image/png",
          "image" : null
        }
```

```
      } ],
      "completeByEmail" : true,
      "commentsField" : null,
      "listView" : {
        "columns" : [ {
          "id" : "duration",
          "label" : "Duration",
          "description" : "The length of stay, measured in days.",
          "dataType" : {
            "type" : "primitive",
            "typeId" : "INTEGER"
          },
          "displayAdvice" : null,
          "state" : {
            "dependencies" : [ ],
            "facets" : [ ]
          },
          "filterable" : false,
          "sortable" : false,
          "isMultiValued" : false
        }, {
          "id" : "location",
          "label" : "Destination",
          "description" : "The destination to which travel is being requested.",
          "dataType" : {
            "type" : "ref",
            "componentTypeId" : null,
            "componentId" : null,
            "classId" : "location",
            "typeFilter" : null,
            "label" : null
          },
          "displayAdvice" : null,
          "state" : {
            "dependencies" : [ ],
            "facets" : [ ]
          },
          "filterable" : false,
          "sortable" : false,
          "isMultiValued" : false
        }, {
          "id" : "arrivalDate",
          "label" : "Arrival Date",
          "description" : "The date of arrival at the destination",
          "dataType" : {
            "type" : "primitive",
            "typeId" : "DATE_TIME"
          },
          "displayAdvice" : null,
          "state" : {
            "dependencies" : [ ],
            "facets" : [ ]
          },
          "filterable" : false,
          "sortable" : false,
```

```
          "isMultiValued" : false
        } ],
        "defaultSequence" : [ "location", "arrivalDate", "duration" ]
      },
      "version" : 3,
      "forms" : {
        "workItemDetails" : {
          "type" : "external",
          "formId" : "travel.seating.task"
        },
        "workItemSubmission" : {
          "type" : "external",
          "formId" : "travel.seating.task"
        },
        "workItemNotification" : {
          "type" : "external",
          "formId" : "travel.itinerary.details"
        }
      }
    },

            .
            .
            .


    "completedDate" : null,
    "assignedDate" : "2014-02-20T23:55:31.600Z",
    "createdDate" : "2014-02-20T23:55:31.600Z",
    "assignedOrCompletedDate" : "2014-02-20T23:55:31.600Z",
    "serviceId" : "2af18227-6a00-49e9-a76b-96de3ee767d2",
    "workItemRequest" : {
      "itemId" : "531660fd-b540-4946-9917-38c023b61c02",
      "itemName" : "test travel 1",
      "itemDescription" : "test travel 1",
      "itemRequestor" : "tony@example.mycompany.com",
      "itemCost" : 0.0,
      "itemData" : {
        "entries" : [ {
          "key" : "requestLeaseTotal",
          "value" : {
            "type" : "money",
            "currencyCode" : null,
            "amount" : 1065.0
          }
        }, {
          "key" : "approvalId",
          "value" : {
            "type" : "string",
            "value" : "7a8b6054-1922-4f82-9266-245dffaa957c"
          }
        }, {
          "key" : "requestClassId",
          "value" : {
            "type" : "string",
```

```
            "value" : "request"
          }
        }, {
          "key" : "requestedFor",
          "value" : {
            "type" : "string",
            "value" : "tony@example.mycompany.com"
          }
        }, {
          "key" : "requestReasons"
        }, {
          "key" : "requestedItemName",
          "value" : {
            "type" : "string",
            "value" : "test travel 1"
          }
        }, {
          "key" : "requestInstanceId",
          "value" : {
            "type" : "string",
            "value" : "1cfe7177-74e3-4d68-a559-ea17587022ca"
          }
        }, {
          "key" : "requestRef",
          "value" : {
            "type" : "string",
            "value" : "15"
          }
        }, {
          "key" : "requestedItemDescription",
          "value" : {
            "type" : "string",
            "value" : "test travel 1"
          }
        }, {
          "key" : "requestLeaseRate",
          "value" : {
            "type" : "moneyTimeRate",
            "cost" : {
              "type" : "money",
              "currencyCode" : null,
              "amount" : 213.0
            },
            "basis" : {
              "type" : "timeSpan",
              "unit" : "DAYS",
              "amount" : 1
            }
          }
        }, {
          "key" : "requestingServiceId",
          "value" : {
            "type" : "string",
            "value" : "f91d044a-04f9-4b96-8542-375e3e4e1dc1"
          }
```

```
        }, {
          "key" : "policy",
          "value" : {
            "type" : "string",
            "value" : "test travel approval policy"
          }
        }, {
          "key" : "phase",
          "value" : {
            "type" : "string",
            "value" : "Pre Approval"
          }
        }, {
          "key" : "requestDescription",
          "value" : {
            "type" : "string",
            "value" : "t"
          }
        }, {
          "key" : "requestLease",
          "value" : {
            "type" : "timeSpan",
            "unit" : "DAYS",
            "amount" : 5
          }
        }, {
          "key" : "requestedBy",
          "value" : {
            "type" : "string",
            "value" : "tony@example.mycompany.com"
          }
        } ]
      }
    },
    "status" : "Active",
    "availableActions" : [ ]
  } ],
  "metadata" : {
    "size" : 20,
    "totalElements" : 7,
    "totalPages" : 1,
    "number" : 1,
    "offset" : 0
  }
}
```

Syntax for Getting Work Item Details

`GET /api/workitems/{id}` retrieves the details of a pending work item. You need these details to submit a completion request.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/workitem-service/api/workitems/*workitem_ID*
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
workitem_ID	Specifies the unique identifier of a work item. See Syntax for Listing Work Items.

Output

The command output contains property names and values based on the command input parameters.

Property	Description
Links	Specifies an array of link objects, each of which contains the following parts: ■ rel: Specifies the name of the link. ■ `Self` refers to the object that was returned or requested. This property does not exist when you query for a single profile. ■ `First`, `Previous`, `Next`, and `Last` refer to corresponding pages of pageable lists. ■ Specifies the application or service that determines the other names. ■ href: Specifies the URL that produces the result.
work itemNumber	Displays a reference number for the work item.
id	Specifies the unique identifier of this resource.
version	Displays the object version number.
assignees	Displays the list of work item assignees.
subTenantId	Optionally associates the work item with a specific business group granting users with management responsibilities over that business group permission to see the approval.
tenantId	Specifies the tenant ID for the work item.
callbackEntityId	Specifies the callback entity ID for the work item.
work itemType	Specifies the work item type for the work item.
completedDate	Specifies the date when the work item was completed.
assignedDate	Specifies the date when the work item was assigned.
createdDate	Specifies the created date of this instance.
assignedOrCompletedDate	Specifies the date to be displayed on UI.

Property	Description
formUrl	Specifies the URL from which the layout for this work item can be retrieved.
serviceId	Specifies the service ID that generated this work item instance.
work itemRequest	Specifies the corresponding work item request object.
status	Specifies the status of the work item.
completedBy	Specifies the principal ID of user who completed the work item.
availableActions	Contains a list of relevant work item actions.
Metadata	Specifies the paging-related data: ■ Size: Specifies the maximum number of rows per page. ■ totalElement: Specifies the number of rows returned. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped.

Example: `curl` Command

The following example command retrieves the necessary details for the specified work item.

```
curl --insecure -H "Content-Type: application/json"
-H "Authorization: Bearer $token”
https://$vRA/workitem-service/api/workitems/5e3e9519-78ea-4409-a52c-e4aa3bc56511
```

Example: JSON Output

The following JSON output is returned based on the command input.

Note Price is referred to as `cost` in API commands and output.

To view the contents of a JSON output file, for example `workItemDetails.json`, use the `!` command with `more` in UNIX or `type` in Windows.

- (UNIX) vcac-shell>**`! more workItemDetails.json`**
- (Windows) vcac-shell> **`! CMD /C type workItemDetails.json`**

```
vcac-shell>  ! more workItemDetails.json
{
  "id" : "5e3e9519-78ea-4409-a52c-e4aa3bc56511",
  "version" : 0,
  "workItemNumber" : 8,
  "assignees" : [ {
    "principalId" : "tony@example.mycompany.com",
    "principalType" : "USER"
  } ],
  "subTenantId" : "eab762cb-6e75-4379-83ef-171a71c9f00e",
  "tenantId" : "MYCOMPANY",
```

```
  "callbackEntityId" : "069dc3ce-a260-4d6a-b191-683141c994c0",
  "workItemType" : {
    "id" : "com.mycompany.csp.core.approval.workitem.request",
    "name" : "Approval",
    "pluralizedName" : "Approvals",
    "description" : "",
    "serviceTypeId" : "com.mycompany.csp.core.cafe.approvals",
    "actions" : [ {
      "id" : "com.mycompany.csp.core.approval.action.approve",
      "name" : "Approve",
      "stateName" : "Approved",
      "icon" : {
        "id" : "c192b6a7-5b35-4a3b-8593-107ffcf8c3a8",
        "name" : "approved.png",
        "contentType" : "image/png",
        "image" : null
      }
    }, {
      "id" : "com.mycompany.csp.core.approval.action.reject",
      "name" : "Reject",
      "stateName" : "Rejected",
      "icon" : {
        "id" : "61c6da67-1164-421d-b575-10a245c89e10",
        "name" : "rejected.png",
        "contentType" : "image/png",
        "image" : null
      }
    } ],
    "completeByEmail" : true,
    "commentsField" : "businessJustification",
    "listView" : {
      "columns" : [ {
        "id" : "requestedItemName",
        "label" : "Requested Item",
        "description" : "",
        "dataType" : {
          "type" : "primitive",
          "typeId" : "STRING"
        },
        "displayAdvice" : null,
        "state" : {
          "dependencies" : [ ],
          "facets" : [ ]
        },
        "filterable" : false,
        "sortable" : false,
        "isMultiValued" : false
      },

            .
            .
            .

       {
        "id" : "requestLease",
```

```
        "label" : "Lease",
        "description" : "",
        "dataType" : {
          "type" : "primitive",
          "typeId" : "TIME_SPAN"
        },
        "displayAdvice" : null,
        "state" : {
          "dependencies" : [ ],
          "facets" : [ ]
        },
        "filterable" : false,
        "sortable" : false,
        "isMultiValued" : false
      } ],
      "defaultSequence" : [ "requestRef", "requestedItemName", "requestedFor",
"requestLease", "requestLeaseRate", "requestLeaseTotal" ]
    },
    "version" : 1,
    "forms" : {
      "workItemDetails" : {
        "type" : "external",
        "formId" : "approval.details"
      },
      "workItemSubmission" : {
        "type" : "external",
        "formId" : "approval.submission"
      },
      "workItemNotification" : {
        "type" : "external",
        "formId" : "approval.notification"
      }
    }
  },
  "completedDate" : null,
  "assignedDate" : "2014-02-25T01:26:07.153Z",
  "createdDate" : "2014-02-25T01:26:07.153Z",
  "assignedOrCompletedDate" : "2014-02-25T01:26:07.153Z",
  "serviceId" : "2af18227-6a00-49e9-a76b-96de3ee767d2",
  "workItemRequest" : {
    "itemId" : "069dc3ce-a260-4d6a-b191-683141c994c0",
    "itemName" : "test-blueprint",
    "itemDescription" : "",
    "itemRequestor" : "fritz@example.mycompany.com",
    "itemCost" : 0.0,
    "itemData" : {
      "entries" : [ {
        "key" : "requestLeaseTotal"
      }, {
        "key" : "approvalId",
        "value" : {
          "type" : "string",
          "value" : "469c11ae-ed27-4790-baf1-c6839f35d474"
        }
      }, {
```

```
        "key" : "requestClassId",
        "value" : {
          "type" : "string",
          "value" : "request"
        }
      }, {
        "key" : "requestedFor",
        "value" : {
          "type" : "string",
          "value" : "fritz@example.mycompany.com"
        }
      }, {
        "key" : "requestReasons",
        "value" : {
          "type" : "string",
          "value" : ""
        }
      }, {
        "key" : "requestedItemName",
        "value" : {
          "type" : "string",
          "value" : "test-blueprint"
        }

            .
            .
            .

      }, {
        "key" : "requestLease"
      }, {
        "key" : "requestedBy",
        "value" : {
          "type" : "string",
          "value" : "fritz@example.mycompany.com"
        }
      } ]
    }
  },
  "status" : "Active",
  "availableActions" : [ ]
}
```

Syntax for Constructing a JSON File to Approve a Machine Request

You can specify a JSON file in your vRealize Automation REST API command line input. For example, when you enter a command to approve a machine request, you can include the name of a JSON file that contains all the parameters required to approve the request and complete the work item.

Template JSON File Values

Copy the following template to start constructing a properly formatted JSON file in a text editor. Replace the highlighted values with your obtained work item details. After you create the JSON file, you can include it, or its contents, when you approve a submitted machine request. See Syntax for Approving a Submitted Machine Request.

```
{
   "formData": {
      "entries": [
         {
            "key": "source-source-provider-Cafe.Shim.VirtualMachine.NumberOfInstances",
            "value": {
               "type": "integer",
               "value": 1
            }
         },
         {
            "key": "source-source-provider-VirtualMachine.Memory.Size",
            "value": {
               "type": "integer",
               "value": 512
            }
         },
         {
            "key": "source-source-provider-VirtualMachine.CPU.Count",
            "value": {
               "type": "integer",
               "value": 1
            }
         },
         {
            "key": "source-businessJustification",
            "value": {
               "type": "string",
               "value": "solves abx request"
            }
         },
         {
            "key": "source-source-provider-VirtualMachine.LeaseDays",
            "value": {
               "type": "integer",
               "value": 0
            }
         }
      ]
   },
   "workItemId": "5e3e9519-78ea-4409-a52c-e4aa3bc56511",
   "workItemActionId": "com.mycompany.csp.core.approval.action.approve"
}
```

Certain parameters are available to use in the JSON template.

Table 5-1. JSON Template Value Table

JSON File Parameter Name	Description of Value
workItemId	Specifies the value of the corresponding work item ID obtained from the work item list.
source-source-provider-Cafe.Shim.VirtualMachine.NumberOfInstances value	Specifies the number of instances requested.
source-source-provider-VirtualMachine.Memory.Size	Specifies the amount of memory requested in GB.
source-source-provider-VirtualMachine.CPU.Count	Specifies the number of CPUs requested.
source-businessJustification	Specifies the text description of reason for request.
source-source-provider-VirtualMachine.LeaseDays	Specifies the number of days to lease.
workItemActionId	To approve a request, include the approve statement, for example **`com.mycompany.csp.core.approval.action.approve.`**. To reject a request, include the reject statement, for example **`com.mycompany.csp.core.approval.action.reject`**.

Example: JSON Input File

Use the following JSON input file sample when constructing a file.

```
{
    "@type": "CatalogItemRequest",
    "catalogItemRef": {
        "id": "65fbca06-a28e-46f3-bced-c6e5fb3a66f9"
    },
    "organization": {
        "tenantRef": "MYCOMPANY",
        "subtenantRef": "cccd7a7e-5283-416b-beb0-45eb4e924dcb"
    },
    "requestedFor": "fritz@example.mycompany.com",
    "state": "SUBMITTED",
    "requestNumber": 0,
    "requestData": {
        "entries": [{
            "key": "provider-blueprintId",
            "value": {
                "type": "string",
                "value": "e16edcf9-6a10-4bc7-98e2-a33361aeb857"
            }
        },
        {
            "key": "provider-provisioningGroupId",
            "value": {
                "type": "string",
                "value": "cccd7a7e-5283-416b-beb0-45eb4e924dcb"
            }
```

```
        },
        {
            "key": "requestedFor",
            "value": {
                "type": "string",
                "value": "fritz@example.mycompany.com"
            }
        },
        {
            "key": "provider-VirtualMachine.CPU.Count",
            "value": {
                "type": "integer",
                "value": 1
            }
        },
        {
            "key": "provider-VirtualMachine.Memory.Size",
            "value": {
                "type": "integer",
                "value": 1024
            }
        },
        {
            "key": "provider-VirtualMachine.LeaseDays",
            "value": {
                "type": "integer",
                "value": 30
            }
        },
        {
            "key": "provider-__Notes",
            "value": {
                "type": "string",
                "value": "MYCOMPANY machine"
            }
        },
        {
            "key": "provider-VirtualMachine.Disk0.Size",
            "value": {
                "type": "string",
                "value": "1"
            }
        },
        {
            "key": "provider-VirtualMachine.Disk0.Letter",
            "value": {
                "type": "string",
                "value": "C"
            }
        },
        {
            "key": "provider-VirtualMachine.Disk0.Label",
            "value": {
                "type": "string",
                "value": "main"
```

```
            }
        }]
    }
}
```

Syntax for Approving a Submitted Machine Request

`PUT /api/workitems/{id}` approves a submitted work item request to complete the request. To construct the approval command, you add work item and work item form details to a JSON file, and call that JSON file from the command line. Use a template to correctly format the JSON file content.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/workitem-service/api/workitems/*workitem_ID*
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
workitem_ID	Specifies the unique identifier of a work item. See Syntax for Listing Work Items.

Output

The command output contains property names and values based on the command input parameters.

Property	Description

Links	Specifies an array of link objects, each of which contains the following parts:
	■ rel: Specifies the name of the link.
	  ■ `Self` refers to the object that was returned or requested. This property does not exist when you query for a single profile.
	  ■ `First`, `Previous`, `Next`, and `Last` refer to corresponding pages of pageable lists.
	  ■ Specifies the application or service that determines the other names.
	■ href: Specifies the URL that produces the result.

work itemNumber	Displays a reference number for the work item.
id	Specifies the unique identifier of this resource.
version	Displays the object version number.
assignees	Displays the list of work item assignees.
subTenantId	Optionally associates the work item with a specific business group granting users with management responsibilities over that business group permission to see the approval.

Property	Description
tenantId	Specifies the tenant ID for the work item.
callbackEntityId	Specifies the callback entity ID for the work item.
work itemType	Specifies the work item type for the work item.
completedDate	Specifies the date when the work item was completed.
assignedDate	Specifies the date when the work item was assigned.
createdDate	Specifies the created date of this instance.
assignedOrCompletedDate	Specifies the date to be displayed on UI.
formUrl	Specifies the URL from which the layout for this work item can be retrieved.
serviceId	Specifies the service ID that generated this work item instance.
work itemRequest	Specifies the corresponding work item request object.
status	Specifies the status of the work item.
completedBy	Specifies the principal ID of user who completed the work item.
availableActions	Contains a list of relevant work item actions.
Metadata	Specifies the paging-related data: ■ Size: Specifies the maximum number of rows per page. ■ totalElement: Specifies the number of rows returned. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped.

Example: Example: `curl` Command

Approve a submitted machine request by specifying its work item ID and using a JSON file named `approve.json` to pass arguments to the command line.

```
curl -X PUT --insecure -H "Content-Type: application/json"
-H "Authorization: Bearer $token"
https://$vRA/workitem-service/api/workitems/5e3e9519-78ea-4409-
a52c-e4aa3bc56511/actions/com.mycompany.csp.core.approval.action.approve
--d @approve.json
```

Error Conditions

If the same request is submitted a second time, the following error response is received:

```
Command failed [Rest Error]: {Status code: 400}, {Error code: 12005} ,
{Error Source: null}, {Error Msg: Work item 5e3e9519-78ea-4409-a52c-e4aa3bc56511
is in COMPLETED state. Requested operation cannot be performed.}, {System Msg:
```

```
Work item 5e3e9519-78ea-4409-a52c-e4aa3bc56511 is in COMPLETED state. Requested
operation cannot be performed.}
```

If a user who is not authorized to approve the request submits the request, the following error response is received:

```
Command failed [Rest Error]: {Status code: 400}, {Error code: 12017} ,
{Error Source: null}, {Error Msg: User fritz@example.mycompany.com not authorized to
complete work item with ID 5e3e9519-78ea-4409-a52c-e4aa3bc56511.}, {System Msg:
User fritz@example.mycompany.com not authorized to complete Work item with id
5e3e9519-78ea-4409-a52c-e4aa3bc56511.}
```

Syntax for Updating Price Information

`POST /api/blueprints/{id}/costs/upfront` of the composition service, updates and displays price information for a deployment. The price of a deployment is based on which blueprint you request plus details of the specific request. For example, if the blueprint allows for a range of CPU, memory, or storage values, the price depends on the value requested.

Input

Use the supported input parameters to control the command output.

Note Price is referred to as `cost` in API commands and output.

Parameter	Description
URL	https://*$vRA*/composition-service/api/blueprints/*$BlueprintId*/costs/upfront
Method	Post
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.

Parameter	Description
$token	Specifies a valid HTTP bearer token with necessary credentials.

HTTP Body	Specifies the blueprint ID for the blueprint for which you are requesting price information and other information.
	■ `Blueprint ID`: Specifies the blueprint ID.
	■ `requestedFor`: The user for whom this request is being made. Must be the fully qualified user ID.
	■ `subTenantId`: Specifies the subtenant ID associated with the blueprint
	■ `requestData`: Specifies data that identifies the blueprint further.
	  ■ `entries`
	  ■ `Key`: The name of the machine on which the blueprint resides.
	  ■ `value`: Specifies key-value pairs that further identify the blueprint, such as the type of the value, the `componentType ID` for the item, the `classID` of the value, and where the blueprint resides. In turn, each entry contains an array of key-value pairs that identify the type of data used to compute the price that is to be displayed.
	  ■ `Values`: Specifies an array of type filters.
	  ■ `Entries`: Specifies a list of key-value pairs that specify the values to be used in computing the price. For example, the cluster, CPU, and allocated memory to use.

Output

The command output contains property names and values based on the command input parameters.

Property	Description
setupFee	Specifies the one time setup fee associated with the component.
totalEstimatedLeasePriceInfo	Specifies the minimum price and maximum price for the lease period.
averageDailyPriceInfo	Specifies the average daily price, which depends on the reservation available for the component.
count	Specifies the instance count of the component.
memory	Specifies memory requested for this component.
additional	Specifies the additional price, if any, associated with the component.
cpu	Specifies the cpu requested for the component.

Property	Description
storage	Specifies the storage requested for the component.
componentId	Specifies the component ID, or total price of the deployment.

Example: `curl` Command

The following sample command updates and displays the price of a sample blueprint with one node. The HTTP body is included as part of the command line input.

Note Price is referred to as `cost` in API commands and output.

```
curl -- insecure -H “Content Type: application/json”
-H "Authorization: Bearer $token"
https://$vRA/composition-service/api/blueprints/$BlueprintId/costs/upfront"

{
  "blueprintId": "myblueprintId",
  "requestedFor": "fritz@coke.sqa-horizon.local",
  "subTenantId": "7a961949-13c4-4f3d-9010-66db8da6c51e",
  "requestData": {
    "entries": [
      {
        "key": "vSphere_Machine_1",
        "value": {
          "type": "complex",
          "componentTypeId": "com.vmware.csp.iaas.blueprint.service",
          "classId": "Blueprint.Node",
          "typeFilter": "phanisimple*vSphere_Machine_1",
          "values": {
            "entries": [
              {
                "key": "_cluster",
                "value": {
                  "type": "integer",
                  "value": 3
                }
              },
              {
                "key": "cpu",
                "value": {
                  "type": "integer",
                  "value": 2
                }
              },
              {
                "key": "memory",
                "value": {
                  "type": "integer",
                  "value": 2048
                }
```

```
                }
              ]
            }
          }
        }
      ]
    }
}
```

Example: JSON Output for a Blueprint Price Update


```
[{"componentId":"vSphere_Machine_1",
"setupFee":"$0.00",
"totalEstimatedLeasePriceInfo":
{"min":50.0543225806451601,"max":50.0543225806451601,"displayString":"$50.05"},
"averageDailyPriceInfo":
{"min":16.6847741935483867,"max":16.6847741935483867,"displayString":"$16.68"},
"count":3
"fieldMap":{"setup_fee":{"min":0,"max":0,"displayString":"$0.00"},
"memory":{"min":8.00,"max":8.00,"displayString":"$8.00"},
"additional":{"min":8.6847741935483867,"max":8.6847741935483867,"displayString":"$8.68"},
"cpu":{"min":0.0,"max":0.0,"displayString":"$0.00"},
"storage":{"min":0,"max":0,"displayString":"$0.00"}}},
{"componentId":"Total","setupFee":"","totalEstimatedLeasePriceInfo":
{"min":50.0543225806451601,"max":50.0543225806451601,"displayString":"$50.05"},
"averageDailyPriceInfo":
{"min":16.6847741935483867,"max":16.6847741935483867,"displayString":"$16.68"},
"count":3,"fieldMap":{}}]
```

Listing Provisioned Resources

6

You use the catalog service to list provisioned resources.

The catalog service is designed to be used by consumers and providers of the service catalog. For example, a consumer might want to list resources provisioned by a provider. The consumer can also list the resources in multiple ways.

Each example for this use case lists a curl command with respective JSON response, plus input and output parameters. The same set of prerequisites applies to each example.

This chapter includes the following topics:

- Prerequisites for Listing Provisioned Resources
- Display Your Provisioned Resources Example
- Display Provisioned Resources by Resource Type Example
- Display All Available Resource Types Example
- Display Provisioned Resources by Business Groups You Manage Example
- View Machine Details Example

Prerequisites for Listing Provisioned Resources

Satisfy the following conditions before performing any tasks for this use case.

- Log in to vRealize Automation as a **business group manager**.
- Verify that the appliance name and fully qualified domain name of the vRealize Automation instance are available.
- Verify that you have a valid HTTP bearer token that matches your login credentials. See Chapter 2 REST API Authentication.

Display Your Provisioned Resources Example

`GET /api/consumer/resources/{id}` displays a list of all the provisioned resources that you own.

curl Command

The following example displays all applicable provisioned resources.

```
curl --insecure -H "Content-Type: application/json"
-H "Authorization: Bearer $token"
https://$vRA/catalog-service/api/consumer/resources/?page=1&limit=n&$orderby=name
```

JSON Output

The following JSON output is returned based on the command input.


```
{
  "links" : [ {
    "@type" : "link",
    "rel" : "next",
    "href" : "https://vra152-009-067.mycompany.com/catalog-service/api/consumer/resources/?
page=2&limit=1"
  } ],
  "content" : [ {
    "@type" : "ConsumerResource",
    "id" : "c24e8c75-c201-489c-b51c-8d7009c23563",
    "iconId" : "Travel_100.png",
    "resourceTypeRef" : {
      "id" : "com.mycompany.mystuff.samples.travel.packageType",
      "label" : "Reservation"
    },
    "name" : "example",
    "description" : "asd",
    "status" : "ACTIVE",
    "catalogResource" : {
      "id" : "6fddafcd-bc3d-4753-8a2a-5fa3f78a5a90",
      "label" : "example"
    },
    "requestId" : "55e7fcf3-4c77-4b11-a442-1f282333ac91",
    "providerBinding" : {
      "bindingId" : "1",
      "providerRef" : {
        "id" : "f60f5d1e-d6e9-4d98-9c48-f70a3e405346",
        "label" : "travel-service"
      }
    },
…
}
```


Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/catalog-service/api/consumer/resources/
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$page	Specifies a page number.
$limit	Specifies the number of entries to display on a page. Maximum value is 5000. If not specified, defaults to 20. For information regarding limits to the number of elements displayed, see Retrieve 10,000 Resources Ordered By Name.
$orderby	Specifies how to order multiple comma-separated properties sorted in ascending or descending order. Values include: ■ $orderby=id ■ $orderby=name ■ $orderby=dateCreated ■ $orderby=lastUpdated ■ $orderby=status ■ $orderby=description
$top	Specifies the number of returned entries from the top of the response (total number per page in relation to skip).
$skip	Specifies the number of entries to skip.

Output

The command output contains property names and values based on the command input parameters.

Property	Description
id	Specifies the unique identifier of this resource.
iconId	Specifies an icon for this request based on the requested object type.
resourceTypeRef	Specifies the resource type.
name	Specifies the resource name.
description	Specifies the resource description.
status	Specifies the resource status.
catalogItem	Specifies the catalog item that defines the service this resource is based on.
requestId	Specifies the request ID that provisioned this resource.

Property	Description
providerBinding	Specifies the provider binding.
owners	Species the owners of this resource.
organization	Specifies the subtenant or tenant that owns this resource.
dateCreated	Specifies the data and time at which the resource was created.
lastUpdated	Specifies the date and time at which the resource was most recently modified.
hasLease	Returns true if the resource is subject to a lease.
lease	Displays the resource's current lease as start and end time stamps.
leaseForDisplay	Specifies the resource's current lease, #getLease, with time units synchronized with #getCosts.
hasCosts	Returns true if the resource is subject to per-time price.
costs	Displays an optional rate of the price charges for the resource. This parameter is deprecated.
costToDate	Displays an optional rate of the current price charges for the resource. This parameter is deprecated.
totalCost	Displays an optional rate of the price charges for the entire lease period. This parameter is deprecated.
expenseMonthToDate	The expense of the resource from the beginning of the month to the current date. This value is updated daily by vRealize Business for Cloud.
parentResourceRef	Displays the parent of this resource.
childResources	Displays the children of this resource.
operations	Specifies the sequence of available operations that can be performed on this resource.
forms	Specifies the forms used to render this resource.
resourceData	Displays the extended provider-defined properties of the resource.

Example: Retrieve 10,000 Resources Ordered By Name

Since the catalog service limits the number of elements that can be retrieved with a single API call to 5000, retrieving 10,000 resources requires two calls. The first call displays the first 5000 elements and the second call displays the second 5000 elements. You can make the two calls by specifying either the page and limit values or the skip and top values.

Specifying page and limit values, you make the following two calls.

```
curl --insecure -H "Content-Type: application/json" -H "Accept: application/json"
   -H "Authorization: $AUTH" "https://$vRA/catalog-service/api/consumer/resources/?
page=1&limit=5000&$orderby=name"
curl --insecure -H "Content-Type: application/json" -H "Accept: application/json"
   -H "Authorization: $AUTH" "https://$vRA/catalog-service/api/consumer/resources/?
page=2&limit=5000&$orderby=name"
```

Specifying skip and top values, you make the following two calls.

```
curl --insecure -H "Content-Type: application/json" -H "Accept: application/json"
   -H "Authorization: $AUTH"  "https://$vRA/catalog-service/api/consumer/resources/?
$skip=0&$top=5000&$orderby=name"
curl --insecure -H "Content-Type: application/json" -H "Accept: application/json"
   -H "Authorization: $AUTH"  "https://$vRA/catalog-service/api/consumer/resources/?
$skip=5000&$top=5000&$orderby=name"
```

If both page and limit values and skip and top values are specified, the skip and top values take priority.

Display Provisioned Resources by Resource Type Example

`GET /api/consumer/resourcesTypes/{id}` displays a list of the provisioned resources that you own filtered by machine resource type.

curl Command

The following example displays the provisioned resources by resource type.

```
curl --insecure -H "Content-Type: application/json"
-H "Authorization: Bearer $token”
https://$vRA/catalog-service/api/consumer/resourceTypes/Infrastructure.Machine/?
page=1&limit=n&$orderby=id
```

JSON Output

The following JSON output is returned based on the command input.


```
{
  "links" : [ ],
  "content" : [ {
    "@type" : "ConsumerResource",
    "id" : "3bfde906-81b9-44c3-8c2d-07d2c9768168",
    "iconId" : "cafe_default_icon_genericCatalogResource",
    "resourceTypeRef" : {
      "id" : "Infrastructure.Virtual",
      "label" : "Virtual Machine"
    },
    "name" : "test2",
    "description" : null,
    "status" : "ACTIVE",
    "catalogResource" : {
      "id" : "e2f397be-72ad-4ec4-a688-c017560fa1a3",
      "label" : "test-blueprint"
    },
    "requestId" : "b013d2fa-4ba4-416c-b46b-98bb8cc7b076",
    "providerBinding" : {
      "bindingId" : "8a4581a0-84f9-4e80-9af6-75d79633e382",
      "providerRef" : {
        "id" : "6918cd49-b737-467f-94bf-d14d52c78fba",
```

```
        "label" : "iaas-service"
      }
    },
    "owners" : [ {
      "tenantName" : "MYCOMPANY",
      "ref" : "fritz@example.mycompany.com",
      "type" : "USER",
      "value" : "Fritz Arbeiter"
    } ],
    "organization" : {
      "tenantRef" : "MYCOMPANY",
      "tenantLabel" : "QETenant",
      "subtenantRef" : "eab762cb-6e75-4379-83ef-171a71c9f00e",
      "subtenantLabel" : "MyTestAgentBusinessGroup"
    },
…
}
```

The output includes the following highlighted items:

- Resource ID. **3bfde906-81b9-44c3-8c2d-07d2c9768168** corresponds to a provisioned machine owned by the logged-in user. The resource IDs are used in requests to retrieve the details for the corresponding machines.
- subtenantRef ID. **eab762cb-6e75-4379-83ef-171a71c9f00e** corresponds to the business group of the logged-in user. If the user who is logged-in is also the manager of the business group, the subtenantRef ID is used to get resources from all business groups that the user manages.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/catalog-service/api/consumer/resourceTypes
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
page	Specifies a page number.
limit	Specifies the number of entries to display on a page. Maximum value is 5000. If not specified, defaults to 20. For information regarding limits to the number of elements displayed, see Retrieve 10,000 Resources Ordered By Name.

Parameter	Description
$orderby	Specifies how to order multiple comma-separated properties sorted in ascending or descending order. Values include: ■ $orderby=id ■ $orderby=name ■ $orderby=dateCreated ■ $orderby=lastUpdated ■ $orderby=status ■ $orderby=description
top	Specifies the number of returned entries from the top of the response (total number per page in relation to skip).
skip	Specifies the number of entries to skip.

Filter by the following resource types:

- Infrastructure.Machine
- Infrastructure.AppServic
- Infrastructure.Cloud
- Infrastructure.Physical
- Infrastructure.vApp
- Infrastructure.Virtual

Output

The command output contains property names and values based on the command input parameters.

Property	Description
id	Specifies the unique identifier of this resource.
iconId	Specifies an icon for this request based on the requested object type.
resourceTypeRef	Specifies the resource type.
name	Specifies the resource name.
description	Specifies the resource description.
status	Specifies the resource status.
catalogItem	Specifies the catalog item that defines the service this resource is based on.
requestId	Specifies the request ID that provisioned this resource.
providerBinding	Specifies the provider binding.
owners	Species the owners of this resource.

Property	Description
organization	Specifies the subtenant or tenant that owns this resource.
dateCreated	Specifies the data and time at which the resource was created.
lastUpdated	Specifies the date and time at which the resource was most recently modified.
hasLease	Returns true if the resource is subject to a lease.
lease	Displays the resource's current lease as start and end time stamps.
leaseForDisplay	Specifies the resource's current lease, #getLease, with time units synchronized with #getCosts.
hasCosts	Returns true if the resource is subject to per-time price.
costs	Displays an optional rate of the price charges for the resource. This parameter is deprecated.
costToDate	Displays an optional rate of the current price charges for the resource. This parameter is deprecated.
totalCost	Displays an optional rate of the price charges for the entire lease period. This parameter is deprecated.
expenseMonthToDate	The expense of the resource from the beginning of the month to the current date. This value is updated daily by vRealize Business for Cloud.
parentResourceRef	Displays the parent of this resource.
childResources	Displays the children of this resource.
operations	Specifies the sequence of available operations that can be performed on this resource.
forms	Specifies the forms used to render this resource.
resourceData	Displays the extended provider-defined properties of the resource.

Display All Available Resource Types Example

`GET /api/consumer/resourcesTypes` displays all the resource types that are available on the system.

curl Command

The following example displays all available resource types.

```
curl --insecure -H "Content-Type: application/json" -H "Authorization: Bearer $token" https://
$vRA/catalog-service/api/consumer/resourceTypes
```

JSON Output

The following JSON output is returned based on the command input.

```
{
  "links" : [ ],
```

```
  "content" : [ {
    "@type" : "ResourceType",
    "id" : "Infrastructure.Machine",
    "name" : "Machine",
    "pluralizedName" : "Machines",
    "description" : "The common parent type for all types of machines",
    "primary" : true,
    "schema" : {
      "classId" : "Infrastructure.Machine.Schema",
      "typeFilter" : null
    },
    "forms" : {
      "catalogResourceInfoHidden" : true,
      "details" : {
        "type" : "extension",
        "extensionId" : "csp.places.iaas.resource.details",
        "extensionPointId" : null
      }
```

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/catalog-service/api/consumer/resourceTypes
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.

Output

The command output contains property names and values based on the command input parameters.

Property	Description
id	Specifies the unique identifier of this resource.
iconId	Specifies an icon for this request based on the requested object type.
resourceTypeRef	Specifies the resource type.
name	Specifies the resource name.
description	Specifies the resource description.
status	Specifies the resource status.
catalogItem	Specifies the catalog item that defines the service this resource is based on.
requestId	Specifies the request ID that provisioned this resource.

Property	Description
providerBinding	Specifies the provider binding.
owners	Species the owners of this resource.
organization	Specifies the subtenant or tenant that owns this resource.
dateCreated	Specifies the data and time at which the resource was created.
lastUpdated	Specifies the date and time at which the resource was most recently modified.
hasLease	Returns true if the resource is subject to a lease.
lease	Displays the resource's current lease as start and end time stamps.
leaseForDisplay	Specifies the resource's current lease, #getLease, with time units synchronized with #getCosts.
hasCosts	Returns true if the resource is subject to per-time price.
costs	Displays an optional rate of the price charges for the resource. This parameter is deprecated.
costToDate	Displays an optional rate of the current price charges for the resource. This parameter is deprecated.
totalCost	Displays an optional rate of the price charges for the entire lease period. This parameter is deprecated.
expenseMonthToDate	The expense of the resource from the beginning of the month to the current date. This value is updated daily by vRealize Business for Cloud.
parentResourceRef	Displays the parent of this resource.
childResources	Displays the children of this resource.
operations	Specifies the sequence of available operations that can be performed on this resource.
forms	Specifies the forms used to render this resource.
resourceData	Displays the extended provider-defined properties of the resource.

Example: `curl` Command

The following example command displays all available resource types.

```
curl --insecure -H "Content-Type: application/json"
-H "Authorization: Bearer $token"
https://$vRA/catalog-service/api/consumer/resourceTypes
```

Example: JSON Output

The following JSON output is returned based on the command input.

```
{
  "links" : [ ],
  "content" : [ {
    "@type" : "ResourceType",
```

```
    "id" : "Infrastructure.Machine",
    "name" : "Machine",
    "pluralizedName" : "Machines",
    "description" : "The common parent type for all types of machines",
    "primary" : true,
    "schema" : {
      "classId" : "Infrastructure.Machine.Schema",
      "typeFilter" : null
    },
    "forms" : {
      "catalogResourceInfoHidden" : true,
      "details" : {
        "type" : "extension",
        "extensionId" : "csp.places.iaas.resource.details",
        "extensionPointId" : null
      }
```

Display Provisioned Resources by Business Groups You Manage Example

`GET /api/consumer/resources/types/{resourceTypeId}` displays all of the provisioned resources that are owned by the business groups that you manage. You can optionally filter the list by business group name.

curl Command

The following example displays the provisioned resources of one or more business groups.

```
curl --insecure -H "Content-Type: application/json"
-H "Authorization: Bearer $token"
https://$vRA/catalog-service/api/consumer/resources/types/Infrastructure.Machine/?
page=1&limit=n&$orderby=id desc&$filter=((organization/subTenant/id eq 'subtenantID_group1')
or (organization/subTenant/id eq ''subtenantID_group2') … )"
```

JSON Output

In the following command input, the subtenant IDs correspond to business groups that are managed by the user who is logged-in.

```
rest get catalog-service --u  "consumer/resources/types/Infrastructure.Machine/?
page=1&limit=2&$orderby=dateCreated desc&$filter=((organization/subTenant/id eq
'eab762cb-6e75-4379-83ef-171a71c9f00e') or (organization/subTenant/id eq 'fa995528-e289-455e-
a0e6-c2da8b0e1bf9') or (organization/subTenant/id eq '699efe66-fe6e-4e34-96e8-52a34f338d20')
or (organization/subTenant/id eq '4d949784-e93e-4538-accb-6a0a464e4a4b'))"
```

The following JSON output is returned based on the command input.

```
{
  "links" : [ ],
  "content" : [ {
    "@type" : "ConsumerResource",
```

```
    "id" : "3bfde906-81b9-44c3-8c2d-07d2c9768168",
    "iconId" : "cafe_default_icon_genericCatalogResource",
    "resourceTypeRef" : {
      "id" : "Infrastructure.Virtual",
      "label" : "Virtual Machine"
    },
    "name" : "test2",
    "description" : null,
    "status" : "ACTIVE",
    "catalogResource" : {
      "id" : "e2f397be-72ad-4ec4-a688-c017560fa1a3",
      "label" : "test-blueprint"
    },
    "requestId" : "b013d2fa-4ba4-416c-b46b-98bb8cc7b076",
    "providerBinding" : {
      "bindingId" : "8a4581a0-84f9-4e80-9af6-75d79633e382",
      "providerRef" : {
        "id" : "6918cd49-b737-467f-94bf-d14d52c78fba",
        "label" : "iaas-service"
      }
    },
    "owners" : [ {
      "tenantName" : "MYCOMPANY",
      "ref" : "fritz@example.mycompany.com",
      "type" : "USER",
      "value" : "Fritz Arbeiter"
    } ],
    "organization" : {
      "tenantRef" : "MYCOMPANY",
      "tenantLabel" : "QETenant",
      "subtenantRef" : "eab762cb-6e75-4379-83ef-171a71c9f00e",
      "subtenantLabel" : "MyTestAgentBusinessGroup"
    },
    "dateCreated" : "2014-09-19T21:19:37.541Z",
    "lastUpdated" : "2014-09-19T21:19:40.888Z",
    "hasLease" : true,
    "lease" : {
      "start" : "2014-09-19T21:18:57.000Z"
    },
    "leaseForDisplay" : null,
    "hasCosts" : true,
    "costs" : {
      "leaseRate" : {
        "type" : "moneyTimeRate",
        "cost" : {
          "type" : "money",
          "currencyCode" : "USD",
          "amount" : 0.0
        },
        "basis" : {
          "type" : "timeSpan",
          "unit" : "DAYS",
          "amount" : 1
        }
      }
```

```
    },
    "costToDate" : {
      "type" : "money",
      "currencyCode" : "USD",
      "amount" : 0.0
    },
    "totalCost" : null,
    "childResources" : [ ],
    "operations" : [ {
      "name" : "Reprovision",
      "description" : "Reprovision a machine.",
      "iconId" : "machineReprovision.png",
      "type" : "ACTION",
      "id" : "a1caee9b-d67f-41e8-a7b3-131616a0f6ac",
      "extensionId" : null,
      "providerTypeId" : "com.mycompany.csp.iaas.blueprint.service",
      "bindingId" : "Infrastructure.Machine.Action.Reprovision",
      "hasForm" : false,
      "formScale" : null
    } ],
    "forms" : {
      "catalogResourceInfoHidden" : true,
      "details" : {
        "type" : "extension",
        "extensionId" : "csp.places.iaas.resource.details",
        "extensionPointId" : null
      }
    },
    "resourceData" : {
      "entries" : [ {
        "key" : "Expire",
        "value" : {
          "type" : "boolean",
          "value" : true
        }
      }, {
        "key" : "MachineGroupName",
        "value" : {
          "type" : "string",
          "value" : "MyTestAgentBusinessGroup"
        }
      }, {
        "key" : "NETWORK_LIST",
        "value" : {
          "type" : "multiple",
          "elementTypeId" : "COMPLEX",
          "resources" : [ {
            "type" : "complex",
            "componentTypeId" : "com.mycompany.csp.component.iaas.proxy.provider",
            "componentId" : null,
            "classId" : "vra.api.model.NetworkViewModel",
            "typeFilter" : null,
            "values" : {
              "entries" : [ {
                "key" : "NETWORK_MAC_ADDRESS",
```

```
                "value" : {
                  "type" : "string",
                  "value" : "56:52:4d:e7:46:d4"
                }
              }, {
                "key" : "NETWORK_NAME",
                "value" : {
                  "type" : "string",
                  "value" : "Test Agent-network-1"
                }
              } ]
            }
          } ]
        }
      }, {
        "key" : "SNAPSHOT_LIST",
        "value" : {
          "type" : "multiple",
          "elementTypeId" : "COMPLEX",
          "resources" : [ ]
        }
      }, {
        "key" : "ConnectViaRdp",
        "value" : {
          "type" : "boolean",
          "value" : true
        }
      }, {
        "key" : "MachineStatus",
        "value" : {
          "type" : "string",
          "value" : "On"
        }
      }, {
        "key" : "PowerOff",
        "value" : {
          "type" : "boolean",
          "value" : true
        }
      }, {
        "key" : "DISK_VOLUMES",
        "value" : {
          "type" : "multiple",
          "elementTypeId" : "COMPLEX",
          "resources" : [ {
            "type" : "complex",
            "componentTypeId" : "com.mycompany.csp.component.iaas.proxy.provider",
            "componentId" : null,
            "classId" : "vra.api.model.DiskInputModel",
            "typeFilter" : null,
            "values" : {
              "entries" : [ {
                "key" : "DISK_CAPACITY",
                "value" : {
                  "type" : "integer",
```

```
                "value" : 1
              }
            }, {
              "key" : "DISK_DRIVE",
              "value" : {
                "type" : "string",
                "value" : "c"
              }
            }, {
              "key" : "DISK_INPUT_ID",
              "value" : {
                "type" : "string",
                "value" : "DISK_INPUT_ID1"
              }
            } ]
          }
        } ]
      }
    }, {
      "key" : "MachineBlueprintName",
      "value" : {
        "type" : "string",
        "value" : "test-blueprint"
      }
    }, {
      "key" : "Suspend",
      "value" : {
        "type" : "boolean",
        "value" : true
      }
    }, {
      "key" : "Reboot",
      "value" : {
        "type" : "boolean",
        "value" : true
      }
    }, {
      "key" : "Reprovision",
      "value" : {
        "type" : "boolean",
        "value" : true
      }
    }, {
      "key" : "MachineStorage",
      "value" : {
        "type" : "integer",
        "value" : 1
      }
    }, {
      "key" : "MachineDailyCost",
      "value" : {
        "type" : "decimal",
        "value" : 0.0
      }
    }, {
```

```
        "key" : "Destroy",
        "value" : {
          "type" : "boolean",
          "value" : true
        }
      }, {
        "key" : "MachineType",
        "value" : {
          "type" : "string",
          "value" : "Virtual"
        }
      }, {
        "key" : "InstallTools",
        "value" : {
          "type" : "boolean",
          "value" : true
        }
      }, {
        "key" : "Shutdown",
        "value" : {
          "type" : "boolean",
          "value" : true
        }
      }, {
        "key" : "ChangeLease",
        "value" : {
          "type" : "boolean",
          "value" : true
        }
      }, {
        "key" : "machineId",
        "value" : {
          "type" : "string",
          "value" : "8a4581a0-84f9-4e80-9af6-75d79633e382"
        }
      }, {
        "key" : "MachineMemory",
        "value" : {
          "type" : "integer",
          "value" : 0
        }
      }, {
        "key" : "MachineGuestOperatingSystem"
      }, {
        "key" : "MachineName",
        "value" : {
          "type" : "string",
          "value" : "test2"
        }
      }, {
        "key" : "MachineDestructionDate"
      }, {
        "key" : "MachineCPU",
        "value" : {
          "type" : "integer",
```

```
          "value" : 1
        }
      }, {
        "key" : "MachineInterfaceType",
        "value" : {
          "type" : "string",
          "value" : "Test"
        }
      }, {
        "key" : "MachineReservationName",
        "value" : {
          "type" : "string",
          "value" : "Test Agent-Res-1"
        }
      }, {
        "key" : "Reconfigure",
        "value" : {
          "type" : "boolean",
          "value" : true
        }
      }, {
        "key" : "EXTERNAL_REFERENCE_ID"
      }, {
        "key" : "MachineExpirationDate"
      }, {
        "key" : "Reset",
        "value" : {
          "type" : "boolean",
          "value" : true
        }
      } ]
    }
  } ],
  "metadata" : {
    "size" : 2,
    "totalElements" : 1,
    "totalPages" : 1,
    "number" : 1,
    "offset" : 0
  }
}
```


Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/catalog-service/api/consumer/resources/type
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.

Parameter	Description
$resourceID	Specifies a resource ID. See Display Your Provisioned Resources Example to view all of your requests and search for a request ID.
managedOnly	If true, the returned requests are from the user's managed subtenants.
page	Specifies a page number.
limit	Specifies the number of entries to display on a page. Maximum value is 5000. If not specified, defaults to 20. For information regarding limits to the number of elements displayed, see Retrieve 10,000 Resources Ordered By Name.
$orderby	Specifies how to order multiple comma-separated properties sorted in ascending or descending order. Values include: ■ $orderby=id ■ $orderby=name ■ $orderby=dateCreated ■ $orderby=lastUpdated ■ $orderby=status ■ $orderby=description
top	Specifies the number of returned entries from the top of the response (total number per page in relation to skip).
skip	Specifies the number of entries to skip.
$filter	Contains a Boolean expression to determine if a particular entry is included in the response.

Output

The command output contains property names and values based on the command input parameters.

Property	Description
id	Specifies the unique identifier of this resource.
iconId	Specifies an icon for this request based on the requested object type.
resourceTypeRef	Specifies the resource type.
name	Specifies the resource name.
description	Specifies the resource description.
status	Specifies the resource status.
catalogItem	Specifies the catalog item that defines the service this resource is based on.
requestId	Specifies the request ID that provisioned this resource.
providerBinding	Specifies the provider binding.

Property	Description
owners	Species the owners of this resource.
organization	Specifies the subtenant or tenant that owns this resource.
dateCreated	Specifies the data and time at which the resource was created.
lastUpdated	Specifies the date and time at which the resource was most recently modified.
hasLease	Returns true if the resource is subject to a lease.
lease	Displays the resource's current lease as start and end time stamps.
leaseForDisplay	Specifies the resource's current lease, #getLease, with time units synchronized with #getCosts.
hasCosts	Returns true if the resource is subject to per-time price.
costs	Displays an optional rate of the price charges for the resource. This parameter is deprecated.
costToDate	Displays an optional rate of the current price charges for the resource. This parameter is deprecated.
totalCost	Displays an optional rate of the price charges for the entire lease period. This parameter is deprecated.
expenseMonthToDate	The expense of the resource from the beginning of the month to the current date. This value is updated daily by vRealize Business for Cloud.
parentResourceRef	Displays the parent of this resource.
childResources	Displays the children of this resource.
operations	Specifies the sequence of available operations that can be performed on this resource.
forms	Specifies the forms used to render this resource.
resourceData	Displays the extended provider-defined properties of the resource.

View Machine Details Example

`GET /api/consumer/requests/{id}/resourceViews` displays the machine details for a provisioned machine.

curl Command

The following example displays machine details for a provisioned machine with *resourceID*=7aaf9baf-aa4e-47c4-997b-edd7c7983a5b.

```
curl --insecure -H "Content-Type: application/json"
-H "Authorization: Bearer $token”
http://$vRA/catalog-service/api/consumer/requests/7aaf9baf-aa4e-47c4-997b-edd7c7983a5b/
resourceViews
```

JSON Output

The following JSON output is returned based on the command input.


```
{
    "links": [],
    "content": [
        {
            "@type": "CatalogResourceView",
            "links": [
                {
                    "@type": "link",
                    "rel": "GET: Catalog Item",
                    "href": "https://$vRA/catalog-service/api/consumer/
entitledCatalogItemViews/7c8275d6-1bd6-452a-97c4-d6c053e4baa4"
                },
                {
                    "@type": "link",
                    "rel": "GET: Request",
                    "href": "https://$vRA/catalog-service/api/consumer/requests/7aaf9baf-
aa4e-47c4-997b-edd7c7983a5b"
                },
                {
                    "@type": "link",
                    "rel": "GET Template:
{com.vmware.csp.component.cafe.composition@resource.action.deployment.destroy.name}",
                    "href": "https://$vRA/catalog-service/api/consumer/resources/c4d3db3e-
e397-44ff-a1c9-0ecebdba12f4/actions/416e6bb1-3357-448b-8396-e268d5f7343b/requests/template"
                },
                {
                    "@type": "link",
                    "rel": "POST:
{com.vmware.csp.component.cafe.composition@resource.action.deployment.destroy.name}",
                    "href": "https://$vRA/catalog-service/api/consumer/resources/c4d3db3e-
e397-44ff-a1c9-0ecebdba12f4/actions/416e6bb1-3357-448b-8396-e268d5f7343b/requests"
                },
                {
                    "@type": "link",
                    "rel": "GET: Child Resources",
                    "href": "https://$vRA/catalog-service/api/consumer/resourceViews?
managedOnly=false&withExtendedData=true&withOperations=true&%24filter=parentResource%20eq%20%2
7c4d3db3e-e397-44ff-a1c9-0ecebdba12f4%27"
                }
            ],
            "resourceId": "c4d3db3e-e397-44ff-a1c9-0ecebdba12f4",
            "iconId": "cafe_default_icon_genericCatalogItem",
            "name": "Linux-80813151",
            "description": null,
            "status": null,
            "catalogItemId": "7c8275d6-1bd6-452a-97c4-d6c053e4baa4",
            "catalogItemLabel": "Linux",
            "requestId": "7aaf9baf-aa4e-47c4-997b-edd7c7983a5b",
            "resourceType":
"{com.vmware.csp.component.cafe.composition@resource.type.deployment.name}",
```

```
            "owners": [
                "Connie Summers"
            ],
            "businessGroupId": "c0683388-6db2-4cb5-9033-b24d15ad3766",
            "tenantId": "mycompany",
            "dateCreated": "2015-07-29T13:51:36.368Z",
            "lastUpdated": "2015-07-29T13:55:35.963Z",
            "lease": null,
            "costs": null,
            "costToDate": null,
            "totalCost": null,
            "parentResourceId": null,
            "hasChildren": true,
            "data": {}
        }
    ],
    "metadata": {
        "size": 20,
        "totalElements": 1,
        "totalPages": 1,
        "number": 1,
        "offset": 0
    }
}
```


Using the API to Get Deployment Details

To view deployed machine details, append `/resourceViews` to the request details URI that you generated when you retrieved request details.

```
http://$vRA/catalog-service/api/consumer/requests/$requestId/resourceViews
```

See Syntax for Viewing Details of a Machine Request .

In addition to general information about the provisioned deployment such as its name, description, and ID, the response contains additional HATEOAS links that enable you to obtain additional details and information.

Table 6-1. HATEOAS Link Functions as Defined by rel Field

Link	Description
GET: Catalog Item	URI to get the catalog item details (as described in sections 3.2.1 and 3.2.2) from which this catalog item was provisioned.
GET: Request	URI to get the request details that provisioned this item.
GET:Template {com.vmware.csp.component.cafe.composition @resource.action.deployment.*$actionName*	URI to get a template request for a specific action that you can perform on this resource. Typically, on a deployment the action will be Delete.

Table 6-1. HATEOAS Link Functions as Defined by rel Field (continued)

Link	Description
POST: {com.vmware.csp.component.cafe.composition @resource.action.deployment.*$actionName*	URI to which to post the request to perform an action, based on the corresponding template.
GET: Child Resources	If the deployment contains child resources (nodes specified in the composite blueprint), this is the URI to get a list of the resourceViews for the children of this deployment.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/catalog-service/api/consumer/resources/$resourceId
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$resourceID	Specifies a resource ID. See Display Your Provisioned Resources Example to view all of your requests and search for a request ID.
managedOnly	If true, the returned requests are from the user's managed subtenants.
page	Specifies a page number.
limit	Specifies the number of entries to display on a page.
$orderby	Specifies how to order multiple comma-separated properties sorted in ascending or descending order.
$top	Specifies the number of returned entries from the top of the response (total number per page in relation to skip).
$skip	Specifies the number of entries to skip.
filter	Contains a Boolean expression to determine if a particular entry is included in the response.

Output

The command output contains property names and values based on the command input parameters.

Property	Description
id	Specifies the unique identifier of this resource.
iconId	Specifies an icon for this request based on the requested object type.
resourceTypeRef	Specifies the resource type.

Property	Description
name	Specifies the resource name.
description	Specifies the resource description.
status	Specifies the resource status.
catalogItem	Specifies the catalog item that defines the service this resource is based on.
requestId	Specifies the request ID that provisioned this resource.
providerBinding	Specifies the provider binding.
owners	Species the owners of this resource.
organization	Specifies the subtenant or tenant that owns this resource.
dateCreated	Specifies the data and time at which the resource was created.
lastUpdated	Specifies the date and time at which the resource was most recently modified.
hasLease	Returns true if the resource is subject to a lease.
lease	Displays the resource's current lease as start and end time stamps.
leaseForDisplay	Specifies the resource's current lease, #getLease, with time units synchronized with #getCosts.
hasCosts	Returns true if the resource is subject to per-time price.
costs	Displays an optional rate of the price charges for the resource. This parameter is deprecated.
costToDate	Displays an optional rate of the current price charges for the resource. This parameter is deprecated.
totalCost	Displays an optional rate of the price charges for the entire lease period. This parameter is deprecated.
expenseMonthToDate	The expense of the resource from the beginning of the month to the current date. This value is updated daily by vRealize Business for Cloud.
parentResourceRef	Displays the parent of this resource.
childResources	Displays the children of this resource.
operations	Specifies the sequence of available operations that can be performed on this resource.
forms	Specifies the forms used to render this resource.
resourceData	Displays the extended provider-defined properties of the resource.

Managing Provisioned Deployments

7

You use the catalog service to manage provisioned deployments.

The catalog service is designed to be used by consumers of the service catalog. For example, a consumer might want to list all provisioned resources then submit a request to power off a resource.

This chapter includes the following topics:

- Manage Provisioned Deployments
- Power Off
- Change Lease
- Catalog Service Examples for Managing Provisioned Deployments

Manage Provisioned Deployments

You use the catalog service to log in to vRealize Automation and view information about provisioned resources.

Prerequisites

- Log in to vRealize Automation as a **business group manager**.
- Verify that the appliance name and fully qualified domain name of the vRealize Automation instance are available.
- Verify that you have a valid HTTP bearer token that matches your login credentials. See Chapter 2 REST API Authentication.

Procedure

1 Display a list of all provisioned resources.

```
$curl --insecure -s -H" Content-Type: multipart/form-data" -H "Authorization:
Bearer $token" http://$vRA/catalog-service/api/consumer/requests/7aaf9baf-aa4e-47c4-997b-
edd7c7983a5b/resourceViews
```

For details regarding input and output of this sample, see Syntax for Getting Deployment Details.

2 Examine the response for the HATEOAS links that you need to obtain additional information about specific deployed resources.

3 Use the `GET: Child Resources` HATEOAS link to retrieve a list of child nodes of a deployment.

```
$curl --insecure -s -H" Content-Type: multipart/form-data" -H "Authorization: Bearer
$token" https:// $vRA/catalog-service/api/consumer/resourceViews?
managedOnly=false&withExtendedData=true&withOperations=true&%24filter=parentResource%20eq%2
0%27c4d3db3e-e397-44ff-a1c9-0ecebdba12f4%27
```

For details regarding input and output of this sample, see Syntax for Navigating to the Children of a Deployed Resource.

What to do next

Use the HATEOS links obtained from retrieving the list of child nodes to perform actions.

- See Power Off.
- See Change Lease.

Note The vRealize Automation REST API does not support custom resource actions template API calls. However, you can perform custom resource actions programmatically by using the vRealize CloudClient.

For additional posts and articles that illustrate methods for performing actions by using the vRealize Automation REST API or vRealize CloudClient tool, see the Executing Day 2 Actions with the vRA 7 REST API blog post.

Power Off

You use the catalog service to perform a power off action. For simple actions that require no user input, the process is straightforward.

This command leverages the links for the power off action from the command used in the Syntax for Navigating to the Children of a Deployed Resource example.

```
{
   "@type": "link",
   "rel": "GET Template: {...iaas.proxy.provider@resource.action.name.machine.PowerOff}",
   "href": "https://$vRA/api/consumer/resources/dd3...a4a/actions/02ba...e38/requests/
template"
},
{
   "@type": "link",
   "rel": "POST: {com.vmware..iaas.proxy.provider@resource.action.name.machine.PowerOff}",
    "href": "https://$vRA/api/consumer/resources/dd3...a4a/actions/02b...e38/requests"
}
```

Procedure

1 Get the template for the resource action request.

```
$curl --insecure -s -H "Content-Type: multipart/form-data" -H "Authorization:
Bearer $token" https://$vRA/catalog-service/api/consumer/resources/dd37b7a1-829c-4773-b5be-
b229453eca4a/actions/02bad06d-f92b-4cf8-b964-37bb5d57be38/requests/template
```

2 Examine the response.

```
HTTP/1.1 200 OK
Server: Apache-Coyote/1.1
Cache-Control: no-cache, no-store
Pragma: no-cache
Expires: Sat, 01 August 2015 23:04:50 GMT
Content-Type: application/json;charset=UTF-8
Date: Sat, 01 August 2015 13:04:50 GMT
{
  "type": "com.vmware.vcac.catalog.domain.request.CatalogResourceRequest",
  "resourceId": "dd37b7a1-829c-4773-b5be-b229453eca4a",
  "actionId": "02bad06d-f92b-4cf8-b964-37bb5d57be38",
  "description": null,
  "data": {
    "description": null,
    "reasons": null
  }
}
```

3 Edit the template as desired. The template is populated with default values. For example, you may want to provide custom values for the description and reasons.

4 Use a POST command to send the template without modification to the corresponding URI.

```
$curl --verbose --insecure -s -H" Content-Type: multipart/form-data" -H "Authorization:
Bearer $token" https://$vRA/catalog-service/api/consumer/resources/dd37b7a1-829c-4773-b5be-
b229453eca4a/actions/02bad06d-f92b-4cf8-b964-37bb5d57be38/requests
{
  "type": "com.vmware.vcac.catalog.domain.request.CatalogResourceRequest",
  "resourceId": "dd37b7a1-829c-4773-b5be-b229453eca4a",
  "actionId": "02bad06d-f92b-4cf8-b964-37bb5d57be38",
  "description": null,
  "data": {
    "description": null,
    "reasons": null
  }
}
```

Results

This POST command returns a response indicating success or failure. `HTTP/1.1 201 CREATED` indicates that the request was submitted successfully.

Change Lease

You use the catalog service to change a lease. For actions that require user input, you may need to edit the template prior to submitting the request.

This command leverages the links for the change lease action from the command used in the Syntax for Navigating to the Children of a Deployed Resource example.

```
{
   "@type": "link",
   "rel": "GET Template: {com.vmware...iaas.proxy.provider@resource...ChangeLease}",
   "href": "https://$vRA/api/consumer/resources/dd3...a4a/actions/b5739e30-.../requests/
template"
},
{
   "@type": "link",
   "rel": "POST: {com.vmware...iaas.proxy.provider@resource.action.name.machine.ChangeLease}",
   "href": "https://$vRA/api/consumer/resources/dd3...a4a/actions/b5739e30-.../requests"
},
```

Procedure

1 Get the template for the resource action request.

```
$curl --insecure -s -H "Content-Type: multipart/form-data" -H "Authorization:
Bearer $token" https://$vRA/catalog-service/api/consumer/resources/dd37b7a1-829c-4773-b5be-
b229453eca4a/actions/b5739e30-871d-48c7-9012-f2a7cf431dc1/requests/template
```

2 Examine the response.

```
HTTP/1.1 200 OK
Server: Apache-Coyote/1.1
Cache-Control: no-cache, no-store
Pragma: no-cache
Expires: Sat, 01 August 2015 23:04:50 GMT
Content-Type: application/json;charset=UTF-8
Date: Sat, 01 August 2015 13:04:50 GMT
{
  "type": "com.vmware.vcac.catalog.domain.request.CatalogResourceRequest",
  "resourceId": "dd37b7a1-829c-4773-b5be-b229453eca4a",
  "actionId": "b5739e30-871d-48c7-9012-f2a7cf431dc1",
  "description": null,
  "data": {"provider-ExpirationDate": "2015-07-29T16:44:13.846Z"}
}
```

3 Edit the template as desired. The template is populated with default values. In this example, the value of *provider-ExpirationDate* is set to the time at which the template was requested in UTC. Edit this value (for example, to change the expiration to a month from now). You may also want to provide a custom value for the description.

4 Use a POST command to send the template to the corresponding URI.

```
$curl --verbose --insecure -s -H "Content-Type: multipart/form-data" -H "Authorization:
Bearer $token" https://$vRA/catalog-service/api/consumer/resources/dd37b7a1-829c-4773-b5be-
b229453eca4a/actions/b5739e30-871d-48c7-9012-f2a7cf431dc1/requests
Accept: application/json
Content-Type: application/json
Authorization: Bearer $token
{
  "type": "com.vmware.vcac.catalog.domain.request.CatalogResourceRequest",
  "resourceId": "dd37b7a1-829c-4773-b5be-b229453eca4a",
  "actionId": "b5739e30-871d-48c7-9012-f2a7cf431dc1",
  "description": null,
  "data": {"provider-ExpirationDate": "2015-08-29T16:44:13.846Z"}
}
```

Results

This POST command returns a response indicating success or failure. `HTTP/1.1 201 CREATED` indicates that the request was submitted successfully.

Catalog Service Examples for Managing Provisioned Deployments

Syntax for each service example lists input parameters, output parameters, and curl commands.

- Syntax for Getting Deployment Details

  `GET /api/consumer/requests/{id}/resourceViews` retrieves resources provisioned by a given request.

- Syntax for Navigating to the Children of a Deployed Resource

  `GET /api/consumer/resourceViews` retrieves a list of the child nodes of a deployment, including virtual machines, networks, and other objects you may have configured on the design canvas.

Syntax for Getting Deployment Details

`GET /api/consumer/requests/{id}/resourceViews` retrieves resources provisioned by a given request.

Accessing Links to Provisioned Items

You can access links to provisioned items from a given request by appending `/resourceViews` to the request details URI. For instance, you can edit the example request URI from as follows:

```
http://$vRA/catalog-service/api/consumer/requests/$requestId/resourceViews
```

In addition to the general information about the provisioned deployment returned in the response, such as its name, description and ID, the response contains additional HATEOAS links.

Table 7-1. HATEOAS Link Deployment Details Functions

Link	Description
GET: Catalog Item	URI to get the catalog item details from which this catalog item was provisioned. See Syntax for Viewing Details of a Machine Request .
GET: Request	URI to get the request details that provisioned this item.
GET:Template {com.vmware.csp.component.cafe.composition@resource.action.deployment.*$actionName*	URI to get a template request for a specific action that you can perform on this resource. Typically, on a deployment, the action will be Delete.
POST: {com.vmware.csp.component.cafe.composition@resource.action.deployment.*$actionName*	URI to which to post the request to perform an action, based on the corresponding template.
GET: Child Resources	If the deployment contains child resources, such as nodes specified in the composite blueprint, this is the URI to get a list of the `resourceViews` for the children of this deployment.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/catalog-service/api/consumer/resources/$resourceId
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
id	UUID of a request.
page	Specifies a page number.
limit	Specifies the number of entries to display on a page.
$orderby	Specifies how to order multiple comma-separated properties sorted in ascending or descending order.
$top	Specifies the number of returned entries from the top of the response (total number per page in relation to skip).
$skip	Specifies the number of entries to skip.
filter	Contains a Boolean expression to determine if a particular entry is included in the response.

Output

The command output contains property names and values based on the command input parameters.

Note Price is referred to as `cost` in API commands and output.

Table 7-2. Output Parameters

Property	Description
resourceId	The unique identifier of the resource.
iconId	Specifies an icon for this request based on the requested object type.
name	The user friendly name of the resource.
description	An extended user friendly description of the resource.
status	The status of the resource. For example, On, Off, etc.
catalogItemId	The identifier of the catalog item associated with this provisioned resource.
catalogItemLabel	The label of the catalog item associated with this provisioned resource.
requestId	The unique identifier of the request that created this provisioned resource.
businessGroupId	The unique identifier of the business group that owns this resource.
tenantId	The unique identifier of the tenant that owns this resource.
owners	The owner of this resource.
resourceType	The type identifier of this resource. For example, Virtual Machine.
parentResourceId	The unique identifier of the parent resource. Used for child resources of a multi-machine resource.
hasChildren	Returns trun if this resource has child resources. Used if this is a multi-machine resource.
dateCreated	The date and time at which the resource was created.
lastUpdated	The date and time at which the resource was most recently modified.
lease	The current lease of the resource.
costs	An optional rate card of the prices and charges levied against the resource. This parameter is deprecated.
costToDate	An optional rate card of the existing prices and charges levied against the resource. This parameter is deprecated
totalCost	An optional rate card of the pricess and charges levied for the entire lease period. This parameter is deprecated.
expenseMonthToDate	The expense of the resource from the beginning of the month to the current date.
data	The extended, provider defined properties of the resource.

Example Curl Command

This example retrieves all children of the resource with an ID of 7aaf9baf-aa4e-47c4-997b-edd7c7983a5b.

```
$curl --insecure -s -H" Content-Type: multipart/form-data" -H "Authorization:
Bearer $token" http://$vRA/catalog-service/api/consumer/requests/7aaf9baf-aa4e-47c4-997b-
edd7c7983a5b/resourceViews
```

Example: JSON Output


```
{
    "links": [],
    "content": [
        {
            "@type": "CatalogResourceView",
            "links": [
                {
                    "@type": "link",
                    "rel": "GET: Catalog Item",
                    "href": "https://$vRA/catalog-service/api/consumer/
entitledCatalogItemViews/7c8275d6-1bd6-452a-97c4-d6c053e4baa4"
                },
                {
                    "@type": "link",
                    "rel": "GET: Request",
                    "href": "https://$vRA/catalog-service/api/consumer/requests/7aaf9baf-
aa4e-47c4-997b-edd7c7983a5b"
                },
                {
                    "@type": "link",
                    "rel": "GET Template:
{com.vmware.csp.component.cafe.composition@resource.action.deployment.destroy.name}",
                    "href": "https://$vRA/catalog-service/api/consumer/resources/c4d3db3e-
e397-44ff-a1c9-0ecebdba12f4/actions/416e6bb1-3357-448b-8396-e268d5f7343b/requests/template"
                },
                {
                    "@type": "link",
                    "rel": "POST:
{com.vmware.csp.component.cafe.composition@resource.action.deployment.destroy.name}",
                    "href": "https://$vRA/catalog-service/api/consumer/resources/c4d3db3e-
e397-44ff-a1c9-0ecebdba12f4/actions/416e6bb1-3357-448b-8396-e268d5f7343b/requests"
                },
                {
                    "@type": "link",
                    "rel": "GET: Child Resources",
                    "href": "https://$vRA/catalog-service/api/consumer/resourceViews?
managedOnly=false&withExtendedData=true&withOperations=true&%24filter=parentResource%20eq%20%2
7c4d3db3e-e397-44ff-a1c9-0ecebdba12f4%27"
                }
            ],
            "resourceId": "c4d3db3e-e397-44ff-a1c9-0ecebdba12f4",
            "iconId": "cafe_default_icon_genericCatalogItem",
            "name": "Linux-80813151",
```

```
            "description": null,
            "status": null,
            "catalogItemId": "7c8275d6-1bd6-452a-97c4-d6c053e4baa4",
            "catalogItemLabel": "Linux",
            "requestId": "7aaf9baf-aa4e-47c4-997b-edd7c7983a5b",
            "resourceType":
 "{com.vmware.csp.component.cafe.composition@resource.type.deployment.name}",
            "owners": [
                "Connie Summers"
            ],
            "businessGroupId": "c0683388-6db2-4cb5-9033-b24d15ad3766",
            "tenantId": "mycompany",
            "dateCreated": "2015-07-29T13:51:36.368Z",
            "lastUpdated": "2015-07-29T13:55:35.963Z",
            "lease": null,
            "costs": null,
            "costToDate": null,
            "totalCost": null,
            "parentResourceId": null,
            "hasChildren": true,
            "data": {}
        }
    ],
    "metadata": {
        "size": 20,
        "totalElements": 1,
        "totalPages": 1,
        "number": 1,
        "offset": 0
    }
}
```


Syntax for Navigating to the Children of a Deployed Resource

`GET /api/consumer/resourceViews` retrieves a list of the child nodes of a deployment, including virtual machines, networks, and other objects you may have configured on the design canvas.

Using the REST API to Get Additional Deployment Information

In addition to general information about the provisioned resource, the response contains additional HATEOAS links that enable you to obtain additional details and information about each returned child resource.

Table 7-3. HATEOAS Link Functions as Defined by rel Field

Link	Description
GET: Parent Resource	URI to get the `resourceView` for the parent item. See Syntax for Getting Deployment Details.
GET:Template {com.vmware.csp.component.cafe.composition@resource.action.deployment.*$actionName*	URI to get a template request for a specific action that you can perform on this resource.
POST: {com.vmware.csp.component.cafe.composition@resource.action.deployment.*$actionName*	URI to which to post the request to perform an action, based on the corresponding template.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/catalog-service/api/consumer/resources/$resourceId
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$resourceID	Specifies a resource ID. See Syntax for Getting Deployment Details to view all of your requests and search for a request ID.
managedOnly	If true, the returned requests are from the user's managed subtenants.
page	Specifies a page number.
limit	Specifies the number of entries to display on a page.
$orderby	Specifies how to order multiple comma-separated properties sorted in ascending or descending order.
$top	Specifies the number of returned entries from the top of the response (total number per page in relation to skip).
$skip	Specifies the number of entries to skip.
filter	Contains a Boolean expression to determine if a particular entry is included in the response.

Output

The command output contains property names and values based on the command input parameters.

Note Price is referred to as `cost` in API commands and output.

Table 7-4. Output Parameters

Property	Description
resourceId	The unique identifier of the resource.
iconId	Specifies an icon for this request based on the requested object type.
name	The user friendly name of the resource.
description	An extended user friendly description of the resource.
status	The status of the resource. For example, On, Off, etc.
catalogItemId	The identifier of the catalog item associated with this provisioned resource.
catalogItemLabel	The label of the catalog item associated with this provisioned resource.
requestId	The unique identifier of the request that created this provisioned resource.
businessGroupId	The unique identifier of the business group that owns this resource.
tenantId	The unique identifier of the tenant that owns this resource.
owners	The owner of this resource.
resourceType	The type identifier of this resource. For example, Virtual Machine.
parentResourceId	The unique identifier of the parent resource. Used for child resources of a multi-machine resource.
hasChildren	Returns trun if this resource has child resources. Used if this is a multi-machine resource.
dateCreated	The date and time at which the resource was created.
lastUpdated	The date and time at which the resource was most recently modified.
lease	The current lease of the resource.
costs	An optional rate card of the prices and charges levied against the resource. This parameter is deprecated.
costToDate	An optional rate card of the existing prices and charges levied against the resource. This parameter is deprecated.
totalCost	An optional rate card of the prices and charges levied for the entire lease period. This parameter is deprecated.
expenseMonthToDate	The expense of the resource from the beginning of the month until the current date. This value is updated daily by vRealize Business for Cloud.
data	The extended, provider defined properties of the resource.

Example Curl Command

This example retrieves all children of the resource with an ID of c4d3db3e-e397-44ff-a1c9-0ecebdba12f4%27.

```
$curl --insecure -s -H" Content-Type: multipart/form-data" -H "Authorization: Bearer $token"
https:// $vRA/catalog-service/api/consumer/resourceViews?
managedOnly=false&withExtendedData=true&withOperations=true&%24filter=parentResource%20eq%20%2
7c4d3db3e-e397-44ff-a1c9-0ecebdba12f4%27
```

Example: JSON Output

The validation output displays the validation status of each content item within the package.


```
{
    "links": [],
    "content": [
        {
            "@type": "CatalogResourceView",
            "links": [
                {
                    "@type": "link",
                    "rel": "GET: Parent Resource",
                    "href": "https://$vRA/catalog-service/api/consumer/resourceViews/c4d3db3e-
e397-44ff-a1c9-0ecebdba12f4"
                },
                {
                    "@type": "link",
                    "rel": "GET Template:
{com.vmware.csp.component.iaas.proxy.provider@resource.action.name.machine.ChangeLease}",
                    "href": "https://$vRA/catalog-service/api/consumer/resources/
dd37b7a1-829c-4773-b5be-b229453eca4a/actions/b5739e30-871d-48c7-9012-f2a7cf431dc1/requests/
template"
                },
                {
                    "@type": "link",
                    "rel": "POST:
{com.vmware.csp.component.iaas.proxy.provider@resource.action.name.machine.ChangeLease}",
                    "href": "https://$vRA/catalog-service/api/consumer/resources/
dd37b7a1-829c-4773-b5be-b229453eca4a/actions/b5739e30-871d-48c7-9012-f2a7cf431dc1/requests"
                },
                {
                    "@type": "link",
                    "rel": "GET Template:
{com.vmware.csp.component.iaas.proxy.provider@resource.action.name.machine.PowerOff}",
                    "href": "https://$vRA/catalog-service/api/consumer/resources/
dd37b7a1-829c-4773-b5be-b229453eca4a/actions/02bad06d-f92b-4cf8-b964-37bb5d57be38/requests/
template"
                },
                {
                    "@type": "link",
                    "rel": "POST:
{com.vmware.csp.component.iaas.proxy.provider@resource.action.name.machine.PowerOff}",
                    "href": "https://$vRA/catalog-service/api/consumer/resources/
dd37b7a1-829c-4773-b5be-b229453eca4a/actions/02bad06d-f92b-4cf8-b964-37bb5d57be38/requests"
```

```
                }
            ],
            "resourceId": "dd37b7a1-829c-4773-b5be-b229453eca4a",
            "iconId": "cafe_default_icon_genericCatalogItem",
            "name": "DEMO-002",
            "description": null,
            "status": "On",
            "catalogItemId": null,
            "catalogItemLabel": null,
            "requestId": null,
            "resourceType":
"{com.vmware.csp.component.iaas.proxy.provider@resource.type.registration.name.Infrastructure.
Virtual}",
            "owners": [
                "Connie Summers"
            ],
            "businessGroupId": "c0683388-6db2-4cb5-9033-b24d15ad3766",
            "tenantId": "mycompany",
            "dateCreated": "2015-07-29T13:54:58.804Z",
            "lastUpdated": "2015-07-29T13:55:01.371Z",
            "lease": {
                "start": "2015-07-29T13:51:33.000Z"
            },
            "costs": {
                "leaseRate": {
                    "type": "moneyTimeRate",
                    "cost": {
                        "type": "money",
                        "currencyCode": "USD",
                        "amount": 0
                    },
                    "basis": {
                        "type": "timeSpan",
                        "unit": "DAYS",
                        "amount": 1
                    }
                }
            },
            "costToDate": {
                "type": "money",
                "currencyCode": "USD",
                "amount": 0
            },
            "totalCost": null,
            "parentResourceId": "c4d3db3e-e397-44ff-a1c9-0ecebdba12f4",
            "hasChildren": false,
            "data": {
                "ChangeLease": true,
                "ConnectViaRdp": true,
                "ConnectViaVmrc": true,
                "DISK_VOLUMES": [
                    {
                        "componentTypeId": "com.vmware.csp.component.iaas.proxy.provider",
                        "componentId": null,
                        "classId": "dynamicops.api.model.DiskInputModel",
```

```
                "typeFilter": null,
                "data": {
                    "DISK_CAPACITY": 6,
                    "DISK_INPUT_ID": "DISK_INPUT_ID1"
                }
            },
            {
                "componentTypeId": "com.vmware.csp.component.iaas.proxy.provider",
                "componentId": null,
                "classId": "dynamicops.api.model.DiskInputModel",
                "typeFilter": null,
                "data": {
                    "DISK_CAPACITY": 6,
                    "DISK_INPUT_ID": "DISK_INPUT_ID2"
                }
            }
        ],
        "Destroy": true,
        "EXTERNAL_REFERENCE_ID": "vm-38153",
        "Expire": true,
        "IS_COMPONENT_MACHINE": false,
        "MachineBlueprintName": "system_blueprint_vsphere",
        "MachineCPU": 1,
        "MachineDailyCost": 0,
        "MachineDestructionDate": null,
        "MachineExpirationDate": null,
        "MachineGroupName": "Demo Group",
        "MachineGuestOperatingSystem": null,
        "MachineInterfaceDisplayName": "vSphere (vCenter)",
        "MachineInterfaceType": "vSphere",
        "MachineMemory": 4096,
        "MachineName": "DEMO-002",
        "MachineReservationName": "vCenter55",
        "MachineStorage": 12,
        "MachineType": "Virtual",
        "NETWORK_LIST": [
            {
                "componentTypeId": "com.vmware.csp.component.iaas.proxy.provider",
                "componentId": null,
                "classId": "dynamicops.api.model.NetworkViewModel",
                "typeFilter": null,
                "data": {
                    "NETWORK_MAC_ADDRESS": "00:50:56:ba:6b:85",
                    "NETWORK_NAME": "VM Network SQA"
                }
            }
        ],
        "PowerOff": true,
        "Reboot": true,
        "Reconfigure": true,
        "Reprovision": true,
        "Reset": true,
        "SNAPSHOT_LIST": [],
        "Shutdown": true,
        "Suspend": true,
```

```
                "ip_address": "10.118.194.213",
                "machineId": "f3579990-a3c4-4e17-9593-1f8893636876"
            }
        },
        {
            "@type": "CatalogResourceView",
            "links": [
                {
                    "@type": "link",
                    "rel": "GET: Parent Resource",
                    "href": "https://$vRA/catalog-service/api/consumer/resourceViews/c4d3db3e-
e397-44ff-a1c9-0ecebdba12f4"
                },
                {
                    "@type": "link",
                    "rel": "GET Template:
{com.vmware.csp.component.network.service@resource.action.destroy.name,
[{{com.vmware.csp.component.iaas.proxy.provider@network.network.type.registration.name.Infrast
ructure.Network.Network.Existing}}]}",
                    "href": "https://$vRA/catalog-service/api/consumer/resources/f735b57a-
fe6f-4108-876f-1c1055ca2cec/actions/ec5c522d-7b5b-4d0b-b9f2-1aedf01a2f0c/requests/template"
                },
                {
                    "@type": "link",
                    "rel": "POST:
{com.vmware.csp.component.network.service@resource.action.destroy.name,
[{{com.vmware.csp.component.iaas.proxy.provider@network.network.type.registration.name.Infrast
ructure.Network.Network.Existing}}]}",
                    "href": "https://$vRA/catalog-service/api/consumer/resources/f735b57a-
fe6f-4108-876f-1c1055ca2cec/actions/ec5c522d-7b5b-4d0b-b9f2-1aedf01a2f0c/requests"
                }
            ],
            "resourceId": "f735b57a-fe6f-4108-876f-1c1055ca2cec",
            "iconId": "cafe_default_icon_genericCatalogItem",
            "name": "Existing Network",
            "description": null,
            "status": null,
            "catalogItemId": null,
            "catalogItemLabel": null,
            "requestId": null,
            "resourceType":
"{com.vmware.csp.component.iaas.proxy.provider@network.network.type.registration.name.Infrastr
ucture.Network.Network.Existing}",
            "owners": [
                "Connie Summers"
            ],
            "businessGroupId": "c0683388-6db2-4cb5-9033-b24d15ad3766",
            "tenantId": "mycompany",
            "dateCreated": "2015-07-29T13:55:14.095Z",
            "lastUpdated": "2015-07-29T13:55:17.315Z",
            "lease": null,
            "costs": null,
            "costToDate": null,
            "totalCost": null,
            "parentResourceId": "c4d3db3e-e397-44ff-a1c9-0ecebdba12f4",
```

```
            "hasChildren": false,
            "data": {
                "Description": " ",
                "Name": "Existing Network"
            }
        }
    ],
    "metadata": {
        "size": 20,
        "totalElements": 2,
        "totalPages": 1,
        "number": 1,
        "offset": 0
    }
}
```

Working with Reservations

8

You can work with the REST API reservation service to perform a variety of functions, such as creating and updating reservations.

The vRealize Automation REST API reservation service supports the following reservation types:

- vSphere (except for FlexClone in vSphere)
- vCloud Air
- vCloud Director
- Amazon
- Hyper-V
- KVM
- Xen

The following reservation types are not supported:

- OpenStack
- Physical reservation

The reservation service is extensible, which allows you to add new reservation types.

A reservation must belong to a business group, also referred to as a subtenant. A business group can have multiple reservations on the same resources or on different resources.

Note The Reservation API now returns compute resource endpoint names within parentheses. You may need to update any client code which contains logic that uses compute resource names to account for this change.

This chapter includes the following topics:

- Prerequisites for Working With Reservations
- Create a Reservation
- Display a List of Reservations
- Update a Reservation
- Delete a Reservation

- Service Examples for Working with Reservations

Prerequisites for Working With Reservations

Satisfy the following conditions before performing any tasks for this use case.

- Log in to vRealize Automation as a **fabric group administrator**.
- Verify that the appliance name and fully qualified domain name of the vRealize Automation instance are available.
- Verify that you have a valid HTTP bearer token that matches your login credentials. See Chapter 2 REST API Authentication.

Create a Reservation

You use the reservation service REST API to create a vSphere, Amazon, or vCloud Air reservation.

Some of the steps required to create a reservation include commands that vary by reservation type. When performing the step, select the command for your vSphere, Amazon, or vCloud Air reservation.

Procedure

1. Display a List of Supported Reservation Types

   Use the reservation service to display a list of supported reservation types, such as vSphere, Amazon EC2, or vCloud Air.

2. Displaying a Schema Definition for a Reservation

   After you know the supported reservations types, you can display a schema definition for the vSphere, Amazon EC2, or vCloud Air reservation.

3. Get the Business Group ID for a Reservation

   You can use reservation service to get the business group ID for a vRealize Automation reservation. The business group is also referred to as the subtenant in the API.

4. Get a Compute Resource for the Reservation

   You can use the REST API reservation service to obtain compute resources for vRealize Automation reservations.

5. Getting a Resources Schema by Reservation Type

   You can use the vRealize Automation REST API to get a resources schema for any supported reservation type, including a vSphere, Amazon EC2, or vCloud reservation.

6. Creating a Reservation By Type

   You can use the vRealize Automation REST API to create any supported reservation type, including a vSphere, Amazon EC2, or vCloud reservation.

7 Verify a Reservation and Get Reservation Details

After you create a reservation, you can use the reservation service along with reservation ID to verify that the reservation exists. You can also use the ID to get information about the reservation in preparation for updating or deleting it.

Display a List of Supported Reservation Types

Use the reservation service to display a list of supported reservation types, such as vSphere, Amazon EC2, or vCloud Air.

Procedure

- Display a list of supported vRealize Automation reservation types.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/reservations/types
```

Example: Display a List of Supported Reservation Types

The following sample displays JSON output for a vSphere reservation.


```
{
  "links": [],
  "content": [{
    "@type": "ReservationType",
    "createdDate": "2015-10-13T04:44:32.008Z",
    "lastUpdated": "2015-10-13T04:44:32.009Z",
    "version": 1,
    "id": "Infrastructure.Reservation.Virtual.vSphere",
    "name": "vSphere",
    "description": "vSphere Reservation",
    "category": "Virtual",
    "serviceTypeId": "com.mycompany.csp.iaas.blueprint.service",
    "tenantId": null,
    "formReference": {
      "type": "external",
      "formId": "Infrastructure.Reservation.Virtual.vSphere.form.new"
    },
    "schemaClassId": "Infrastructure.Reservation.Virtual.vSphere",
    "alertTypes": [{
      "createdDate": "2015-10-13T04:44:32.008Z",
      "lastUpdated": "2015-10-13T04:44:32.008Z",
      "version": 0,
      "id": "d248eeee-238c-4e87-9e95-f263b04d113f",
      "name": "storage",
      "description": null,
      "referenceResourceId": "storage"
  },//Omit 7 reservation types here
  ],
  "metadata": {
    "size": 20,
    "totalElements": 8,
```

```
    "totalPages": 1,
    "number": 1,
    "offset": 0
  }
}
```

The following sample displays JSON output for an Amazon reservation.

```
{
  "links": [],
  "content": [{
  {
    "@type": "ReservationType",
    "createdDate": "2015-10-13T04:44:32.074Z",
    "lastUpdated": "2015-10-13T04:44:32.075Z",
    "version": 1,
    "id": "Infrastructure.Cloud.Amazon",
    "name": "Amazon",
    "description": "Amazon Reservation",
    "category": "Cloud",
    "serviceTypeId": "com.mycompany.csp.iaas.blueprint.service",
    "tenantId": null,
    "formReference": {
      "type": "external",
      "formId": "Infrastructure.Cloud.Amazon.form.new"
    },
    "schemaClassId": "Infrastructure.Cloud.Amazon",
    "alertTypes": [{
      "createdDate": "2015-10-13T04:44:32.075Z",
      "lastUpdated": "2015-10-13T04:44:32.075Z",
      "version": 0,
      "id": "2ef8f47c-045c-4ee4-821d-7b1543ea5f11",
      "name": "machine",
      "description": null,
      "referenceResourceId": "machine"
    }]
  },//Omit 7 reservation types here
  ],
  "metadata": {
    "size": 20,
    "totalElements": 8,
    "totalPages": 1,
    "number": 1,
    "offset": 0
  }
}
```

The following sample displays JSON output for a vCloud Air reservation.

```
{
  "links": [],
  "content": [{
    {
      "@type": "ReservationType",
      "createdDate": "2015-11-06T10:21:06.010Z",
```

```
      "lastUpdated": "2015-11-06T10:21:06.011Z",
      "version": 1,
      "id": "Infrastructure.Reservation.Cloud.vCloudAir",
      "name": "vCloud",
      "description": "vCloud Air Reservation",
      "category": "Cloud",
      "serviceTypeId": "com.mycompany.csp.iaas.blueprint.service",
      "tenantId": null,
      "formReference": {
        "type": "external",
        "formId": "Infrastructure.Reservation.Cloud.vCloudAir.form.new"
      },
      "schemaClassId": "Infrastructure.Reservation.Cloud.vCloudAir",
      "alertTypes": [
        {
          "createdDate": "2015-11-06T10:21:06.010Z",
          "lastUpdated": "2015-11-06T10:21:06.010Z",
          "version": 0,
          "id": "cd707ad2-d504-43e2-8002-11ee670dcf41",
          "name": "storage",
          "description": null,
          "referenceResourceId": "storage"
        },
        {
          "createdDate": "2015-11-06T10:21:06.010Z",
          "lastUpdated": "2015-11-06T10:21:06.010Z",
          "version": 0,
          "id": "ef96fec4-a607-4944-a0af-fbe7df862ee2",
          "name": "memory",
          "description": null,
          "referenceResourceId": "memory"
        },
        {
          "createdDate": "2015-11-06T10:21:06.011Z",
          "lastUpdated": "2015-11-06T10:21:06.011Z",
          "version": 0,
          "id": "043e0815-9f02-4876-b5ce-ddbedabb8ff6",
          "name": "cpu",
          "description": null,
          "referenceResourceId": "cpu"
        },
        {
          "createdDate": "2015-11-06T10:21:06.011Z",
          "lastUpdated": "2015-11-06T10:21:06.011Z",
          "version": 0,
          "id": "77e90acd-93ab-4bbe-853a-b74923dae70a",
          "name": "machine",
          "description": null,
          "referenceResourceId": "machine"
        }
      ]
    }, //Omit 7 reservation types here
  ],
  "metadata": {
    "size": 20,
```

```
    "totalElements": 8,
    "totalPages": 1,
    "number": 1,
    "offset": 0
  }
}
```

Displaying a Schema Definition for a Reservation

After you know the supported reservations types, you can display a schema definition for the vSphere, Amazon EC2, or vCloud Air reservation.

Display a Schema Definition for a vSphere Reservation

You can use the reservation service to display a schema definition for a specific vRealize Automation reservation type such as a vSphere reservation.

Prerequisites

In addition to the Prerequisites for Working With Reservations, obtain the schema class ID of the reservation type to create. See Display a List of Supported Reservation Types.

Procedure

- Display a schema definition for a specific vRealize Automation vSphere reservation type.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/data-service/schema/
Infrastructure.Reservation.Virtual.vSphere/default
```

Example: Display the Schema Definition for a vSphere Reservation

The following sample displays output based on the request to display the schema definition. This example includes nine extension fields that are supported for the vSphere type reservation.

```
{
  "fields": [{
    "id": "reservationNetworks",
    "label": "Network",
    "dataType": {
      "type": "complex",
      "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
      "componentId": null,
      "classId": "reservationNetwork",
      "typeFilter": null,
      "label": "Network"
    },
    "displayAdvice": "DATA_TABLE",
    "permissibleValues": {
      "type": "dynamic",
      "customAllowed": false,
      "dependencies": ["computeResource"]
```

```
    },
    "state": {
      "dependencies": [],
      "facets": [{
        "type": "mandatory",
        "value": {
          "type": "constantClause",
          "value": {
            "type": "boolean",
            "value": true
          }
        }
      }]
    },
    "isMultiValued": true
  },
  {
    "id": "reservationVCNSTransportZone",
    "label": "Transport Zone",
    "description": "Transport zone of the vCNS settings",
    "dataType": {
      "type": "ref",
      "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
      "componentId": null,
      "classId": "NetworkScopes",
      "typeFilter": null,
      "label": "Transport Zone"
    },
    "displayAdvice": null,
    "permissibleValues": {
      "type": "dynamic",
      "customAllowed": false,
      "dependencies": ["computeResource"]
    },
    "state": {
      "dependencies": [],
      "facets": []
    },
    "isMultiValued": false
  },
  {
    "id": "reservationVCNSSecurityGroups",
    "label": "Security Groups",
    "description": "Security groups of the vCNS settings",
    "dataType": {
      "type": "ref",
      "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
      "componentId": null,
      "classId": "SecurityGroups",
      "typeFilter": null,
      "label": "Security Group"
    },
    "displayAdvice": null,
    "permissibleValues": {
      "type": "dynamic",
```

```
      "customAllowed": false,
      "dependencies": ["computeResource"]
    },
    "state": {
      "dependencies": [],
      "facets": []
    },
    "isMultiValued": true
  },
  {
    "id": "reservationMemory",
    "label": "Memory",
    "dataType": {
      "type": "complex",
      "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
      "componentId": null,
      "classId": "reservationMemory",
      "typeFilter": null,
      "label": "Memory"
    },
    "displayAdvice": "DATA_TABLE",
    "permissibleValues": {
      "type": "dynamic",
      "customAllowed": false,
      "dependencies": ["computeResource"]
    },
    "state": {
      "dependencies": [],
      "facets": [{
        "type": "mandatory",
        "value": {
          "type": "constantClause",
          "value": {
            "type": "boolean",
            "value": true
          }
        }
      }]
    },
    "isMultiValued": false
  },
  {
    "id": "computeResource",
    "label": "Compute Resource",
    "description": "The compute resource for the reservation",
    "dataType": {
      "type": "ref",
      "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
      "componentId": null,
      "classId": "ComputeResource",
      "typeFilter": "InterfaceTypeId",
      "label": "Compute Resource"
    },
    "displayAdvice": null,
    "permissibleValues": {
```

```
      "type": "dynamic",
      "customAllowed": false,
      "dependencies": []
    },
    "state": {
      "dependencies": [],
      "facets": [{
        "type": "mandatory",
        "value": {
          "type": "constantClause",
          "value": {
            "type": "boolean",
            "value": true
          }
        }
      }]
    },
    "isMultiValued": false
  },
  {
    "id": "machineQuota",
    "label": "Machine Quota",
    "description": "The machine quota for the reservation",
    "dataType": {
      "type": "primitive",
      "typeId": "INTEGER"
    },
    "displayAdvice": null,
    "state": {
      "dependencies": [],
      "facets": []
    },
    "isMultiValued": false
  },
  {
    "id": "reservationStorages",
    "label": "Storage",
    "dataType": {
      "type": "complex",
      "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
      "componentId": null,
      "classId": "reservationStorage",
      "typeFilter": null,
      "label": "Storage"
    },
    "displayAdvice": "DATA_TABLE",
    "permissibleValues": {
      "type": "dynamic",
      "customAllowed": false,
      "dependencies": ["computeResource"]
    },
    "state": {
      "dependencies": [],
      "facets": [{
        "type": "mandatory",
```

```
        "value": {
          "type": "constantClause",
          "value": {
            "type": "boolean",
            "value": true
          }
        }
      }]
    },
    "isMultiValued": true
  },
  {
    "id": "resourcePool",
    "label": "Resource Pool",
    "description": "The resource pool for the reservation",
    "dataType": {
      "type": "ref",
      "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
      "componentId": null,
      "classId": "ResourcePools",
      "typeFilter": null,
      "label": "Resource Pool"
    },
    "displayAdvice": null,
    "permissibleValues": {
      "type": "dynamic",
      "customAllowed": false,
      "dependencies": ["computeResource"]
    },
    "state": {
      "dependencies": [],
      "facets": []
    },
    "isMultiValued": false
  },
  {
    "id": "reservationVCNSRoutedGateways",
    "label": "Routed Gateways",
    "dataType": {
      "type": "complex",
      "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
      "componentId": null,
      "classId": "reservationVCNSRoutedGateway",
      "typeFilter": null,
      "label": "Routed Gateways"
    },
    "displayAdvice": "DATA_TABLE",
    "permissibleValues": {
      "type": "dynamic",
      "customAllowed": false,
      "dependencies": ["computeResource"]
    },
    "state": {
      "dependencies": [],
      "facets": []
```

```
    },
    "isMultiValued": true
  }]
}
```

Display a Schema Definition for an Amazon Reservation

You can use the reservation service to display a schema definition for a specific vRealize Automation reservation type such as an Amazon reservation.

Prerequisites

In addition to the Prerequisites for Working With Reservations, obtain the schema class ID of the reservation type to create. See Display a List of Supported Reservation Types.

Procedure

- Display a schema definition for an Amazon reservation type.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/data-service/schema/
Infrastructure.Reservation.Cloud.Amazon/default
```

Example: Display the Schema Definition for an Amazon Reservation

The following sample displays output based on the request to display the schema definition. This example includes nine extension fields that are supported for the Amazon type reservation.

```
{
  "fields": [
    {
      "id": "securityGroups",
      "label": "Security groups",
      "description": "The security groups",
      "dataType": {
        "type": "ref",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "AmazonSecurityGroup",
        "typeFilter": null,
        "label": "Amazon Security Group"
      },
      "displayAdvice": null,
      "permissibleValues": {
        "type": "dynamic",
        "customAllowed": false,
        "dependencies": [
          "computeResource"
        ]
      },
      "state": {
        "dependencies": [
```

```
        ],
        "facets": [
          {
            "type": "visible",
            "value": {
              "type": "not",
              "subClause": {
                "type": "expression",
                "operator": {
                  "type": "isDefined"
                },
                "leftOperand": {
                  "type": "path",
                  "path": "VPC"
                }
              }
            }
          },
          {
            "type": "mandatory",
            "value": {
              "type": "not",
              "subClause": {
                "type": "expression",
                "operator": {
                  "type": "isDefined"
                },
                "leftOperand": {
                  "type": "path",
                  "path": "VPC"
                }
              }
            }
          }
        ]
      },
      "isMultiValued": true
    },
    {
      "id": "locations",
      "label": "Locations",
      "description": "The locations",
      "dataType": {
        "type": "ref",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "AvailabilityZone",
        "typeFilter": null,
        "label": "Availability Zone"
      },
      "displayAdvice": null,
      "permissibleValues": {
        "type": "dynamic",
        "customAllowed": false,
        "dependencies": [
```

```
          "computeResource"
        ]
      },
      "state": {
        "dependencies": [

        ],
        "facets": [
          {
            "type": "visible",
            "value": {
              "type": "not",
              "subClause": {
                "type": "expression",
                "operator": {
                  "type": "isDefined"
                },
                "leftOperand": {
                  "type": "path",
                  "path": "VPC"
                }
              }
            }
          },
          {
            "type": "mandatory",
            "value": {
              "type": "not",
              "subClause": {
                "type": "expression",
                "operator": {
                  "type": "isDefined"
                },
                "leftOperand": {
                  "type": "path",
                  "path": "VPC"
                }
              }
            }
          }
        ]
      },
      "isMultiValued": true
    },
    {
      "id": "loadBalancers",
      "label": "Load balancers",
      "description": "The load balancers",
      "dataType": {
        "type": "ref",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "ElasticLoadBalancer",
        "typeFilter": null,
        "label": "Elastic Load Balancer"
```

```
      },
      "displayAdvice": null,
      "permissibleValues": {
        "type": "dynamic",
        "customAllowed": false,
        "dependencies": [
          "locations",
          "computeResource"
        ]
      },
      "state": {
        "dependencies": [

        ],
        "facets": [
          {
            "type": "visible",
            "value": {
              "type": "not",
              "subClause": {
                "type": "expression",
                "operator": {
                  "type": "isDefined"
                },
                "leftOperand": {
                  "type": "path",
                  "path": "VPC"
                }
              }
            }
          }
        ]
      },
      "isMultiValued": true
    },
    {
      "id": "specificKeyPairs",
      "label": "Specific key pair",
      "description": "The specific key pair",
      "dataType": {
        "type": "ref",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "KeyPair",
        "typeFilter": null,
        "label": "Key Pair"
      },
      "displayAdvice": null,
      "permissibleValues": {
        "type": "dynamic",
        "customAllowed": false,
        "dependencies": [
          "computeResource",
          "keyPairs"
        ]
```

```
      },
      "state": {
        "dependencies": [

        ],
        "facets": [
          {
            "type": "visible",
            "value": {
              "type": "and",
              "subClauses": [
                {
                  "type": "expression",
                  "operator": {
                    "type": "isDefined"
                  },
                  "leftOperand": {
                    "type": "path",
                    "path": "keyPairs"
                  }
                },
                {
                  "type": "expression",
                  "operator": {
                    "type": "equals"
                  },
                  "leftOperand": {
                    "type": "constant",
                    "value": {
                      "type": "string",
                      "value": "Specific Key Pair"
                    }
                  },
                  "rightOperand": {
                    "type": "path",
                    "path": "keyPairs"
                  }
                }
              ]
            }
          },
          {
            "type": "mandatory",
            "value": {
              "type": "and",
              "subClauses": [
                {
                  "type": "expression",
                  "operator": {
                    "type": "isDefined"
                  },
                  "leftOperand": {
                    "type": "path",
                    "path": "keyPairs"
                  }
```

```
                },
                {
                  "type": "expression",
                  "operator": {
                    "type": "equals"
                  },
                  "leftOperand": {
                    "type": "constant",
                    "value": {
                      "type": "string",
                      "value": "Specific Key Pair"
                    }
                  },
                  "rightOperand": {
                    "type": "path",
                    "path": "keyPairs"
                  }
                }
              ]
            }
          }
        ]
      },
      "isMultiValued": false
    },
    {
      "id": "computeResource",
      "label": "Compute Resource",
      "description": "The compute resource for the reservation",
      "dataType": {
        "type": "ref",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "ComputeResource",
        "typeFilter": "ReservationTypeId",
        "label": "Compute Resource"
      },
      "displayAdvice": null,
      "permissibleValues": {
        "type": "dynamic",
        "customAllowed": false,
        "dependencies": [

        ]
      },
      "state": {
        "dependencies": [

        ],
        "facets": [
          {
            "type": "mandatory",
            "value": {
              "type": "constantClause",
              "value": {
```

```
                "type": "boolean",
                "value": true
              }
            }
          }
        ]
      },
      "isMultiValued": false
    },
    {
      "id": "VPC",
      "label": "VPC",
      "dataType": {
        "type": "complex",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "Infrastructure.Reservation.Cloud.Amazon.VPC",
        "typeFilter": null,
        "label": "VPC",
        "schema": {
          "fields": [
            {
              "id": "VPCSubnets",
              "label": "Subnets",
              "description": "The subnets.",
              "dataType": {
                "type": "ref",
                "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
                "componentId": null,
                "classId": "Subnet",
                "typeFilter": null,
                "label": "Subnet"
              },
              "displayAdvice": null,
              "permissibleValues": {
                "type": "dynamic",
                "customAllowed": false,
                "dependencies": [

                ]
              },
              "state": {
                "dependencies": [

                ],
                "facets": [
                  {
                    "type": "minCardinality",
                    "value": {
                      "type": "constant",
                      "value": {
                        "type": "integer",
                        "value": 1
                      }
                    }
```

```
                },
                {
                  "type": "mandatory",
                  "value": {
                    "type": "constantClause",
                    "value": {
                      "type": "boolean",
                      "value": true
                    }
                  }
                }
              ]
            },
            "isMultiValued": true
          },
          {
            "id": "VPCSecurityGroups",
            "label": "Security groups",
            "description": "The security groups",
            "dataType": {
              "type": "ref",
              "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
              "componentId": null,
              "classId": "AmazonSecurityGroup",
              "typeFilter": null,
              "label": "Amazon Security Group"
            },
            "displayAdvice": null,
            "permissibleValues": {
              "type": "dynamic",
              "customAllowed": false,
              "dependencies": [

              ]
            },
            "state": {
              "dependencies": [

              ],
              "facets": [
                {
                  "type": "minCardinality",
                  "value": {
                    "type": "constant",
                    "value": {
                      "type": "integer",
                      "value": 1
                    }
                  }
                },
                {
                  "type": "mandatory",
                  "value": {
                    "type": "constantClause",
                    "value": {
```

```
                "type": "boolean",
                "value": true
              }
            }
          }
        ]
      },
      "isMultiValued": true
    },
    {
      "id": "VPCName",
      "label": "VPC Name",
      "description": "The virtual private cloud.",
      "dataType": {
        "type": "ref",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "VirtualPrivateCloud",
        "typeFilter": null,
        "label": "Virtual Private Cloud"
      },
      "displayAdvice": null,
      "state": {
        "dependencies": [

        ],
        "facets": [
          {
            "type": "readOnly",
            "value": {
              "type": "constantClause",
              "value": {
                "type": "boolean",
                "value": true
              }
            }
          }
        ]
      },
      "isMultiValued": false
    },
    {
      "id": "VPCLoadBalancers",
      "label": "Load balancers",
      "description": "The load balancers.",
      "dataType": {
        "type": "ref",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "ElasticLoadBalancer",
        "typeFilter": null,
        "label": "Elastic Load Balancer"
      },
      "displayAdvice": null,
      "permissibleValues": {
```

```
                "type": "dynamic",
                "customAllowed": false,
                "dependencies": [
                  "VPCSubnets"
                ]
              },
              "state": {
                "dependencies": [

                ],
                "facets": [

                ]
              },
              "isMultiValued": true
            }
          ]
        }
      },
      "displayAdvice": "DATA_TABLE",
      "permissibleValues": {
        "type": "dynamic",
        "customAllowed": false,
        "dependencies": [
          "computeResource"
        ]
      },
      "state": {
        "dependencies": [

        ],
        "facets": [
          {
            "type": "visible",
            "value": {
              "type": "or",
              "subClauses": [
                {
                  "type": "not",
                  "subClause": {
                    "type": "expression",
                    "operator": {
                      "type": "isDefined"
                    },
                    "leftOperand": {
                      "type": "path",
                      "path": "locations"
                    }
                  }
                },
                {
                  "type": "not",
                  "subClause": {
                    "type": "expression",
                    "operator": {
```

```
                    "type": "isDefined"
                  },
                  "leftOperand": {
                    "type": "path",
                    "path": "securityGroups"
                  }
                }
              }
            ]
          }
        },
        {
          "type": "mandatory",
          "value": {
            "type": "or",
            "subClauses": [
              {
                "type": "not",
                "subClause": {
                  "type": "expression",
                  "operator": {
                    "type": "isDefined"
                  },
                  "leftOperand": {
                    "type": "path",
                    "path": "locations"
                  }
                }
              },
              {
                "type": "not",
                "subClause": {
                  "type": "expression",
                  "operator": {
                    "type": "isDefined"
                  },
                  "leftOperand": {
                    "type": "path",
                    "path": "securityGroups"
                  }
                }
              }
            ]
          }
        }
      ]
    },
    "isMultiValued": true
  },
  {
    "id": "machineQuota",
    "label": "Machine Quota",
    "description": "The machine quota for the reservation",
    "dataType": {
      "type": "primitive",
```

```
        "typeId": "INTEGER"
      },
      "displayAdvice": null,
      "state": {
        "dependencies": [

        ],
        "facets": [

        ]
      },
      "isMultiValued": false
    },
    {
      "id": "keyPairs",
      "label": "Key pair",
      "description": "The key pair",
      "dataType": {
        "type": "primitive",
        "typeId": "STRING"
      },
      "displayAdvice": null,
      "permissibleValues": {
        "type": "static",
        "customAllowed": false,
        "values": [
          {
            "underlyingValue": {
              "type": "string",
              "value": "Not Specified"
            },
            "label": null
          },
          {
            "underlyingValue": {
              "type": "string",
              "value": "Per Provisioning Group"
            },
            "label": null
          },
          {
            "underlyingValue": {
              "type": "string",
              "value": "Per Machine"
            },
            "label": null
          },
          {
            "underlyingValue": {
              "type": "string",
              "value": "Specific Key Pair"
            },
            "label": null
          }
        ]
```

```
      },
      "state": {
        "dependencies": [

        ],
        "facets": [
          {
            "type": "mandatory",
            "value": {
              "type": "constantClause",
              "value": {
                "type": "boolean",
                "value": true
              }
            }
          }
        ]
      },
      "isMultiValued": false
    }
  ]
```

Display a Schema Definition for a vCloud Air Reservation

You can use the reservation service to display a schema definition for a specific reservation type such as a vCloud Air reservation.

Prerequisites

In addition to the Prerequisites for Working With Reservations, obtain the schema class ID of the reservation type to create. See Display a List of Supported Reservation Types.

Procedure

- Display a schema definition for a specific vCloud Air reservation.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRAt/reservation-service/api/data-service/schema/
Infrastructure.Reservation.Cloud.vCloudAir/default
```

Example: Display the Schema Definition for a vCloud Air Reservation

The following sample displays output based on the request to display the schema definition. This example includes six extension fields that are supported for the vCloud Air type reservation.

```
{
  "fields": [
    {
      "id": "reservationNetworks",
      "label": "Network",
      "dataType": {
        "type": "complex",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
```

```
        "componentId": null,
        "classId": "Infrastructure.Reservation.Network",
        "typeFilter": null,
        "label": "Network",
        "schema": {
          "fields": [
            {
              "id": "networkPath",
              "label": "Network Path",
              "description": "Network path of the reservation",
              "dataType": {
                "type": "ref",
                "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
                "componentId": null,
                "classId": "Network",
                "typeFilter": null,
                "label": "Network"
              },
              "displayAdvice": null,
              "state": {
                "dependencies": [

                ],
                "facets": [
                  {
                    "type": "mandatory",
                    "value": {
                      "type": "constantClause",
                      "value": {
                        "type": "boolean",
                        "value": true
                      }
                    }
                  }
                ]
              },
              "isMultiValued": false
            },
            {
              "id": "networkProfile",
              "label": "Network Profile",
              "description": "The Network Profile",
              "dataType": {
                "type": "ref",
                "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
                "componentId": null,
                "classId": "NetworkProfile",
                "typeFilter": null,
                "label": "Network Profile"
              },
              "displayAdvice": null,
              "permissibleValues": {
                "type": "dynamic",
                "customAllowed": false,
                "dependencies": [
```

```
                ]
              },
              "state": {
                "dependencies": [

                ],
                "facets": [

                ]
              },
              "isMultiValued": false
            }
          ]
        }
      },
      "displayAdvice": "DATA_TABLE",
      "permissibleValues": {
        "type": "dynamic",
        "customAllowed": false,
        "dependencies": [
          "computeResource"
        ]
      },
      "state": {
        "dependencies": [

        ],
        "facets": [
          {
            "type": "mandatory",
            "value": {
              "type": "constantClause",
              "value": {
                "type": "boolean",
                "value": true
              }
            }
          }
        ]
      },
      "isMultiValued": true
    },
    {
      "id": "allocationModel",
      "label": "Allocation Model",
      "description": "The allocation model for the reservation",
      "dataType": {
        "type": "primitive",
        "typeId": "INTEGER"
      },
      "displayAdvice": null,
      "state": {
        "dependencies": [
```

```
        ],
        "facets": [
          {
            "type": "readOnly",
            "value": {
              "type": "constantClause",
              "value": {
                "type": "boolean",
                "value": true
              }
            }
          }
        ]
      },
      "isMultiValued": false
    },
    {
      "id": "reservationMemory",
      "label": "Memory",
      "dataType": {
        "type": "complex",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "Infrastructure.Reservation.Memory",
        "typeFilter": null,
        "label": "Memory",
        "schema": {
          "fields": [
            {
              "id": "computeResourceMemoryTotalSizeMB",
              "label": "Physical Memory (MB)",
              "description": "The physical capacity (MB) for the memory",
              "dataType": {
                "type": "primitive",
                "typeId": "INTEGER"
              },
              "displayAdvice": null,
              "state": {
                "dependencies": [

                ],
                "facets": [
                  {
                    "type": "readOnly",
                    "value": {
                      "type": "constantClause",
                      "value": {
                        "type": "boolean",
                        "value": true
                      }
                    }
                  }
                ]
              },
              "isMultiValued": false
```

```
            },
            {
              "id": "memoryReservedSizeMb",
              "label": "Memory Reservation (MB)",
              "description": "The reserved capacity (MB) for the memory",
              "dataType": {
                "type": "primitive",
                "typeId": "INTEGER"
              },
              "displayAdvice": null,
              "state": {
                "dependencies": [

                ],
                "facets": [

                ]
              },
              "isMultiValued": false
            }
          ]
        }
      },
      "displayAdvice": "DATA_TABLE",
      "state": {
        "dependencies": [

        ],
        "facets": [

        ]
      },
      "isMultiValued": false
    },
    {
      "id": "computeResource",
      "label": "Compute Resource",
      "description": "The compute resource for the reservation",
      "dataType": {
        "type": "ref",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "ComputeResource",
        "typeFilter": "ReservationTypeId",
        "label": "Compute Resource"
      },
      "displayAdvice": null,
      "permissibleValues": {
        "type": "dynamic",
        "customAllowed": false,
        "dependencies": [

        ]
      },
      "state": {
```

```
        "dependencies": [

        ],
        "facets": [
          {
            "type": "mandatory",
            "value": {
              "type": "constantClause",
              "value": {
                "type": "boolean",
                "value": true
              }
            }
          }
        ]
      },
      "isMultiValued": false
    },
    {
      "id": "machineQuota",
      "label": "Machine Quota",
      "description": "The machine quota for the reservation",
      "dataType": {
        "type": "primitive",
        "typeId": "INTEGER"
      },
      "displayAdvice": null,
      "state": {
        "dependencies": [

        ],
        "facets": [

        ]
      },
      "isMultiValued": false
    },
    {
      "id": "reservationStorages",
      "label": "Storage",
      "dataType": {
        "type": "complex",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "Infrastructure.Reservation.Storage",
        "typeFilter": null,
        "label": "Storage",
        "schema": {
          "fields": [
            {
              "id": "storagePath",
              "label": "Storage Path",
              "description": "The storage path of the storage",
              "dataType": {
                "type": "ref",
```

```
            "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
            "componentId": null,
            "classId": "Storage",
            "typeFilter": null,
            "label": "Storage Path"
          },
          "displayAdvice": null,
          "state": {
            "dependencies": [

            ],
            "facets": [
              {
                "type": "mandatory",
                "value": {
                  "type": "constantClause",
                  "value": {
                    "type": "boolean",
                    "value": true
                  }
                }
              }
            ]
          },
          "isMultiValued": false
        },
        {
          "id": "storageReservationPriority",
          "label": "Priority",
          "description": "The reservation priority for the storage",
          "dataType": {
            "type": "primitive",
            "typeId": "INTEGER"
          },
          "displayAdvice": null,
          "state": {
            "dependencies": [

            ],
            "facets": [
              {
                "type": "mandatory",
                "value": {
                  "type": "constantClause",
                  "value": {
                    "type": "boolean",
                    "value": true
                  }
                }
              }
            ]
          },
          "isMultiValued": false
        },
        {
```

```
            "id": "computeResourceStorageTotalSizeGB",
            "label": "Total (GB)",
            "description": "The total physical capacity (GB) for the storage",
            "dataType": {
              "type": "primitive",
              "typeId": "INTEGER"
            },
            "displayAdvice": null,
            "state": {
              "dependencies": [

              ],
              "facets": [
                {
                  "type": "readOnly",
                  "value": {
                    "type": "constantClause",
                    "value": {
                      "type": "boolean",
                      "value": true
                    }
                  }
                }
              ]
            },
            "isMultiValued": false
          },
          {
            "id": "storageReservedSizeGB",
            "label": "This reservation reserved (GB)",
            "description": "The reserved capacity size (GB) for the storage",
            "dataType": {
              "type": "primitive",
              "typeId": "INTEGER"
            },
            "displayAdvice": null,
            "state": {
              "dependencies": [

              ],
              "facets": [

              ]
            },
            "isMultiValued": false
          },
          {
            "id": "storageEnabled",
            "label": "Enabled",
            "description": "Whether the storage is enabled to reserve",
            "dataType": {
              "type": "primitive",
              "typeId": "BOOLEAN"
            },
            "displayAdvice": null,
```

```
            "state": {
              "dependencies": [

              ],
              "facets": [
                {
                  "type": "mandatory",
                  "value": {
                    "type": "constantClause",
                    "value": {
                      "type": "boolean",
                      "value": true
                    }
                  }
                }
              ]
            },
            "isMultiValued": false
          },
          {
            "id": "computeResourceStorageFreeSizeGB",
            "label": "Free (GB)",
            "description": "The free capacity (GB) for the storage",
            "dataType": {
              "type": "primitive",
              "typeId": "INTEGER"
            },
            "displayAdvice": null,
            "state": {
              "dependencies": [

              ],
              "facets": [
                {
                  "type": "readOnly",
                  "value": {
                    "type": "constantClause",
                    "value": {
                      "type": "boolean",
                      "value": true
                    }
                  }
                }
              ]
            },
            "isMultiValued": false
          }
        ]
      }
    },
    "displayAdvice": "DATA_TABLE",
    "permissibleValues": {
      "type": "dynamic",
      "customAllowed": false,
      "dependencies": [
```

```
          "computeResource"
        ]
      },
      "state": {
        "dependencies": [

        ],
        "facets": [
          {
            "type": "mandatory",
            "value": {
              "type": "constantClause",
              "value": {
                "type": "boolean",
                "value": true
              }
            }
          }
        ]
      },
      "isMultiValued": true
    }
  ]
}
```

Get the Business Group ID for a Reservation

You can use reservation service to get the business group ID for a vRealize Automation reservation. The business group is also referred to as the subtenant in the API.

When you create a reservation, you must supply the business group ID, also referred to as the subtenant ID, in the REST command line. Use this procedure to obtain the subTenantId value.

Procedure

- Get business group ID for a vRealize Automation reservation with the reservation service.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/identity/api/tenants/qe/subtenants
```

Example: Get the Business Group ID for a Reservation

The following sample displays JSON output for the request.

```
{
    "links": [],
    "content": [{
        "@type": "Subtenant",
        "id": "7d7dbb19-d2dc-44a3-9fc2-7435552c8a05",
        "name": "Development",
        "description": " Development ",
        "subtenantRoles": null,
        "extensionData": {
```

```
            "entries": [{
                "key": "iaas-manager-emails",
                "value": {
                    "type": "string",
                    "value": "user1@mycompany.com"
                }
            }]
        },
        "tenant": "qe"
    },
    {
        "@type": "Subtenant",
        "id": "ade5b8d3-decf-405e-bd0b-297f976ef721",
        "name": "Finance",
        "description": "Finance",
        "subtenantRoles": null,
        "extensionData": {
            "entries": [{
                "key": "iaas-manager-emails",
                "value": {
                    "type": "string",
                    "value": " user1@mycompany.com "
                }
            }]
        },
        "tenant": "qe"
    },
    {
        "@type": "Subtenant",
        "id": "ef58f604-528d-4441-a219-4725bead629b",
        "name": "Test Sub Tenant",
        "description": "VMPS",
        "subtenantRoles": null,
        "extensionData": {
            "entries": []
        },
        "tenant": "qe"
    },
    {
        "@type": "Subtenant",
        "id": "92926c91-37de-4647-9aee-70b8d557ce8d",
        "name": "Quality Engineering",
        "description": "created by demo content",
        "subtenantRoles": null,
        "extensionData": {
            "entries": [{
                "key": "iaas-manager-emails",
                "value": {
                    "type": "string",
                    "value": " user1@mycompany.com "
                }
            }]
        },
        "tenant": "qe"
    }],
```

```
    "metadata": {
        "size": 20,
        "totalElements": 4,
        "totalPages": 1,
        "number": 1,
        "offset": 0
    }
}
```

Get a Compute Resource for the Reservation

You can use the REST API reservation service to obtain compute resources for vRealize Automation reservations.

Prerequisites

When you create a reservation, you must provide compute resource information that corresponds to the `computeResource` parameter.

For example, for a vSphere, Amazon EC2, or vCloud Air reservation type schema definition, the following `permissibleValues` field in the compute resource output indicates if the compute resource is available and if it has any dependencies.

```
"permissibleValues": {"type": "dynamic","customAllowed": false, "dependencies": []}
```

Procedure

- Use the following command to get a compute resource.
  - Command to get a compute resource for vSphere reservation.

    ```
    curl --insecure -H "Accept:application/json"
    -H "Authorization: Bearer $token"
    https://$vRA/reservation-service/api/data-service/schema/
    Infrastructure.Reservation.Virtual.vSphere/default/computeResource/values  -d "{}"
    ```

  - Command to get a compute resource for an Amazon EC2 reservation.

    ```
    curl --insecure -H "Accept:application/json"
    -H "Authorization: Bearer $token"
    https://$vRA/reservation-service/api/data-service/schema/
    Infrastructure.Reservation.Cloud.Amazon/default/computeResource/values  -d "{}"
    Example: curl Command for a vCloud reservation
    ```

  - Command to get a compute resource for a vCloud reservation.

    ```
    curl --insecure -H "Accept:application/json"
    -H "Authorization: Bearer $token"
    https://$vRA/reservation-service/api/data-service/schema/
    Infrastructure.Reservation.Cloud.vCloud/default/computeResource/values  -d "{}"
    ```

Example: Get a Compute Resource for the Reservation

The following sample displays JSON output for a vSphere reservation.


```
{
  "values": [{
    "underlyingValue": {
      "type": "entityRef",
      "componentId": null,
      "classId": "ComputeResource",
      "id": "047e00f5-5424-4ed2-a751-4a334aeaff54",
      "label": "VC51-Cluster"
    },
    "label": "VC51-Cluster"
  },
  {
    "underlyingValue": {
      "type": "entityRef",
      "componentId": null,
      "classId": "ComputeResource",
      "id": "a4349488-9a56-4906-83a5-7d8b33c9d435",
      "label": "NSX61-RC-ManagementCluster"
    },
    "label": "NSX61-RC-ManagementCluster"
  },
  {
    "underlyingValue": {
      "type": "entityRef",
      "componentId": null,
      "classId": "ComputeResource",
      "id": "40b151ce-e409-4d2a-8dae-bb456139a660",
      "label": "NSX61-RC-ComputeClusterB"
    },
    "label": "NSX61-RC-ComputeClusterB"
  },
  {
    "underlyingValue": {
      "type": "entityRef",
      "componentId": null,
      "classId": "ComputeResource",
      "id": "cc254a84-95b8-434a-874d-bdfef8e8ad2c",
      "label": "NSX61-RC-ComputeClusterA"
    },
    "label": "NSX61-RC-ComputeClusterA"
  }]
}
```


The following sample displays JSON output for an Amazon reservation.


```
{
  "values": [
    {
      "underlyingValue": {
        "type": "entityRef",
        "componentId": null,
```

```
        "classId": "ComputeResource",
        "id": "fdfa4b95-9476-4c18-81c5-1c0e5cb1131f",
        "label": "EC2 841 Endpoint-us-west-1"
      },
      "label": "EC2 841 Endpoint-us-west-1"
    },
    {
      "underlyingValue": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ComputeResource",
        "id": "4e362590-b634-4269-9da4-548260148fa3",
        "label": "EC2 841 Endpoint-us-west-2"
      },
      "label": "EC2 841 Endpoint-us-west-2"
    },
    {
      "underlyingValue": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ComputeResource",
        "id": "9d1a3b5a-7162-4a5a-85b7-ec1b2824f554",
        "label": "EC2 841 Endpoint-us-east-1"
      },
      "label": "EC2 841 Endpoint-us-east-1"
    }
  ]
}
```


The following sample displays JSON output for a vCloud Air reservation.


```
{
  "values": [
    {
      "underlyingValue": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ComputeResource",
        "id": "c527a0f5-b1ae-4b61-8145-ad9d5c434dc7",
        "label": "Engineering Allocation VDC"
      },
      "label": "Engineering Allocation VDC"
    }
  ]
}
```


Getting a Resources Schema by Reservation Type

You can use the vRealize Automation REST API to get a resources schema for any supported reservation type, including a vSphere, Amazon EC2, or vCloud reservation.

Get Resources Schema for a vSphere Reservation

You can use the reservation service to display information about available resources, such as storage and network information, for a vSphere reservation.

Procedure

- Display information about available resources.

  The following example command queries resource pool information for the compute resource cc254a84-95b8-434a-874d-bdfef8e8ad2c.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/data-service/schema/
Infrastructure.Reservation.Virtual.vSphere/default/resourcePool/values  -d "{
  "text": "",
  "dependencyValues": {
    "entries": [{
      "key": "computeResource",
      "value": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ComputeResource",
        "id": " cc254a84-95b8-434a-874d-bdfef8e8ad2c "
      }
    }]
  }
}"
```

Example: Get Resources Schema for a vSphere Reservation

The following JSON output is returned based on the command input.

```
{
  "values": [{
    "underlyingValue": {
      "type": "entityRef",
      "componentId": null,
      "classId": "ResourcePools",
      "id": " 4e51fabc-19e8-4e79-b413-d52309b3bb62",
      "label": " CoreDev"
    },
    "label": " CoreDev"
  },
  {
    "underlyingValue": {
      "type": "entityRef",
      "componentId": null,
      "classId": "ResourcePools",
      "id": "1186b5cc-cdef-4afb-8653-0ad41a36c194",
      "label": "Documentation"
    },
    "label": "Documentation"
```

```
  },
  //Omit other resource pool list
    ]
}
```

Get Resources Schema for an Amazon Reservation

You can use the reservation service to display resource schema, such as storage and network information, for an Amazon reservation.

Procedure

- Use the reservation service to display resource schema information for an Amazon reservation.

  The following example command displays storage and network information for the compute resource with an ID of 9d1a3b5a-7162-4a5a-85b7-ec1b2824f554.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/data-service/schema/
Infrastructure.Reservation.Cloud.Amazon/default/securityGroups/values  -d "
{
  "text": "",
  "dependencyValues": {
    "entries": [{
      "key": "computeResource",
      "value": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ComputeResource",
        "id": "9d1a3b5a-7162-4a5a-85b7-ec1b2824f554"
      }
    }]
  }
}
"
```

Example: Get Resources Schema for an Amazon Reservation

The following JSON output is returned based on the command input.

```
{
  "values": [
    {
      "underlyingValue": {
        "type": "entityRef",
        "componentId": null,
        "classId": "AmazonSecurityGroup",
        "id": "9",
        "label": "test1"
      },
      "label": "test1"
    },
```

```
    {
      "underlyingValue": {
        "type": "entityRef",
        "componentId": null,
        "classId": "AmazonSecurityGroup",
        "id": "10",
        "label": "default"
      },
      "label": "default"
    }
  ]
}
```

Get Resources Schema for a vCloud Air Reservation

You can use the reservation service to display information about available resources, such as storage and network information, for a vCloud Air reservation.

Procedure

- Use the reservation service to display information about available resources.

  The following example command displays storage and network information.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/data-service/schema/
Infrastructure.Reservation.Cloud.vCloudAir/default/reservationStorages/values  -d "
```

Example: Get Resources Schema for a vCloud Air Reservation

The following JSON output is returned based on the command input.

```
{
  "values": [
    {
      "underlyingValue": {
        "type": "complex",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "Infrastructure.Reservation.Storage",
        "typeFilter": null,
        "values": {
          "entries": [
            {
              "key": "computeResourceStorageTotalSizeGB",
              "value": {
                "type": "integer",
                "value": 1000
              }
            },
            {
              "key": "storagePath",
              "value": {
                "type": "entityRef",
```

```
                "componentId": null,
                "classId": "Storage",
                "id": "f4df029b-d475-4f85-ab42-05bddde3f667",
                "label": "Low Performance Storage"
              }
            },
            {
              "key": "computeResourceStorageFreeSizeGB",
              "value": {
                "type": "integer",
                "value": 954
              }
            }
          ]
        }
      },
      "label": "Low Performance Storage"
    },
    {
      "underlyingValue": {
        "type": "complex",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "Infrastructure.Reservation.Storage",
        "typeFilter": null,
        "values": {
          "entries": [
            {
              "key": "computeResourceStorageTotalSizeGB",
              "value": {
                "type": "integer",
                "value": 1000
              }
            },
            {
              "key": "storagePath",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "Storage",
                "id": "e655aa78-e5fb-4722-9e8a-0cd4139248cf",
                "label": "High Performance Storage"
              }
            },
            {
              "key": "computeResourceStorageFreeSizeGB",
              "value": {
                "type": "integer",
                "value": 691
              }
            }
          ]
        }
      },
```

```
      "label": "High Performance Storage"
    }
  ]
}
```

Creating a Reservation By Type

You can use the vRealize Automation REST API to create any supported reservation type, including a vSphere, Amazon EC2, or vCloud reservation.

Create a vSphere Reservation

You can use the reservation service to create a vSphere reservation.

Prerequisites

In addition to the Prerequisites for Working With Reservations, perform the following tasks before creating a reservation.

- Display a list of the reservation types that are supported in the vRealize Automation server. See Display a List of Supported Reservation Types.
- Obtain the permissible value field information required to create a new reservation. After you retrieve all permissible value field information, you have the input information required to create a reservation. See Get Resources Schema for a vSphere Reservation.

Procedure

- Create a vSphere reservation.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/reservations -d
"
{
  "name": "TestCreateReservation",
  "reservationTypeId": "Infrastructure.Reservation.Virtual.vSphere",
  "tenantId": "qe",
  "subTenantId": "ef58f604-528d-4441-a219-4725bead629b",
  "enabled": true,
  "priority": 3,
  "reservationPolicyId": "b71c3a5f-087a-4d9e-9a56-fab785a3d128",
  "alertPolicy": {
    "enabled": true,
    "frequencyReminder": 20,
    "emailBgMgr": false,
    "recipients": ["test1@mycompany.com",
    "test2@mycompany.com"],
    "alerts": [{
      "alertPercentLevel": 10,
      "referenceResourceId": "storage",
      "id": "storage"
    },
```

```
    {
      "alertPercentLevel": 20,
      "referenceResourceId": "memory",
      "id": "memory"
    },
    {
      "alertPercentLevel": 30,
      "referenceResourceId": "cpu",
      "id": "cpu"
    },
    {
      "alertPercentLevel": 40,
      "referenceResourceId": "machine",
      "id": "machine"
    }]
  },
  "extensionData": {
    "entries": [{
      "key": "reservationNetworks",
      "value": {
        "type": "multiple",
        "elementTypeId": "COMPLEX",
        "items": [{
          "type": "complex",
          "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
          "componentId": null,
          "classId": "reservationNetwork",
          "typeFilter": null,
          "values": {
            "entries": [{
              "key": "reservationNetworkPath",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "Network",
                "id": "44cb65d5-b321-43dd-a2ab-8ecf387bff8f",
                "label": "VM Network SQA"
              }
            }]
          }
        }]
      }
    },
    {
      "key": "custom-Properties-key0",
      "value": {
        "type": "string",
        "value": "custom-property-value0"
      }
    },
    {
      "key": "custom-Properties-key2",
      "value": {
        "type": "string",
        "value": "custom-property-value2"
```

```
      }
    },
    {
      "key": "reservationMemory",
      "value": {
        "type": "complex",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "reservationMemory",
        "typeFilter": null,
        "values": {
          "entries": [{
            "key": "hostMemoryTotalSizeMB",
            "value": {
              "type": "integer",
              "value": 57187
            }
          },
          {
            "key": "memoryReservedSizeMb",
            "value": {
              "type": "integer",
              "value": 15872
            }
          }]
        }
      }
    },
    {
      "key": "computeResource",
      "value": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ComputeResource",
        "id": "cc254a84-95b8-434a-874d-bdfef8e8ad2c",
        "label": "NSX61-RC-ComputeClusterA"
      }
    },
    {
      "key": "machineQuota",
      "value": {
        "type": "integer",
        "value": 2
      }
    },
    {
      "key": "reservationStorages",
      "value": {
        "type": "multiple",
        "elementTypeId": "COMPLEX",
        "items": [{
          "type": "complex",
          "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
          "componentId": null,
          "classId": "reservationStorage",
```

```
          "typeFilter": null,
          "values": {
            "entries": [{
              "key": "storageTotalSizeGB",
              "value": {
                "type": "integer",
                "value": 394
              }
            },
            {
              "key": "storageReservedSizeGB",
              "value": {
                "type": "integer",
                "value": 32
              }
            },
            {
              "key": "storageEnabled",
              "value": {
                "type": "boolean",
                "value": true
              }
            },
            {
              "key": "reservationStoragePath",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "StoragePath",
                "id": "f48a527b-30a6-4d54-8829-f549bc195b69",
                "label": "VNXe:qe-vnxe-nfs-1"
              }
            },
            {
              "key": "storageFreeSizeGB",
              "value": {
                "type": "integer",
                "value": 120
              }
            },
            {
              "key": "storagePriority",
              "value": {
                "type": "integer",
                "value": 1
              }
            }]
          }
        }]
      }
    },
    {
      "key": "resourcePool",
      "value": {
        "type": "entityRef",
```

```
        "componentId": null,
        "classId": "ResourcePools",
        "id": "4e51fabc-19e8-4e79-b413-d52309b3bb62",
        "label": "CoreDev"
      }
    }]
  }
}
"
```

Example: Create a vSphere Reservation

The command output is a URL that includes the new reservation ID, for example `https://$vRA/reservation-service/api/reservations/94d74105-831a-4598-8f42-efd590fea15c`.

Create an Amazon Reservation

You can use the reservation service to create an Amazon reservation.

Prerequisites

In addition to the Prerequisites for Working With Reservations, perform the following tasks before creating a reservation.

- Display a list of the reservation types that are supported in the vRealize Automation server. See Display a List of Supported Reservation Types.
- Obtain the permissible value field information required to create a new reservation. See Get Resources Schema for an Amazon Reservation.

Procedure

◆ Create an Amazon reservation.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/reservations -d "
{
  "name": "TestEC2Reservation",
  "reservationTypeId": "Infrastructure.Reservation.Cloud.Amazon",
  "tenantId": "qe",
  "subTenantId": "a5d056be-3aa2-4fdd-ba1e-a3805f26f0e0",
  "enabled": true,
  "priority": 1,
  "reservationPolicyId": "34d2a612-718e-4814-96c5-225f7f5615a6",
  "alertPolicy": {
    "enabled": false,
    "frequencyReminder": 0,
    "emailBgMgr": true,
    "recipients": [

    ],
    "alerts": [
      {
        "alertPercentLevel": 80,
```

```
        "referenceResourceId": "machine",
        "id": "machine"
      }
    ]
  },
  "extensionData": {
    "entries": [
      {
        "key": "computeResource",
        "value": {
          "type": "entityRef",
          "componentId": null,
          "classId": "ComputeResource",
          "id": "9d1a3b5a-7162-4a5a-85b7-ec1b2824f554",
          "label": "EC2 841 Endpoint-us-east-1"
        }
      },
      {
        "key": "machineQuota",
        "value": {
          "type": "integer",
          "value": 0
        }
      },
      {
        "key": "securityGroups",
        "value": {
          "type": "multiple",
          "elementTypeId": "ENTITY_REFERENCE",
          "items": [
            {
              "type": "entityRef",
              "componentId": null,
              "classId": "AmazonSecurityGroup",
              "id": "10",
              "label": "default"
            }
          ]
        }
      },
      {
        "key": "loadBalancers",
        "value": {
          "type": "multiple",
          "elementTypeId": "ENTITY_REFERENCE",
          "items": [
            {
              "type": "entityRef",
              "componentId": null,
              "classId": "ElasticLoadBalancer",
              "id": "3",
              "label": "test1"
            }
          ]
        }
```

```
      },
      {
        "key": "locations",
        "value": {
          "type": "multiple",
          "elementTypeId": "ENTITY_REFERENCE",
          "items": [
            {
              "type": "entityRef",
              "componentId": null,
              "classId": "AvailabilityZone",
              "id": "10",
              "label": "us-east-1a"
            }
          ]
        }
      },
      {
        "key": "keyPairs",
        "value": {
          "type": "string",
          "value": "Per Provisioning Group"
        }
      }
    ]
  }
}”
```

Example: Create an Amazon Reservation

The output is a sample location URL, including the new Amazon reservation ID.

```
Location: https://$vRA/reservation-service/api/reservations/3289b039-2a11-4ab4-a0bc-
b583e4c6d085
```

Create a vCloud Air Reservation

You can use the vRealize Automation REST API reservation service to create a vCloud Air reservation.

Prerequisites

In addition to the Prerequisites for Working With Reservations, perform the following tasks before creating a reservation.

- Display a list of the reservation types that are supported in the vRealize Automation server. See Display a List of Supported Reservation Types.
- Obtain the permissible value field information required to create a new reservation. See Get Resources Schema for a vCloud Air Reservation.

Procedure

- Create a vCloud Air reservation.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/reservations -d "
{
  "name": "TestvAppReservation",
  "reservationTypeId": "Infrastructure.Reservation.Cloud.vCloudAir",
  "tenantId": "qe",
  "subTenantId": "a5d056be-3aa2-4fdd-ba1e-a3805f26f0e0",
  "enabled": true,
  "priority": 1,
  "reservationPolicyId": null,
  "alertPolicy": {
    "enabled": false,
    "frequencyReminder": 0,
    "emailBgMgr": true,
    "recipients": [

    ],
    "alerts": [
      {
        "alertPercentLevel": 80,
        "referenceResourceId": "storage",
        "id": "storage"
      },
      {
        "alertPercentLevel": 80,
        "referenceResourceId": "memory",
        "id": "memory"
      },
      {
        "alertPercentLevel": 80,
        "referenceResourceId": "cpu",
        "id": "cpu"
      },
      {
        "alertPercentLevel": 80,
        "referenceResourceId": "machine",
        "id": "machine"
      }
    ]
  },
  "extensionData": {
    "entries": [
      {
        "key": "computeResource",
        "value": {
          "type": "entityRef",
          "componentId": null,
          "classId": "ComputeResource",
          "id": "c527a0f5-b1ae-4b61-8145-ad9d5c434dc7",
          "label": "Engineering Allocation VDC"
```

```
          }
        },
        {
          "key": "machineQuota",
          "value": {
            "type": "integer",
            "value": 0
          }
        },
        {
          "key": "allocationModel",
          "value": {
            "type": "integer",
            "value": 0
          }
        },
        {
          "key": "reservationNetworks",
          "value": {
            "type": "multiple",
            "elementTypeId": "COMPLEX",
            "items": [
              {
                "type": "complex",
                "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
                "componentId": null,
                "classId": "Infrastructure.Reservation.Network",
                "typeFilter": null,
                "values": {
                  "entries": [
                    {
                      "key": "networkPath",
                      "value": {
                        "type": "entityRef",
                        "componentId": null,
                        "classId": "Network",
                        "id": "42c5063c-5422-448f-aac7-22ebe941ac8e",
                        "label": "VM Network SQA"
                      }
                    }
                  ]
                }
              }
            ]
          }
        },
        {
          "key": "reservationStorages",
          "value": {
            "type": "multiple",
            "elementTypeId": "COMPLEX",
            "items": [
              {
                "type": "complex",
                "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
```

```
            "componentId": null,
            "classId": "Infrastructure.Reservation.Storage",
            "typeFilter": null,
            "values": {
              "entries": [
                {
                  "key": "computeResourceStorageTotalSizeGB",
                  "value": {
                    "type": "integer",
                    "value": 1000
                  }
                },
                {
                  "key": "storagePath",
                  "value": {
                    "type": "entityRef",
                    "componentId": null,
                    "classId": "Storage",
                    "id": "e655aa78-e5fb-4722-9e8a-0cd4139248cf",
                    "label": "High Performance Storage"
                  }
                },
                {
                  "key": "storagePriority",
                  "value": {
                    "type": "integer",
                    "value": 1
                  }
                },
                {
                  "key": "storageReservedSizeGB",
                  "value": {
                    "type": "integer",
                    "value": 100
                  }
                },
                {
                  "key": "storageEnabled",
                  "value": {
                    "type": "boolean",
                    "value": true
                  }
                },
                {
                  "key": "computeResourceStorageFreeSizeGB",
                  "value": {
                    "type": "integer",
                    "value": 691
                  }
                }
              ]
            }
          }
        ]
      }
```

```
      },
      {
        "key": "reservationMemory",
        "value": {
          "type": "complex",
          "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
          "componentId": null,
          "classId": "Infrastructure.Reservation.Memory",
          "typeFilter": null,
          "values": {
            "entries": [
              {
                "key": "computeResourceMemoryTotalSizeMB",
                "value": {
                  "type": "integer",
                  "value": 13312
                }
              },
              {
                "key": "memoryReservedSizeMb",
                "value": {
                  "type": "integer",
                  "value": 4096
                }
              }
            ]
          }
        }
      }
    ]
  }
}
"
```

Example: Create a vCloud Air Reservation

The output is a location URL, including the new vCloud Air reservation ID.

```
Location:
https://$vRA/reservation-service/api/reservations/3289b039-2a11-4ab4-a0bc-b583e4c6d085
```

Verify a Reservation and Get Reservation Details

After you create a reservation, you can use the reservation service along with reservation ID to verify that the reservation exists. You can also use the ID to get information about the reservation in preparation for updating or deleting it.

Prerequisites

In addition to the Prerequisites for Working With Reservations, perform the following tasks before creating a reservation.

- Finish creating a new reservation. Obtain the reservation ID from the output URL. See Syntax for Creating a vSphere Reservation .

- Get the reservation ID if you do not already know it. See Display a List of Reservations.

Procedure

- Use the reservation service to verify that a reservation exists by using the verification ID.

  The following example command verifies the existence of a reservation with an ID of 94d74105-831a-4598-8f42-efd590fea15c

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/reservations/94d74105-831a-4598-8f42-efd590fea15c
```

Example: Verify a Reservation and Get Reservation Details

The following sample displays JSON output for the request including reservation details.


```
{
  "id": "94d74105-831a-4598-8f42-efd590fea15c ",
  "name": "TestReservation",
  "reservationTypeId": "Infrastructure.Reservation.Virtual.vSphere",
  "tenantId": "qe",
  "subTenantId": "ef58f604-528d-4441-a219-4725bead629b",
  "enabled": true,
  "priority": 3,
  "reservationPolicyId": "b71c3a5f-087a-4d9e-9a56-fab785a3d128",
  "alertPolicy": {
    "enabled": true,
    "frequencyReminder": 20,
    "emailBgMgr": false,
    "recipients": ["user1@mycompany.com",
    "user2@mycompany.com"],
    "alerts": [{
      "alertPercentLevel": 10,
      "referenceResourceId": "storage",
      "id": "storage"
    },
    {
      "alertPercentLevel": 20,
      "referenceResourceId": "memory",
      "id": "memory"
    },
    {
      "alertPercentLevel": 30,
      "referenceResourceId": "cpu",
      "id": "cpu"
    },
    {
      "alertPercentLevel": 40,
      "referenceResourceId": "machine",
      "id": "machine"
    }]
  },
  "extensionData": {
    "entries": [{
```

```
      "key": "key4",
      "value": {
        "type": "string",
        "value": "custom-property-value4"
      }
    },
    {
      "key": "key3",
      "value": {
        "type": "string",
        "value": "custom-property-value3"
      }
    },
    {
      "key": "reservationNetworks",
      "value": {
        "type": "multiple",
        "elementTypeId": "COMPLEX",
        "items": [{
          "type": "complex",
          "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
          "componentId": null,
          "classId": "reservationNetwork",
          "typeFilter": null,
          "values": {
            "entries": [{
              "key": "reservationNetworkProfile",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "NetworkProfile",
                "id": "ed5d1503-08ac-42ca-804d-9167834a63a5",
                "label": "ETEDoNotDelete2014-10-13 13:10:56"
              }
            },
            {
              "key": "reservationNetworkPath",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "Network",
                "id": "44cb65d5-b321-43dd-a2ab-8ecf387bff8f",
                "label": "VM Network SQA"
              }
            }]
          }
        }]
      }
    },
    {
      "key": "key0",
      "value": {
        "type": "string",
        "value": "custom-property-value0"
      }
```

```
    },
    {
      "key": "key2",
      "value": {
        "type": "string",
        "value": "custom-property-value2"
      }
    },
    {
      "key": "reservationMemory",
      "value": {
        "type": "complex",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "reservationMemory",
        "typeFilter": null,
        "values": {
          "entries": [{
            "key": "hostMemoryTotalSizeMB",
            "value": {
              "type": "integer",
              "value": 57187
            }
          },
          {
            "key": "reservationMemoryReservedSizeMb",
            "value": {
              "type": "integer",
              "value": 15888
            }
          }]
        }
      }
    },
    {
      "key": "key1",
      "value": {
        "type": "string",
        "value": "custom-property-value-Updated"
      }
    },
    {
      "key": "computeResource",
      "value": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ComputeResource",
        "id": "047e00f5-5424-4ed2-a751-4a334aeaff54",
        "label": "VC51-Cluster"
      }
    },
    {
      "key": "machineQuota",
      "value": {
        "type": "integer",
```

```
        "value": 2
      }
    },
    {
      "key": "reservationStorages",
      "value": {
        "type": "multiple",
        "elementTypeId": "COMPLEX",
        "items": [{
          "type": "complex",
          "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
          "componentId": null,
          "classId": "reservationStorage",
          "typeFilter": null,
          "values": {
            "entries": [{
              "key": "storageTotalSizeGB",
              "value": {
                "type": "integer",
                "value": 394
              }
            },
            {
              "key": "reservationStorageReservedSizeGB",
              "value": {
                "type": "integer",
                "value": 31
              }
            },
            {
              "key": "reservationStorageEnabled",
              "value": {
                "type": "boolean",
                "value": true
              }
            },
            {
              "key": "reservationStoragePath",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "StoragePath",
                "id": "f48a527b-30a6-4d54-8829-f549bc195b69",
                "label": "VNXe:qe-vnxe-nfs-1"
              }
            },
            {
              "key": "storageFreeSizeGB",
              "value": {
                "type": "integer",
                "value": 120
              }
            },
            {
              "key": "reservationStorageReservationPriority",
```

```
              "value": {
                "type": "integer",
                "value": 1
              }
            }]
          }
        }]
      }
    },
    {
      "key": "resourcePool",
      "value": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ResourcePools",
        "id": "4e51fabc-19e8-4e79-b413-d52309b3bb62",
        "label": "CoreDev"
      }
    }]
  }
}
Example Output for a vCloud Reservation
{
  "id": "bf922450-d495-460d-9dbf-1c09b0692db2",
  "name": "TestvAppReservation",
  "reservationTypeId": "Infrastructure.Reservation.Cloud.vCloud",
  "tenantId": "qe",
  "subTenantId": "a5d056be-3aa2-4fdd-ba1e-a3805f26f0e0",
  "enabled": true,
  "priority": 1,
  "reservationPolicyId": null,
  "alertPolicy": {
    "enabled": false,
    "frequencyReminder": 0,
    "emailBgMgr": true,
    "recipients": [

    ],
    "alerts": [
      {
        "alertPercentLevel": 80,
        "referenceResourceId": "storage",
        "id": "storage"
      },
      {
        "alertPercentLevel": 80,
        "referenceResourceId": "memory",
        "id": "memory"
      },
      {
        "alertPercentLevel": 80,
        "referenceResourceId": "cpu",
        "id": "cpu"
      },
      {
```

```
        "alertPercentLevel": 80,
        "referenceResourceId": "machine",
        "id": "machine"
      }
    ]
  },
  "extensionData": {
    "entries": [
      {
        "key": "computeResource",
        "value": {
          "type": "entityRef",
          "componentId": null,
          "classId": "ComputeResource",
          "id": "c527a0f5-b1ae-4b61-8145-ad9d5c434dc7",
          "label": "Engineering Allocation VDC"
        }
      },
      {
        "key": "machineQuota",
        "value": {
          "type": "integer",
          "value": 0
        }
      },
      {
        "key": "allocationModel",
        "value": {
          "type": "integer",
          "value": 0
        }
      },
      {
        "key": "reservationNetworks",
        "value": {
          "type": "multiple",
          "elementTypeId": "COMPLEX",
          "items": [
            {
              "type": "complex",
              "componentTypeId": "com.vmware.csp.iaas.blueprint.service",
              "componentId": null,
              "classId": "Infrastructure.Reservation.Network",
              "typeFilter": null,
              "values": {
                "entries": [
                  {
                    "key": "networkPath",
                    "value": {
                      "type": "entityRef",
                      "componentId": null,
                      "classId": "Network",
                      "id": "42c5063c-5422-448f-aac7-22ebe941ac8e",
                      "label": "VM Network SQA"
                    }
```

```
                }
              ]
            }
          }
        ]
      }
    },
    {
      "key": "reservationStorages",
      "value": {
        "type": "multiple",
        "elementTypeId": "COMPLEX",
        "items": [
          {
            "type": "complex",
            "componentTypeId": "com.vmware.csp.iaas.blueprint.service",
            "componentId": null,
            "classId": "Infrastructure.Reservation.Storage",
            "typeFilter": null,
            "values": {
              "entries": [
                {
                  "key": "computeResourceStorageTotalSizeGB",
                  "value": {
                    "type": "integer",
                    "value": 1000
                  }
                },
                {
                  "key": "storagePath",
                  "value": {
                    "type": "entityRef",
                    "componentId": null,
                    "classId": "Storage",
                    "id": "e655aa78-e5fb-4722-9e8a-0cd4139248cf",
                    "label": "High Performance Storage"
                  }
                },
                {
                  "key": "storageReservationPriority",
                  "value": {
                    "type": "integer",
                    "value": 1
                  }
                },
                {
                  "key": "storageReservedSizeGB",
                  "value": {
                    "type": "integer",
                    "value": 100
                  }
                },
                {
                  "key": "storageEnabled",
                  "value": {
```

```
                    "type": "boolean",
                    "value": true
                  }
                },
                {
                  "key": "computeResourceStorageFreeSizeGB",
                  "value": {
                    "type": "integer",
                    "value": 691
                  }
                }
              ]
            }
          }
        ]
      }
    },
    {
      "key": "reservationMemory",
      "value": {
        "type": "complex",
        "componentTypeId": "com.vmware.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "Infrastructure.Reservation.Memory",
        "typeFilter": null,
        "values": {
          "entries": [
            {
              "key": "computeResourceMemoryTotalSizeMB",
              "value": {
                "type": "integer",
                "value": 13312
              }
            },
            {
              "key": "memoryReservedSizeMb",
              "value": {
                "type": "integer",
                "value": 4096
              }
            }
          ]
        }
      }
    }
  ]
 }
}
```


Display a List of Reservations

You can use the reservation service to obtain and display a list of existing reservations to obtain the required reservation ID value in preparation for updating or deleting a reservation.

Procedure

- Display a list of existing vRealize Automation reservations.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/reservations
```

Example: Display a List of Reservations

The following sample output lists two vSphere reservations named MyTestReservation1 and MyTestReservation2.


```
{
  "links": [],
  "content": [{
  "id": "94d74105-831a-4598-8f42-efd590fea15c ",
  "name": "TestReservation",
  "reservationTypeId": "Infrastructure.Reservation.Virtual.vSphere",
  "tenantId": "qe",
  "subTenantId": "ef58f604-528d-4441-a219-4725bead629b",
  "enabled": true,
  "priority": 3,
  "reservationPolicyId": "b71c3a5f-087a-4d9e-9a56-fab785a3d128",
  "alertPolicy": {
    "enabled": true,
    "frequencyReminder": 20,
    "emailBgMgr": false,
    "recipients": ["user1@mycompany.com",
    "user2@mycompany.com"],
    "alerts": [{
      "alertPercentLevel": 10,
      "referenceResourceId": "storage",
      "id": "storage"
    },
    {
      "alertPercentLevel": 20,
      "referenceResourceId": "memory",
      "id": "memory"
    },
    {
      "alertPercentLevel": 30,
      "referenceResourceId": "cpu",
      "id": "cpu"
    },
    {
      "alertPercentLevel": 40,
      "referenceResourceId": "machine",
      "id": "machine"
    }]
  },
  "extensionData": {
    "entries": [{
      "key": "key4",
```

```
      "value": {
        "type": "string",
        "value": "custom-property-value4"
      }
    },
    {
      "key": "key3",
      "value": {
        "type": "string",
        "value": "custom-property-value3"
      }
    },
    {
      "key": "reservationNetworks",
      "value": {
        "type": "multiple",
        "elementTypeId": "COMPLEX",
        "items": [{
          "type": "complex",
          "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
          "componentId": null,
          "classId": "reservationNetwork",
          "typeFilter": null,
          "values": {
            "entries": [{
              "key": "reservationNetworkProfile",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "NetworkProfile",
                "id": "ed5d1503-08ac-42ca-804d-9167834a63a5",
                "label": "ETEDoNotDelete2014-10-13 13:10:56"
              }
            },
            {
              "key": "reservationNetworkPath",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "Network",
                "id": "44cb65d5-b321-43dd-a2ab-8ecf387bff8f",
                "label": "VM Network SQA"
              }
            }]
          }
        }]
      }
    },
    {
      "key": "key0",
      "value": {
        "type": "string",
        "value": "custom-property-value0"
      }
    },
```

```
    {
      "key": "key2",
      "value": {
        "type": "string",
        "value": "custom-property-value2"
      }
    },
    {
      "key": "reservationMemory",
      "value": {
        "type": "complex",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "reservationMemory",
        "typeFilter": null,
        "values": {
          "entries": [{
            "key": "hostMemoryTotalSizeMB",
            "value": {
              "type": "integer",
              "value": 57187
            }
          },
          {
            "key": "reservationMemoryReservedSizeMb",
            "value": {
              "type": "integer",
              "value": 15888
            }
          }]
        }
      }
    },
    {
      "key": "key1",
      "value": {
        "type": "string",
        "value": "custom-property-value-Updated"
      }
    },
    {
      "key": "computeResource",
      "value": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ComputeResource",
        "id": "047e00f5-5424-4ed2-a751-4a334aeaff54",
        "label": "VC51-Cluster"
      }
    },
    {
      "key": "machineQuota",
      "value": {
        "type": "integer",
        "value": 2
```

```
      }
    },
    {
      "key": "reservationStorages",
      "value": {
        "type": "multiple",
        "elementTypeId": "COMPLEX",
        "items": [{
          "type": "complex",
          "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
          "componentId": null,
          "classId": "reservationStorage",
          "typeFilter": null,
          "values": {
            "entries": [{
              "key": "storageTotalSizeGB",
              "value": {
                "type": "integer",
                "value": 394
              }
            },
            {
              "key": "reservationStorageReservedSizeGB",
              "value": {
                "type": "integer",
                "value": 31
              }
            },
            {
              "key": "reservationStorageEnabled",
              "value": {
                "type": "boolean",
                "value": true
              }
            },
            {
              "key": "reservationStoragePath",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "StoragePath",
                "id": "f48a527b-30a6-4d54-8829-f549bc195b69",
                "label": "VNXe:qe-vnxe-nfs-1"
              }
            },
            {
              "key": "storageFreeSizeGB",
              "value": {
                "type": "integer",
                "value": 120
              }
            },
            {
              "key": "reservationStorageReservationPriority",
              "value": {
```

```
                "type": "integer",
                "value": 1
              }
            }]
          }
        }]
      }
    },
    {
      "key": "resourcePool",
      "value": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ResourcePools",
        "id": "4e51fabc-19e8-4e79-b413-d52309b3bb62",
        "label": "CoreDev"
      }
    }],
  "metadata": {
    "size": 0,
    "totalElements": 1,
    "totalPages": 1,
    "number": 1,
    "offset": 0
  }
}
```


Update a Reservation

You can use the reservation service to update an existing vRealize Automation reservation.

Prerequisites

In addition to the Prerequisites for Working With Reservations, perform the following tasks before updating a reservation.

- Obtain the reservation ID of the reservation that you want to update. This information is required API command input. See Syntax for Displaying a List of Reservations .
- Obtain the reservation field information for the reservation that you want to update. For example, if you want to change from one compute resource to another, you must obtain the new compute resource ID and its associated JSON section output. This information is required API command input. See Syntax for Getting a Compute Resource for a Reservation .

Procedure

◆ Use the reservation service to update an existing reservation.

The following example command updates a reservation with an ID of 94d74105-831a-4598-8f42-efd590fea15c.

```
curl -X PUT --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
```

```
https://$vRA/reservation-service/api/reservations/94d74105-831a-4598-8f42-efd590fea15c -d
"
{
  "id": "94d74105-831a-4598-8f42-efd590fea15c",
  "name": "TestReservation",
  "reservationTypeId": "Infrastructure.Reservation.Virtual.vSphere",
  "tenantId": "qe",
  "subTenantId": "ef58f604-528d-4441-a219-4725bead629b",
  "enabled": true,
  "priority": 3,
  "reservationPolicyId": "b71c3a5f-087a-4d9e-9a56-fab785a3d128",
  "alertPolicy": {
    "enabled": true,
    "frequencyReminder": 20,
    "emailBgMgr": false,
    "recipients": ["user1@mycompany.com",
    "user2@mycompany.com"],
    "alerts": [{
      "alertPercentLevel": 10,
      "referenceResourceId": "storage",
      "id": "storage"
    },
    {
      "alertPercentLevel": 20,
      "referenceResourceId": "memory",
      "id": "memory"
    },
    {
      "alertPercentLevel": 30,
      "referenceResourceId": "cpu",
      "id": "cpu"
    },
    {
      "alertPercentLevel": 40,
      "referenceResourceId": "machine",
      "id": "machine"
    }]
  },
  "extensionData": {
    "entries": [{
      "key": "key4",
      "value": {
        "type": "string",
        "value": "custom-property-value4"
      }
    },
    {
      "key": "key3",
      "value": {
        "type": "string",
        "value": "custom-property-value3"
      }
    },
    {
      "key": "reservationNetworks",
```

```
      "value": {
        "type": "multiple",
        "elementTypeId": "COMPLEX",
        "items": [{
          "type": "complex",
          "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
          "componentId": null,
          "classId": "reservationNetwork",
          "typeFilter": null,
          "values": {
            "entries": [{
              "key": "reservationNetworkProfile",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "NetworkProfile",
                "id": "ed5d1503-08ac-42ca-804d-9167834a63a5",
                "label": "TestNetworkProfile"
              }
            },
            {
              "key": "reservationNetworkPath",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "Network",
                "id": "44cb65d5-b321-43dd-a2ab-8ecf387bff8f",
                "label": "VM Network SQA"
              }
            }]
          }
        }]
      }
    },
    {
      "key": "key0",
      "value": {
        "type": "string",
        "value": "custom-property-value0"
      }
    },
    {
      "key": "key2",
      "value": {
        "type": "string",
        "value": "custom-property-value2"
      }
    },
    {
      "key": "reservationMemory",
      "value": {
        "type": "complex",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "reservationMemory",
```

```
        "typeFilter": null,
        "values": {
          "entries": [{
            "key": "hostMemoryTotalSizeMB",
            "value": {
              "type": "integer",
              "value": 57187
            }
          },
          {
            "key": "reservationMemoryReservedSizeMb",
            "value": {
              "type": "integer",
              "value": 15888
            }
          }]
        }
      }
    },
    {
      "key": "key1",
      "value": {
        "type": "string",
        "value": "custom-property-value-Updated"
      }
    },
    {
      "key": "computeResource",
      "value": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ComputeResource",
        "id": "047e00f5-5424-4ed2-a751-4a334aeaff54",
        "label": "VC51-Cluster"
      }
    },
    {
      "key": "machineQuota",
      "value": {
        "type": "integer",
        "value": 2
      }
    },
    {
      "key": "reservationStorages",
      "value": {
        "type": "multiple",
        "elementTypeId": "COMPLEX",
        "items": [{
          "type": "complex",
          "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
          "componentId": null,
          "classId": "reservationStorage",
          "typeFilter": null,
```

```
          "values": {
            "entries": [{
              "key": "storageTotalSizeGB",
              "value": {
                "type": "integer",
                "value": 394
              }
            },
            {
              "key": "reservationStorageReservedSizeGB",
              "value": {
                "type": "integer",
                "value": 31
              }
            },
            {
              "key": "reservationStorageEnabled",
              "value": {
                "type": "boolean",
                "value": true
              }
            },
            {
              "key": "reservationStoragePath",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "StoragePath",
                "id": "f48a527b-30a6-4d54-8829-f549bc195b69",
                "label": "VNXe:qe-vnxe-nfs-1"
              }
            },
            {
              "key": "storageFreeSizeGB",
              "value": {
                "type": "integer",
                "value": 120
              }
            },
            {
              "key": "reservationStorageReservationPriority",
              "value": {
                "type": "integer",
                "value": 1
              }
            }]
          }
        }]
      }
    },
    {
      "key": "resourcePool",
      "value": {
        "type": "entityRef",
        "componentId": null,
```

```
        "classId": "ResourcePools",
        "id": "4e51fabc-19e8-4e79-b413-d52309b3bb62",
        "label": "CoreDev"
      }
    }]
  }
}
”
```

Example: Update a Reservation

The following output is returned based on the command input.

```
If the command is successful, the HTTP response body is empty except for a 204 No Content
status statement.
```

Delete a Reservation

You can use the vRealize Automation REST API reservation service to delete an existing reservation.

Prerequisites

In addition to the Prerequisites for Working With Reservations, obtain the reservation ID of the reservation that you want to delete. This information is required API command input. See Syntax for Displaying a List of Reservations before deleting a reservation.

Procedure

- Use the reservation service to delete the existing reservation.

  The following example command deletes a reservation with the ID of 94d74105-831a-4598-8f42-efd590fea15c.

  ```
  curl -X “Delete” --insecure -H "Accept:application/json"
  -H "Authorization: Bearer $token"
  https://$vRA/reservation-service/api/reservations/94d74105-831a-4598-8f42-efd590fea15c
  ```

Example: Delete a Reservation

The following output is returned based on the command input.

```
If the command is successful, the HTTP response body is empty except for a 204 No Content
status statement.
```

Service Examples for Working with Reservations

Syntax for each service example lists input parameters, output parameters, and curl commands.

Most examples use the reservation service API. You use the identity service API to get the business group ID for a reservation.

- Syntax for Displaying a List of Reservations

  `GET /api/reservations` displays a list of existing vRealize Automation reservations. You can use this list to obtain the required reservation ID value in preparation for updating or deleting a reservation.

- Syntax for Displaying a Schema Definition for a vSphere Reservation

  `GET /api/data-service/schema/{classId}/default` with `classId` for vSphere, displays the schema definition for a vSphere reservation.

- Syntax for Displaying a Schema Definition for an Amazon Reservation

  `GET /api/data-service/schema/{classId}/default` with `classId` for Amazon, displays the schema definition for an Amazon reservation.

- Syntax for Displaying a Schema Definition for a vCloud Air Reservation

  `GET /api/data-service/schema/{classId}/default` with `classId` for vCloud Air, displays the schema definition for a vCloud Air reservation.

- Syntax for Getting the Business Group ID for a Reservation

  `GET /api/tenants/{tenantId}/subtenants` of the identity service API, lists all business groups. The business group is also referred to as the subtenant in the API. When you create a reservation, you must provide the business group ID, also referred to as the subtenant ID, in the REST command line. Use this procedure to obtain the `subTenantId` value.

- Syntax for Getting a Compute Resource for a Reservation

  `POST /api/data-service/schema/{schemaClassId}/default/{fieldId}/values` creates a compute resource for a vRealize Automation reservation.

- Syntax for Getting Resources Schema for a vSphere Reservation

  `POST /api/data-service/schema/{schemaClassId}/default/{fieldId}/values` with a `schemaClassId` for vSphere, displays information about available resources for a vSphere reservation, such as storage and network information.

- Syntax for Getting Resources Schema for an Amazon Reservation

  `POST /api/data-service/schema/{schemaClassId}/default/{fieldId}/values` with a `schemaClassId` for Amazon, displays resource schema information, such as storage and network data, for an Amazon reservation.

- Syntax for Getting Resources Schema for a vCloud Air Reservation

  `POST /api/data-service/schema/{schemaClassId}/default/{fieldId}/values` with a `schemaClassId` for vCloud Air, displays information about available resources, such as storage and network information, for a vCloud Air reservation.

- Syntax for Creating a vSphere Reservation

  `POST /api/reservations` with a `reservationTypeID` for vSphere, creates a vSphere reservation.

- Syntax for Creating an Amazon Reservation

  `POST /api/reservations` with a `reservationTypeID` for Amazon, creates an Amazon reservation.

- Syntax for Creating a vCloud Air Reservation

  `POST /api/reservations` with a `reservationTypeID` for vCloud Air, creates a vCloud Air reservation.

- Syntax for Verifying a Reservation and Getting Reservation Details

  `GET /api/reservations/{id}` retrieves a vRealize Automation reservation. After you create a reservation, you can use the reservation ID to verify that the reservation exists. You can also use the ID to get information about the reservation in preparation for updating or deleting it.

- Syntax for Displaying a List of Supported Reservation Types

  `GET /api/reservations/types` displays a list of supported vRealize Automation reservation types.

- Syntax for Updating a Reservation

  `PUT /api/reservations/{id}` updates an existing reservation with a given ID.

- Syntax for Deleting a Reservation

  `DELETE /api/reservations/{id}` deletes an existing reservation with the given ID.

Syntax for Displaying a List of Reservations

`GET /api/reservations` displays a list of existing vRealize Automation reservations. You can use this list to obtain the required reservation ID value in preparation for updating or deleting a reservation.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/reservation-service/api/reservations
Method	Get
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.

Output

The command output contains property names and values based on the command input parameters.

Property	Description
Links	Species an array of link objects, each of which contains the following parts:
rel	Specifies the name of the link. ■ `Self` refers to the object which was returned or requested. ■ `First`, `Previous`, `Next`, and `Last` refer to corresponding pages of pageable lists. ■ Specifies the application or service that determines the other names.
href	Specifies the URL that produces the result.
Content	Specifies an array of data rows, each of which represents one of the tenant objects returned in a pageable list.
Metadata	Specifies the paging-related data.
Size	Specifies the maximum number of rows per page.
totalElements	Specifies the number of rows returned.
totalPages	Specifies the total number of pages of data available.
Number	Specifies the current page number.
Offset	Specifies the number of rows skipped.

Example: `curl` Command

The following example command displays a list of reservations.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/reservations
```

Example: JSON Output

The following sample output lists two vSphere reservations, named `MyTestReservation1` and `MyTestReservation2`. For related information, see Syntax for Verifying a Reservation and Getting Reservation Details .

You can use the `id` value for each reservation to update or delete them. For related information, see Syntax for Updating a Reservation or Syntax for Deleting a Reservation .

```
{
  "links": [],
  "content": [{
  "id": "94d74105-831a-4598-8f42-efd590fea15c ",
  "name": "TestReservation",
  "reservationTypeId": "Infrastructure.Reservation.Virtual.vSphere",
  "tenantId": "qe",
```

```
  "subTenantId": "ef58f604-528d-4441-a219-4725bead629b",
  "enabled": true,
  "priority": 3,
  "reservationPolicyId": "b71c3a5f-087a-4d9e-9a56-fab785a3d128",
  "alertPolicy": {
    "enabled": true,
    "frequencyReminder": 20,
    "emailBgMgr": false,
    "recipients": ["user1@mycompany.com",
    "user2@mycompany.com"],
    "alerts": [{
      "alertPercentLevel": 10,
      "referenceResourceId": "storage",
      "id": "storage"
    },
    {
      "alertPercentLevel": 20,
      "referenceResourceId": "memory",
      "id": "memory"
    },
    {
      "alertPercentLevel": 30,
      "referenceResourceId": "cpu",
      "id": "cpu"
    },
    {
      "alertPercentLevel": 40,
      "referenceResourceId": "machine",
      "id": "machine"
    }]
  },
  "extensionData": {
    "entries": [{
      "key": "key4",
      "value": {
        "type": "string",
        "value": "custom-property-value4"
      }
    },
    {
      "key": "key3",
      "value": {
        "type": "string",
        "value": "custom-property-value3"
      }
    },
    {
      "key": "reservationNetworks",
      "value": {
        "type": "multiple",
        "elementTypeId": "COMPLEX",
        "items": [{
          "type": "complex",
          "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
          "componentId": null,
```

```
          "classId": "reservationNetwork",
          "typeFilter": null,
          "values": {
            "entries": [{
              "key": "reservationNetworkProfile",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "NetworkProfile",
                "id": "ed5d1503-08ac-42ca-804d-9167834a63a5",
                "label": "ETEDoNotDelete2014-10-13 13:10:56"
              }
            },
            {
              "key": "reservationNetworkPath",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "Network",
                "id": "44cb65d5-b321-43dd-a2ab-8ecf387bff8f",
                "label": "VM Network SQA"
              }
            }]
          }
        }]
      }
    },
    {
      "key": "key0",
      "value": {
        "type": "string",
        "value": "custom-property-value0"
      }
    },
    {
      "key": "key2",
      "value": {
        "type": "string",
        "value": "custom-property-value2"
      }
    },
    {
      "key": "reservationMemory",
      "value": {
        "type": "complex",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "reservationMemory",
        "typeFilter": null,
        "values": {
          "entries": [{
            "key": "hostMemoryTotalSizeMB",
            "value": {
              "type": "integer",
              "value": 57187
```

```
            }
          },
          {
            "key": "reservationMemoryReservedSizeMb",
            "value": {
              "type": "integer",
              "value": 15888
            }
          }]
        }
      }
    },
    {
      "key": "key1",
      "value": {
        "type": "string",
        "value": "custom-property-value-Updated"
      }
    },
    {
      "key": "computeResource",
      "value": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ComputeResource",
        "id": "047e00f5-5424-4ed2-a751-4a334aeaff54",
        "label": "VC51-Cluster"
      }
    },
    {
      "key": "machineQuota",
      "value": {
        "type": "integer",
        "value": 2
      }
    },
    {
      "key": "reservationStorages",
      "value": {
        "type": "multiple",
        "elementTypeId": "COMPLEX",
        "items": [{
          "type": "complex",
          "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
          "componentId": null,
          "classId": "reservationStorage",
          "typeFilter": null,
          "values": {
            "entries": [{
              "key": "storageTotalSizeGB",
              "value": {
                "type": "integer",
                "value": 394
              }
            },
```

```
            {
              "key": "reservationStorageReservedSizeGB",
              "value": {
                "type": "integer",
                "value": 31
              }
            },
            {
              "key": "reservationStorageEnabled",
              "value": {
                "type": "boolean",
                "value": true
              }
            },
            {
              "key": "reservationStoragePath",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "StoragePath",
                "id": "f48a527b-30a6-4d54-8829-f549bc195b69",
                "label": "VNXe:qe-vnxe-nfs-1"
              }
            },
            {
              "key": "storageFreeSizeGB",
              "value": {
                "type": "integer",
                "value": 120
              }
            },
            {
              "key": "reservationStorageReservationPriority",
              "value": {
                "type": "integer",
                "value": 1
              }
            }]
          }
        }]
      }
    },
    {
      "key": "resourcePool",
      "value": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ResourcePools",
        "id": "4e51fabc-19e8-4e79-b413-d52309b3bb62",
        "label": "CoreDev"
      }
    }],
  "metadata": {
    "size": 0,
    "totalElements": 1,
```

```
    "totalPages": 1,
    "number": 1,
    "offset": 0
  }
}
```

Syntax for Displaying a Schema Definition for a vSphere Reservation

`GET /api/data-service/schema/{classId}/default` with `classId` for vSphere, displays the schema definition for a vSphere reservation.

Overview

Each reservation contains several fields. Some fields are common to all reservation types and some are type-specific. The list of type-specific fields is defined in a schema. Call a data and schema service to get schema definition information. The data and schema service combines fetch data and fetch schema REST API calls.

Table 8-1. Fields Common To All Reservation Types

Parameter	Description	Parameter Type
Id	Specifies the reservation ID.	GUID
name	Specifies the reservation name.	String
reservationTypeId	Specifies the reservation type, for example Infrastructure.Reservation.Virtual.vSphere or Infrastructure.Reservation.Virtual.Amazon.	String
tenantId	Specifies the tenant ID that contains the reservation.	String
subTenantId	Specifies the subtenant ID that contains the reservation.	GUID
enabled	Specifies whether the reservation is enabled.	Boolean
priority	Specifies the priority of the reservation during VM provisioning.	Integer
reservationPolicyId	Specifies the reservation policy ID to bind to this reservation.	GUID
alertPolicy	Specifies the alert policy of the reservation. The detail schema of this field refers to the alert policy.	JSON
extensionData	Contains type-specific fields. The detail schema of this field is retrieved by the data and schema service.	JSON

The following table describes the vSphere reservation types field IDs that appear in the output schema definitions.

Table 8-2. Extension Fields Supported in vSphere Reservations

Field ID	Data Type	Type Class	Permissible Value	Depends on Field
reservationNetworks	Complex Type	reservationNetwork	Yes	computeResource
reservationVCNSTransportZone	Entity Reference	NetworkScopes	Yes	computeResource
reservationVCNSSecurityGroups	Entity Reference	SecurityGroups	Yes	computeResource
reservationMemory	Complex Type	reservationMemory	Yes	computeResource
computeResource	Entity Reference	ComputeResource	Yes	NA
machineQuota	Integer	N/A	No	NA
reservationStorages	Complex Type	reservationStorage	Yes	computeResource
resourcePool	Entity Reference	ResourcePools	Yes	computeResource
reservationVCNSRoutedGateways	Complex Type	reservationVCNSRoutedGateway	Yes	computeResource

Note The information in the table is subject to change. Call the data and schema service to retrieve the latest field information.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/reservation-service/api/data-service/schema/*$schemaclassid*/default
Method	Get
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$schemaclassid	Specifies the schema class of the reservation type. The schema class ID for a vSphere reservation is Infrastructure.Reservation.Virtual.vSphere. Each supported reservation type contains specific fields. The supported fields are defined in the schema. For details, see the reservation service schema definitions in the *vRealize Automation API Reference* in the vRealize Automation documentation center.

Output

The command output contains property names and values based on the command input parameters.

Each field contains an array of data rows. Each data row represents one of the fields defined in the schema.

Property	Description
Id	Specifies the unique identifier of this resource.
label	Specifies the field label.
dataType	Specifies the dataType field value: ■ type: Specifies the field value type: ■ `Self` refers to the object that was returned or requested. ■ `First`, `Previous`, `Next`, and `Last` refer to corresponding pages of a pageable list. ■ Specifies the application or service that determines the other names. ■ componentTypeid: Specifies the type ID of the component. ■ component: Specifies the unique identifier of the component. ■ classId: Specifies the schema class of the field This property is valid for complex and ref field types only. ■ label: Specifies the label of the field data type.
displayAdvice	Contains display advice for the field. This property is valid for a user interface element only.
permissibleValues	Optional field. If this field is a permissible value list field, define the meta info for the permissible value by using the following options: ■ type: Specifies if the permissible value list is dynamic or static. ■ customAllowed: Specifies if a custom value is allowed during user input in this field. ■ dependencies: Specifies the list of fields that the current field depends on.
state	Provides a structure for defining the state of a content construct, for example `{@link LayoutSection}`. The element state identifies the field paths in the client data context upon which that element state depends. For example, the `callback` facet result indicates that facet evaluation must be delegated to the server of the object. This evaluation may be dependent on data collected in the client data context. For example, for a unique machine name, the evaluation requires the proposed name entered by the user.
dependencies	Contains the set of field paths on which the server-side evaluation of the facets depends: ■ facets: Provides a higher level view of an `{@link Constraint}` collection and its current values. All rendering code should use this class to provide a common place to get the current state of the field. If a field is considered in need of server-side evaluation, its `facets` setting is `callback`. If a field is considered mandatory, its `facets` setting is `mandatory`. ■ isMultiValued: Specifies if the field is a multi-value field, such as a list field. The state provides a higher level view of an `{@link Constraint}` collection and its current values. Rendering code should use this class to provide a common place to get the current state of the field.

Example: `curl` Command

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
```

```
https://$vRA/reservation-service/api/data-service/schema/
Infrastructure.Reservation.Virtual.vSphere/default
```

Example: JSON Output

The schema definition in this example includes 9 extension fields that are supported for the vSphere type reservation.


```
{
  "fields": [{
    "id": "reservationNetworks",
    "label": "Network",
    "dataType": {
      "type": "complex",
      "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
      "componentId": null,
      "classId": "reservationNetwork",
      "typeFilter": null,
      "label": "Network"
    },
    "displayAdvice": "DATA_TABLE",
    "permissibleValues": {
      "type": "dynamic",
      "customAllowed": false,
      "dependencies": ["computeResource"]
    },
    "state": {
      "dependencies": [],
      "facets": [{
        "type": "mandatory",
        "value": {
          "type": "constantClause",
          "value": {
            "type": "boolean",
            "value": true
          }
        }
      }]
    },
    "isMultiValued": true
  },
  {
    "id": "reservationVCNSTransportZone",
    "label": "Transport Zone",
    "description": "Transport zone of the vCNS settings",
    "dataType": {
      "type": "ref",
      "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
      "componentId": null,
      "classId": "NetworkScopes",
      "typeFilter": null,
      "label": "Transport Zone"
    },
    "displayAdvice": null,
```

```
      "permissibleValues": {
        "type": "dynamic",
        "customAllowed": false,
        "dependencies": ["computeResource"]
      },
      "state": {
        "dependencies": [],
        "facets": []
      },
      "isMultiValued": false
    },
    {
      "id": "reservationVCNSSecurityGroups",
      "label": "Security Groups",
      "description": "Security groups of the vCNS settings",
      "dataType": {
        "type": "ref",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "SecurityGroups",
        "typeFilter": null,
        "label": "Security Group"
      },
      "displayAdvice": null,
      "permissibleValues": {
        "type": "dynamic",
        "customAllowed": false,
        "dependencies": ["computeResource"]
      },
      "state": {
        "dependencies": [],
        "facets": []
      },
      "isMultiValued": true
    },
    {
      "id": "reservationMemory",
      "label": "Memory",
      "dataType": {
        "type": "complex",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "reservationMemory",
        "typeFilter": null,
        "label": "Memory"
      },
      "displayAdvice": "DATA_TABLE",
      "permissibleValues": {
        "type": "dynamic",
        "customAllowed": false,
        "dependencies": ["computeResource"]
      },
      "state": {
        "dependencies": [],
        "facets": [{
```

```
        "type": "mandatory",
        "value": {
          "type": "constantClause",
          "value": {
            "type": "boolean",
            "value": true
          }
        }
      }]
    },
    "isMultiValued": false
  },
  {
    "id": "computeResource",
    "label": "Compute Resource",
    "description": "The compute resource for the reservation",
    "dataType": {
      "type": "ref",
      "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
      "componentId": null,
      "classId": "ComputeResource",
      "typeFilter": "InterfaceTypeId",
      "label": "Compute Resource"
    },
    "displayAdvice": null,
    "permissibleValues": {
      "type": "dynamic",
      "customAllowed": false,
      "dependencies": []
    },
    "state": {
      "dependencies": [],
      "facets": [{
        "type": "mandatory",
        "value": {
          "type": "constantClause",
          "value": {
            "type": "boolean",
            "value": true
          }
        }
      }]
    },
    "isMultiValued": false
  },
  {
    "id": "machineQuota",
    "label": "Machine Quota",
    "description": "The machine quota for the reservation",
    "dataType": {
      "type": "primitive",
      "typeId": "INTEGER"
    },
    "displayAdvice": null,
    "state": {
```

```
      "dependencies": [],
      "facets": []
    },
    "isMultiValued": false
  },
  {
    "id": "reservationStorages",
    "label": "Storage",
    "dataType": {
      "type": "complex",
      "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
      "componentId": null,
      "classId": "reservationStorage",
      "typeFilter": null,
      "label": "Storage"
    },
    "displayAdvice": "DATA_TABLE",
    "permissibleValues": {
      "type": "dynamic",
      "customAllowed": false,
      "dependencies": ["computeResource"]
    },
    "state": {
      "dependencies": [],
      "facets": [{
        "type": "mandatory",
        "value": {
          "type": "constantClause",
          "value": {
            "type": "boolean",
            "value": true
          }
        }
      }]
    },
    "isMultiValued": true
  },
  {
    "id": "resourcePool",
    "label": "Resource Pool",
    "description": "The resource pool for the reservation",
    "dataType": {
      "type": "ref",
      "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
      "componentId": null,
      "classId": "ResourcePools",
      "typeFilter": null,
      "label": "Resource Pool"
    },
    "displayAdvice": null,
    "permissibleValues": {
      "type": "dynamic",
      "customAllowed": false,
      "dependencies": ["computeResource"]
    },
```

```
    "state": {
      "dependencies": [],
      "facets": []
    },
    "isMultiValued": false
  },
  {
    "id": "reservationVCNSRoutedGateways",
    "label": "Routed Gateways",
    "dataType": {
      "type": "complex",
      "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
      "componentId": null,
      "classId": "reservationVCNSRoutedGateway",
      "typeFilter": null,
      "label": "Routed Gateways"
    },
    "displayAdvice": "DATA_TABLE",
    "permissibleValues": {
      "type": "dynamic",
      "customAllowed": false,
      "dependencies": ["computeResource"]
    },
    "state": {
      "dependencies": [],
      "facets": []
    },
    "isMultiValued": true
  }]
}
```

Syntax for Displaying a Schema Definition for an Amazon Reservation

`GET /api/data-service/schema/{classId}/default` with `classId` for Amazon, displays the schema definition for an Amazon reservation.

Overview

Each reservation contains several fields. Some fields are common to all reservation types and some are type-specific. The list of type-specific fields is defined in a schema. Call a data and schema service to get schema definition information. The data and schema service combines fetch data and fetch schema REST API calls.

Table 8-3. Fields Common To All Reservation Types

Parameter	Description	Parameter Type
Id	Specifies the reservation ID.	GUID
name	Specifies the reservation name.	String

Table 8-3. Fields Common To All Reservation Types (continued)

Parameter	Description	Parameter Type
reservationTypeId	Specifies the reservation type, for example Infrastructure.Reservation.Virtual.vSphere or Infrastructure.Reservation.Virtual.Amazon.	String
tenantId	Specifies the tenant ID that contains the reservation.	String
subTenantId	Specifies the subtenant ID that contains the reservation.	GUID
enabled	Specifies whether the reservation is enabled.	Boolean
priority	Specifies the priority of the reservation during VM provisioning.	Integer
reservationPolicyId	Specifies the reservation policy ID to bind to this reservation.	GUID
alertPolicy	Specifies the alert policy of the reservation. The detail schema of this field refers to the alert policy.	JSON
extensionData	Contains type-specific fields. The detail schema of this field is retrieved by the data and schema service.	JSON

The following table describes the Amazon EC2 reservation types field IDs that appear in the output schema definitions.

Table 8-4. Extension Fields Supported in Amazon Reservations

Field ID	Data Type	Type Class	Permissible Value	Depends on Field
securityGroups	Entity Reference	AmazonSecurityGroup	Yes	computeResource
locations	Entity Reference	AvailabilityZone	Yes	computeResource
loadBalancers	Entity Reference	ElasticLoadBalancer	Yes	computeResource and locations
specificKeyPairs	Entity Reference	KeyPair	Yes	computeResource and keyPairs
computeResource	Entity Reference	ComputeResource	Yes	NA
VPC	Complex Type	Infrastructure.Reservation.Cloud.Amazon.VPC	Yes	computeResource
machineQuota	Integer	NA	No	NA
keyPairs	String	ResourcePools	Yes	computeResource

Note The information in the table is subject to change. Call the data and schema service to retrieve the latest field information.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/reservation-service/api/data-service/schema/*$schemaclassid*/default
Method	Get
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$schemaclassid	Specifies the schema class of the reservation type. The schema class ID for an Amazon reservation is Infrastructure.Reservation.Cloud.Amazon. Each supported reservation type contains specific fields. The supported fields are defined in the schema. For details, see the reservation service schema definitions in the *vRealize Automation API Reference* in vRealize Automation documentation.

Output

The command output contains property names and values based on the command input parameters.

Each field contains an array of data rows. Each data row represents one of the fields defined in the schema.

Property	Description
Id	Specifies the unique identifier of this resource.
label	Specifies the field label.

dataType	Specifies the dataType field value:
	■ type: Specifies the field value type:
	  ■ `Self` refers to the object that was returned or requested.
	  ■ `First`, `Previous`, `Next`, and `Last` refer to corresponding pages of a pageable list.
	  ■ Specifies the application or service that determines the other names.
	■ componentTypeid: Specifies the type ID of the component.
	■ component: Specifies the unique identifier of the component.
	■ classId: Specifies the schema class of the field
	  This property is valid for complex and ref field types only.
	■ label: Specifies the label of the field data type.

displayAdvice	Contains display advice for the field. This property is valid for a user interface element only.
permissibleValues	Optional field. If this field is a permissible value list field, define the meta info for the permissible value by using the following options: ■ type: Specifies if the permissible value list is dynamic or static. ■ customAllowed: Specifies if a custom value is allowed during user input in this field. ■ dependencies: Specifies the list of fields that the current field depends on.

Property	Description
state	Provides a structure for defining the state of a content construct, for example `{@link LayoutSection}`. The element state identifies the field paths in the client data context upon which that element state depends. For example, the `callback` facet result indicates that facet evaluation must be delegated to the server of the object. This evaluation may be dependent on data collected in the client data context. For example, for a unique machine name, the evaluation requires the proposed name entered by the user.
dependencies	Contains the set of field paths on which the server-side evaluation of the facets depends: ■ facets: Provides a higher level view of an `{@link Constraint}` collection and its current values. All rendering code should use this class to provide a common place to get the current state of the field. If a field is considered in need of server-side evaluation, its `facets` setting is `callback`. If a field is considered mandatory, its `facets` setting is `mandatory`. ■ isMultiValued: Specifies if the field is a multi-value field, such as a list field. The state provides a higher level view of an `{@link Constraint}` collection and its current values. Rendering code should use this class to provide a common place to get the current state of the field.

Example: `curl` Command

The following example command retrieves schema definition information for an Amazon type reservation.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/data-service/schema/
Infrastructure.Reservation.Cloud.Amazon/default
```

Example: JSON Output

The following JSON output is returned based on the command input.

The schema definition in this example includes 8 extension fields that are supported for the Amazon EC2 type reservation.

```
{
  "fields": [
    {
      "id": "securityGroups",
      "label": "Security groups",
      "description": "The security groups",
      "dataType": {
        "type": "ref",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "AmazonSecurityGroup",
        "typeFilter": null,
        "label": "Amazon Security Group"
      },
      "displayAdvice": null,
```

```
      "permissibleValues": {
        "type": "dynamic",
        "customAllowed": false,
        "dependencies": [
          "computeResource"
        ]
      },
      "state": {
        "dependencies": [

        ],
        "facets": [
          {
            "type": "visible",
            "value": {
              "type": "not",
              "subClause": {
                "type": "expression",
                "operator": {
                  "type": "isDefined"
                },
                "leftOperand": {
                  "type": "path",
                  "path": "VPC"
                }
              }
            }
          },
          {
            "type": "mandatory",
            "value": {
              "type": "not",
              "subClause": {
                "type": "expression",
                "operator": {
                  "type": "isDefined"
                },
                "leftOperand": {
                  "type": "path",
                  "path": "VPC"
                }
              }
            }
          }
        ]
      },
      "isMultiValued": true
    },
    {
      "id": "locations",
      "label": "Locations",
      "description": "The locations",
      "dataType": {
        "type": "ref",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
```

```
        "componentId": null,
        "classId": "AvailabilityZone",
        "typeFilter": null,
        "label": "Availability Zone"
      },
      "displayAdvice": null,
      "permissibleValues": {
        "type": "dynamic",
        "customAllowed": false,
        "dependencies": [
          "computeResource"
        ]
      },
      "state": {
        "dependencies": [

        ],
        "facets": [
          {
            "type": "visible",
            "value": {
              "type": "not",
              "subClause": {
                "type": "expression",
                "operator": {
                  "type": "isDefined"
                },
                "leftOperand": {
                  "type": "path",
                  "path": "VPC"
                }
              }
            }
          },
          {
            "type": "mandatory",
            "value": {
              "type": "not",
              "subClause": {
                "type": "expression",
                "operator": {
                  "type": "isDefined"
                },
                "leftOperand": {
                  "type": "path",
                  "path": "VPC"
                }
              }
            }
          }
        ]
      },
      "isMultiValued": true
    },
    {
```

```
      "id": "loadBalancers",
      "label": "Load balancers",
      "description": "The load balancers",
      "dataType": {
        "type": "ref",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "ElasticLoadBalancer",
        "typeFilter": null,
        "label": "Elastic Load Balancer"
      },
      "displayAdvice": null,
      "permissibleValues": {
        "type": "dynamic",
        "customAllowed": false,
        "dependencies": [
          "locations",
          "computeResource"
        ]
      },
      "state": {
        "dependencies": [

        ],
        "facets": [
          {
            "type": "visible",
            "value": {
              "type": "not",
              "subClause": {
                "type": "expression",
                "operator": {
                  "type": "isDefined"
                },
                "leftOperand": {
                  "type": "path",
                  "path": "VPC"
                }
              }
            }
          }
        ]
      },
      "isMultiValued": true
    },
    {
      "id": "specificKeyPairs",
      "label": "Specific key pair",
      "description": "The specific key pair",
      "dataType": {
        "type": "ref",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "KeyPair",
        "typeFilter": null,
```

```
        "label": "Key Pair"
      },
      "displayAdvice": null,
      "permissibleValues": {
        "type": "dynamic",
        "customAllowed": false,
        "dependencies": [
          "computeResource",
          "keyPairs"
        ]
      },
      "state": {
        "dependencies": [

        ],
        "facets": [
          {
            "type": "visible",
            "value": {
              "type": "and",
              "subClauses": [
                {
                  "type": "expression",
                  "operator": {
                    "type": "isDefined"
                  },
                  "leftOperand": {
                    "type": "path",
                    "path": "keyPairs"
                  }
                },
                {
                  "type": "expression",
                  "operator": {
                    "type": "equals"
                  },
                  "leftOperand": {
                    "type": "constant",
                    "value": {
                      "type": "string",
                      "value": "Specific Key Pair"
                    }
                  },
                  "rightOperand": {
                    "type": "path",
                    "path": "keyPairs"
                  }
                }
              ]
            }
          },
          {
            "type": "mandatory",
            "value": {
              "type": "and",
```

```
            "subClauses": [
              {
                "type": "expression",
                "operator": {
                  "type": "isDefined"
                },
                "leftOperand": {
                  "type": "path",
                  "path": "keyPairs"
                }
              },
              {
                "type": "expression",
                "operator": {
                  "type": "equals"
                },
                "leftOperand": {
                  "type": "constant",
                  "value": {
                    "type": "string",
                    "value": "Specific Key Pair"
                  }
                },
                "rightOperand": {
                  "type": "path",
                  "path": "keyPairs"
                }
              }
            ]
          }
        }
      ]
    },
    "isMultiValued": false
  },
  {
    "id": "computeResource",
    "label": "Compute Resource",
    "description": "The compute resource for the reservation",
    "dataType": {
      "type": "ref",
      "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
      "componentId": null,
      "classId": "ComputeResource",
      "typeFilter": "ReservationTypeId",
      "label": "Compute Resource"
    },
    "displayAdvice": null,
    "permissibleValues": {
      "type": "dynamic",
      "customAllowed": false,
      "dependencies": [

      ]
    },
```

```
      "state": {
        "dependencies": [

        ],
        "facets": [
          {
            "type": "mandatory",
            "value": {
              "type": "constantClause",
              "value": {
                "type": "boolean",
                "value": true
              }
            }
          }
        ]
      },
      "isMultiValued": false
    },
    {
      "id": "VPC",
      "label": "VPC",
      "dataType": {
        "type": "complex",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "Infrastructure.Reservation.Cloud.Amazon.VPC",
        "typeFilter": null,
        "label": "VPC",
        "schema": {
          "fields": [
            {
              "id": "VPCSubnets",
              "label": "Subnets",
              "description": "The subnets.",
              "dataType": {
                "type": "ref",
                "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
                "componentId": null,
                "classId": "Subnet",
                "typeFilter": null,
                "label": "Subnet"
              },
              "displayAdvice": null,
              "permissibleValues": {
                "type": "dynamic",
                "customAllowed": false,
                "dependencies": [

                ]
              },
              "state": {
                "dependencies": [

                ],
```

```
            "facets": [
              {
                "type": "minCardinality",
                "value": {
                  "type": "constant",
                  "value": {
                    "type": "integer",
                    "value": 1
                  }
                }
              },
              {
                "type": "mandatory",
                "value": {
                  "type": "constantClause",
                  "value": {
                    "type": "boolean",
                    "value": true
                  }
                }
              }
            ]
          },
          "isMultiValued": true
        },
        {
          "id": "VPCSecurityGroups",
          "label": "Security groups",
          "description": "The security groups",
          "dataType": {
            "type": "ref",
            "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
            "componentId": null,
            "classId": "AmazonSecurityGroup",
            "typeFilter": null,
            "label": "Amazon Security Group"
          },
          "displayAdvice": null,
          "permissibleValues": {
            "type": "dynamic",
            "customAllowed": false,
            "dependencies": [

            ]
          },
          "state": {
            "dependencies": [

            ],
            "facets": [
              {
                "type": "minCardinality",
                "value": {
                  "type": "constant",
                  "value": {
```

```
                "type": "integer",
                "value": 1
              }
            }
          },
          {
            "type": "mandatory",
            "value": {
              "type": "constantClause",
              "value": {
                "type": "boolean",
                "value": true
              }
            }
          }
        ]
      },
      "isMultiValued": true
    },
    {
      "id": "VPCName",
      "label": "VPC Name",
      "description": "The virtual private cloud.",
      "dataType": {
        "type": "ref",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "VirtualPrivateCloud",
        "typeFilter": null,
        "label": "Virtual Private Cloud"
      },
      "displayAdvice": null,
      "state": {
        "dependencies": [

        ],
        "facets": [
          {
            "type": "readOnly",
            "value": {
              "type": "constantClause",
              "value": {
                "type": "boolean",
                "value": true
              }
            }
          }
        ]
      },
      "isMultiValued": false
    },
    {
      "id": "VPCLoadBalancers",
      "label": "Load balancers",
      "description": "The load balancers.",
```

```
            "dataType": {
              "type": "ref",
              "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
              "componentId": null,
              "classId": "ElasticLoadBalancer",
              "typeFilter": null,
              "label": "Elastic Load Balancer"
            },
            "displayAdvice": null,
            "permissibleValues": {
              "type": "dynamic",
              "customAllowed": false,
              "dependencies": [
                "VPCSubnets"
              ]
            },
            "state": {
              "dependencies": [

              ],
              "facets": [

              ]
            },
            "isMultiValued": true
          }
        ]
      }
    },
    "displayAdvice": "DATA_TABLE",
    "permissibleValues": {
      "type": "dynamic",
      "customAllowed": false,
      "dependencies": [
        "computeResource"
      ]
    },
    "state": {
      "dependencies": [

      ],
      "facets": [
        {
          "type": "visible",
          "value": {
            "type": "or",
            "subClauses": [
              {
                "type": "not",
                "subClause": {
                  "type": "expression",
                  "operator": {
                    "type": "isDefined"
                  },
                  "leftOperand": {
```

```
                "type": "path",
                "path": "locations"
              }
            }
          },
          {
            "type": "not",
            "subClause": {
              "type": "expression",
              "operator": {
                "type": "isDefined"
              },
              "leftOperand": {
                "type": "path",
                "path": "securityGroups"
              }
            }
          }
        ]
      }
    },
    {
      "type": "mandatory",
      "value": {
        "type": "or",
        "subClauses": [
          {
            "type": "not",
            "subClause": {
              "type": "expression",
              "operator": {
                "type": "isDefined"
              },
              "leftOperand": {
                "type": "path",
                "path": "locations"
              }
            }
          },
          {
            "type": "not",
            "subClause": {
              "type": "expression",
              "operator": {
                "type": "isDefined"
              },
              "leftOperand": {
                "type": "path",
                "path": "securityGroups"
              }
            }
          }
        ]
      }
    }
```

```
        ]
      },
      "isMultiValued": true
    },
    {
      "id": "machineQuota",
      "label": "Machine Quota",
      "description": "The machine quota for the reservation",
      "dataType": {
        "type": "primitive",
        "typeId": "INTEGER"
      },
      "displayAdvice": null,
      "state": {
        "dependencies": [

        ],
        "facets": [

        ]
      },
      "isMultiValued": false
    },
    {
      "id": "keyPairs",
      "label": "Key pair",
      "description": "The key pair",
      "dataType": {
        "type": "primitive",
        "typeId": "STRING"
      },
      "displayAdvice": null,
      "permissibleValues": {
        "type": "static",
        "customAllowed": false,
        "values": [
          {
            "underlyingValue": {
              "type": "string",
              "value": "Not Specified"
            },
            "label": null
          },
          {
            "underlyingValue": {
              "type": "string",
              "value": "Per Provisioning Group"
            },
            "label": null
          },
          {
            "underlyingValue": {
              "type": "string",
              "value": "Per Machine"
            },
```

```
            "label": null
          },
          {
            "underlyingValue": {
              "type": "string",
              "value": "Specific Key Pair"
            },
            "label": null
          }
        ]
      },
      "state": {
        "dependencies": [

        ],
        "facets": [
          {
            "type": "mandatory",
            "value": {
              "type": "constantClause",
              "value": {
                "type": "boolean",
                "value": true
              }
            }
          }
        ]
      },
      "isMultiValued": false
    }
  ]
```

Syntax for Displaying a Schema Definition for a vCloud Air Reservation

`GET /api/data-service/schema/{classId}/default` with `classId` for vCloud Air, displays the schema definition for a vCloud Air reservation.

Overview

SomevRealize Automation reservation fields are common to all reservation types and some are type-specific. The list of type-specific fields is defined in a schema. You can call a data and schema service to get schema definition information. The data and schema service combines fetch data and fetch schema REST API calls.

Table 8-5. Fields Common To All Reservation Types

Parameter	Description	Parameter Type
Id	Specifies the reservation ID.	GUID
name	Specifies the reservation name.	String

Table 8-5. Fields Common To All Reservation Types (continued)

Parameter	Description	Parameter Type
reservationTypeId	Specifies the reservation type, for example Infrastructure.Reservation.Virtual.vSphere or Infrastructure.Reservation.Virtual.Amazon.	String
tenantId	Specifies the tenant ID that contains the reservation.	String
subTenantId	Specifies the subtenant ID that contains the reservation.	GUID
enabled	Specifies whether the reservation is enabled.	Boolean
priority	Specifies the priority of the reservation during VM provisioning.	Integer
reservationPolicyId	Specifies the reservation policy ID to bind to this reservation.	GUID
alertPolicy	Specifies the alert policy of the reservation. The detail schema of this field refers to the alert policy.	JSON
extensionData	Contains type-specific fields. The detail schema of this field is retrieved by the data and schema service.	JSON

The following table describes the vCloud Air reservation types field IDs that appear in the output schema definitions.

Table 8-6. Extension Fields Supported in vCloud Reservations

Field ID	Data Type	Type Class	Permissible Value	Depends on Field
reservationNetworks	Complex Type	Infrastructure.Reservation.Network	Yes	computeResource
allocationModel	Integer	NA	No	NA
reservationMemory	Complex Type	Infrastructure.Reservation.Memory	No	NA
computeResource	Entity Reference	ComputeResource	Yes	NA
machineQuota	Integer	NA	No	NA
reservationStorages	Complex Type	Infrastructure.Reservation.Storage	Yes	computeResource

Note The information in the table is subject to change. Call the data and schema service to retrieve the latest field information.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/reservation-service/api/data-service/schema/*$schemaclassid*/default
Method	Get
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$schemaclassid	Specifies the schema class of the reservation type. The schema class ID for a vCloud Air reservation is Infrastructure.Reservation.Cloud.vCloudAir. Each supported reservation type contains specific fields. The supported fields are defined in the schema. For details, see the reservation service schema definitions in the *vRealize Automation API Reference* in vRealize Automation documentation.

Output

The command output contains property names and values based on the command input parameters.

Each field contains an array of data rows. Each data row represents one of the fields defined in the schema.

Property	Description
Id	Specifies the unique identifier of this resource.
label	Specifies the field label.

dataType	Specifies the dataType field value:
	■ type: Specifies the field value type:
	  ■ `Self` refers to the object that was returned or requested.
	  ■ `First`, `Previous`, `Next`, and `Last` refer to corresponding pages of a pageable list.
	  ■ Specifies the application or service that determines the other names.
	■ componentTypeid: Specifies the type ID of the component.
	■ component: Specifies the unique identifier of the component.
	■ classId: Specifies the schema class of the field
	This property is valid for complex and ref field types only.
	■ label: Specifies the label of the field data type.

displayAdvice	Contains display advice for the field. This property is valid for a user interface element only.
permissibleValues	Optional field. If this field is a permissible value list field, define the meta info for the permissible value by using the following options: ■ type: Specifies if the permissible value list is dynamic or static. ■ customAllowed: Specifies if a custom value is allowed during user input in this field. ■ dependencies: Specifies the list of fields that the current field depends on.

Property	Description
state	Provides a structure for defining the state of a content construct, for example `{@link LayoutSection}`. The element state identifies the field paths in the client data context upon which that element state depends. For example, the `callback` facet result indicates that facet evaluation must be delegated to the server of the object. This evaluation may be dependent on data collected in the client data context. For example, for a unique machine name, the evaluation requires the proposed name entered by the user.
dependencies	Contains the set of field paths on which the server-side evaluation of the facets depends: ■ facets: Provides a higher level view of an `{@link Constraint}` collection and its current values. All rendering code should use this class to provide a common place to get the current state of the field. If a field is considered in need of server-side evaluation, its `facets` setting is `callback`. If a field is considered mandatory, its `facets` setting is `mandatory`. ■ isMultiValued: Specifies if the field is a multi-value field, such as a list field. The state provides a higher level view of an `{@link Constraint}` collection and its current values. Rendering code should use this class to provide a common place to get the current state of the field.

Example: `curl` Command

The following example command retrieves schema definition information for a vCloud Air reservation.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/data-service/schema/
Infrastructure.Reservation.Cloud.vCloudAir/default
```

Example: JSON Output

The schema definition in this example includes 6 extension fields that are supported for the vCloud Air type reservation.

```
{
  "fields": [
    {
      "id": "reservationNetworks",
      "label": "Network",
      "dataType": {
        "type": "complex",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "Infrastructure.Reservation.Network",
        "typeFilter": null,
        "label": "Network",
        "schema": {
          "fields": [
            {
              "id": "networkPath",
              "label": "Network Path",
```

```
            "description": "Network path of the reservation",
            "dataType": {
              "type": "ref",
              "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
              "componentId": null,
              "classId": "Network",
              "typeFilter": null,
              "label": "Network"
            },
            "displayAdvice": null,
            "state": {
              "dependencies": [

              ],
              "facets": [
                {
                  "type": "mandatory",
                  "value": {
                    "type": "constantClause",
                    "value": {
                      "type": "boolean",
                      "value": true
                    }
                  }
                }
              ]
            },
            "isMultiValued": false
          },
          {
            "id": "networkProfile",
            "label": "Network Profile",
            "description": "The Network Profile",
            "dataType": {
              "type": "ref",
              "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
              "componentId": null,
              "classId": "NetworkProfile",
              "typeFilter": null,
              "label": "Network Profile"
            },
            "displayAdvice": null,
            "permissibleValues": {
              "type": "dynamic",
              "customAllowed": false,
              "dependencies": [

              ]
            },
            "state": {
              "dependencies": [

              ],
              "facets": [
```

```
                ]
              },
              "isMultiValued": false
            }
          ]
        }
      },
      "displayAdvice": "DATA_TABLE",
      "permissibleValues": {
        "type": "dynamic",
        "customAllowed": false,
        "dependencies": [
          "computeResource"
        ]
      },
      "state": {
        "dependencies": [

        ],
        "facets": [
          {
            "type": "mandatory",
            "value": {
              "type": "constantClause",
              "value": {
                "type": "boolean",
                "value": true
              }
            }
          }
        ]
      },
      "isMultiValued": true
    },
    {
      "id": "allocationModel",
      "label": "Allocation Model",
      "description": "The allocation model for the reservation",
      "dataType": {
        "type": "primitive",
        "typeId": "INTEGER"
      },
      "displayAdvice": null,
      "state": {
        "dependencies": [

        ],
        "facets": [
          {
            "type": "readOnly",
            "value": {
              "type": "constantClause",
              "value": {
                "type": "boolean",
                "value": true
```

```
                }
              }
            }
          ]
        },
        "isMultiValued": false
      },
      {
        "id": "reservationMemory",
        "label": "Memory",
        "dataType": {
          "type": "complex",
          "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
          "componentId": null,
          "classId": "Infrastructure.Reservation.Memory",
          "typeFilter": null,
          "label": "Memory",
          "schema": {
            "fields": [
              {
                "id": "computeResourceMemoryTotalSizeMB",
                "label": "Physical Memory (MB)",
                "description": "The physical capacity (MB) for the memory",
                "dataType": {
                  "type": "primitive",
                  "typeId": "INTEGER"
                },
                "displayAdvice": null,
                "state": {
                  "dependencies": [

                  ],
                  "facets": [
                    {
                      "type": "readOnly",
                      "value": {
                        "type": "constantClause",
                        "value": {
                          "type": "boolean",
                          "value": true
                        }
                      }
                    }
                  ]
                },
                "isMultiValued": false
              },
              {
                "id": "memoryReservedSizeMb",
                "label": "Memory Reservation (MB)",
                "description": "The reserved capacity (MB) for the memory",
                "dataType": {
                  "type": "primitive",
                  "typeId": "INTEGER"
                },
```

```
              "displayAdvice": null,
              "state": {
                "dependencies": [

                ],
                "facets": [

                ]
              },
              "isMultiValued": false
            }
          ]
        }
      },
      "displayAdvice": "DATA_TABLE",
      "state": {
        "dependencies": [

        ],
        "facets": [

        ]
      },
      "isMultiValued": false
    },
    {
      "id": "computeResource",
      "label": "Compute Resource",
      "description": "The compute resource for the reservation",
      "dataType": {
        "type": "ref",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "ComputeResource",
        "typeFilter": "ReservationTypeId",
        "label": "Compute Resource"
      },
      "displayAdvice": null,
      "permissibleValues": {
        "type": "dynamic",
        "customAllowed": false,
        "dependencies": [

        ]
      },
      "state": {
        "dependencies": [

        ],
        "facets": [
          {
            "type": "mandatory",
            "value": {
              "type": "constantClause",
              "value": {
```

```
                "type": "boolean",
                "value": true
              }
            }
          }
        ]
      },
      "isMultiValued": false
    },
    {
      "id": "machineQuota",
      "label": "Machine Quota",
      "description": "The machine quota for the reservation",
      "dataType": {
        "type": "primitive",
        "typeId": "INTEGER"
      },
      "displayAdvice": null,
      "state": {
        "dependencies": [

        ],
        "facets": [

        ]
      },
      "isMultiValued": false
    },
    {
      "id": "reservationStorages",
      "label": "Storage",
      "dataType": {
        "type": "complex",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "Infrastructure.Reservation.Storage",
        "typeFilter": null,
        "label": "Storage",
        "schema": {
          "fields": [
            {
              "id": "storagePath",
              "label": "Storage Path",
              "description": "The storage path of the storage",
              "dataType": {
                "type": "ref",
                "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
                "componentId": null,
                "classId": "Storage",
                "typeFilter": null,
                "label": "Storage Path"
              },
              "displayAdvice": null,
              "state": {
                "dependencies": [
```

```
        ],
        "facets": [
          {
            "type": "mandatory",
            "value": {
              "type": "constantClause",
              "value": {
                "type": "boolean",
                "value": true
              }
            }
          }
        ]
      },
      "isMultiValued": false
    },
    {
      "id": "storageReservationPriority",
      "label": "Priority",
      "description": "The reservation priority for the storage",
      "dataType": {
        "type": "primitive",
        "typeId": "INTEGER"
      },
      "displayAdvice": null,
      "state": {
        "dependencies": [

        ],
        "facets": [
          {
            "type": "mandatory",
            "value": {
              "type": "constantClause",
              "value": {
                "type": "boolean",
                "value": true
              }
            }
          }
        ]
      },
      "isMultiValued": false
    },
    {
      "id": "computeResourceStorageTotalSizeGB",
      "label": "Total (GB)",
      "description": "The total physical capacity (GB) for the storage",
      "dataType": {
        "type": "primitive",
        "typeId": "INTEGER"
      },
      "displayAdvice": null,
      "state": {
```

```
            "dependencies": [

            ],
            "facets": [
              {
                "type": "readOnly",
                "value": {
                  "type": "constantClause",
                  "value": {
                    "type": "boolean",
                    "value": true
                  }
                }
              }
            ]
          },
          "isMultiValued": false
        },
        {
          "id": "storageReservedSizeGB",
          "label": "This reservation reserved (GB)",
          "description": "The reserved capacity size (GB) for the storage",
          "dataType": {
            "type": "primitive",
            "typeId": "INTEGER"
          },
          "displayAdvice": null,
          "state": {
            "dependencies": [

            ],
            "facets": [

            ]
          },
          "isMultiValued": false
        },
        {
          "id": "storageEnabled",
          "label": "Enabled",
          "description": "Whether the storage is enabled to reserve",
          "dataType": {
            "type": "primitive",
            "typeId": "BOOLEAN"
          },
          "displayAdvice": null,
          "state": {
            "dependencies": [

            ],
            "facets": [
              {
                "type": "mandatory",
                "value": {
                  "type": "constantClause",
```

```
                    "value": {
                      "type": "boolean",
                      "value": true
                    }
                  }
                }
              ]
            },
            "isMultiValued": false
          },
          {
            "id": "computeResourceStorageFreeSizeGB",
            "label": "Free (GB)",
            "description": "The free capacity (GB) for the storage",
            "dataType": {
              "type": "primitive",
              "typeId": "INTEGER"
            },
            "displayAdvice": null,
            "state": {
              "dependencies": [

              ],
              "facets": [
                {
                  "type": "readOnly",
                  "value": {
                    "type": "constantClause",
                    "value": {
                      "type": "boolean",
                      "value": true
                    }
                  }
                }
              ]
            },
            "isMultiValued": false
          }
        ]
      }
    },
    "displayAdvice": "DATA_TABLE",
    "permissibleValues": {
      "type": "dynamic",
      "customAllowed": false,
      "dependencies": [
        "computeResource"
      ]
    },
    "state": {
      "dependencies": [

      ],
      "facets": [
        {
```

```
            "type": "mandatory",
            "value": {
              "type": "constantClause",
              "value": {
                "type": "boolean",
                "value": true
              }
            }
          }
        ]
      },
      "isMultiValued": true
    }
  ]
}
```

Syntax for Getting the Business Group ID for a Reservation

`GET /api/tenants/{tenantId}/subtenants` of the identity service API, lists all business groups. The business group is also referred to as the subtenant in the API. When you create a reservation, you must provide the business group ID, also referred to as the subtenant ID, in the REST command line. Use this procedure to obtain the `subTenantId` value.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/identity/api/tenants/$tenantId/subtenants
Method	Get
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$tenantId	Specifies the ID of the tenant. Use to indicate the tenant ID to be queried. Each subtenant, or business group, must belong to a tenant.

Output

The command output contains property names and values based on the command input parameters.

Property	Description
Links	Species an array of link objects, each of which contains the following parts:
rel	Specifies the name of the link. ■ `Self` refers to the object that was returned or requested. ■ `First`, `Previous`, `Next`, and `Last` refer to corresponding pages of pageable lists. ■ Specifies the application or service determines the other names.
href	Specifies the URL which produces the result.
Content	Specifies an array of data rows, each of which represents one of the tenant objects returned in a pageable list. Each tenant object contains the following information:
@type	Constants the `ReservationType` string.
Id	Specifies the unique reservation type identifier.
name	Specifies the reservation type name.
description	Specifies the reservation type description.
subtenantRoles	Specifies the business group roles.
extensionData	Specifies the extension data of the business group. For example, the email address of the vRealize Automation business group manager is `user1@mycompany.com`.
Metadata	Specifies the paging-related data.
Size	Specifies the maximum number of rows per page.
totalElements	Specifies the number of rows returned.
totalPages	Specifies the total number of pages of data available.
Number	Specifies the current page number.
Offset	Specifies the number of rows skipped.

Example: `curl` Command

The following example command retrieves all available business group, or subtenant, IDs.

```
insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/identity/api/tenants/qe/subtenants
```

Example: JSON Output

In this example, all available business group, or subtenant, IDs are displayed. For related information about the subtenant ID **`ef58f604-528d-4441-a219-4725bead629b`**, see Create a Reservation.

The following JSON output is returned based on the command input.


```
{
    "links": [],
    "content": [{
        "@type": "Subtenant",
        "id": "7d7dbb19-d2dc-44a3-9fc2-7435552c8a05",
        "name": "Development",
        "description": " Development ",
        "subtenantRoles": null,
        "extensionData": {
            "entries": [{
                "key": "iaas-manager-emails",
                "value": {
                    "type": "string",
                    "value": "user1@mycompany.com"
                }
            }]
        },
        "tenant": "qe"
    },
    {
        "@type": "Subtenant",
        "id": "ade5b8d3-decf-405e-bd0b-297f976ef721",
        "name": "Finance",
        "description": "Finance",
        "subtenantRoles": null,
        "extensionData": {
            "entries": [{
                "key": "iaas-manager-emails",
                "value": {
                    "type": "string",
                    "value": " user1@mycompany.com "
                }
            }]
        },
        "tenant": "qe"
    },
    {
        "@type": "Subtenant",
        "id": "ef58f604-528d-4441-a219-4725bead629b",
        "name": "Test Sub Tenant",
        "description": "VMPS",
        "subtenantRoles": null,
        "extensionData": {
            "entries": []
        },
        "tenant": "qe"
    },
    {
        "@type": "Subtenant",
        "id": "92926c91-37de-4647-9aee-70b8d557ce8d",
        "name": "Quality Engineering",
        "description": "created by demo content",
        "subtenantRoles": null,
```

```
        "extensionData": {
            "entries": [{
                "key": "iaas-manager-emails",
                "value": {
                    "type": "string",
                    "value": " user1@mycompany.com "
                }
            }]
        },
        "tenant": "qe"
    }],
    "metadata": {
        "size": 20,
        "totalElements": 4,
        "totalPages": 1,
        "number": 1,
        "offset": 0
    }
}
```

Syntax for Getting a Compute Resource for a Reservation

`POST /api/data-service/schema/{schemaClassId}/default/{fieldId}/values` creates a compute resource for a vRealize Automation reservation.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/reservation-service/api/data-service/schema/*$schemaclassid*/default/*$fieldid/*values
Method	Post
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$schemaclassid	Specifies the schema class ID. For a vSphere reservation, specify **`Infrastructure.Reservation.Virtual.vSphere`** as the *$schemaclassid* value. For an Amazon EC2 reservation, specify **`Infrastructure.Reservation.Cloud.Amazon`** as the the *$schemaclassid* value. For a vCloud reservation, specify **`Infrastructure.Reservation.Cloud.vCloud`** as the the *$schemaclassid* value.

Parameter	Description
$fieldId	From the schema definition, specifies the `schemaclassid` of the compute resource field, which is is `computeResource`. Enter **`computeResource`** for the *$fieldId* value.
HTTP body	Because the dependencies entry for this permissible value field is an empty string, provide an empty JSON string "{}" in the HTTP body.

Output

The command output contains property names and values based on the command input parameters.

The `values` section contains an array of data rows, each of which represents one of the compute resource objects, returned in a pageable list. Each compute resource object contains the following information.

Property	Description
underlyingValue	Contains a JSON string representing one permissible value of field. ■ type Specifies one of the following permissible value data types. ■ entityRef - Indicates that the object references a vRealize Automation entity. ■ complexRef - Indicates that the object is a user-defined complex structure, for example `struct` in C or `Pojo` in Java. ■ primary - Indicates the entity type such as string, integer, and so on. ■ componentId Specifies the component ID. ■ classId Specifies the schema class ID of the current data type. ■ Id Specifies the unique compute resource identifier.
label	Contains the compute resource label. This value matches the `underlyingValue.label`.

Example: `curl` Command for a vSphere reservation

The following command retrieves a compute resource for a vSphere reservation.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/data-service/schema/
Infrastructure.Reservation.Virtual.vSphere/default/computeResource/values  -d “{}”
```

Example: `curl` Command for an Amazon EC2 reservation

The following command retrieves a compute resource for an Amazon EC2 reservation.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/data-service/schema/
Infrastructure.Reservation.Cloud.Amazon/default/computeResource/values  -d “{}”
```

Example: `curl` Command for a vCloud reservation

The following command retrieves a compute resource for a vCloud reservation.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/data-service/schema/
Infrastructure.Reservation.Cloud.vCloud/default/computeResource/values  -d “{}”
```

Example: JSON Output for a vSphere Reservation

In this example, there are 4 available compute resources that you can use to create a vSphere reservation, for example cc254a84-95b8-434a-874d-bdfef8e8ad2c. Save a copy of the `underlyingValue` section of the compute resource that you want to an XML editor and use the section content later to create a reservation request.

The following JSON output is returned based on the command input.


```
{
  "values": [{
    "underlyingValue": {
      "type": "entityRef",
      "componentId": null,
      "classId": "ComputeResource",
      "id": "047e00f5-5424-4ed2-a751-4a334aeaff54",
      "label": "VC51-Cluster"
    },
    "label": "VC51-Cluster"
  },
  {
    "underlyingValue": {
      "type": "entityRef",
      "componentId": null,
      "classId": "ComputeResource",
      "id": "a4349488-9a56-4906-83a5-7d8b33c9d435",
      "label": "NSX61-RC-ManagementCluster"
    },
    "label": "NSX61-RC-ManagementCluster"
  },
  {
    "underlyingValue": {
      "type": "entityRef",
      "componentId": null,
      "classId": "ComputeResource",
      "id": "40b151ce-e409-4d2a-8dae-bb456139a660",
```

```
      "label": "NSX61-RC-ComputeClusterB"
    },
    "label": "NSX61-RC-ComputeClusterB"
  },
  {
    "underlyingValue": {
      "type": "entityRef",
      "componentId": null,
      "classId": "ComputeResource",
      "id": "cc254a84-95b8-434a-874d-bdfef8e8ad2c",
      "label": "NSX61-RC-ComputeClusterA"
    },
    "label": "NSX61-RC-ComputeClusterA"
  }]
}
```

Example: JSON Output for an Amazon Reservation

In this example, there are 3 available compute resources that you can use to create an Amazon EC2 reservation. Save a copy of the `underlyingValue` section of the compute resource that you want to an XML editor and use the section content later to create a reservation request.

```
{
  "values": [
    {
      "underlyingValue": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ComputeResource",
        "id": "fdfa4b95-9476-4c18-81c5-1c0e5cb1131f",
        "label": "EC2 841 Endpoint-us-west-1"
      },
      "label": "EC2 841 Endpoint-us-west-1"
    },
    {
      "underlyingValue": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ComputeResource",
        "id": "4e362590-b634-4269-9da4-548260148fa3",
        "label": "EC2 841 Endpoint-us-west-2"
      },
      "label": "EC2 841 Endpoint-us-west-2"
    },
    {
      "underlyingValue": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ComputeResource",
        "id": "9d1a3b5a-7162-4a5a-85b7-ec1b2824f554",
        "label": "EC2 841 Endpoint-us-east-1"
      },
      "label": "EC2 841 Endpoint-us-east-1"
    }
```

```
  ]
}
```

Example: Output for a vCloud Reservation

In this example, there is 1 available compute resource that you can use to create a vCloud reservation. Save a copy of the `underlyingValue` section of the compute resource that you want to an XML editor and use the section content later to create a reservation request.

```
{
  "values": [
    {
      "underlyingValue": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ComputeResource",
        "id": "c527a0f5-b1ae-4b61-8145-ad9d5c434dc7",
        "label": "Engineering Allocation VDC"
      },
      "label": "Engineering Allocation VDC"
    }
  ]
}
```

Syntax for Getting Resources Schema for a vSphere Reservation

`POST /api/data-service/schema/{schemaClassId}/default/{fieldId}/values` with a `schemaClassId` for vSphere, displays information about available resources for a vSphere reservation, such as storage and network information.

Overview

This example illustrates how to get a permissible value list for the `resourcePool` field. You can use the generated output as input for creating or updating a vSphere reservation.

Table 8-7. Extension Fields Supported in vSphere Reservations

Field ID	Data Type	Type Class	Permissible Value	Depends on Field
reservationNetworks	Complex Type	reservationNetwork	Yes	computeResource
reservationVCNSTransportZone	Entity Reference	NetworkScopes	Yes	computeResource
reservationVCNSSecurityGroups	Entity Reference	SecurityGroups	Yes	computeResource
reservationMemory	Complex Type	reservationMemory	Yes	computeResource
computeResource	Entity Reference	ComputeResource	Yes	NA
machineQuota	Integer	N/A	No	NA
reservationStorages	Complex Type	reservationStorage	Yes	computeResource

Table 8-7. Extension Fields Supported in vSphere Reservations (continued)

Field ID	Data Type	Type Class	Permissible Value	Depends on Field
resourcePool	Entity Reference	ResourcePools	Yes	computeResource
reservationVCNSRoutedGateways	Complex Type	reservationVCNSRoutedGateway	Yes	computeResource

Note The information in the table is subject to change. Call the data and schema service to retrieve the latest field information.

For related information, see Syntax for Displaying a Schema Definition for a vSphere Reservation .

Input

Use the supported input parameters to control the command output.

Input	Description
URL	https://*$vRA*/reservation-service/api/data-service/schema/$schemaclassid/default/$fieldid/values
Method	Post
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$schemaclassid	Specifies the schema class ID. This example illustrates how to use the `resourcePool` field of a vSphere reservation type as an example. The schema class ID of a vSphere reservation is `Infrastructure.Reservation.Virtual.vSphere`. For this example, the input value for *$schemaclassid* is `Infrastructure.Reservation.Virtual.vSphere`.
$fieldId	Specifies the field ID of the resource. For example, the field ID for the resource pool is `resourcePool`. For this example, the input value for *$fieldId* is `resourcePool`.
HTTP body	Contains information about dependencies. Because the dependency of this permissible value field is `computeResource`, you must provide a dependency definition in the HTTP body.

Output

The command output contains property names and values based on the command input parameters.

Property	Description
values	An array of data rows, each of which represents one of the resource pool objects returned in a pageable list. Each resource pool object contains an `underlyingValue` and `label` entry.
underlyingValue	JSON string representing one permissible value for a field: ■ type -- data type of `entityRef`, `complexRef`, or `primary` ■ component ID -- componentID ■ classId -- schema class ID of current data type ■ id -- unique resource pool ID ■ label -- resource pool label
label	Specifies the resource pool label. This value matches the `underlyingValue` value.

Example: `curl` Command

The following example command returns vSphere reservation storage information.

```
curl -X POST --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/data-service/schema/
Infrastructure.Reservation.Virtual.vSphere/default/resourcePool/values  -d "{
  "text": "",
  "dependencyValues": {
    "entries": [{
      "key": "computeResource",
      "value": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ComputeResource",
        "id": " cc254a84-95b8-434a-874d-bdfef8e8ad2c "
      }
    }]
  }
}"
```

Example: JSON Output

The following JSON output is returned based on the command input.

In the following example output, the `CoreDev` resource pool is shown. Copy the output `underlyingValue` section into an XML editor and use it as input to create or update a reservation. Note that other REST calls can be used such as `reservationNetworks` and `reservationStorages` to get other resources for the reservation.

```
{
  "values": [{
    "underlyingValue": {
      "type": "entityRef",
      "componentId": null,
      "classId": "ResourcePools",
      "id": " 4e51fabc-19e8-4e79-b413-d52309b3bb62",
```

```
      "label": " CoreDev"
    },
    "label": " CoreDev"
  },
  {
    "underlyingValue": {
      "type": "entityRef",
      "componentId": null,
      "classId": "ResourcePools",
      "id": "1186b5cc-cdef-4afb-8653-0ad41a36c194",
      "label": "Documentation"
    },
    "label": "Documentation"
  },
  //Omit other resource pool list
    ]
}
```

Syntax for Getting Resources Schema for an Amazon Reservation

`POST /api/data-service/schema/{schemaClassId}/default/{fieldId}/values` with a `schemaClassId` for Amazon, displays resource schema information, such as storage and network data, for an Amazon reservation.

Overview

This example illustrates how to get a permissible value list for the `securityGroups` field. You can use the generated output as input for creating or updating an Amazon reservation.

Table 8-8. Extension Fields Supported in Amazon Reservations

Field ID	Data Type	Type Class	Permissible Value	Depends on Field
securityGroups	Entity Reference	AmazonSecurityGroup	Yes	computeResource
locations	Entity Reference	AvailabilityZone	Yes	computeResource
loadBalancers	Entity Reference	ElasticLoadBalancer	Yes	computeResource and locations
specificKeyPairs	Entity Reference	KeyPair	Yes	computeResource and keyPairs
computeResource	Entity Reference	ComputeResource	Yes	NA
VPC	Complex Type	Infrastructure.Reservation.Cloud.Amazon.VPC	Yes	computeResource
machineQuota	Integer	NA	No	NA
keyPairs	String	ResourcePools	Yes	computeResource

Note The information in the table is subject to change. Call the data and schema service to retrieve the latest field information.

For related information, see Syntax for Displaying a Schema Definition for an Amazon Reservation .

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/reservation-service/api/data-service/schema/$schemaclassid/default/$fieldid/values
Method	Post
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$schemaclassid	Specifies the schema class ID. This example illustrates how to use the `securityGroups` field of an Amazon reservation type as an example. The schema class ID of an Amazon reservation is `Infrastructure.Reservation.Cloud.Amazon`. For this example, the input value for *$schemaclassid* is `Infrastructure.Reservation.Cloud.Amazon`.
$fieldId	Specifies the field ID of the resource. For example, the field ID for the resource pool is `securityGroups`. For this example, the input value for *$fieldId* is `securityGroups`.
HTTP body	Contains information about dependencies. Because the dependency of this permissible value field is `computeResource`, you must provide a dependency definition in the HTTP body.

Output

The command output contains property names and values based on the command input parameters.

Property	Description
values	An array of data rows, each of which represents one of the security group objects returned in a pageable list. Each security group object contains an `underlyingValue` and `label` entry.
underlyingValue	JSON string representing one permissible value for a field: ■ type -- data type of `entityRef`, `complexRef`, or `primary` ■ component ID -- componentID ■ classId -- schema class ID of current data type ■ id -- unique security group ID ■ label -- security group label
label	Specifies the security groups label. This value matches the `underlyingValue` value.

Example: `curl` Command

The following example command displays resource schema security group information.

```
curl -X POST --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/data-service/schema/
Infrastructure.Reservation.Cloud.Amazon/default/securityGroups/values  -d "
{
  "text": "",
  "dependencyValues": {
    "entries": [{
      "key": "computeResource",
      "value": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ComputeResource",
        "id": "9d1a3b5a-7162-4a5a-85b7-ec1b2824f554"
      }
    }]
  }
}
"
```

Example: JSON Output

The following JSON output is returned based on the command input.

Copy the output from an `underlyingValue` section into an XML editor and use it as input to create or update a reservation.

```
{
  "values": [
    {
      "underlyingValue": {
        "type": "entityRef",
        "componentId": null,
        "classId": "AmazonSecurityGroup",
        "id": "9",
        "label": "test1"
      },
      "label": "test1"
    },
    {
      "underlyingValue": {
        "type": "entityRef",
        "componentId": null,
        "classId": "AmazonSecurityGroup",
        "id": "10",
        "label": "default"
      },
      "label": "default"
    }
  ]
```

```
}
```

Syntax for Getting Resources Schema for a vCloud Air Reservation

`POST /api/data-service/schema/{schemaClassId}/default/{fieldId}/values` with a `schemaClassId` for vCloud Air, displays information about available resources, such as storage and network information, for a vCloud Air reservation.

Overview

This example illustrates how to get a permissible value list for the `reservationStorages` field. Use the generated output as input for creating or updating a vCloud Air reservation.

Table 8-9. Extension Fields Supported in vCloud Reservations

Field ID	Data Type	Type Class	Permissible Value	Depends on Field
reservationNetworks	Complex Type	Infrastructure.Reservation.Network	Yes	computeResource
allocationModel	Integer	NA	No	NA
reservationMemory	Complex Type	Infrastructure.Reservation.Memory	No	NA
computeResource	Entity Reference	ComputeResource	Yes	NA
machineQuota	Integer	NA	No	NA
reservationStorages	Complex Type	Infrastructure.Reservation.Storage	Yes	computeResource

Note The information in the table is subject to change. Call the data and schema service to retrieve the latest field information.

For related information, see Syntax for Displaying a Schema Definition for a vCloud Air Reservation .

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/reservation-service/api/data-service/schema/$schemaclassid/default/$fieldid/values
Method	Post
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.

Parameter		Description
$schemaclassid		Specifies the schema class ID. This example illustrates how to use the `reservationStorages` field of a reservation type as an example. The schema class ID of a vCloud Air reservation is `Infrastructure.Reservation.Cloud.vCloudAir`. For this example, the input value for *$schemaclassid* is `Infrastructure.Reservation.Cloud.vCloudAir`.
$fieldId		Specifies the field ID of the resource. For example, the field ID for the reservation storage is `reservationStorages`. For this example, the input value for *$fieldId* is `reservationStorages`.
HTTP body		Contains information about dependencies. Because the dependency of the permissible value field `reservationStorages` is `computeResource`, you must include a dependency definition in the HTTP body.
	text	Empty
	dependencyValues	JSON string that defines the dependency values
	entries	key -- Specifies the field ID of dependent field. For this example, enter `computeResource`. value -- Specifies the value of the dependent field. For this example, copy and paste the vCloud HTTP response obtained by using the Get Compute Resource task. See Syntax for Getting Resources Schema for a vCloud Air Reservation .

Output

The command output contains property names and values based on the command input parameters.

Property		Description
values		An array of data rows, each of which represents one of the reservation storage objects returned in a pageable list. Each reservation storage object contains an `underlyingValue` and `label` entry.
	underlyingValue	JSON string representing one permissible value for a field: ■ type -- data type of `entityRef`, `complexRef`, or `primary` ■ component ID -- componentID ■ classId -- schema class ID of current data type ■ id -- unique reservation storage ID ■ label --reservation storage label
	label	Specifies the reservation storage label. This value matches the `underlyingValue` value.

Example: `curl` Command

The following example command returns vCloud Air reservation storage information.

```
curl -X POST --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/data-service/schema/
Infrastructure.Reservation.Cloud.vCloudAir/default/reservationStorages/values  -d "
```

Example: JSON Output

The following JSON output is returned based on the command input.

Copy the output from an `underlyingValue` section into an XML editor and use it as input to create or update a reservation.


```
{
  "values": [
    {
      "underlyingValue": {
        "type": "complex",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "Infrastructure.Reservation.Storage",
        "typeFilter": null,
        "values": {
          "entries": [
            {
              "key": "computeResourceStorageTotalSizeGB",
              "value": {
                "type": "integer",
                "value": 1000
              }
            },
            {
              "key": "storagePath",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "Storage",
                "id": "f4df029b-d475-4f85-ab42-05bddde3f667",
                "label": "Low Performance Storage"
              }
            },
            {
              "key": "computeResourceStorageFreeSizeGB",
              "value": {
                "type": "integer",
                "value": 954
              }
            }
          ]
        }
      },
```

```
      "label": "Low Performance Storage"
    },
    {
      "underlyingValue": {
        "type": "complex",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "Infrastructure.Reservation.Storage",
        "typeFilter": null,
        "values": {
          "entries": [
            {
              "key": "computeResourceStorageTotalSizeGB",
              "value": {
                "type": "integer",
                "value": 1000
              }
            },
            {
              "key": "storagePath",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "Storage",
                "id": "e655aa78-e5fb-4722-9e8a-0cd4139248cf",
                "label": "High Performance Storage"
              }
            },
            {
              "key": "computeResourceStorageFreeSizeGB",
              "value": {
                "type": "integer",
                "value": 691
              }
            }
          ]
        }
      },
      "label": "High Performance Storage"
    }
  ]
}
```


Syntax for Creating a vSphere Reservation

`POST /api/reservations` with a `reservationTypeID` for vSphere, creates a vSphere reservation.

Input

Use the supported input parameters to control the command output.

Input	Description
URL	https://*$vRA*/reservation-service/api/reservations
Method	Post
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
HTTP body	The HTTP body describes the reservation to create and calls the REST API used to create the reservation. Compose the HTTP body using one of the following methods: ■ Copy the HTTP body from the JSON output from this example and edit the applicable field values to compose the HTTP body input for the command line. ■ Use the API commands in Syntax for Verifying a Reservation and Getting Reservation Details , remove the appropriate ID field from the HTTP response, and edit the field values to compose the HTTP body input for the command line.

Output

The output URL contains the new reservation ID.

Property	Description
status	When the reservation is successfully created, the HTTP response status is `201 created`.
Header.Location	The HTTP response contains a `Location` attribute that is formatted as https://*$vRA* /reservation-service/api/reservations/*$reservationId*.
$reservationId	Specifies the new reservation ID.

Example: `curl` Command

The following sample command creates a vSphere reservation. The HTTP body is included as part of the command line input.

```
curl -X POST --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/reservations -d
"
{
  "name": "TestCreateReservation",
  "reservationTypeId": "Infrastructure.Reservation.Virtual.vSphere",
  "tenantId": "qe",
  "subTenantId": "ef58f604-528d-4441-a219-4725bead629b",
  "enabled": true,
  "priority": 3,
  "reservationPolicyId": "b71c3a5f-087a-4d9e-9a56-fab785a3d128",
  "alertPolicy": {
    "enabled": true,
```

```
    "frequencyReminder": 20,
    "emailBgMgr": false,
    "recipients": ["test1@mycompany.com",
    "test2@mycompany.com"],
    "alerts": [{
      "alertPercentLevel": 10,
      "referenceResourceId": "storage",
      "id": "storage"
    },
    {
      "alertPercentLevel": 20,
      "referenceResourceId": "memory",
      "id": "memory"
    },
    {
      "alertPercentLevel": 30,
      "referenceResourceId": "cpu",
      "id": "cpu"
    },
    {
      "alertPercentLevel": 40,
      "referenceResourceId": "machine",
      "id": "machine"
    }]
  },
  "extensionData": {
    "entries": [{
      "key": "reservationNetworks",
      "value": {
        "type": "multiple",
        "elementTypeId": "COMPLEX",
        "items": [{
          "type": "complex",
          "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
          "componentId": null,
          "classId": "reservationNetwork",
          "typeFilter": null,
          "values": {
            "entries": [{
              "key": "reservationNetworkPath",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "Network",
                "id": "44cb65d5-b321-43dd-a2ab-8ecf387bff8f",
                "label": "VM Network SQA"
              }
            }]
          }
        }]
      }
    },
    {
      "key": "custom-Properties-key0",
      "value": {
```

```
        "type": "string",
        "value": "custom-property-value0"
      }
    },
    {
      "key": "custom-Properties-key2",
      "value": {
        "type": "string",
        "value": "custom-property-value2"
      }
    },
    {
      "key": "reservationMemory",
      "value": {
        "type": "complex",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "reservationMemory",
        "typeFilter": null,
        "values": {
          "entries": [{
            "key": "hostMemoryTotalSizeMB",
            "value": {
              "type": "integer",
              "value": 57187
            }
          },
          {
            "key": "memoryReservedSizeMb",
            "value": {
              "type": "integer",
              "value": 15872
            }
          }]
        }
      }
    },
    {
      "key": "computeResource",
      "value": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ComputeResource",
        "id": "cc254a84-95b8-434a-874d-bdfef8e8ad2c",
        "label": "NSX61-RC-ComputeClusterA"
      }
    },
    {
      "key": "machineQuota",
      "value": {
        "type": "integer",
        "value": 2
      }
    },
    {
```

```
      "key": "reservationStorages",
      "value": {
        "type": "multiple",
        "elementTypeId": "COMPLEX",
        "items": [{
          "type": "complex",
          "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
          "componentId": null,
          "classId": "reservationStorage",
          "typeFilter": null,
          "values": {
            "entries": [{
              "key": "storageTotalSizeGB",
              "value": {
                "type": "integer",
                "value": 394
              }
            },
            {
              "key": "storageReservedSizeGB",
              "value": {
                "type": "integer",
                "value": 32
              }
            },
            {
              "key": "storageEnabled",
              "value": {
                "type": "boolean",
                "value": true
              }
            },
            {
              "key": "reservationStoragePath",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "StoragePath",
                "id": "f48a527b-30a6-4d54-8829-f549bc195b69",
                "label": "VNXe:qe-vnxe-nfs-1"
              }
            },
            {
              "key": "storageFreeSizeGB",
              "value": {
                "type": "integer",
                "value": 120
              }
            },
            {
              "key": "storagePriority",
              "value": {
                "type": "integer",
                "value": 1
              }
```

```
            }]
          }
        }]
      }
    },
    {
      "key": "resourcePool",
      "value": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ResourcePools",
        "id": "4e51fabc-19e8-4e79-b413-d52309b3bb62",
        "label": "CoreDev"
      }
    }]
  }
}
”
```

Example: JSON Output

The following sample location URL is displayed, including the new vSphere reservation ID.

```
Location:
https://$vRA/reservation-service/api/reservations/94d74105-831a-4598-8f42-efd590fea15c
```

Copy the output response into an XML editor for use in a future procedure, such as updating or deleting the reservation.

Syntax for Creating an Amazon Reservation

`POST /api/reservations` with a `reservationTypeID` for Amazon, creates an Amazon reservation.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/reservation-service/api/reservations
Method	Post
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.

Parameter	Description
$token	Specifies a valid HTTP bearer token with necessary credentials.
HTTP body	The HTTP body describes the reservation to create and calls the REST API used to create the reservation. Compose the HTTP body using one of the following methods: ■ Copy the HTTP body from the JSON output from this example and edit the applicable field values to compose the HTTP body input for the command line. ■ Use the API commands in Syntax for Verifying a Reservation and Getting Reservation Details , remove the appropriate ID field from the HTTP response, and edit the field values to compose the HTTP body input for the command line.

Output

The output URL contains the new reservation ID.

Property	Description
status	When the reservation is successfully created, the HTTP response status is `201 created`.
Header.Location	The HTTP response contains a `Location` attribute that is formatted as https://*$vRA* /reservation-service/api/reservations/*$reservationId*.
$reservationId	Specifies the new reservation ID.

Example: `curl` Command

The following example command creates an Amazon reservation. The HTTP body is included as part of the command line input.

```
curl -X POST --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/reservations -d "
{
  "name": "TestEC2Reservation",
  "reservationTypeId": "Infrastructure.Reservation.Cloud.Amazon",
  "tenantId": "qe",
  "subTenantId": "a5d056be-3aa2-4fdd-ba1e-a3805f26f0e0",
  "enabled": true,
  "priority": 1,
  "reservationPolicyId": "34d2a612-718e-4814-96c5-225f7f5615a6",
  "alertPolicy": {
    "enabled": false,
    "frequencyReminder": 0,
    "emailBgMgr": true,
    "recipients": [

    ],
    "alerts": [
      {
```

```
        "alertPercentLevel": 80,
        "referenceResourceId": "machine",
        "id": "machine"
      }
    ]
  },
  "extensionData": {
    "entries": [
      {
        "key": "computeResource",
        "value": {
          "type": "entityRef",
          "componentId": null,
          "classId": "ComputeResource",
          "id": "9d1a3b5a-7162-4a5a-85b7-ec1b2824f554",
          "label": "EC2 841 Endpoint-us-east-1"
        }
      },
      {
        "key": "machineQuota",
        "value": {
          "type": "integer",
          "value": 0
        }
      },
      {
        "key": "securityGroups",
        "value": {
          "type": "multiple",
          "elementTypeId": "ENTITY_REFERENCE",
          "items": [
            {
              "type": "entityRef",
              "componentId": null,
              "classId": "AmazonSecurityGroup",
              "id": "10",
              "label": "default"
            }
          ]
        }
      },
      {
        "key": "loadBalancers",
        "value": {
          "type": "multiple",
          "elementTypeId": "ENTITY_REFERENCE",
          "items": [
            {
              "type": "entityRef",
              "componentId": null,
              "classId": "ElasticLoadBalancer",
              "id": "3",
              "label": "test1"
            }
          ]
```

```
        }
      },
      {
        "key": "locations",
        "value": {
          "type": "multiple",
          "elementTypeId": "ENTITY_REFERENCE",
          "items": [
            {
              "type": "entityRef",
              "componentId": null,
              "classId": "AvailabilityZone",
              "id": "10",
              "label": "us-east-1a"
            }
          ]
        }
      },
      {
        "key": "keyPairs",
        "value": {
          "type": "string",
          "value": "Per Provisioning Group"
        }
      }
    ]
  }
}"
```

Example: JSON Output

The following sample location URL is displayed, including the new Amazon reservation ID.

```
Location: https://$vRA/reservation-service/api/reservations/3289b039-2a11-4ab4-a0bc-
b583e4c6d085
```

Copy the output response into an XML editor for use in a future procedure, such as updating or deleting the reservation.

Syntax for Creating a vCloud Air Reservation

`POST /api/reservations` with a `reservationTypeID` for vCloud Air, creates a vCloud Air reservation.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/reservation-service/api/reservations
Method	Post

Parameter	Description
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.

HTTP body	The HTTP body describes the reservation to create and calls the REST API used to create the reservation.
	Compose the HTTP body using one of the following methods:
	■ Copy the HTTP body from the JSON output from this example and edit the applicable field values to compose the HTTP body input for the command line.
	■ Update the formatted reservation information to specify the new information:
	  ■ remove the appropriate ID field from the HTTP response
	  ■ edit the field values to compose the HTTP body input for the command line
	For information, see Syntax for Verifying a Reservation and Getting Reservation Details .

Output

The output URL contains the new reservation ID.

Property	Description
status	When the reservation is successfully created, the HTTP response status is `201 created`.
Header.Location	The HTTP response contains a `Location` attribute that is formatted as https://*$vRA* /reservation-service/api/reservations/*$reservationId*.
$reservationId	Specifies the new reservation ID.

Example: `curl` Command

The following sample command creates a vCloud Air reservation. The HTTP body is included as part of the command line input.

```
curl -X POST --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/reservations -d ‟
{
  "name": "TestvAppReservation",
  "reservationTypeId": "Infrastructure.Reservation.Cloud.vCloudAir",
  "tenantId": "qe",
  "subTenantId": "a5d056be-3aa2-4fdd-ba1e-a3805f26f0e0",
  "enabled": true,
  "priority": 1,
  "reservationPolicyId": null,
  "alertPolicy": {
    "enabled": false,
    "frequencyReminder": 0,
```

```
    "emailBgMgr": true,
    "recipients": [

    ],
    "alerts": [
      {
        "alertPercentLevel": 80,
        "referenceResourceId": "storage",
        "id": "storage"
      },
      {
        "alertPercentLevel": 80,
        "referenceResourceId": "memory",
        "id": "memory"
      },
      {
        "alertPercentLevel": 80,
        "referenceResourceId": "cpu",
        "id": "cpu"
      },
      {
        "alertPercentLevel": 80,
        "referenceResourceId": "machine",
        "id": "machine"
      }
    ]
  },
  "extensionData": {
    "entries": [
      {
        "key": "computeResource",
        "value": {
          "type": "entityRef",
          "componentId": null,
          "classId": "ComputeResource",
          "id": "c527a0f5-b1ae-4b61-8145-ad9d5c434dc7",
          "label": "Engineering Allocation VDC"
        }
      },
      {
        "key": "machineQuota",
        "value": {
          "type": "integer",
          "value": 0
        }
      },
      {
        "key": "allocationModel",
        "value": {
          "type": "integer",
          "value": 0
        }
      },
      {
        "key": "reservationNetworks",
```

```
        "value": {
          "type": "multiple",
          "elementTypeId": "COMPLEX",
          "items": [
            {
              "type": "complex",
              "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
              "componentId": null,
              "classId": "Infrastructure.Reservation.Network",
              "typeFilter": null,
              "values": {
                "entries": [
                  {
                    "key": "networkPath",
                    "value": {
                      "type": "entityRef",
                      "componentId": null,
                      "classId": "Network",
                      "id": "42c5063c-5422-448f-aac7-22ebe941ac8e",
                      "label": "VM Network SQA"
                    }
                  }
                ]
              }
            }
          ]
        }
      },
      {
        "key": "reservationStorages",
        "value": {
          "type": "multiple",
          "elementTypeId": "COMPLEX",
          "items": [
            {
              "type": "complex",
              "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
              "componentId": null,
              "classId": "Infrastructure.Reservation.Storage",
              "typeFilter": null,
              "values": {
                "entries": [
                  {
                    "key": "computeResourceStorageTotalSizeGB",
                    "value": {
                      "type": "integer",
                      "value": 1000
                    }
                  },
                  {
                    "key": "storagePath",
                    "value": {
                      "type": "entityRef",
                      "componentId": null,
                      "classId": "Storage",
```

```
                    "id": "e655aa78-e5fb-4722-9e8a-0cd4139248cf",
                    "label": "High Performance Storage"
                  }
                },
                {
                  "key": "storageReservationPriority",
                  "value": {
                    "type": "integer",
                    "value": 1
                  }
                },
                {
                  "key": "storageReservedSizeGB",
                  "value": {
                    "type": "integer",
                    "value": 100
                  }
                },
                {
                  "key": "storageEnabled",
                  "value": {
                    "type": "boolean",
                    "value": true
                  }
                },
                {
                  "key": "computeResourceStorageFreeSizeGB",
                  "value": {
                    "type": "integer",
                    "value": 691
                  }
                }
              ]
            }
          }
        ]
      }
    },
    {
      "key": "reservationMemory",
      "value": {
        "type": "complex",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "Infrastructure.Reservation.Memory",
        "typeFilter": null,
        "values": {
          "entries": [
            {
              "key": "computeResourceMemoryTotalSizeMB",
              "value": {
                "type": "integer",
                "value": 13312
              }
            },
```

```
                {
                  "key": "memoryReservedSizeMb",
                  "value": {
                    "type": "integer",
                    "value": 4096
                  }
                }
              ]
            }
          }
        }
      ]
    }
  }
"
```

Example: JSON Output

The output response displays the location URL, including the new vCloud reservation ID.

```
Location: https://$vRA/reservation-service/api/reservations/3289b039-2a11-4ab4-a0bc-
b583e4c6d085
```

Copy the output response into an XML editor for use in a future procedure, such as updating or deleting the reservation.

Syntax for Verifying a Reservation and Getting Reservation Details

`GET /api/reservations/{id}` retrieves a vRealize Automation reservation. After you create a reservation, you can use the reservation ID to verify that the reservation exists. You can also use the ID to get information about the reservation in preparation for updating or deleting it.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/reservation-service/api/reservations/$reservationId This is the URL that is generated when you create a reservation using the REST API. See Syntax for Creating a vSphere Reservation .
Method	Get
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$reservationId	Specifies the unique identifier of the reservation to verify. Obtain the value from the output generated when you created the reservation. See Create a Reservation.

Output

The command output contains property names and values based on the command input parameters.

Property	Description
status	The HTTP response status is `201 created` to indicate that the reservation exists.
Header.Location	The HTTP response should contain a `location` attribute, format as https://*$vRA* /reservation-service/api/reservations/*$reservationId*.
$reservationId	The HTTP response should contain a location attribute, formatted as https://*$vRA* / reservation-service/api/reservations/*$reservation*Id.

Example: `curl` Command

In the following example, the reservation ID of 94d74105-831a-4598-8f42-efd590fea15c is the value you obtained when you created the reservation.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/reservations/94d74105-831a-4598-8f42-efd590fea15c
```

Example: JSON Output for a vSphere Reservation

The following JSON output is returned based on the command input.

Copy the output response into an XML editor for future step usage.


```
{
  "id": "94d74105-831a-4598-8f42-efd590fea15c ",
  "name": "TestReservation",
  "reservationTypeId": "Infrastructure.Reservation.Virtual.vSphere",
  "tenantId": "qe",
  "subTenantId": "ef58f604-528d-4441-a219-4725bead629b",
  "enabled": true,
  "priority": 3,
  "reservationPolicyId": "b71c3a5f-087a-4d9e-9a56-fab785a3d128",
  "alertPolicy": {
    "enabled": true,
    "frequencyReminder": 20,
    "emailBgMgr": false,
    "recipients": ["user1@mycompany.com",
    "user2@mycompany.com"],
    "alerts": [{
      "alertPercentLevel": 10,
      "referenceResourceId": "storage",
      "id": "storage"
    },
    {
      "alertPercentLevel": 20,
      "referenceResourceId": "memory",
      "id": "memory"
```

```
    },
    {
      "alertPercentLevel": 30,
      "referenceResourceId": "cpu",
      "id": "cpu"
    },
    {
      "alertPercentLevel": 40,
      "referenceResourceId": "machine",
      "id": "machine"
    }]
  },
  "extensionData": {
    "entries": [{
      "key": "key4",
      "value": {
        "type": "string",
        "value": "custom-property-value4"
      }
    },
    {
      "key": "key3",
      "value": {
        "type": "string",
        "value": "custom-property-value3"
      }
    },
    {
      "key": "reservationNetworks",
      "value": {
        "type": "multiple",
        "elementTypeId": "COMPLEX",
        "items": [{
          "type": "complex",
          "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
          "componentId": null,
          "classId": "reservationNetwork",
          "typeFilter": null,
          "values": {
            "entries": [{
              "key": "reservationNetworkProfile",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "NetworkProfile",
                "id": "ed5d1503-08ac-42ca-804d-9167834a63a5",
                "label": "ETEDoNotDelete2014-10-13 13:10:56"
              }
            },
            {
              "key": "reservationNetworkPath",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "Network",
```

```
                "id": "44cb65d5-b321-43dd-a2ab-8ecf387bff8f",
                "label": "VM Network SQA"
              }
            }]
          }
        }]
      }
    },
    {
      "key": "key0",
      "value": {
        "type": "string",
        "value": "custom-property-value0"
      }
    },
    {
      "key": "key2",
      "value": {
        "type": "string",
        "value": "custom-property-value2"
      }
    },
    {
      "key": "reservationMemory",
      "value": {
        "type": "complex",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "reservationMemory",
        "typeFilter": null,
        "values": {
          "entries": [{
            "key": "hostMemoryTotalSizeMB",
            "value": {
              "type": "integer",
              "value": 57187
            }
          },
          {
            "key": "reservationMemoryReservedSizeMb",
            "value": {
              "type": "integer",
              "value": 15888
            }
          }]
        }
      }
    },
    {
      "key": "key1",
      "value": {
        "type": "string",
        "value": "custom-property-value-Updated"
      }
    },
```

```
    {
      "key": "computeResource",
      "value": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ComputeResource",
        "id": "047e00f5-5424-4ed2-a751-4a334aeaff54",
        "label": "VC51-Cluster"
      }
    },
    {
      "key": "machineQuota",
      "value": {
        "type": "integer",
        "value": 2
      }
    },
    {
      "key": "reservationStorages",
      "value": {
        "type": "multiple",
        "elementTypeId": "COMPLEX",
        "items": [{
          "type": "complex",
          "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
          "componentId": null,
          "classId": "reservationStorage",
          "typeFilter": null,
          "values": {
            "entries": [{
              "key": "storageTotalSizeGB",
              "value": {
                "type": "integer",
                "value": 394
              }
            },
            {
              "key": "reservationStorageReservedSizeGB",
              "value": {
                "type": "integer",
                "value": 31
              }
            },
            {
              "key": "reservationStorageEnabled",
              "value": {
                "type": "boolean",
                "value": true
              }
            },
            {
              "key": "reservationStoragePath",
              "value": {
                "type": "entityRef",
                "componentId": null,
```

```
                "classId": "StoragePath",
                "id": "f48a527b-30a6-4d54-8829-f549bc195b69",
                "label": "VNXe:qe-vnxe-nfs-1"
              }
            },
            {
              "key": "storageFreeSizeGB",
              "value": {
                "type": "integer",
                "value": 120
              }
            },
            {
              "key": "reservationStorageReservationPriority",
              "value": {
                "type": "integer",
                "value": 1
              }
            }]
          }
        }]
      }
    },
    {
      "key": "resourcePool",
      "value": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ResourcePools",
        "id": "4e51fabc-19e8-4e79-b413-d52309b3bb62",
        "label": "CoreDev"
      }
    }]
  }
}
```


Example: Example Output for a vCloud Reservation


```
{
  "id": "bf922450-d495-460d-9dbf-1c09b0692db2",
  "name": "TestvAppReservation",
  "reservationTypeId": "Infrastructure.Reservation.Cloud.vCloud",
  "tenantId": "qe",
  "subTenantId": "a5d056be-3aa2-4fdd-ba1e-a3805f26f0e0",
  "enabled": true,
  "priority": 1,
  "reservationPolicyId": null,
  "alertPolicy": {
    "enabled": false,
    "frequencyReminder": 0,
    "emailBgMgr": true,
    "recipients": [

    ],
```

```
    "alerts": [
      {
        "alertPercentLevel": 80,
        "referenceResourceId": "storage",
        "id": "storage"
      },
      {
        "alertPercentLevel": 80,
        "referenceResourceId": "memory",
        "id": "memory"
      },
      {
        "alertPercentLevel": 80,
        "referenceResourceId": "cpu",
        "id": "cpu"
      },
      {
        "alertPercentLevel": 80,
        "referenceResourceId": "machine",
        "id": "machine"
      }
    ]
  },
  "extensionData": {
    "entries": [
      {
        "key": "computeResource",
        "value": {
          "type": "entityRef",
          "componentId": null,
          "classId": "ComputeResource",
          "id": "c527a0f5-b1ae-4b61-8145-ad9d5c434dc7",
          "label": "Engineering Allocation VDC"
        }
      },
      {
        "key": "machineQuota",
        "value": {
          "type": "integer",
          "value": 0
        }
      },
      {
        "key": "allocationModel",
        "value": {
          "type": "integer",
          "value": 0
        }
      },
      {
        "key": "reservationNetworks",
        "value": {
          "type": "multiple",
          "elementTypeId": "COMPLEX",
          "items": [
```

```
            {
              "type": "complex",
              "componentTypeId": "com.vmware.csp.iaas.blueprint.service",
              "componentId": null,
              "classId": "Infrastructure.Reservation.Network",
              "typeFilter": null,
              "values": {
                "entries": [
                  {
                    "key": "networkPath",
                    "value": {
                      "type": "entityRef",
                      "componentId": null,
                      "classId": "Network",
                      "id": "42c5063c-5422-448f-aac7-22ebe941ac8e",
                      "label": "VM Network SQA"
                    }
                  }
                ]
              }
            }
          ]
        }
      },
      {
        "key": "reservationStorages",
        "value": {
          "type": "multiple",
          "elementTypeId": "COMPLEX",
          "items": [
            {
              "type": "complex",
              "componentTypeId": "com.vmware.csp.iaas.blueprint.service",
              "componentId": null,
              "classId": "Infrastructure.Reservation.Storage",
              "typeFilter": null,
              "values": {
                "entries": [
                  {
                    "key": "computeResourceStorageTotalSizeGB",
                    "value": {
                      "type": "integer",
                      "value": 1000
                    }
                  },
                  {
                    "key": "storagePath",
                    "value": {
                      "type": "entityRef",
                      "componentId": null,
                      "classId": "Storage",
                      "id": "e655aa78-e5fb-4722-9e8a-0cd4139248cf",
                      "label": "High Performance Storage"
                    }
                  },
```

```
                {
                  "key": "storageReservationPriority",
                  "value": {
                    "type": "integer",
                    "value": 1
                  }
                },
                {
                  "key": "storageReservedSizeGB",
                  "value": {
                    "type": "integer",
                    "value": 100
                  }
                },
                {
                  "key": "storageEnabled",
                  "value": {
                    "type": "boolean",
                    "value": true
                  }
                },
                {
                  "key": "computeResourceStorageFreeSizeGB",
                  "value": {
                    "type": "integer",
                    "value": 691
                  }
                }
              ]
            }
          }
        ]
      }
    },
    {
      "key": "reservationMemory",
      "value": {
        "type": "complex",
        "componentTypeId": "com.vmware.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "Infrastructure.Reservation.Memory",
        "typeFilter": null,
        "values": {
          "entries": [
            {
              "key": "computeResourceMemoryTotalSizeMB",
              "value": {
                "type": "integer",
                "value": 13312
              }
            },
            {
              "key": "memoryReservedSizeMb",
              "value": {
                "type": "integer",
```

```
                    "value": 4096
                  }
                }
              ]
            }
          }
        }
      ]
    }
  }
```

Syntax for Displaying a List of Supported Reservation Types

`GET /api/reservations/types` displays a list of supported vRealize Automation reservation types.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/reservation-service/api/reservations/types
Method	Get
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.

Output

The command output contains property names and values based on the command input parameters.

Property	Description
Links	Species an array of link objects, each of which contains the following parts:
rel	Specifies the name of the link. ■ `Self` refers to the object that was returned or requested. ■ `First`, `Previous`, `Next`, and `Last` refer to corresponding pages of pageable lists. ■ Specifies the application or service that determines the other names.
href	Specifies the URL that produces the result.
Content	Specifies an array of data rows, each of which represents one of the objects returned in a pageable list. Each object contains the following information:
@type	Contains the `ReservationType` string.
createdDate	Specifies the create date.
lastUpdated	Specifies the last update date.

Property	Description
version	Displays the object version number.
Id	Specifies the unique identifier of this resource.
name	Specifies the reservation type name.
description	Specifies the reservation type description.
category	Specifies the reservation category of Virtual, Cloud or Physical.
serviceTypeId	Specifies the vRealize Automation service ID.
tenantId	This contains a null value.
FormReference	Specifies the user interface form reference. This field is valid for user interface elements only. ■ type -- user interface form type ■ formId -- user interface form ID
SchemaClassId	Specifies the schema class ID of the reservation type. Each supported reservation type contains specific fields. The supported fields are defined in the schema. For details, see the reservation service schema definitions in the *vRealize Automation API Reference* in the vRealize Automation Documentation Center.
alertTypes	Contains the alert type list defined in the reservation type: ■ createdDate -- Alert type created date ■ lastUpdated -- Alert type last updated date ■ version -- Alert type version ■ id -- Unique identifier of alert type ■ name -- Name of alert type ■ description -- Long description of alert type ■ referenceResourceId -- Unique identifier of reference resource
Metadata	Specifies the paging-related data: ■ Size: Specifies the maximum number of rows per page. ■ totalElements: Specifies the number of rows returned. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped.

Example: `curl` Command

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/reservations/types
```

The following command contains the example bearer token from Syntax for Requesting an HTTP Bearer Token.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer
MTQxMTY5OTkxODQyNTpkYmZmYjkzZTgzNjdmOGU0NThjZTp0ZW5hbnQ6cWV1c2VybmFtZTpmcml0ekBjb2tlLnZtd2
FyZS5jb206NDhmNGViNzQ3ZjYxY2YxMzdhNDAxOGY2MDAwOTFlZTJiZWI4MmJmZWU5ZTQ0MTI0YWI1M2U4NGNiOTk0
```

```
OTJjZjEwNjdhMzdmZTQ5YWMyMzA2NTA5M2UyNzlhMzI2ZGYxZDhlYTgxYmNkNjM5ZTNiNjIyYmEwYTRhOWJiMGE2ZTI="
https://myVRA.eng.mycompany.com/reservation-service/api/reservations/types
```

Example: JSON Output for a vSphere Reservation

In the following response, there are 8 reservation types. For the vSphere reservation, the reservation type ID is `Infrastructure.Reservation.Virtual.vSphere`, and its schema class ID is `Infrastructure.Reservation.Virtual.vSphere`.


```
{
  "links": [],
  "content": [{
    "@type": "ReservationType",
    "createdDate": "2015-10-13T04:44:32.008Z",
    "lastUpdated": "2015-10-13T04:44:32.009Z",
    "version": 1,
    "id": "Infrastructure.Reservation.Virtual.vSphere",
    "name": "vSphere",
    "description": "vSphere Reservation",
    "category": "Virtual",
    "serviceTypeId": "com.mycompany.csp.iaas.blueprint.service",
    "tenantId": null,
    "formReference": {
      "type": "external",
      "formId": "Infrastructure.Reservation.Virtual.vSphere.form.new"
    },
    "schemaClassId": "Infrastructure.Reservation.Virtual.vSphere",
    "alertTypes": [{
      "createdDate": "2015-10-13T04:44:32.008Z",
      "lastUpdated": "2015-10-13T04:44:32.008Z",
      "version": 0,
      "id": "d248eeee-238c-4e87-9e95-f263b04d113f",
      "name": "storage",
      "description": null,
      "referenceResourceId": "storage"
  },//Omit 7 reservation types here
  ],
  "metadata": {
    "size": 20,
    "totalElements": 8,
    "totalPages": 1,
    "number": 1,
    "offset": 0
  }
}
```

Example: JSON Output for a vCloud Air Reservation

In the following response, there are 8 reservation types. For the vCloud Air reservation, the reservation type ID is `Infrastructure.Reservation.Cloud.vCloudAir` and its schema class ID is `Infrastructure.Reservation.Cloud.vCloudAir`.


```
{
  "links": [],
  "content": [{
    {
      "@type": "ReservationType",
      "createdDate": "2015-11-06T10:21:06.010Z",
      "lastUpdated": "2015-11-06T10:21:06.011Z",
      "version": 1,
      "id": "Infrastructure.Reservation.Cloud.vCloudAir",
      "name": "vCloud",
      "description": "vCloud Reservation",
      "category": "Cloud",
      "serviceTypeId": "com.mycompany.csp.iaas.blueprint.service",
      "tenantId": null,
      "formReference": {
        "type": "external",
        "formId": "Infrastructure.Reservation.Cloud.vCloudAir.form.new"
      },
      "schemaClassId": "Infrastructure.Reservation.Cloud.vCloudAir",
      "alertTypes": [
        {
          "createdDate": "2015-11-06T10:21:06.010Z",
          "lastUpdated": "2015-11-06T10:21:06.010Z",
          "version": 0,
          "id": "cd707ad2-d504-43e2-8002-11ee670dcf41",
          "name": "storage",
          "description": null,
          "referenceResourceId": "storage"
        },
        {
          "createdDate": "2015-11-06T10:21:06.010Z",
          "lastUpdated": "2015-11-06T10:21:06.010Z",
          "version": 0,
          "id": "ef96fec4-a607-4944-a0af-fbe7df862ee2",
          "name": "memory",
          "description": null,
          "referenceResourceId": "memory"
        },
        {
          "createdDate": "2015-11-06T10:21:06.011Z",
          "lastUpdated": "2015-11-06T10:21:06.011Z",
          "version": 0,
          "id": "043e0815-9f02-4876-b5ce-ddbedabb8ff6",
          "name": "cpu",
          "description": null,
          "referenceResourceId": "cpu"
        },
        {
```

```
          "createdDate": "2015-11-06T10:21:06.011Z",
          "lastUpdated": "2015-11-06T10:21:06.011Z",
          "version": 0,
          "id": "77e90acd-93ab-4bbe-853a-b74923dae70a",
          "name": "machine",
          "description": null,
          "referenceResourceId": "machine"
        }
      ]
    }, //Omit 7 reservation types here
  ],
  "metadata": {
    "size": 20,
    "totalElements": 8,
    "totalPages": 1,
    "number": 1,
    "offset": 0
  }
}
```

Example: JSON Output for an Amazon Reservation

In the following response, there are 8 reservation types. For the Amazon reservation, the reservation type ID is `Infrastructure.Reservation.Cloud.Amazon` and its schema class ID is `Infrastructure.Reservation.Cloud.Amazon`.

```
{
  "links": [],
  "content": [{
  {
    "@type": "ReservationType",
    "createdDate": "2015-10-13T04:44:32.074Z",
    "lastUpdated": "2015-10-13T04:44:32.075Z",
    "version": 1,
    "id": "Infrastructure.Cloud.Amazon",
    "name": "Amazon",
    "description": "Amazon Reservation",
    "category": "Cloud",
    "serviceTypeId": "com.mycompany.csp.iaas.blueprint.service",
    "tenantId": null,
    "formReference": {
      "type": "external",
      "formId": "Infrastructure.Cloud.Amazon.form.new"
    },
    "schemaClassId": "Infrastructure.Cloud.Amazon",
    "alertTypes": [{
      "createdDate": "2015-10-13T04:44:32.075Z",
      "lastUpdated": "2015-10-13T04:44:32.075Z",
      "version": 0,
      "id": "2ef8f47c-045c-4ee4-821d-7b1543ea5f11",
      "name": "machine",
      "description": null,
      "referenceResourceId": "machine"
    }]
```

```
  },//Omit 7 reservation types here
  ],
  "metadata": {
    "size": 20,
    "totalElements": 8,
    "totalPages": 1,
    "number": 1,
    "offset": 0
  }
}
```

Syntax for Updating a Reservation

`PUT /api/reservations/{id}` updates an existing reservation with a given ID.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/reservation-service/api/reservations/$reservationId
Method	Put
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$reservationId	Specifies the unique identifier of the reservation to update. For information about how to obtain the reservation ID, see Syntax for Displaying a List of Reservations .
HTTP body	Contains the JSON information for the reservation, including the updated data for the parameters that you want to update. Most of this JSON string information is obtained by displaying the existing details of the *$reservationId*. See Syntax for Verifying a Reservation and Getting Reservation Details . The rest of the JSON string information is obtained by using an API command to get the ID of the parameter you want to update. For example, to update the reservation to use a different compute resource than the one currently specified, replace the `computeResource` value of the exiting reservation with a new `computeResource` value in the command's HTTP input.

Output

If the command is successful, the HTTP response body is empty except for a `204 No Content` status statement.

Example: `curl` Command

The following example command updates the reservation with an ID of 94d74105-831a-4598-8f42-efd590fea15c to use compute resource ID 047e00f5-5424-4ed2-a751-4a334aeaff54.

```
curl -X PUT --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/reservations/94d74105-831a-4598-8f42-efd590fea15c -d
"
{
  "name": "TestReservation",
  "reservationTypeId": "Infrastructure.Reservation.Virtual.vSphere",
  "tenantId": "qe",
  "subTenantId": "ef58f604-528d-4441-a219-4725bead629b",
  "enabled": true,
  "priority": 3,
  "reservationPolicyId": "b71c3a5f-087a-4d9e-9a56-fab785a3d128",
  "alertPolicy": {
    "enabled": true,
    "frequencyReminder": 20,
    "emailBgMgr": false,
    "recipients": ["user1@mycompany.com",
    "user2@mycompany.com"],
    "alerts": [{
      "alertPercentLevel": 10,
      "referenceResourceId": "storage",
      "id": "storage"
    },
    {
      "alertPercentLevel": 20,
      "referenceResourceId": "memory",
      "id": "memory"
    },
    {
      "alertPercentLevel": 30,
      "referenceResourceId": "cpu",
      "id": "cpu"
    },
    {
      "alertPercentLevel": 40,
      "referenceResourceId": "machine",
      "id": "machine"
    }]
  },
  "extensionData": {
    "entries": [{
      "key": "key4",
      "value": {
        "type": "string",
        "value": "custom-property-value4"
      }
    },
    {
```

```
      "key": "key3",
      "value": {
        "type": "string",
        "value": "custom-property-value3"
      }
    },
    {
      "key": "reservationNetworks",
      "value": {
        "type": "multiple",
        "elementTypeId": "COMPLEX",
        "items": [{
          "type": "complex",
          "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
          "componentId": null,
          "classId": "reservationNetwork",
          "typeFilter": null,
          "values": {
            "entries": [{
              "key": "reservationNetworkProfile",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "NetworkProfile",
                "id": "ed5d1503-08ac-42ca-804d-9167834a63a5",
                "label": "TestNetworkProfile"
              }
            },
            {
              "key": "reservationNetworkPath",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "Network",
                "id": "44cb65d5-b321-43dd-a2ab-8ecf387bff8f",
                "label": "VM Network SQA"
              }
            }]
          }
        }]
      }
    },
    {
      "key": "key0",
      "value": {
        "type": "string",
        "value": "custom-property-value0"
      }
    },
    {
      "key": "key2",
      "value": {
        "type": "string",
        "value": "custom-property-value2"
      }
```

```
    },
    {
      "key": "reservationMemory",
      "value": {
        "type": "complex",
        "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
        "componentId": null,
        "classId": "reservationMemory",

        "typeFilter": null,
        "values": {
          "entries": [{
            "key": "hostMemoryTotalSizeMB",
            "value": {
              "type": "integer",
              "value": 57187
            }
          },
          {
            "key": "reservationMemoryReservedSizeMb",
            "value": {
              "type": "integer",
              "value": 15888
            }
          }]
        }
      }
    },
    {
      "key": "key1",
      "value": {
        "type": "string",
        "value": "custom-property-value-Updated"
      }
    },
    {
      "key": "computeResource",
      "value": {
        "type": "entityRef",
        "componentId": null,
        "classId": "ComputeResource",
        "id": "047e00f5-5424-4ed2-a751-4a334aeaff54",
        "label": "VC51-Cluster"
      }
    },
    {
      "key": "machineQuota",
      "value": {
        "type": "integer",
        "value": 2
      }
    },
    {
      "key": "reservationStorages",
      "value": {
```

```
        "type": "multiple",
        "elementTypeId": "COMPLEX",
        "items": [{
          "type": "complex",
          "componentTypeId": "com.mycompany.csp.iaas.blueprint.service",
          "componentId": null,
          "classId": "reservationStorage",
          "typeFilter": null,
          "values": {
            "entries": [{
              "key": "storageTotalSizeGB",
              "value": {
                "type": "integer",
                "value": 394
              }
            },
            {
              "key": "reservationStorageReservedSizeGB",
              "value": {
                "type": "integer",
                "value": 31
              }
            },
            {
              "key": "reservationStorageEnabled",
              "value": {
                "type": "boolean",
                "value": true
              }
            },
            {
              "key": "reservationStoragePath",
              "value": {
                "type": "entityRef",
                "componentId": null,
                "classId": "StoragePath",
                "id": "f48a527b-30a6-4d54-8829-f549bc195b69",
                "label": "VNXe:qe-vnxe-nfs-1"
              }
            },
            {
              "key": "storageFreeSizeGB",
              "value": {
                "type": "integer",
                "value": 120
              }
            },
            {
              "key": "reservationStorageReservationPriority",
              "value": {
                "type": "integer",
                "value": 1
              }
            }]
          }
```

```
          }]
        }
      },
      {
        "key": "resourcePool",
        "value": {
          "type": "entityRef",
          "componentId": null,
          "classId": "ResourcePools",
          "id": "4e51fabc-19e8-4e79-b413-d52309b3bb62",
          "label": "CoreDev"
        }
      }]
    }
  }
”
```

Example: JSON Output

If the command is successful, the HTTP response body is empty except for a `204 No Content` status statement.

Syntax for Deleting a Reservation

`DELETE /api/reservations/{id}` deletes an existing reservation with the given ID.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/reservation-service/api/reservations/$reservationId
Method	Delete
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$reservationId	Specifies the unique identifier of the reservation to delete. For information about how to obtain the reservation ID, see Syntax for Displaying a List of Reservations .

Output

If the command is successful, the HTTP response body is empty except for a `204 No Content` status statement.

Example: `curl` Command

The following example command deletes a reservation with an ID of 94d74105-831a-4598-8f42-efd590fea15c.

```
curl –X “Delete” --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/reservations/94d74105-831a-4598-8f42-efd590fea15c
```

Example: JSON Output

If the command is successful, the HTTP response body is empty except for a `204 No Content` status statement.

Working with Reservation Policies

9

You use the reservation service to perform a variety of functions, such as creating and updating reservation policies.

While many functions are stand-alone, some functions rely on the output of others. For example, to delete a reservation, you must first obtain the ID of the reservation to delete.

Each example for this use case lists a curl command with respective JSON response, plus input and output parameters. The same set of prerequisites applies to each example.

This chapter includes the following topics:

- Prerequisites for Working with Reservation Policies
- List Reservation Policies Example
- Create a Reservation Policy Example
- Display a Reservation Policy by ID Example
- Update a Reservation Policy Example
- Deleting a Reservation Policy Example

Prerequisites for Working with Reservation Policies

Satisfy the following conditions before performing any tasks for this use case.

- Log in to vRealize Automation as a **business group manager**.
- Verify that the appliance name and fully qualified domain name of the vRealize Automation instance are available.
- Verify that you have a valid HTTP bearer token that matches your login credentials. See Chapter 2 REST API Authentication.

List Reservation Policies Example

`GET /api/reservations/policies` lists existing reservation policies. Use this information to obtain a reservation policy ID in preparation for updating or deleting the reservation policy.

curl Command

List all available reservation policies.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/reservations/policies
```

JSON Output

The following example output lists two reservation policies, named `reservationPolicyTest` and `reservationPolicyTest2`. Use the `id` value for each reservation policy to update or delete them. See Update a Reservation Policy Exampleand Deleting a Reservation Policy Example.

```
{
  "links": [],
  "content": [{
    "@type": "ReservationPolicy",
    "id": "8adafb54-4c85-4478-86f0-b6ae80ab5ca4",
    "name": "reservationPolicyTest",
    "description": "reservationPolicyDescTest",
    "reservationPolicyTypeId": "Infrastructure.Reservation.Policy.ComputeResource"
  },
  {
    "@type": "reservationPolicy",
    "id": "fdd9854b-012e-41d7-ad17-fc73d4395714",
    "name": "reservationPolicyTest2",
    "description": "reservationPolicyDescTest2",
    "reservationPolicyTypeId": "Infrastructure.Reservation.Policy.Storage"
  }],
  "metadata": {
    "size": 0,
    "totalElements": 2,
    "totalPages": 1,
    "number": 1,
    "offset": 0
  }
}
```

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/reservation-service/api/reservations/policies
Method	Get
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.

Output

The command output contains property names and values based on the command input parameters.

Property	Description
Links	Specifies an array of link objects, each of which contains the following parts: ■ rel Specifies the name of the link. ■ `Self` refers to the object which was returned or requested. ■ `First`, `Previous`, `Next`, and `Last` refer to corresponding pages of pageable lists. ■ Specifies the application or service that determines the other names. ■ href Specifies the URL that produces the result.
Content	Specifies an array of data rows, each of which represents one of the tenant objects returned in a pageable list. Each tenant object contains the following information: ■ @type. Contains the `ReservationPolicy` string. ■ id. Specifies the unique reservation policy ID. ■ name. Specifies the reservation policy name. ■ description. Specifies the reservation policy description.
reservationPolicyTypeId	Specifies the type of reservation policy. Supported vRealize Automation reservation policy types are Reservation.Policy.ComputeResource and Reservation.Policy.Storage.
Metadata	Specifies the paging-related data: ■ Size. Specifies the maximum number of rows per page. ■ totalElements. Specifies the number of rows returned. ■ totalPages. Specifies the total number of pages of data available. ■ Number. Specifies the current page number. ■ Offset. Specifies the number of rows skipped.

Create a Reservation Policy Example

`POST /api/reservations/policies` creates a reservation policy.

curl Command

The following example command uses the reservation service to create a new reservation policy.

```
curl -X POST --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/reservations/policies -d "
{
  "name": "ABXReservationPolicyTest",
  "description": "ABXReservationPolicyDescTest",
  "reservationPolicyTypeId": "Infrastructure.Reservation.Policy.ComputeResource"
}
"
```

JSON Output

The following example output contains the HTTP body and a location URL. The output URL contains the new reservation policy ID, for example `5fd2de36-659f-4beb-97af-77d683feb697`.

```
Location:
https://$vRA/reservation-service/api/reservations/policies/
5fd2de36-659f-4beb-97af-77d683feb697
```

Copy the location URL from this output to an editor for future use, for example for updating or deleting the reservation policy.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/reservation-service/api/reservations/policies
Method	Post
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
HTTP body	Describes the reservation policy to create. ■ *$name* - reservation policy name ■ *$description* - reservation policy description
$reservationPolicyTypeId	Specifies the reservation policy type ID. The supported reservation policy types are Reservation.Policy.ComputeResource and Reservation.Policy.Storage.

Output

The command output contains property names and values based on the command input parameters.

The output URL contains the new reservation policy ID.

Property	Description
status	When the reservation policy is successfully created, the HTTP response status is `201 created`.
Header.Location	The HTTP response contains a `Location` attribute that is format as https://$vRA /reservation-service/api/reservations/policies/ *$reservationPolicyId*.
$reservationPolicyId	Specifies the new reservation policy ID. Obtain this ID by listing your available reservation policies.

Display a Reservation Policy by ID Example

`GET /api/reservations/policies/{id}` displays information about a specific reservation policy with a reservation policy ID.

curl Command

The following example command retrieves information for the reservation policy with an ID of 8adafb54-4c85-4478-86f0-b6ae80ab5ca4.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/reservations/policies/8adafb54-4c85-4478-86f0-
b6ae80ab5ca4
```

JSON Output

The following sample output displays information for the specified reservation policy ID 8adafb54-4c85-4478-86f0-b6ae80ab5ca4.

```
{
    "id": "8adafb54-4c85-4478-86f0-b6ae80ab5ca4",
    "name": "reservationPolicyTest",
    "description": "reservationPolicyDescTest",
    "reservationPolicyTypeId": "Infrastructure.Reservation.Policy.ComputeResource"
}
```

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/reservation-service/api/reservations/policies/*$id*
Method	Get
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.

Example: Output

The command output contains property names and values based on the command input parameters.

Parameter	Description
$id	Specifies the reservation policy ID.
$name	Specifies the reservation policy name.

Parameter	Description
$description	Specifies the reservation policy description.
$reservationPolicyTypeId	Specifies the reservation policy type ID.

Update a Reservation Policy Example

`PUT /api/reservations/policies/{id}` updates a reservation policy with a reservation policy ID.

curl Command

The following example command updates the name and description values for the reservation policy with an ID of 94d74105-831a-4598-8f42-efd590fea15c.

```
curl -X PUT --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/reservations/policies/94d74105-831a-4598-8f42-
efd590fea15c -d "
{
  "id": "94d74105-831a-4598-8f42-efd590fea15c",
  "name": "ReservationPolicyTestRename",
  "description": "ReservationPolicyDescTestRename",
  "reservationPolicyTypeId": "Infrastructure.Reservation.Policy.ComputeResource"
}
"
```

JSON Output

If the command is successful, the HTTP response body is empty except for a `204 No Content` status statement.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/reservation-service/api/reservations/policies/*$id*
Method	Put
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.

Parameter	Description
$token	Specifies a valid HTTP bearer token with necessary credentials.
HTTP body	Describes the reservation policy to update. To obtain the value, query the reservation policy and copy the response output to an editor for use as the basis of your command input. See Display a Reservation Policy by ID Example. ■ *$id* - reservation policy ID ■ *$name* - reservation policy name ■ *$description* - reservation policy description ■ *$reservationPolicyTypeId* - reservation policy type ID The supported reservation policy types are Reservation.Policy.ComputeResource and Reservation.Policy.Storage.

Output

If the command is successful, the HTTP response body is empty except for a `204 No Content` status statement.

Deleting a Reservation Policy Example

`DELETE /api/reservations/policies/{id}` deletes a vRealize Automation reservation policy with a reservation policy ID.

curl Command

The following example command deletes a reservation policy with an ID of 8adafb54-4c85-4478-86f0-b6ae80ab5ca4.

```
curl –X “Delete” --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/reservation-service/api/reservations/policies/8adafb54-4c85-4478-86f0-
b6ae80ab5ca4
```

JSON Output

If the command is successful, the HTTP response body is empty except for a `204 No Content` status statement.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/reservation-service/api/reservations/policies/*$id*
Method	Delete
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$id	Specifies the reservation policy ID. To obtain the reservation policy ID to delete, see List Reservation Policies Example.

Output

If the command is successful, the HTTP response body is empty except for a `204 No Content` status statement.

Working with Key Pairs

10

You use the keyValuePair data element of the work-item service to list, create, and update key pairs.

For information about using the vRealize Automation application user interface to work with key pairs, see the *IaaS Configuration* documentation.

Each example for this use case lists a curl command with respective JSON response, plus input and output parameters. The same set of prerequisites applies to each example.

This chapter includes the following topics:

- Prerequisites for Working with Key Pairs
- Get a Key Pair List Example
- Create a Key Pair Example
- Query a Key Pair Example
- Update a Key Pair Example
- Delete a Key Pair Example

Prerequisites for Working with Key Pairs

Satisfy the following conditions before performing any tasks for this use case.

- Log in to vRealize Automation as a **tenant administrator**.
- Verify that the appliance name and fully qualified domain name of the vRealize Automation instance are available.
- Verify that you have a valid HTTP bearer token that matches your login credentials. See Chapter 2 REST API Authentication.

Get a Key Pair List Example

`GET /api/keyPairs` gets a list of valid key pairs.

curl Command

The following example command gets a list of valid key pairs.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/iaas-proxy-provider/api/keyPairs
```

JSON Output

The following JSON output is returned based on the command input.


```
{
  "links": [

  ],
  "content": [
    {
      "@type": "KeyPair",
      "id": 26,
      "name": "TestKeyPair",
      "computeResourceId": "ca4dcca0-85ce-49dd-8371-4ce7c8e2d5e6",
      "secretKey": ""
    },
    {
      "@type": "KeyPair",
      "id": 27,
      "name": "EC2KeyPair",
      "computeResourceId": "ca4dcca0-85ce-49dd-8371-4ce7c8e2d5e6",
      "secretKey":
"jmfhkPFLe1xF4LsgxyYDlBH65IjiKsNH3xgeUhNt6AyIcSA2eZsxH9FNFcDst1cRLQUmLYLUCN6ZlrVtD3C5CYAOEE9Up
lO+YKnAcqUSyXB6PQ3I/
NuebdtGrx38fkTJsEpRqxLppWPJpVlHYRO2O7GhhWnE6F3bPwwg3dWwymqWHxBZlCcuEcztovbhN8r7/
hKsXKbNSJz+J8DVhPB7PPdHJJ4E/6a9IXkNQs/T0NknCOyc0YcFVpgrc3PMGabi8vd/
7v0nEtDARyA8WwAGgtedHGtBo2gciY1Bu/
0SNr2yCzsZcqbVeg4ufkjlv0G1Ed1FfGHMh5kuVC7alk2aSI5YkWnS4d9YJYi7diYmc7GmrVW0XWNz4kEMdQBkK+CvMxiZ
17jyQD+V4NuM4ydNPJJMqpvoAHtLrAmp/hXhInuf8j/
l0mbawWSvUDUA3s4ZE55cFp546MJIrVCRyoMoKfxuHquIPdANRAVs7qo9DGxBiCzjvyBqof21y6dhGCd1q48Dkd72QCj6g
GV84lHZ/zXWcz4+aKFRVolNqSZEtZ/9wzdjqYdn/ySl0S5GE2rG/xRsh6g+giB9j4VQOMvC/
uvhkYUo3WfTgxi8SeipFIVcbvkkOI0ubPU1xnWdDErjji6UwEtmjajHuiA93GtiWIdeCvyKQWmo9jkkLUmQe4XrmRt3P09
FWm8Quwe5Hw6czK0dIODwcHE0Azl0TqLKl1wA39uhGrHoXNypFiOMmRbo1YnfIW23ggEnxRACY1jUZkTewhSbVY4S+Xyzv
FDcTRpSjWpRUOozYuMSsDnRzCJZQXhg4IYvwTvG+uEUu4+YR+WCrgC6Tk60i3cLSuHnV5k00AWXWwvnPnwYRFxxyzhcSDx
4jyyCaysmBo9NHGwNkJU1F94SY5Vp6O0E9EJuViMohF1gc18Q6SXHBNlrp0L7bAMggpmystGIkBNkSRhcDAFflNoS/
MTEW0uJoDfe6DczAt9B0YGtHdy3AH/U4ADOPkz5xlQ4EL/
rQSSolcBfVhbejVpbktJo4YKB7dzSDcJTSw99Uve+BQjhigVcfxDXme3MrXPO4BeCU891DLaTJyeYYADyGUKZfKFC6iCO9
SQfynwK6iE2eYKLpIMcf/C8+rLJVXcy7gkjT/
17WCu7mQXMevlIJlaApyytN1eCJcVDsr4N5LURZofnPArromhLy3JWiEJ4dtq+17KPiMff34e/
kT+i0ns73Wdy1oblZAi5kwBFMgBjAMex5fGNR1q/wtY1beWaxVw1J5RViaXeXSKO5mttE/
dzW6ONeJygjIlpgfwSLwr8JA4GanN1RWGeqRNjfOOGgdufIvDqmBB/
klnuGTVgMVWc0caQMzFq07UcXlMsgNOROHBfkzelWB+v0kXHsQ4eSeYVhjnT3CPURr5UMZ8YQ7fm+DltRM1Nw3o9WAJjQJ
5xyT2kxou4PHBzoq6JouwrCluig7GQ06lVu2C3nNpyfGKsmFyOlHMaVuRYX9/
dJQyibZAg1yDqyI3sIL3CeGr7ynhOTEEQiAOWqgIUyDvrvc2Ma4RjjI4b3eFfBMkLWqTqs33+/5QktQz+p5JrIb192STI/
PwHY51MfkbDErpeNFY479P7yKlZGbB8WVBfFpJCoVTQoZNio1ZhA7nA+rkqNbM4mcHQ+ZaYfxCc1UKO1AYBGS9ARz5OtYQ
U64Ei7tpWUbsYDXIA9Ss4VRASHvA7M3s+N61TPQ9HZuof/
```

```
c6TbzOWE0ojtxEyO3sDsBWumm13/61+JT3k0rIdmV25aVvxrUv1S3JLI/o/
zGgR9yTOeADIXHWsF4lQyai9MnmEaclHVWmK+LiVZSAfk6auEm+13a24+UM9Mg6ninfzeIq0cjdT3OUweXgDnK0BMGX0wf
SIYIrpRrDr9QdVoHGtdqZvJ62F8aITjO8urIK+bXZzwgFQ2JE4SYxojNHPYwBjadFm0A2eVPtOivMYYYr8FCUYtfbjjIS1
TyJaKIFhhqs6bA6/PH+NvBmbozpDkH9wg3mQ1SOP5iSMAMue6fx+b/
SpOZ5MPnNjRo+VXG3qFl936AB4F1F2ObD27GyjibeYmhQkITtp/yGYCZ68PhCun0/eiEjmXiOUx/5jYGOUEZ1Ddojhc5M/
PClR46vQ/
3Iyv5pUGPno+wkn34lk6s2PO2axrXvQqTwoiYC3f2p1gp0qYidIzKa2KHrUCOF4hnjQ3v3z93ORMCK3wN5uQ3xMFOd7+1X
petxvG9d7L1lU/sgCVmEhdOSnhLC5Jeq70MVwixPocnJR4nyotPE=="
    },//Omit 18 more key pairs
  ],
  "metadata": {
    "size": 0,
    "totalElements": 20,
    "totalPages": 1,
    "number": 1,
    "offset": 0
  }
}
```


Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA/*iaas-proxy-provider/api/keyPairs
Method	Get
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.

Output

The command output contains property names and values based on the command input parameters.

Parameter	Description

Links	Specifies an array of link objects, each of which contains the following parts:
	■ rel: Specifies the name of the link.
	  ■ `Self` refers to the object that was returned or requested. This parameter does not appear when you query a single profile.
	  ■ `First`, `Previous`, `Next`, and `Last` refer to corresponding pages of pageable lists.
	  ■ Specifies the application or service that determines the other names.
	■ href: Specifies the URL that produces the result.

Content	Specifies an array of data rows, each of which represents one of the tenant objects returned in a pageable list. Each tenant object can contain the following information: ■ *@type*: Contains the `KeyPair` string. ■ *$id:* Specifies the unique identifier of the key pair. ■ *$name:* Specifies the unique identifier of the key pair. ■ *$computeResourceId:* Specifies the compute resource ID that is binded to the key pair. ■ *$secretKey:* Specifies the secret key for the key pair.
Metadata	Specifies the following paging-related data: ■ Size: Specifies the maximum number of rows per page. ■ totalElement: Specifies the number of rows returned. This parameter is not output when you query for a single profile. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped. ■ Size: Specifies the maximum number of rows per page. ■ totalElement: Specifies the number of rows returned. This parameter is not output when you query for a single profile. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped.

Create a Key Pair Example

`POST /api/keyPairs` creates a key pair.

curl Command

The following example command creates a key pair.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/iaas-proxy-provider/api/keyPairs -d
"
{
  "name": "TestKeyPair",
  "computeResourceId": "ca4dcca0-85ce-49dd-8371-4ce7c8e2d5e6",
  "secretKey":
"jmfhkPFLe1xF4LsgxyYDlBH65IjiKsNH3xgeUhNt6AyIcSA2eZsxH9FNFcDst1cRLQUmLYLUCN6ZlrVtD3C5CYAOEE9Up
lO+YKnAcqUSyXB6PQ3I/
NuebdtGrx38fkTJsEpRqxLppWPJpVlHYRO2O7GhhWnE6F3bPwwg3dWwymqWHxBZlCcuEcztovbhN8r7/
hKsXKbNSJz+J8DVhPB7PPdHJJ4E/6a9IXkNQs/T0NknCOyc0YcFVpgrc3PMGabi8vd/
7v0nEtDARyA8WwAGgtedHGtBo2gciY1Bu/
0SNr2yCzsZcqbVeg4ufkjlv0G1Ed1FfGHMh5kuVC7alk2aSI5YkWnS4d9YJYi7diYmc7GmrVW0XWNz4kEMdQBkK+CvMxiZ
17jyQD+V4NuM4ydNPJJMqpvoAHtLrAmp/hXhInuf8j/
l0mbawWSvUDUA3s4ZE55cFp546MJIrVCRyoMoKfxuHquIPdANRAVs7qo9DGxBiCzjvyBqof21y6dhGCd1q48Dkd72QCj6g
GV84lHZ/zXWcz4+aKFRVolNqSZEtZ/9wzdjqYdn/ySl0S5GE2rG/xRsh6g+giB9j4VQOMvC/
uvhkYUo3WfTgxi8SeipFIVcbvkkOI0ubPU1xnWdDErjji6UwEtmjajHuiA93GtiWIdeCvyKQWmo9jkkLUmQe4XrmRt3P09
FWm8Quwe5Hw6czK0dIODwcHE0Azl0TqLKl1wA39uhGrHoXNypFiOMmRbo1YnfIW23ggEnxRACY1jUZkTewhSbVY4S+Xyzv
FDcTRpSjWpRUOozYuMSsDnRzCJZQXhg4IYvwTvG+uEUu4+YR+WCrgC6Tk60i3cLSuHnV5k00AWXWwvnPnwYRFxxyzhcSDx
4jyyCaysmBo9NHGwNkJU1F94SY5Vp6O0E9EJuViMohF1gc18Q6SXHBNlrp0L7bAMggpmystGIkBNkSRhcDAFflNoS/
MTEW0uJoDfe6DczAt9B0YGtHdy3AH/U4ADOPkz5xlQ4EL/
rQSSolcBfVhbejVpbktJo4YKB7dzSDcJTSw99Uve+BQjhigVcfxDXme3MrXPO4BeCU891DLaTJyeYYADyGUKZfKFC6iCO9
SQfynwK6iE2eYKLpIMcf/C8+rLJVXcy7gkjT/
17WCu7mQXMevlIJlaApyytN1eCJcVDsr4N5LURZofnPArromhLy3JWiEJ4dtq+17KPiMff34e/
kT+i0ns73Wdy1oblZAi5kwBFMgBjAMex5fGNR1q/wtY1beWaxVw1J5RViaXeXSKO5mttE/
dzW6ONeJygjIlpgfwSLwr8JA4GanN1RWGeqRNjfOOGgdufIvDqmBB/
klnuGTVgMVWc0caQMzFq07UcXlMsgNOROHBfkzelWB+v0kXHsQ4eSeYVhjnT3CPURr5UMZ8YQ7fm+DltRM1Nw3o9WAJjQJ
5xyT2kxou4PHBzoq6JouwrCluig7GQ06lVu2C3nNpyfGKsmFyOlHMaVuRYX9/
dJQyibZAg1yDqyI3sIL3CeGr7ynhOTEEQiAOWqgIUyDvrvc2Ma4RjjI4b3eFfBMkLWqTqs33+/5QktQz+p5JrIb192STI/
PwHY51MfkbDErpeNFY479P7yKlZGbB8WVBfFpJCoVTQoZNio1ZhA7nA+rkqNbM4mcHQ+ZaYfxCc1UKO1AYBGS9ARz5OtYQ
U64Ei7tpWUbsYDXIA9Ss4VRASHvA7M3s+N61TPQ9HZuof/
c6TbzOWE0ojtxEyO3sDsBWumm13/61+JT3k0rIdmV25aVvxrUv1S3JLI/o/
zGgR9yTOeADIXHWsF4lQyai9MnmEaclHVWmK+LiVZSAfk6auEm+13a24+UM9Mg6ninfzeIq0cjdT3OUweXgDnK0BMGX0wf
SIYIrpRrDr9QdVoHGtdqZvJ62F8aITjO8urIK+bXZzwgFQ2JE4SYxojNHPYwBjadFm0A2eVPtOivMYYYr8FCUYtfbjjIS1
TyJaKIFhhqs6bA6/PH+NvBmbozpDkH9wg3mQ1SOP5iSMAMue6fx+b/
SpOZ5MPnNjRo+VXG3qFl936AB4F1F2ObD27GyjibeYmhQkITtp/yGYCZ68PhCun0/eiEjmXiOUx/5jYGOUEZ1Ddojhc5M/
PClR46vQ/
3Iyv5pUGPno+wkn34lk6s2PO2axrXvQqTwoiYC3f2p1gp0qYidIzKa2KHrUCOF4hnjQ3v3z93ORMCK3wN5uQ3xMFOd7+1X
petxvG9d7L1lU/sgCVmEhdOSnhLC5Jeq70MVwixPocnJR4nyotPE=="
}
"
```

JSON Output

The output returns an empty HTTP response body and the host information and key pair ID in the header statement.

```
Location:
https://vcac148-084-241.eng.mycompany.com/iaas-proxy-provider/api/keyPairs/56
```

Copy the location URL into a text editor for future use.

Input

Use the supported input parameters to control the command output.

Input	Description
URL	https://*$vRA*/iaas-proxy-provider/api/keyPairs
Method	Post
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
HTTP Body	Contains the HTTP body of the target key pair.

Output

The command output contains property names and values based on the command input parameters.

Parameter	Description
status	If the command is successful, the HTTP status is `201 Created`.
Header.Location	The http response should contain a `Location` attribute with the following format. `https://$vRA/iaas-proxy-provider/api/keyPairs/$keypairID`
$keypairID	Specifies the unique identifier of the new key pair.

Example: `curl` Command

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/iaas-proxy-provider/api/keyPairs -d
"
{
  "name": "TestKeyPair",
```

```
  "computeResourceId": "ca4dcca0-85ce-49dd-8371-4ce7c8e2d5e6",
  "secretKey":
"jmfhkPFLe1xF4LsgxyYDlBH65IjiKsNH3xgeUhNt6AyIcSA2eZsxH9FNFcDst1cRLQUmLYLUCN6ZlrVtD3C5CYAOEE9Up
lO+YKnAcqUSyXB6PQ3I/
NuebdtGrx38fkTJsEpRqxLppWPJpVlHYRO2O7GhhWnE6F3bPwwg3dWwymqWHxBZlCcuEcztovbhN8r7/
hKsXKbNSJz+J8DVhPB7PPdHJJ4E/6a9IXkNQs/T0NknCOyc0YcFVpgrc3PMGabi8vd/
7v0nEtDARyA8WwAGgtedHGtBo2gciY1Bu/
0SNr2yCzsZcqbVeg4ufkjlv0G1Ed1FfGHMh5kuVC7alk2aSI5YkWnS4d9YJYi7diYmc7GmrVW0XWNz4kEMdQBkK+CvMxiZ
17jyQD+V4NuM4ydNPJJMqpvoAHtLrAmp/hXhInuf8j/
l0mbawWSvUDUA3s4ZE55cFp546MJIrVCRyoMoKfxuHquIPdANRAVs7qo9DGxBiCzjvyBqof21y6dhGCd1q48Dkd72QCj6g
GV84lHZ/zXWcz4+aKFRVolNqSZEtZ/9wzdjqYdn/ySl0S5GE2rG/xRsh6g+giB9j4VQOMvC/
uvhkYUo3WfTgxi8SeipFIVcbvkkOI0ubPU1xnWdDErjji6UwEtmjajHuiA93GtiWIdeCvyKQWmo9jkkLUmQe4XrmRt3P09
FWm8Quwe5Hw6czK0dIODwcHE0Azl0TqLKl1wA39uhGrHoXNypFiOMmRbo1YnfIW23ggEnxRACY1jUZkTewhSbVY4S+Xyzv
FDcTRpSjWpRUOozYuMSsDnRzCJZQXhg4IYvwTvG+uEUu4+YR+WCrgC6Tk60i3cLSuHnV5k00AWXWwvnPnwYRFxxyzhcSDx
4jyyCaysmBo9NHGwNkJU1F94SY5Vp6O0E9EJuViMohF1gc18Q6SXHBNlrp0L7bAMggpmystGIkBNkSRhcDAFflNoS/
MTEW0uJoDfe6DczAt9B0YGtHdy3AH/U4ADOPkz5xlQ4EL/
rQSSolcBfVhbejVpbktJo4YKB7dzSDcJTSw99Uve+BQjhigVcfxDXme3MrXPO4BeCU891DLaTJyeYYADyGUKZfKFC6iCO9
SQfynwK6iE2eYKLpIMcf/C8+rLJVXcy7gkjT/
17WCu7mQXMevlIJlaApyytN1eCJcVDsr4N5LURZofnPArromhLy3JWiEJ4dtq+17KPiMff34e/
kT+i0ns73Wdy1oblZAi5kwBFMgBjAMex5fGNR1q/wtY1beWaxVw1J5RViaXeXSKO5mttE/
dzW6ONeJygjIlpgfwSLwr8JA4GanN1RWGeqRNjfOOGgdufIvDqmBB/
klnuGTVgMVWc0caQMzFq07UcXlMsgNOROHBfkzelWB+v0kXHsQ4eSeYVhjnT3CPURr5UMZ8YQ7fm+DltRM1Nw3o9WAJjQJ
5xyT2kxou4PHBzoq6JouwrCluig7GQ06lVu2C3nNpyfGKsmFyOlHMaVuRYX9/
dJQyibZAg1yDqyI3sIL3CeGr7ynhOTEEQiAOWqgIUyDvrvc2Ma4RjjI4b3eFfBMkLWqTqs33+/5QktQz+p5JrIb192STI/
PwHY51MfkbDErpeNFY479P7yKlZGbB8WVBfFpJCoVTQoZNio1ZhA7nA+rkqNbM4mcHQ+ZaYfxCc1UKO1AYBGS9ARz5OtYQ
U64Ei7tpWUbsYDXIA9Ss4VRASHvA7M3s+N61TPQ9HZuof/
c6TbzOWE0ojtxEyO3sDsBWumm13/61+JT3k0rIdmV25aVvxrUv1S3JLI/o/
zGgR9yTOeADIXHWsF4lQyai9MnmEaclHVWmK+LiVZSAfk6auEm+13a24+UM9Mg6ninfzeIq0cjdT3OUweXgDnK0BMGX0wf
SIYIrpRrDr9QdVoHGtdqZvJ62F8aITjO8urIK+bXZzwgFQ2JE4SYxojNHPYwBjadFm0A2eVPtOivMYYYr8FCUYtfbjjIS1
TyJaKIFhhqs6bA6/PH+NvBmbozpDkH9wg3mQ1SOP5iSMAMue6fx+b/
SpOZ5MPnNjRo+VXG3qFl936AB4F1F2ObD27GyjibeYmhQkITtp/yGYCZ68PhCun0/eiEjmXiOUx/5jYGOUEZ1Ddojhc5M/
PClR46vQ/
3Iyv5pUGPno+wkn34lk6s2PO2axrXvQqTwoiYC3f2p1gp0qYidIzKa2KHrUCOF4hnjQ3v3z93ORMCK3wN5uQ3xMFOd7+1X
petxvG9d7L1lU/sgCVmEhdOSnhLC5Jeq70MVwixPocnJR4nyotPE=="
}
"
```


Example: JSON Output

The output returns an empty HTTP response body and the host information and key pair ID in the header statement.

```
Location:
https://vcac148-084-241.eng.mycompany.com/iaas-proxy-provider/api/keyPairs/56
```

Copy the location URL into a text editor for future use.

Query a Key Pair Example

`GET /api/keyPairs/{id}` queries a key pair that is available for the vRealize Automation tenant administrator.

curl Command

The following example command queries a key pair.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/iaas-proxy-provider/api/keyPairs/26
```

JSON Output

The following JSON output is returned based on the command input.

```
{
  "id": 26,
  "name": "TestKeyPair",
  "computeResourceId": "ca4dcca0-85ce-49dd-8371-4ce7c8e2d5e6",
  "secretKey": ""
}
```

Input

Use the supported input parameters to control the command output.

Parameters	Description
URL	https://*$vRA*/iaas-proxy-provider/api/keyPairs/$ids
Method	Get
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$id:	Specifies the unique identifier of the key pair.

Output

The command output contains property names and values based on the command input parameters.

Parameters	Description
$id:	Specifies the unique identifier of the key pair.
$name:	Specifies the name of the key pair.
$computeResourceId:	Specifies the complete resource ID that is bound to the key pair.
$secretKey:	Specifies the secret key for the key pair.

Update a Key Pair Example

`PUT /api/KeyPairs/{id}` updates an existing key pair using the vRealize Automation REST API.

curl Command

The following example command updates a key pair.

```
curl -X PUT --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/iaas-proxy-provider/api/keyPairs/26 -d "
{
  "id": 26,
  "name": "TestKeyPair",
  "computeResourceId": "ca4dcca0-85ce-49dd-8371-4ce7c8e2d5e6",
  "secretKey":
"jmfhkPFLe1xF4LsgxyYDlBH65IjiKsNH3xgeUhNt6AyIcSA2eZsxH9FNFcDst1cRLQUmLYLUCN6ZlrVtD3C5CYAOEE9Up
lO+YKnAcqUSyXB6PQ3I/
NuebdtGrx38fkTJsEpRqxLppWPJpVlHYRO2O7GhhWnE6F3bPwwg3dWwymqWHxBZlCcuEcztovbhN8r7/
hKsXKbNSJz+J8DVhPB7PPdHJJ4E/6a9IXkNQs/T0NknCOyc0YcFVpgrc3PMGabi8vd/
7v0nEtDARyA8WwAGgtedHGtBo2gciY1Bu/
0SNr2yCzsZcqbVeg4ufkjlv0G1Ed1FfGHMh5kuVC7alk2aSI5YkWnS4d9YJYi7diYmc7GmrVW0XWNz4kEMdQBkK+CvMxiZ
17jyQD+V4NuM4ydNPJJMqpvoAHtLrAmp/hXhInuf8j/
l0mbawWSvUDUA3s4ZE55cFp546MJIrVCRyoMoKfxuHquIPdANRAVs7qo9DGxBiCzjvyBqof21y6dhGCd1q48Dkd72QCj6g
GV84lHZ/zXWcz4+aKFRVolNqSZEtZ/9wzdjqYdn/ySl0S5GE2rG/xRsh6g+giB9j4VQOMvC/
uvhkYUo3WfTgxi8SeipFIVcbvkkOI0ubPU1xnWdDErjji6UwEtmjajHuiA93GtiWIdeCvyKQWmo9jkkLUmQe4XrmRt3P09
FWm8Quwe5Hw6czK0dIODwcHE0Azl0TqLKl1wA39uhGrHoXNypFiOMmRbo1YnfIW23ggEnxRACY1jUZkTewhSbVY4S+Xyzv
FDcTRpSjWpRUOozYuMSsDnRzCJZQXhg4IYvwTvG+uEUu4+YR+WCrgC6Tk60i3cLSuHnV5k00AWXWwvnPnwYRFxxyzhcSDx
4jyyCaysmBo9NHGwNkJU1F94SY5Vp6O0E9EJuViMohF1gc18Q6SXHBNlrp0L7bAMggpmystGIkBNkSRhcDAFflNoS/
MTEW0uJoDfe6DczAt9B0YGtHdy3AH/U4ADOPkz5xlQ4EL/
rQSSolcBfVhbejVpbktJo4YKB7dzSDcJTSw99Uve+BQjhigVcfxDXme3MrXPO4BeCU891DLaTJyeYYADyGUKZfKFC6iCO9
SQfynwK6iE2eYKLpIMcf/C8+rLJVXcy7gkjT/
17WCu7mQXMevlIJlaApyytN1eCJcVDsr4N5LURZofnPArromhLy3JWiEJ4dtq+17KPiMff34e/
kT+i0ns73Wdy1oblZAi5kwBFMgBjAMex5fGNR1q/wtY1beWaxVw1J5RViaXeXSKO5mttE/
dzW6ONeJygjIlpgfwSLwr8JA4GanN1RWGeqRNjfOOGgdufIvDqmBB/
klnuGTVgMVWc0caQMzFq07UcXlMsgNOROHBfkzelWB+v0kXHsQ4eSeYVhjnT3CPURr5UMZ8YQ7fm+DltRM1Nw3o9WAJjQJ
5xyT2kxou4PHBzoq6JouwrCluig7GQ06lVu2C3nNpyfGKsmFyOlHMaVuRYX9/
dJQyibZAg1yDqyI3sIL3CeGr7ynhOTEEQiAOWqgIUyDvrvc2Ma4RjjI4b3eFfBMkLWqTqs33+/5QktQz+p5JrIb192STI/
PwHY51MfkbDErpeNFY479P7yKlZGbB8WVBfFpJCoVTQoZNio1ZhA7nA+rkqNbM4mcHQ+ZaYfxCc1UKO1AYBGS9ARz5OtYQ
U64Ei7tpWUbsYDXIA9Ss4VRASHvA7M3s+N61TPQ9HZuof/
c6TbzOWE0ojtxEyO3sDsBWumm13/61+JT3k0rIdmV25aVvxrUv1S3JLI/o/
zGgR9yTOeADIXHWsF4lQyai9MnmEaclHVWmK+LiVZSAfk6auEm+13a24+UM9Mg6ninfzeIq0cjdT3OUweXgDnK0BMGX0wf
SIYIrpRrDr9QdVoHGtdqZvJ62F8aITjO8urIK+bXZzwgFQ2JE4SYxojNHPYwBjadFm0A2eVPtOivMYYYr8FCUYtfbjjIS1
TyJaKIFhhqs6bA6/PH+NvBmbozpDkH9wg3mQ1SOP5iSMAMue6fx+b/
SpOZ5MPnNjRo+VXG3qFl936AB4F1F2ObD27GyjibeYmhQkITtp/yGYCZ68PhCun0/eiEjmXiOUx/5jYGOUEZ1Ddojhc5M/
PClR46vQ/
3Iyv5pUGPno+wkn34lk6s2PO2axrXvQqTwoiYC3f2p1gp0qYidIzKa2KHrUCOF4hnjQ3v3z93ORMCK3wN5uQ3xMFOd7+1X
petxvG9d7L1lU/sgCVmEhdOSnhLC5Jeq70MVwixPocnJR4nyotPE=="
}
"
```

JSON Output

The output contains an empty HTTP response body and the following status code.

```
204 No Content
```

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/iaas-proxy-provider/api/keyPairs/*$id*
Method	Put
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
HTTP Body	Contains the HTTP body that describes the key pair to update and what to update in the identified key pair. ■ *$id:* Specifies the unique identifier of the key pair. ■ *$name:* Specifies the unique identifier of the key pair. ■ *$computeResourceId:* Specifies the compute resource ID that is binded to the key pair. ■ *$secretKey:* Specifies the secret key for the key pair.

Output

The command output contains a status statement.

Parameter	Description
status	If the command is not successful, the HTTP status is `204 No Content`.

Delete a Key Pair Example

`DELETE /api/keyPairs/{id}` deletes a key pair.

curl Command

The following example command deletes a key pair.

```
curl –X “Delete” --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/iaas-proxy-provider/api/keyPairs/26
```

JSON Output

The output contains an empty HTTP response body and the following status code.

```
204 No Content
```

Input

Use the supported input parameters to control the command output.

Input	Description
URL	https://*$vRA*/iaas-proxy-provider/api/keyPairs/*$id*
Method	Delete
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$id:	Specifies the unique identifier of the key pair.

Output

The command output contains a status statement.

Parameter	Description
status	If the command is not successful, the HTTP status is `204 No Content`.

Working with Network Profiles

11

You use the IaaS proxy provider service and IPAM service to create, list, and update network profiles.

You can access the following types of network profile by using the same programming calls. Different types of network profiles contain different fields.

Network Profile Type	Description
External	All network profiles use the elements in the object definition for external network. The network definition specifies the network address configuration for the network. The external network definition can specify: ■ Existing network addresses configured on the vSphere server. They are the external part of the NAT and routed networks types. An external network profile can define a range of static IP addresses available on the external network. ■ An endpoint that allows access to IP ranges obtained from the supplied VMware internal IPAM provider or an external IPAM provider solution that you have imported and registered in vRealize Orchestrator, such as Infoblox IPAM, and existing network address ranges configured by the IPAM provider software. ■ An endpoint that allows access to IP ranges obtained from the supplied VMware internal IPAM provider or an external IPAM provider solution that you have imported and registered in vRealize Orchestrator, such as Infoblox IPAM, and existing network address ranges configured by the IPAM provider software. An external network profile with a static IP range is a prerequisite for NAT and routed networks. When you specify a NAT network profile or a Routed network profile, the base object definition for the external network profile is used and additional definitions for the NAT or Routed network profiles are required to complete the profile.
NAT	An external network that uses network address translation (NAT) to enable one set of IP addresses for external communication and another set for internal communications. With one-to-one NAT networks, every virtual machine is assigned an external IP address from the external network profile and an internal IP address from the NAT network profile. With one-to-many NAT networks, all machines share a single IP address from the external network profile for external communication. A NAT network profile defines local and external networks that use a translation table for mutual communication.
Routed	A routed network represents a routable IP space divided across subnets that are linked together using Distributed Logical Router (DLR). Every new routed network has the next available subnet assigned to it and is associated with other routed networks that use the same network profile. The virtual machines that are provisioned with routed networks that have the same routed network profile can communicate with each other and the external network. A routed network profile defines a routable space and available subnets. For more information about Distributed Logical Router, see *NSX Administration Guide* available as a selection from the NSX for vSphere product documentation.

Each example for this use case lists a curl command with respective JSON response, plus input and output parameters. The same set of prerequisites applies to each example.

This chapter includes the following topics:

- Prerequisites for Working With Network Profiles
- Get a Network Profile List Example
- Create an External Network Profile Without IPAM Example
- Create an External Network Profile Using External IPAM Example
- Query a Network Profile Example
- Update a Network Profile Example

- Delete a Network Profile Example

Prerequisites for Working With Network Profiles

Satisfy the following conditions before performing any tasks for this use case.

- Log in to vRealize Automation as a **tenant administrator**.
- Verify that the appliance name and fully qualified domain name of the vRealize Automation instance are available.
- Verify that you have a valid HTTP bearer token that matches your login credentials. See Chapter 2 REST API Authentication.

Get a Network Profile List Example

`GET /api/network/profiles` returns a page of current network profiles.

curl Command

The following example command returns a list of network profiles.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/iaas-proxy-provider/api/network/profiles
```

JSON Output

The following JSON output is returned based on the command input.


```
{
  "links": [

  ],
  "content": [
    {
      "@type": "NATNetworkProfile",
      "id": "599541aa-ffb0-4a37-9483-4353f3fc6be3",
      "name": "NATTest",
      "description": "",
      "createdDate": "2014-11-11T02:29:09.000Z",
      "lastModifiedDate": "2014-11-11T02:29:09.000Z",
      "isHidden": false,
      "definedRanges": [
        {
          "id": "9f7d8025-bd4c-4560-9b41-9ce455ee49ae",
          "name": "range",
          "description": "",
          "beginIPv4Address": "10.118.190.110",
          "endIPv4Address": "10.118.190.115",
          "state": "UNALLOCATED",
          "createdDate": "2014-11-11T02:29:05.000Z",
```

```
        "lastModifiedDate": "2014-11-11T02:29:05.000Z",
        "definedAddresses": [
          {
            "id": "6e7dc8c3-dc64-4ebd-a282-05852010310f",
            "name": null,
            "description": null,
            "IPv4Address": "10.118.190.111",
            "IPSortValue": 0,
            "state": "UNALLOCATED",
            "hostName": "",
            "createdDate": "2014-11-11T02:29:05.000Z",
            "lastModifiedDate": "2014-11-11T02:29:05.000Z"
          },
          {
            "id": "f6802100-1d7e-4f31-bdeb-1b27f7e77766",
            "name": null,
            "description": null,
            "IPv4Address": "10.118.190.115",
            "IPSortValue": 0,
            "state": "UNALLOCATED",
            "hostName": "",
            "createdDate": "2014-11-11T02:29:05.000Z",
            "lastModifiedDate": "2014-11-11T02:29:05.000Z"
          },
          {
            "id": "f6deba8c-fbf4-4ea0-9d9c-325e9db2f13e",
            "name": null,
            "description": null,
            "IPv4Address": "10.118.190.114",
            "IPSortValue": 0,
            "state": "UNALLOCATED",
            "hostName": "",
            "createdDate": "2014-11-11T02:29:05.000Z",
            "lastModifiedDate": "2014-11-11T02:29:05.000Z"
          },
          {
            "id": "9d5a9d25-26d7-4ce3-93a2-61242a88c5b2",
            "name": null,
            "description": null,
            "IPv4Address": "10.118.190.110",
            "IPSortValue": 0,
            "state": "UNALLOCATED",
            "hostName": "",
            "createdDate": "2014-11-11T02:29:05.000Z",
            "lastModifiedDate": "2014-11-11T02:29:05.000Z"
          },
          {
            "id": "2b616f1a-dc35-4caa-8ee7-6494ca50db57",
            "name": null,
            "description": null,
            "IPv4Address": "10.118.190.113",
            "IPSortValue": 0,
            "state": "UNALLOCATED",
            "hostName": "",
            "createdDate": "2014-11-11T02:29:05.000Z",
```

```
            "lastModifiedDate": "2014-11-11T02:29:05.000Z"
          },
          {
            "id": "9dd5d265-ec23-42be-9bdb-734c11b1e315",
            "name": null,
            "description": null,
            "IPv4Address": "10.118.190.112",
            "IPSortValue": 0,
            "state": "UNALLOCATED",
            "hostName": "",
            "createdDate": "2014-11-11T02:29:05.000Z",
            "lastModifiedDate": "2014-11-11T02:29:05.000Z"
          },

        ]
      }
    ],
    "profileType": "NAT",
    "subnetMask": "255.255.255.0",
    "gatewayAddress": "10.118.190.230",
    "primaryDnsAddress": "10.110.182.45",
    "secondaryDnsAddress": "",
    "dnsSuffix": "mycompany.com",
    "dnsSearchSuffix": "",
    "primaryWinsAddress": "10.0.0.1",
    "secondaryWinsAddress": "",
    "dhcpStartIPAddress": null,
    "dhcpEndIPAddress": null,
    "leaseTimeInSeconds": 0
  },
  {
    "@type": "PrivateNetworkProfile",
    "id": "594e4016-b067-4d19-aa81-63502675f925",
    "name": "privateTest",
    "description": "",
    "createdDate": "2014-11-11T02:26:44.000Z",
    "lastModifiedDate": "2014-11-11T02:26:44.000Z",
    "isHidden": false,
    "definedRanges": [
      {
        "id": "8827193e-f1c3-493e-8bcd-1b153f2a5e74",
        "name": "range",
        "description": "",
        "beginIPv4Address": "10.118.190.110",
        "endIPv4Address": "10.118.190.112",
        "state": "UNALLOCATED",
        "createdDate": "2014-11-11T02:25:57.000Z",
        "lastModifiedDate": "2014-11-11T02:25:57.000Z",
        "definedAddresses": [
          {
            "id": "262a4273-1e75-4c23-8fb8-088473521b19",
            "name": null,
            "description": null,
            "IPv4Address": "10.118.190.111",
            "IPSortValue": 0,
```

```
            "state": "UNALLOCATED",
            "hostName": "",
                          "createdDate": "2014-11-11T02:25:57.000Z",
            "lastModifiedDate": "2014-11-11T02:25:57.000Z"
          },
          {
            "id": "7eebd0ad-0dde-4fa1-aad3-750498214caf",
            "name": null,
            "description": null,
            "IPv4Address": "10.118.190.110",
            "IPSortValue": 0,
            "state": "UNALLOCATED",
            "hostName": "",
            "createdDate": "2014-11-11T02:25:57.000Z",
            "lastModifiedDate": "2014-11-11T02:25:57.000Z"
          },
          {
            "id": "37ca8368-5d19-4d23-a6b8-7b233bb2320d",
            "name": null,
            "description": null,
            "IPv4Address": "10.118.190.112",
            "IPSortValue": 0,
            "state": "UNALLOCATED",
            "hostName": "",
            "createdDate": "2014-11-11T02:25:57.000Z",
            "lastModifiedDate": "2014-11-11T02:25:57.000Z"
          },
        ]
      }
    ],
    "profileType": "PRIVATE",
    "subnetMask": "255.255.255.0",
    "gatewayAddress": "10.118.190.230",
    "dhcpStartIPAddress": null,
    "dhcpEndIPAddress": null,
    "leaseTimeInSeconds": 0
  },
  {
    "@type": "RoutedNetworkProfile",
    "id": "a3dbfc76-7eab-4c1f-8f59-8fcc0b50ec6c",
    "name": "routedTest",
    "description": "",
    "createdDate": "2014-11-11T02:31:11.000Z",
    "lastModifiedDate": "2014-11-11T02:31:11.000Z",
    "isHidden": false,
    "definedRanges": [
      {
        "id": "4d9b291a-841f-4f62-b03e-83781133024c",
        "name": "Range 1",
        "description": "",
        "beginIPv4Address": "10.118.183.1",
        "endIPv4Address": "10.118.183.254",
        "state": "UNALLOCATED",
        "createdDate": "2014-11-11T02:30:34.000Z",
        "lastModifiedDate": "2014-11-11T02:30:34.000Z",
```

```
          "definedAddresses": [

          ]
        }
      ],
      "profileType": "ROUTED",
      "subnetMask": "255.255.254.0",
      "primaryDnsAddress": "10.110.182.45",
      "secondaryDnsAddress": "",
      "dnsSuffix": "mycompany.com",
      "dnsSearchSuffix": "",
      "primaryWinsAddress": "10.0.0.1",
      "secondaryWinsAddress": "",
      "baseIP": "10.118.183.1"
    },
    {
      "@type": "ExternalNetworkProfile",
      "id": "68b6a183-fc8a-4592-af23-92f8d410ee32",
      "name": "externalTest",
      "description": "",
      "createdDate": "2014-11-11T02:24:07.000Z",
      "lastModifiedDate": "2014-11-11T02:24:07.000Z",
      "isHidden": false,
      "definedRanges": [
        {
          "id": "3a85a049-522f-4b64-8f60-6e7b252ad204",
          "name": "range",
          "description": "",
          "beginIPv4Address": "10.110.183.200",
          "endIPv4Address": "10.110.183.201",
          "state": "UNALLOCATED",
          "createdDate": "2014-11-11T02:23:38.000Z",
          "lastModifiedDate": "2014-11-11T02:23:38.000Z",
          "definedAddresses": [
             {
              "id": "f229ea1a-18de-4dae-ae7b-0cec7feaa99b",
              "name": null,
              "description": null,
              "IPv4Address": "10.110.183.201",
              "IPSortValue": 0,
              "state": "UNALLOCATED",
              "hostName": "",
              "createdDate": "2014-11-11T02:23:38.000Z",
              "lastModifiedDate": "2014-11-11T02:23:38.000Z"
            },
            {
              "id": "cd39e786-6490-4c95-8cf7-d6e3b6a0ba67",
              "name": null,
              "description": null,
              "IPv4Address": "10.110.183.200",
              "IPSortValue": 0,
              "state": "UNALLOCATED",
              "hostName": "",
              "createdDate": "2014-11-11T02:23:38.000Z",
              "lastModifiedDate": "2014-11-11T02:23:38.000Z"
```

```
            },
          ]
        },
        {
          "id": "67acdc6f-d0b9-4f47-a74b-ea58ff9ce074",
          "name": "range2",
          "description": "",
          "beginIPv4Address": "10.110.183.180",
          "endIPv4Address": "10.110.183.183",
          "state": "UNALLOCATED",
          "createdDate": "2014-11-11T02:24:04.000Z",
          "lastModifiedDate": "2014-11-11T02:24:04.000Z",
          "definedAddresses": [
            {
              "id": "37b5c7d1-b82f-4961-a7cc-0117d3610ed7",
              "name": null,
              "description": null,
              "IPv4Address": "10.110.183.182",
              "IPSortValue": 0,
              "state": "UNALLOCATED",
              "hostName": "",
              "createdDate": "2014-11-11T02:24:04.000Z",
              "lastModifiedDate": "2014-11-11T02:24:04.000Z"
            },
              "id": "43d8bae4-7b78-40d2-a9ef-350d28901c24",
              "name": null,
              "description": null,
              "IPv4Address": "10.110.183.180",
              "IPSortValue": 0,
              "state": "UNALLOCATED",
              "hostName": "",
              "createdDate": "2014-11-11T02:24:04.000Z",
              "lastModifiedDate": "2014-11-11T02:24:04.000Z"
            },
            {
              "id": "c270ce8e-a418-4d02-89db-3b84f6816a75",
              "name": null,
              "description": null,
              "IPv4Address": "10.110.183.181",
              "IPSortValue": 0,
              "state": "UNALLOCATED",
              "hostName": "",
              "createdDate": "2014-11-11T02:24:04.000Z",
              "lastModifiedDate": "2014-11-11T02:24:04.000Z"
            },
            {
              "id": "684bbe43-29ce-4113-92c7-43921c943099",
              "name": null,
              "description": null,
              "IPv4Address": "10.110.183.183",
              "IPSortValue": 0,
              "state": "UNALLOCATED",
              "hostName": "",
              "createdDate": "2014-11-11T02:24:04.000Z",
              "lastModifiedDate": "2014-11-11T02:24:04.000Z"
```

```
            },

          ]
        }
      ],
      "profileType": "EXTERNAL",
      "IPAMEndpointId": null,
      "subnetMask": "255.255.255.0",
      "gatewayAddress": "10.110.183.253",
      "primaryDnsAddress": "10.110.182.45",
      "secondaryDnsAddress": "",
      "dnsSuffix": "mycompany.com",
      "dnsSearchSuffix": "",
      "primaryWinsAddress": "10.0.0.1",
      "secondaryWinsAddress": ""
    }
  ],
  "metadata": {
    "size": 0,
    "totalElements": 4,
    "totalPages": 1,
    "number": 1,
    "offset": 0
  }
}
```


Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/iaas-proxy-provider/api/network/profiles
Method	Get
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.

Output

The command output contains property names and values based on the command input parameters.

Parameter	Description

Links	Specifies an array of link objects, each of which contains the following parts:
	■ rel: Specifies the name of the link.
	  ■ `Self` refers to the object that was returned or requested. This parameter does not appear when you query a single profile.
	  ■ `First`, `Previous`, `Next`, and `Last` refer to corresponding pages of pageable lists.
	  ■ Specifies the application or service that determines the other names.
	■ href: Specifies the URL that produces the result.

Content	Specifies an array of data rows, each of which represents one of the tenant objects returned in a pageable list. Each tenant object can contain the following information:
	■ *@type*:
	  Specifies one of the following network profile type values:
	  ■ ExternalNetworkProfile
	  ■ NATNetworkProfile
	  ■ PrivateNetworkProfile
	  ■ RoutedNetworkProfile
	■ *$id*:
	  Specifies the unique network profile identifier.
	■ *$name*:
	  Specifies the network profile name.
	■ createdDate:
	  Specifies the date and time that the network profile was created.
	■ lastModifiedDate:
	  Specifies the date and time that the network profile was last modified.
	■ isHidden:
	  Specifies if the network profile is hidden from the vRealize Automation user interface.
	■ definedRanges:
	  Specifies the IP range array that is defined for the network profile.
	■ profileType:
	  Specifies the network profile type as one of the following types:
	  ■ EXTERNAL
	  ■ NAT
	  ■ ROUTED
	■ IPAMEndpointId:

Parameter	Description
	If you are creating or querying an external network profile that uses extrernal, IPAM , specifies the endpoint ID for the external IPAM provider. If you are creating a network profile and the profile does not use external IPAM, code null for this value. ■ subnetMask: Specifies the subnet mask. ■ gatewayAddress: Specifies the IP address of the network gateway. ■ primaryDnsAddress: Specifies the IP address of the primary DNS server. This parameter is only available for external, NAT, and routed network profiles. ■ secondaryDnsAddress: Specifies the IP address of a secondary DNS server. This parameter is only available for external, NAT, and routed network profiles. ■ dnsSuffix: Specifies the DNS suffix. This parameter is only available for external, NAT, and routed network profiles. ■ dnsSearchSuffix: Specifies the DNS search suffix. This parameter is only available for external, NAT, and routed network profiles. ■ primaryWinsAddress: Specifies the IP address of the primary Wins server. This parameter is only available for external, NAT, and routed network profiles. ■ secondaryWinsAddress: Specifies the IP address of secondary Wins server. This parameter is only available for external, NAT, and routed network profiles. ■ dhcpStartIPAddress: Specifies the start IP address of the DHCP server. This parameter is only supported by NAT and private network profiles. ■ dhcpEndIPAddress: Specifies the end IP address of the DHCP server. This parameter is only supported by NAT and private network profiles. ■ leaseTimeInSeconds: Specifies the lease time for the DHCP server. This parameter is only supported by NAT and private network profiles. ■ baseIP:

Parameter	Description
	Specifies the base IP address. This parameter is only supported by routed network profiles.
Metadata	Specifies the following paging-related data: ■ Size: Specifies the maximum number of rows per page. ■ totalElement: Specifies the number of rows returned. This parameter is not output when you query for a single profile. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped. ■ Size: Specifies the maximum number of rows per page. ■ totalElement: Specifies the number of rows returned. This parameter is not output when you query for a single profile. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped.

Create an External Network Profile Without IPAM Example

`POST /api/network/profiles` creates an external, NAT, private, or routed network profile.

curl Command

The following example command creates an external network profile without IPAM.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/iaas-proxy-provider/api/$networkProfileID -d ‟
{
  "@type": "ExternalNetworkProfile",
  "name": "externalTestCreate",
  "description": "",
  "isHidden": false,
  "definedRanges": [
    {
      "name": "range",
      "description": "",
      "beginIPv4Address": "10.110.183.221",
      "endIPv4Address": "10.110.183.240",
      "state": "UNALLOCATED"
    }
  ],
  "profileType": "EXTERNAL",
  "IPAMEndpointId": null,
  "subnetMask": "255.255.255.0",
  "gatewayAddress": "10.110.183.253",
```

```
  "primaryDnsAddress": "10.110.182.45",
  "secondaryDnsAddress": "",
  "dnsSuffix": "mycompany.com",
  "dnsSearchSuffix": "",
  "primaryWinsAddress": "10.0.0.1",
  "secondaryWinsAddress": ""
}
"
```

JSON Output

The JSON output consists of a location URL, which points to the newly created network profile. The output contains an empty HTTP response body and the following or similar header statement. Copy the location URL into a text editor for future use.

```
Location:
https://vcac148-084-241.eng.mycompany.com/iaas-proxy-provider/api/network/profiles/263b80f5-d34f-47f2-b0b1-5a3db991c2e9
```

Copy the location URL into a text editor for future use.

Input

Use the supported input parameters to control the command output.

Input	Description
URL	https://*$vRA*/iaas-proxy-provider/api/network/profiles
Method	Post
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
HTTP Body	The HTTP body describes the network profile to create. Sample HTTP body field values are presented in the JSON Output section of the Get a Network Profile List Example topic. Format your HTTP body using this content as reference.

Output

The command output contains property names and values based on the command input parameters.

Property	Description
status	If the command is successful, the HTTP status is `201 Created`.
Header.Location	The HTTP response should contain a `Location` attribute that is formatted as `https://$vRA/iaas-proxy-provider/api/network/profiles/$networkProfileID`.
$networkProfileID	Specifies the unique identifier of the new network profile.

Create an External Network Profile Using External IPAM Example

`POST /api/network/profiles` creates a external network profile using external IPAM.

curl Command

The following example command creates an external IPAM profile.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/iaas-proxy-provider/api/$networkProfileID -d "

{
    "profileType" : "EXTERNAL",
    "id" : null,
    "@type" : "ExternalNetworkProfile",
    "name" : "External IPAM",
    "IPAMEndpointId" : "c20f305c-07a5-4ba7-88ac-35da7b9713e0",
    "addressSpaceExternalId" : "address-space-4",
    "description" : null,
    "definedRanges" : [{
            "externalId" : "network-1",
            "name" : "192.168.1.0/24",
            "description" : "Created by vRO package stub workflow",
            "state" : "UNALLOCATED",
            "beginIPv4Address" : null,
            "endIPv4Address" : null
        }
    ]
}
```

JSON Output

The output contains an empty HTTP response body and the location and network profile ID in the header statement.

```
Location:
https://vcac148-084-241.eng.mycompany.com/iaas-proxy-provider/api/network/profiles/263b80f5-d34f-47f2-b0b1-5a3db991c2e9
```

Copy the location URL into a text editor for future use.

Input

Use the supported input parameters to control the command output.

Input	Description
URL	https://*$vRA*/iaas-proxy-provider/api/network/profiles
Method	Post
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.

HTTP Body	The HTTP body specifies the information for creating an external IPAM profile.
	■ *profileType*: Specify EXTERNAL for this parameter.
	■ id: Specifies *null*.
	■ name: Specifies the name of the profile.
	■ *IPAMEndpointId*: Specifies the endpoint ID for an external IPAM provider.
	■ *addressSpaceExternalId*: Specify the address space of the IPAM provider. This is represented in the vRealize Automation UI as **Address Space**.
	■ *description*: Optionally, can specify a description for the profile. If you do not provide a description, code "null" for this parameter.
	■ *definedRanges*: Specifies parameters that set up defined address ranges:
	  ■ externalId: Specify the address range of the IPAM provider.
	  This is the tie between vRealize Automation and he external IPAM provider. When you edit a network profile, vRealize Automation pulls information about the address ranges based on the external ID.
	  ■ name: Optionally, you can specify a descriptive name for the range.
	  ■ description
	  ■ state: Specify "UNALLOCATED" for this value.
	  ■ beginIPv4Address: Specify "null" for this parameter.
	  ■ endIPv4Address: Specify "null" for this parameter.

Output

The command output contains property names and values based on the command input parameters.

Property	Description
status	If the command is successful, the HTTP status is `201 Created`.
Header.Location	The HTTP response should contain a `Location` attribute that is formatted as `https://$vRA/iaas-proxy-provider/api/network/profiles/$networkProfileID`.
$networkProfileID	Specifies the unique identifier of the new network profile.

Query a Network Profile Example

`GET /api/network/profiles/{id}` queries and displays an external, NAT, or routed network profile. For example, you can query an external network profile and use it as the basis for creating a different type of network profile.

curl Command

The following example command queries the existing network profile ID 68b6a183-fc8a-4592-af23-92f8d410ee32.

```
curl --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/iaas-proxy-provider/api/network/profiles/68b6a183-fc8a-4592-af23-92f8d410ee32
```

JSON Output

The following JSON output is returned based on the command input.


```
{
  "@type": "ExternalNetworkProfile",
  "id": "68b6a183-fc8a-4592-af23-92f8d410ee32",
  "name": "externalTest",
  "description": "",
  "createdDate": "2014-11-11T02:24:07.000Z",
  "lastModifiedDate": "2014-11-11T02:24:07.000Z",
  "isHidden": false,
  "definedRanges": [
    {
      "id": "3a85a049-522f-4b64-8f60-6e7b252ad204",
      "name": "range",
      "description": "",
      "beginIPv4Address": "10.110.183.200",
      "endIPv4Address": "10.110.183.201",
      "state": "UNALLOCATED",
      "createdDate": "2014-11-11T02:23:38.000Z",
      "lastModifiedDate": "2014-11-11T02:23:38.000Z",
      "definedAddresses": [
        {
          "id": "f229ea1a-18de-4dae-ae7b-0cec7feaa99b",
          "name": null,
```

```
          "description": null,
          "IPv4Address": "10.110.183.201",
          "IPSortValue": 0,
          "state": "UNALLOCATED",
          "hostName": "",
          "createdDate": "2014-11-11T02:23:38.000Z",
          "lastModifiedDate": "2014-11-11T02:23:38.000Z"
        },
        {
          "id": "cd39e786-6490-4c95-8cf7-d6e3b6a0ba67",
          "name": null,
          "description": null,
          "IPv4Address": "10.110.183.200",
          "IPSortValue": 0,
          "state": "UNALLOCATED",
          "hostName": "",
          "createdDate": "2014-11-11T02:23:38.000Z",
          "lastModifiedDate": "2014-11-11T02:23:38.000Z"
        },
    }
  ],
  "profileType": "EXTERNAL",
  "IPAMEndpointId": null,
  "subnetMask": "255.255.255.0",
  "gatewayAddress": "10.110.183.253",
  "primaryDnsAddress": "10.110.182.45",
  "secondaryDnsAddress": "",
  "dnsSuffix": "mycompany.com",
  "dnsSearchSuffix": "",
  "primaryWinsAddress": "10.0.0.1",
  "secondaryWinsAddress": ""
}
```


Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/iaas-proxy-provider/api/network/profiles/*$id*
Method	Get
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$id:	Specifies the unique network profile identifier.

Output

The command output contains property names and values based on the command input parameters.

Parameter	Description

Links	Specifies an array of link objects, each of which contains the following parts:
	■ rel: Specifies the name of the link.
	  ■ `Self` refers to the object that was returned or requested. This property does not exist when you query for a single profile.
	  ■ `First`, `Previous`, `Next`, and `Last` refer to corresponding pages of pageable lists.
	  ■ Specifies the application or service that determines the other names.
	■ href: Specifies the URL that produces the result.

Content	Specifies an array of data rows, each of which represents one of the objects returned in a pageable list. Each object contains the following information:
	■ *@type*:
	  Specifies one of the following network profile type values:
	  ■ ExternalNetworkProfile
	  ■ NATNetworkProfile
	  ■ RoutedNetworkProfile
	■ *$id*:
	  Specifies the unique network profile identifier.
	■ *$name*:
	  Specifies the network profile name.
	■ createdDate:
	  Specifies the date and time that the network profile was created.
	■ lastModifiedDate:
	  Specifies the date and time that the network profile was last modified.
	■ isHidden:
	  Specifies if the network profile is hidden from the vRealize Automation user interface.
	■ definedRanges:
	  Specifies the IP range array that is defined for the network profile.
	■ profileType:
	  Specifies the network profile type as one of the following types:
	  ■ EXTERNAL
	  ■ NAT
	  ■ ROUTED
	■ IPAMEndpointId

Parameter	Description
	If you are querying an external network profile that uses external IPAM, shows the endpoint ID for the external IPAM provider. ■ subnetMask: Specifies the subnet mask. ■ gatewayAddress: Specifies the IP address of the network gateway. ■ primaryDnsAddress: Specifies the IP address of the primary DNS server. This parameter is only available for external, NAT, and routed network profiles. ■ secondaryDnsAddress: Specifies the IP address of a secondary DNS server. This parameter is only available for external, NAT, and routed network profiles. ■ dnsSuffix: Specifies the DNS suffix. This parameter is only available for external, NAT, and routed network profiles. ■ dnsSearchSuffix: Specifies the DNS search suffix. This parameter is only available for external, NAT, and routed network profiles. ■ primaryWinsAddress: Specifies the IP address of the primary Wins server. This parameter is only available for external, NAT, and routed network profiles. ■ secondaryWinsAddress: Specifies the IP address of secondary Wins server. This parameter is only available for external, NAT, and routed network profiles. ■ dhcpStartIPAddress: Specifies the start IP address of the DHCP server. This parameter is only supported by NAT network profiles. ■ dhcpEndIPAddress: Specifies the end IP address of the DHCP server. This parameter is only supported by NAT network profiles. ■ leaseTimeInSeconds: Specifies the lease time for the DHCP server. This parameter is only supported by NAT network profiles. ■ baseIP: Specifies the base IP address. This parameter is only supported by routed network profiles.
Metadata	Specifies the following paging-related data: ■ Size: Specifies the maximum number of rows per page.

Parameter	Description
	■ totalElement: Specifies the number of rows returned. This parameter is not output when you query for a single profile. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped. ■ Size: Specifies the maximum number of rows per page. ■ totalElement: Specifies the number of rows returned. This parameter is not output when you query for a single profile. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped.

Update a Network Profile Example

`PUT /api/network/profiles/{id}` updates an existing network profile.

curl Command

The following example command updates the network profile with an ID of 263b80f5-d34f-47f2-b0b1-5a3db991c2e9.

```
curl -X PUT --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/iaas-proxy-provider/api/network/profiles/263b80f5-d34f-47f2-b0b1-5a3db991c2e9 -d
"
{
  "@type": "ExternalNetworkProfile",
  "id": "263b80f5-d34f-47f2-b0b1-5a3db991c2e9",
  "name": "externalTestEdit",
  "description": "",
  "createdDate": "2014-11-16T09:11:55.000Z",
  "lastModifiedDate": "2014-11-16T09:11:55.000Z",
  "isHidden": false,
  "definedRanges": [
    {
      "id": "ce266d4c-5fbb-47a9-a391-c77444c20b09",
      "name": "range",
      "description": "",
      "beginIPv4Address": "10.110.183.239",
      "endIPv4Address": "10.110.183.240",
      "state": "UNALLOCATED",
      "createdDate": "2014-11-16T09:11:55.000Z",
      "lastModifiedDate": "2014-11-16T09:11:55.000Z",
      "definedAddresses": [
```

```
      ]
    }
  ],
  "profileType": "EXTERNAL",
  "subnetMask": "255.255.255.0",
  "gatewayAddress": "10.110.183.253",
  "primaryDnsAddress": "10.110.182.45",
  "secondaryDnsAddress": "",
  "dnsSuffix": "mycompany.com",
  "dnsSearchSuffix": "",
  "primaryWinsAddress": "10.0.0.1",
  "secondaryWinsAddress": ""
}
 "
```

JSON Output

The output contains an empty HTTP response body and the following status code.

```
204 No Content
```

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/iaas-proxy-provider/api/network/profiles/*$id*
Method	Put
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.

Output

The command output contains a status statement.

Parameter	Description
status	If the command is not successful, the HTTP status is `204 No Content`.

Delete a Network Profile Example

`DELETE /api/network/profiles/{id}` deletes an existing network profile corresponding to its unique ID.

curl Command

The following example command deletes a network profile with an ID of 263b80f5-d34f-47f2-b0b1-5a3db991c2e9.

```
curl –X “Delete” --insecure -H "Accept:application/json"
-H "Authorization: Bearer $token"
https://$vRA/iaas-proxy-provider/api/network/profiles/263b80f5-d34f-47f2-b0b1-5a3db991c2e9
```

JSON Output

The output contains an empty HTTP response body and the following status code.

```
204 No Content
```

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/iaas-proxy-provider/api/network/profiles/*$id*
Method	Delete
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$id:	Specifies the unique network profile identifier.

Output

The command output contains a status statement.

Parameter	Description
status	If the command is not successful, the HTTP status is `204 No Content`.

Getting a List of Available IP Ranges

12

After creating a network profile, the administrator imports IP address ranges into vRealize Automation from a registered IP address management (IPAM) service provider.

This chapter includes the following topics:

- Get a List of Available IP Ranges for an IPAM Provider

Get a List of Available IP Ranges for an IPAM Provider

`GET /api/providers/{providerEnpointId}/ip-ranges` queries a specified IPAM provider endpoint for a list of the available IP address ranges configured on the IPAM provider device.

Prerequisites

- Log in to vRealize Automation as a **tenant administrator**.
- Verify that the appliance name and fully qualified domain name of the vRealize Automation instance are available.
- Verify that you have a valid HTTP bearer token that matches your login credentials. See Chapter 2 REST API Authentication.
- Obtain the endpoint ID for the external IPAM provider device you want to query.

Procedure

1. Use the following command to query an IPAM endpoint for a list of configured IP address ranges.

   ```
   curl --insecure -H "Accept:application/json" -H "Authorization: Bearer $token" https://
   $vRA/ ipam-service/api/providers/<ENDPOINT_ID>/ip-ranges
   ```

   ENDPOINT_ID is the endpoint ID of the external IPAM service provider.

2. Examine the response for a list of the available IP address ranges configured on the IPAM provider device.

   ```
   {
     "links": [],
     "content": [
       {
   ```

```
      "@type": "IPRange",
      "id": null,
      "name": "192.168.0.0/24",
      "description": "Created by vRO package stub workflow",
      "extensionData": {
        "entries": [
          {
            "key": "Building",
            "value": {
              "type": "string",
              "value": "Building 0"
            }
          },
          {
            "key": "City",
            "value": {
              "type": "string",
              "value": "Santa Clara"
            }
          }
        ]
      },
      "providerEndpointId": "C20F305C-07A5-4BA7-88AC-35DA7B9713E0",
      "providerEndpointURI": null,
      "start": null,
      "end": null,
      "ipVersion": "IPv4",
      "gateway": "192.168.0.0",
      "subnetPrefixLength": 24,
      "externalId": "network-0",
      "dnsInfo": {
        "@type": "DNSInfo",
        "id": null,
        "name": null,
        "description": null,
        "dnsSuffix": "sqa.local",
        "primaryDNS": "",
        "secondaryDNS": "",
        "dnsSearchSuffixes": "search.sqa.local,search2.sqa.local",
        "preferredWINS": "",
        "alternateWINS": ""
      },
      "addressSpaceId": "default"
    },
    {
      "@type": "IPRange",
      "id": null,
      "name": "192.168.1.0/24",
      "description": "Created by vRO package stub workflow",
      "extensionData": {
        "entries": [
          {
            "key": "Building",
            "value": {
              "type": "string",
```

```
              "value": "Building 1"
            }
          },
          {
            "key": "City",
            "value": {
              "type": "string",
              "value": "Boston"
            }
          }
        ]
      },
      "providerEndpointId": "C20F305C-07A5-4BA7-88AC-35DA7B9713E0",
      "providerEndpointURI": null,
      "start": null,
      "end": null,
      "ipVersion": "IPv4",
      "gateway": "192.168.1.0",
      "subnetPrefixLength": 24,
      "externalId": "network-1",
      "dnsInfo": {
        "@type": "DNSInfo",
        "id": null,
        "name": null,
        "description": null,
        "dnsSuffix": "sqa.local",
        "primaryDNS": "",
        "secondaryDNS": "",
        "dnsSearchSuffixes": "search.sqa.local,search2.sqa.local",
        "preferredWINS": "",
        "alternateWINS": ""
      },
      "addressSpaceId": "default"
    },
    {
      "@type": "IPRange",
      "id": null,
      "name": "192.168.2.0/24",
      "description": "Created by vRO package stub workflow",
      "extensionData": {
        "entries": [
          {
            "key": "Building",
            "value": {
              "type": "string",
              "value": "Building 2"
            }
          },
          {
            "key": "City",
            "value": {
              "type": "string",
              "value": "Santa Clara"
            }
          }
```

```
        ]
      },
      "providerEndpointId": "C20F305C-07A5-4BA7-88AC-35DA7B9713E0",
      "providerEndpointURI": null,
      "start": null,
      "end": null,
      "ipVersion": "IPv4",
      "gateway": "192.168.2.0",
      "subnetPrefixLength": 24,
      "externalId": "network-2",
      "dnsInfo": {
        "@type": "DNSInfo",
        "id": null,
        "name": null,
        "description": null,
        "dnsSuffix": "sqa.local",
        "primaryDNS": "",
        "secondaryDNS": "",
        "dnsSearchSuffixes": "search.sqa.local,search2.sqa.local",
        "preferredWINS": "",
        "alternateWINS": ""
      },
      "addressSpaceId": "default"
    },
    {
      "@type": "IPRange",
      "id": null,
      "name": "192.168.3.0/24",
      "description": "Created by vRO package stub workflow",
      "extensionData": {
        "entries": [
          {
            "key": "Building",
            "value": {
              "type": "string",
              "value": "Building 3"
            }
          },
          {
            "key": "City",
            "value": {
              "type": "string",
              "value": "Boston"
            }
          }
        ]
      },
      "providerEndpointId": "C20F305C-07A5-4BA7-88AC-35DA7B9713E0",
      "providerEndpointURI": null,
      "start": null,
      "end": null,
      "ipVersion": "IPv4",
      "gateway": "192.168.3.0",
      "subnetPrefixLength": 24,
      "externalId": "network-3",
```

```
      "dnsInfo": {
        "@type": "DNSInfo",
        "id": null,
        "name": null,
        "description": null,
        "dnsSuffix": "sqa.local",
        "primaryDNS": "",
        "secondaryDNS": "",
        "dnsSearchSuffixes": "search.sqa.local,search2.sqa.local",
        "preferredWINS": "",
        "alternateWINS": ""
      },
      "addressSpaceId": "default"
    },
    {
      "@type": "IPRange",
      "id": null,
      "name": "192.168.4.0/24",
      "description": "Created by vRO package stub workflow",
      "extensionData": {
        "entries": [
          {
            "key": "Building",
            "value": {
              "type": "string",
              "value": "Building 4"
            }
          },
          {
            "key": "City",
            "value": {
              "type": "string",
              "value": "Santa Clara"
            }
          }
        ]
      },
      "providerEndpointId": "C20F305C-07A5-4BA7-88AC-35DA7B9713E0",
      "providerEndpointURI": null,
      "start": null,
      "end": null,
      "ipVersion": "IPv4",
      "gateway": "192.168.4.0",
      "subnetPrefixLength": 24,
      "externalId": "network-4",
      "dnsInfo": {
        "@type": "DNSInfo",
        "id": null,
        "name": null,
        "description": null,
        "dnsSuffix": "sqa.local",
        "primaryDNS": "",
        "secondaryDNS": "",
        "dnsSearchSuffixes": "search.sqa.local,search2.sqa.local",
        "preferredWINS": "",
```

```
        "alternateWINS": ""
      },
      "addressSpaceId": "default"
    },
    {
      "@type": "IPRange",
      "id": null,
      "name": "192.168.5.0/24",
      "description": "Created by vRO package stub workflow",
      "extensionData": {
        "entries": [
          {
            "key": "Building",
            "value": {
              "type": "string",
              "value": "Building 5"
            }
          },
          {
            "key": "City",
            "value": {
              "type": "string",
              "value": "Boston"
            }
          }
        ]
      },
      "providerEndpointId": "C20F305C-07A5-4BA7-88AC-35DA7B9713E0",
      "providerEndpointURI": null,
      "start": null,
      "end": null,
      "ipVersion": "IPv4",
      "gateway": "192.168.5.0",
      "subnetPrefixLength": 24,
      "externalId": "network-5",
      "dnsInfo": {
        "@type": "DNSInfo",
        "id": null,
        "name": null,
        "description": null,
        "dnsSuffix": "sqa.local",
        "primaryDNS": "",
        "secondaryDNS": "",
        "dnsSearchSuffixes": "search.sqa.local,search2.sqa.local",
        "preferredWINS": "",
        "alternateWINS": ""
      },
      "addressSpaceId": "default"
    },
    {
      "@type": "IPRange",
      "id": null,
      "name": "192.168.6.0/24",
      "description": "Created by vRO package stub workflow",
      "extensionData": {
```

```
        "entries": [
          {
            "key": "Building",
            "value": {
              "type": "string",
              "value": "Building 6"
            }
          },
          {
            "key": "City",
            "value": {
              "type": "string",
              "value": "Santa Clara"
            }
          }
        ]
      },
      "providerEndpointId": "C20F305C-07A5-4BA7-88AC-35DA7B9713E0",
      "providerEndpointURI": null,
      "start": null,
      "end": null,
      "ipVersion": "IPv4",
      "gateway": "192.168.6.0",
      "subnetPrefixLength": 24,
      "externalId": "network-6",
      "dnsInfo": {
        "@type": "DNSInfo",
        "id": null,
        "name": null,
        "description": null,
        "dnsSuffix": "sqa.local",
        "primaryDNS": "",
        "secondaryDNS": "",
        "dnsSearchSuffixes": "search.sqa.local,search2.sqa.local",
        "preferredWINS": "",
        "alternateWINS": ""
      },
      "addressSpaceId": "default"
    },
    {
      "@type": "IPRange",
      "id": null,
      "name": "192.168.7.0/24",
      "description": "Created by vRO package stub workflow",
      "extensionData": {
        "entries": [
          {
            "key": "Building",
            "value": {
              "type": "string",
              "value": "Building 7"
            }
          },
          {
            "key": "City",
```

```
            "value": {
              "type": "string",
              "value": "Boston"
            }
          }
        ]
      },
      "providerEndpointId": "C20F305C-07A5-4BA7-88AC-35DA7B9713E0",
      "providerEndpointURI": null,
      "start": null,
      "end": null,
      "ipVersion": "IPv4",
      "gateway": "192.168.7.0",
      "subnetPrefixLength": 24,
      "externalId": "network-7",
      "dnsInfo": {
        "@type": "DNSInfo",
        "id": null,
        "name": null,
        "description": null,
        "dnsSuffix": "sqa.local",
        "primaryDNS": "",
        "secondaryDNS": "",
        "dnsSearchSuffixes": "search.sqa.local,search2.sqa.local",
        "preferredWINS": "",
        "alternateWINS": ""
      },
      "addressSpaceId": "default"
    },
    {
      "@type": "IPRange",
      "id": null,
      "name": "192.168.8.0/24",
      "description": "Created by vRO package stub workflow",
      "extensionData": {
        "entries": [
          {
            "key": "Building",
            "value": {
              "type": "string",
              "value": "Building 8"
            }
          },
          {
            "key": "City",
            "value": {
              "type": "string",
              "value": "Santa Clara"
            }
          }
        ]
      },
      "providerEndpointId": "C20F305C-07A5-4BA7-88AC-35DA7B9713E0",
      "providerEndpointURI": null,
      "start": null,
```

```
      "end": null,
      "ipVersion": "IPv4",
      "gateway": "192.168.8.0",
      "subnetPrefixLength": 24,
      "externalId": "network-8",
      "dnsInfo": {
        "@type": "DNSInfo",
        "id": null,
        "name": null,
        "description": null,
        "dnsSuffix": "sqa.local",
        "primaryDNS": "",
        "secondaryDNS": "",
        "dnsSearchSuffixes": "search.sqa.local,search2.sqa.local",
        "preferredWINS": "",
        "alternateWINS": ""
      },
      "addressSpaceId": "default"
    },
    {
      "@type": "IPRange",
      "id": null,
      "name": "192.168.9.0/24",
      "description": "Created by vRO package stub workflow",
      "extensionData": {
        "entries": [
          {
            "key": "Building",
            "value": {
              "type": "string",
              "value": "Building 9"
            }
          },
          {
            "key": "City",
            "value": {
              "type": "string",
              "value": "Boston"
            }
          }
        ]
      },
      "providerEndpointId": "C20F305C-07A5-4BA7-88AC-35DA7B9713E0",
      "providerEndpointURI": null,
      "start": null,
      "end": null,
      "ipVersion": "IPv4",
      "gateway": "192.168.9.0",
      "subnetPrefixLength": 24,
      "externalId": "network-9",
      "dnsInfo": {
        "@type": "DNSInfo",
        "id": null,
        "name": null,
        "description": null,
```

```
        "dnsSuffix": "sqa.local",
        "primaryDNS": "",
        "secondaryDNS": "",
        "dnsSearchSuffixes": "search.sqa.local,search2.sqa.local",
        "preferredWINS": "",
        "alternateWINS": ""
      },
      "addressSpaceId": "default"
    },
    {
      "@type": "IPRange",
      "id": null,
      "name": "192.168.10.0/24",
      "description": "Created by vRO package stub workflow",
      "extensionData": {
        "entries": [
          {
            "key": "Building",
            "value": {
              "type": "string",
              "value": "Building 10"
            }
          },
          {
            "key": "City",
            "value": {
              "type": "string",
              "value": "Santa Clara"
            }
          }
        ]
      },
      "providerEndpointId": "C20F305C-07A5-4BA7-88AC-35DA7B9713E0",
      "providerEndpointURI": null,
      "start": null,
      "end": null,
      "ipVersion": "IPv4",
      "gateway": "192.168.10.0",
      "subnetPrefixLength": 24,
      "externalId": "network-10",
      "dnsInfo": {
        "@type": "DNSInfo",
        "id": null,
        "name": null,
        "description": null,
        "dnsSuffix": "sqa.local",
        "primaryDNS": "",
        "secondaryDNS": "",
        "dnsSearchSuffixes": "search.sqa.local,search2.sqa.local",
        "preferredWINS": "",
        "alternateWINS": ""
      },
      "addressSpaceId": "default"
    },
    {
```

```
      "@type": "IPRange",
      "id": null,
      "name": "192.168.11.0/24",
      "description": "Created by vRO package stub workflow",
      "extensionData": {
        "entries": [
          {
            "key": "Building",
            "value": {
              "type": "string",
              "value": "Building 11"
            }
          },
          {
            "key": "City",
            "value": {
              "type": "string",
              "value": "Boston"
            }
          }
        ]
      },
      "providerEndpointId": "C20F305C-07A5-4BA7-88AC-35DA7B9713E0",
      "providerEndpointURI": null,
      "start": null,
      "end": null,
      "ipVersion": "IPv4",
      "gateway": "192.168.11.0",
      "subnetPrefixLength": 24,
      "externalId": "network-11",
      "dnsInfo": {
        "@type": "DNSInfo",
        "id": null,
        "name": null,
        "description": null,
        "dnsSuffix": "sqa.local",
        "primaryDNS": "",
        "secondaryDNS": "",
        "dnsSearchSuffixes": "search.sqa.local,search2.sqa.local",
        "preferredWINS": "",
        "alternateWINS": ""
      },
      "addressSpaceId": "default"
    },
    {
      "@type": "IPRange",
      "id": null,
      "name": "192.168.12.0/24",
      "description": "Created by vRO package stub workflow",
      "extensionData": {
        "entries": [
          {
            "key": "Building",
            "value": {
              "type": "string",
```

```
            "value": "Building 12"
          }
        },
        {
          "key": "City",
          "value": {
            "type": "string",
            "value": "Santa Clara"
          }
        }
      ]
    },
    "providerEndpointId": "C20F305C-07A5-4BA7-88AC-35DA7B9713E0",
    "providerEndpointURI": null,
    "start": null,
    "end": null,
    "ipVersion": "IPv4",
    "gateway": "192.168.12.0",
    "subnetPrefixLength": 24,
    "externalId": "network-12",
    "dnsInfo": {
      "@type": "DNSInfo",
      "id": null,
      "name": null,
      "description": null,
      "dnsSuffix": "sqa.local",
      "primaryDNS": "",
      "secondaryDNS": "",
      "dnsSearchSuffixes": "search.sqa.local,search2.sqa.local",
      "preferredWINS": "",
      "alternateWINS": ""
    },
    "addressSpaceId": "default"
  },
  {
    "@type": "IPRange",
    "id": null,
    "name": "192.168.13.0/24",
    "description": "Created by vRO package stub workflow",
    "extensionData": {
      "entries": [
        {
          "key": "Building",
          "value": {
            "type": "string",
            "value": "Building 13"
          }
        },
        {
          "key": "City",
          "value": {
            "type": "string",
            "value": "Boston"
          }
        }
```

```
        ]
      },
      "providerEndpointId": "C20F305C-07A5-4BA7-88AC-35DA7B9713E0",
      "providerEndpointURI": null,
      "start": null,
      "end": null,
      "ipVersion": "IPv4",
      "gateway": "192.168.13.0",
      "subnetPrefixLength": 24,
      "externalId": "network-13",
      "dnsInfo": {
        "@type": "DNSInfo",
        "id": null,
        "name": null,
        "description": null,
        "dnsSuffix": "sqa.local",
        "primaryDNS": "",
        "secondaryDNS": "",
        "dnsSearchSuffixes": "search.sqa.local,search2.sqa.local",
        "preferredWINS": "",
        "alternateWINS": ""
      },
      "addressSpaceId": "default"
    },
    {
      "@type": "IPRange",
      "id": null,
      "name": "192.168.14.0/24",
      "description": "Created by vRO package stub workflow",
      "extensionData": {
        "entries": [
          {
            "key": "Building",
            "value": {
              "type": "string",
              "value": "Building 14"
            }
          },
          {
            "key": "City",
            "value": {
              "type": "string",
              "value": "Santa Clara"
            }
          }
        ]
      },
      "providerEndpointId": "C20F305C-07A5-4BA7-88AC-35DA7B9713E0",
      "providerEndpointURI": null,
      "start": null,
      "end": null,
      "ipVersion": "IPv4",
      "gateway": "192.168.14.0",
      "subnetPrefixLength": 24,
      "externalId": "network-14",
```

```
      "dnsInfo": {
        "@type": "DNSInfo",
        "id": null,
        "name": null,
        "description": null,
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        "primaryDNS": "",
        "secondaryDNS": "",
        "dnsSearchSuffixes": "search.sqa.local,search2.sqa.local",
        "preferredWINS": "",
        "alternateWINS": ""
      },
      "addressSpaceId": "default"
    },
    {
      "@type": "IPRange",
      "id": null,
      "name": "192.168.15.0/24",
      "description": "Created by vRO package stub workflow",
      "extensionData": {
        "entries": [
          {
            "key": "Building",
            "value": {
              "type": "string",
              "value": "Building 15"
            }
          },
          {
            "key": "City",
            "value": {
              "type": "string",
              "value": "Boston"
            }
          }
        ]
      },
      "providerEndpointId": "C20F305C-07A5-4BA7-88AC-35DA7B9713E0",
      "providerEndpointURI": null,
      "start": null,
      "end": null,
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      "subnetPrefixLength": 24,
      "externalId": "network-15",
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        "id": null,
        "name": null,
        "description": null,
        "dnsSuffix": "sqa.local",
        "primaryDNS": "",
        "secondaryDNS": "",
        "dnsSearchSuffixes": "search.sqa.local,search2.sqa.local",
        "preferredWINS": "",
```

```
        "alternateWINS": ""
      },
      "addressSpaceId": "default"
    },
    {
      "@type": "IPRange",
      "id": null,
      "name": "192.168.16.0/24",
      "description": "Created by vRO package stub workflow",
      "extensionData": {
        "entries": [
          {
            "key": "Building",
            "value": {
              "type": "string",
              "value": "Building 16"
            }
          },
          {
            "key": "City",
            "value": {
              "type": "string",
              "value": "Santa Clara"
            }
          }
        ]
      },
      "providerEndpointId": "C20F305C-07A5-4BA7-88AC-35DA7B9713E0",
      "providerEndpointURI": null,
      "start": null,
      "end": null,
      "ipVersion": "IPv4",
      "gateway": "192.168.16.0",
      "subnetPrefixLength": 24,
      "externalId": "network-16",
      "dnsInfo": {
        "@type": "DNSInfo",
        "id": null,
        "name": null,
        "description": null,
        "dnsSuffix": "sqa.local",
        "primaryDNS": "",
        "secondaryDNS": "",
        "dnsSearchSuffixes": "search.sqa.local,search2.sqa.local",
        "preferredWINS": "",
        "alternateWINS": ""
      },
      "addressSpaceId": "default"
    },
    {
      "@type": "IPRange",
      "id": null,
      "name": "192.168.17.0/24",
      "description": "Created by vRO package stub workflow",
      "extensionData": {
```

```
        "entries": [
          {
            "key": "Building",
            "value": {
              "type": "string",
              "value": "Building 17"
            }
          },
          {
            "key": "City",
            "value": {
              "type": "string",
              "value": "Boston"
            }
          }
        ]
      },
      "providerEndpointId": "C20F305C-07A5-4BA7-88AC-35DA7B9713E0",
      "providerEndpointURI": null,
      "start": null,
      "end": null,
      "ipVersion": "IPv4",
      "gateway": "192.168.17.0",
      "subnetPrefixLength": 24,
      "externalId": "network-17",
      "dnsInfo": {
        "@type": "DNSInfo",
        "id": null,
        "name": null,
        "description": null,
        "dnsSuffix": "sqa.local",
        "primaryDNS": "",
        "secondaryDNS": "",
        "dnsSearchSuffixes": "search.sqa.local,search2.sqa.local",
        "preferredWINS": "",
        "alternateWINS": ""
      },
      "addressSpaceId": "default"
    },
    {
      "@type": "IPRange",
      "id": null,
      "name": "192.168.18.0/24",
      "description": "Created by vRO package stub workflow",
      "extensionData": {
        "entries": [
          {
            "key": "Building",
            "value": {
              "type": "string",
              "value": "Building 18"
            }
          },
          {
            "key": "City",
```

```
            "value": {
              "type": "string",
              "value": "Santa Clara"
            }
          }
        ]
      },
      "providerEndpointId": "C20F305C-07A5-4BA7-88AC-35DA7B9713E0",
      "providerEndpointURI": null,
      "start": null,
      "end": null,
      "ipVersion": "IPv4",
      "gateway": "192.168.18.0",
      "subnetPrefixLength": 24,
      "externalId": "network-18",
      "dnsInfo": {
        "@type": "DNSInfo",
        "id": null,
        "name": null,
        "description": null,
        "dnsSuffix": "sqa.local",
        "primaryDNS": "",
        "secondaryDNS": "",
        "dnsSearchSuffixes": "search.sqa.local,search2.sqa.local",
        "preferredWINS": "",
        "alternateWINS": ""
      },
      "addressSpaceId": "default"
    },
    {
      "@type": "IPRange",
      "id": null,
      "name": "192.168.19.0/24",
      "description": "Created by vRO package stub workflow",
      "extensionData": {
        "entries": [
          {
            "key": "Building",
            "value": {
              "type": "string",
              "value": "Building 19"
            }
          },
          {
            "key": "City",
            "value": {
              "type": "string",
              "value": "Boston"
            }
          }
        ]
      },
      "providerEndpointId": "C20F305C-07A5-4BA7-88AC-35DA7B9713E0",
      "providerEndpointURI": null,
      "start": null,
```

```
      "end": null,
      "ipVersion": "IPv4",
      "gateway": "192.168.19.0",
      "subnetPrefixLength": 24,
      "externalId": "network-19",
      "dnsInfo": {
        "@type": "DNSInfo",
        "id": null,
        "name": null,
        "description": null,
        "dnsSuffix": "sqa.local",
        "primaryDNS": "",
        "secondaryDNS": "",
        "dnsSearchSuffixes": "search.sqa.local,search2.sqa.local",
        "preferredWINS": "",
        "alternateWINS": ""
      },
      "addressSpaceId": "default"
    }
  ],
  "metadata": {
    "size": 0,
    "totalElements": 20,
    "totalPages": 1,
    "number": 1,
    "offset": 0
  }
}
```

Importing and Exporting Content 13

You use the content management service to import and export content such as blueprints, software components, and other artifacts between vRealize Automation systems.

vRealize Automation customers often experiment with system artifacts in their development or staging deployments. When ready, they can use the content management service to move the artifacts to production environments or between different tenants.

Import and export has some known constraints.

Table 13-1. Import and Export Considerations

Issue	Consideration
Approval policies and entitlements	You cannot import or export approval policies or entitlements.
Required secure property values	If you export a blueprint that has the option `--secure true`, the values are removed during the export process. If the secure property is marked required, the import process will fail unless you update the package with the secure property values before you import it.
Draft state	You cannot import or export any content that is in a draft state.

For consistency with other service examples, each example lists a curl command. However the content management service provides a convenient mechanism for moving artifacts between systems using the CloudClient interface. With CloudClient, there is no need to set heading values, including the Authorization header. The `$vRA//$servicename/api` is eliminated from the URL and the service name becomes a separate parameter. For example, `consumer/entitledCatalogItems/{id}/request/template`. See Using vRealize CloudClient.

XaaS services are integrated with the content management service, and all commands that work with other content types also work with XaaS content to migrate XaaS content into vRealize Automation.

The same set prerequisites apply to each example.

This chapter includes the following topics:

- Prerequisites for Importing and Exporting Content
- List Supported Content Types Example

- List Available Content Example
- Filter Content by Content Type Example
- Create a Package for Export Example
- List Packages in the Content Service Example
- Export a Package Example
- Validate a Content Bundle Before Importing example
- Import a Package Example
- Export XaaS Content Example
- Import XaaS Content Example

Prerequisites for Importing and Exporting Content

Satisfy the following conditions before performing any tasks for this use case.

- Log in to vRealize Automation with an appropriate role. For example: Software Architect, Application Architect, Infrastructure Architecture or some combination of these depending on the need.
- Verify that the appliance name and fully qualified domain name of the vRealize Automation instance are available.
- Verify that you have a valid HTTP bearer token that matches your login credentials. See Chapter 2 REST API Authentication.

List Supported Content Types Example

`GET /api/provider/contenttypes` displays a list of supported content types.

Supported Content Types

A content type describes content that you can import or export using the content management service. Content types contain metadata about the content provider and the content itself, such as type information or service type ID. Usually the content provider supplies this information.

The REST API supports import and export of the following registered content types:

- composite-blueprint - the content type corresponding to the composite blueprint
- software-component - the content type corresponding to the software component
- property-group - the content type corresponding to the property groups
- property-definition - the content type corresponding to the property definitions

Everything as a Service (XaaS) content types:

- XaaS-blueprint

- XaaS-resource-action
- XaaS-resource-type
- XaaS-resource-mapping

curl Command

The following example command returns a list of supported content types.

```
$curl --insecure -s -H "Content-Type: application/json" -H "Authorization: Bearer $token"
https://$vRA/content-management-service/api/provider/contenttypes
```

JSON Output

The following JSON output is returned based on the command input.


```
{
  "links": [
  ],
  "content": [
    {
      "@type": "ContentType",
      "id": "property-group",
      "name": "Property Group",
      "description": "Content type corresponding to the property groups.",
      "classId": "PropertyGroup",
      "serviceTypeId": "com.vmware.csp.core.properties.service"
    },
    {
      "@type": "ContentType",
      "id": "property-definition",
      "name": "Property Definition",
      "description": "Content type corresponding to the property definitions.",
      "classId": "PropertyDefinition",
      "serviceTypeId": "com.vmware.csp.core.properties.service"
    },
    {
      "@type": "ContentType",
      "id": "composite-blueprint",
      "name": "Composite Blueprint Content Type",
      "description": "The content type corresponding to the composite blueprint",
      "classId": "Composite.Blueprint",
      "serviceTypeId": "com.vmware.csp.component.cafe.composition"
    },
    {
      "@type": "ContentType",
      "id": "asd-blueprint",
      "name": "{com.vmware.csp.core.designer.service@service.blueprint.content.type.name}",
      "description":
"{com.vmware.csp.core.designer.service@service.blueprint.content.type.description}",
      "classId": "asdServiceBlueprint",
      "serviceTypeId": "com.vmware.csp.core.designer.service"
    },
```

```
    {
      "@type": "ContentType",
      "id": "asd-resource-action",
      "name": "{com.vmware.csp.core.designer.service@resource.action.content.type.name}",
      "description":
"{com.vmware.csp.core.designer.service@resource.action.content.type.description}",
      "classId": "asdResourceAction",
      "serviceTypeId": "com.vmware.csp.core.designer.service"
    },
    {
      "@type": "ContentType",
      "id": "asd-resource-type",
      "name": "{com.vmware.csp.core.designer.service@resource.type.content.type.name}",
      "description":
"{com.vmware.csp.core.designer.service@resource.type.content.type.description}",
      "classId": "asdResourceType",
      "serviceTypeId": "com.vmware.csp.core.designer.service"
    },
    {
      "@type": "ContentType",
      "id": "asd-resource-mapping",
      "name": "{com.vmware.csp.core.designer.service@resource.mapping.content.type.name}",
      "description":
"{com.vmware.csp.core.designer.service@resource.mapping.content.type.description}",
      "classId": "asdResourceMapping",
      "serviceTypeId": "com.vmware.csp.core.designer.service"
    },
    {
      "@type": "ContentType",
      "id": "software-component",
      "name": "Software Component Content Type",
      "description":
"{com.vmware.csp.component.software.service@software.component.content.type.description}",
      "classId": "softwareComponentType",
      "serviceTypeId": "com.vmware.csp.component.software.service"
    }
  ],
  "metadata": {
    "size": 20,
    "totalElements": 9,
    "totalPages": 1,
    "number": 1,
    "offset": 0
  }
}
```


Input

Use the supported input parameters with your query URL to control command output. .

Name	Description	Type
page	Page Number. Default is 1.	Query
limit	Number of entries per page. Default is 20.	Query
$orderby	Multiple comma-separated properties sorted in ascending or descending order.	Query
$top	The number of returned entries from the top of the response (total number per page in relation to skip).	Query
$skip	The number of entries to skip.	Query
$filter	Boolean expression for whether a particular entry should be included in the response.	Query

Output

The command output contains property names and values based on the command input parameters.

Parameter	Description

Links	Specifies an array of link objects, each of which contains the following parts:
	■ rel: Specifies the name of the link.
	  ■ `Self` refers to the object that was returned or requested. This parameter does not appear when you query a single profile.
	  ■ `First`, `Previous`, `Next`, and `Last` refer to corresponding pages of pageable lists.
	  ■ Specifies the application or service that determines the other names.
	■ href: Specifies the URL that produces the result.

Content	■ id: The unique identifier for the content. This is also used as a folder name to group similar content artifacts. ■ name: The name of a given content type provided in localized message key form. ■ description: Additional information describing the content type. ■ classId: The class identifier associated with a content type. ■ serviceTypeId: The service ID for the given content type.
Metadata	Specifies the following paging-related data: ■ Size: Specifies the maximum number of rows per page. ■ totalElement: Specifies the number of rows returned. This parameter is not output when you query for a single profile. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped. ■ Size: Specifies the maximum number of rows per page. ■ totalElement: Specifies the number of rows returned. This parameter is not output when you query for a single profile. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped.

List Available Content Example

`GET /api/contents` lists the content that is available for export on your vRealize Automation deployment. Content is some artifact, entity or information that provides value to a user in a

specific context. Content can be represented in a file in different formats, such as XML, JSON, or a package of files.

curl Command

The following command displays a list of all available content in your vRealize Automation deployment.

```
$curl --insecure -s -H "Content-Type: application/json"-H "Authorization: Bearer $token"
https://$vRA/content-management-service/api/contents
```

JSON Output

The output includes published artifacts such as blueprints, software, and properties.


```
{
  "links": [],
  "content": [
    {
      "@type": "Content",
      "id": "6ba58cb4-257d-4833-b2dc-f090f92f86be",
      "contentId": "3482e3a7-c6c2-4372-b8e1-0db517b93406",
      "name": "Echo String",
      "description": null,
      "contentTypeId": "asd-blueprint",
      "mimeType": null,
      "tenantId": "qe",
      "subtenantId": null,
      "dependencies": [],
      "createdDate": "2015-08-18T19:14:54.899Z",
      "lastUpdated": "2015-08-18T19:14:54.899Z",
      "version": 0
    },
    {
      "@type": "Content",
      "id": "079cc912-b870-4f56-a1c3-91905526b09d",
      "contentId": "NicksBP",
      "name": "Nick's BP",
      "description": "Nick's BP",
      "contentTypeId": "composite-blueprint",
      "mimeType": null,
      "tenantId": "qe",
      "subtenantId": null,
      "dependencies": [],
      "createdDate": "2015-08-18T20:14:57.299Z",
      "lastUpdated": "2015-08-18T20:14:57.299Z",
      "version": 0
    },
    {
      "@type": "Content",
      "id": "9795e97f-7025-44f9-9a57-f59242a7775d",
      "contentId": "de81f329-cb72-4099-b831-309db708833b",
      "name": "TestMapping",
```

```
      "description": null,
      "contentTypeId": "asd-resource-mapping",
      "mimeType": null,
      "tenantId": "qe",
      "subtenantId": null,
      "dependencies": [],
      "createdDate": "2015-08-18T20:53:25.062Z",
      "lastUpdated": "2015-08-18T20:53:25.062Z",
      "version": 0
    },
    {
      "@type": "Content",
      "id": "3922fda1-b5fd-4c51-997d-5f803ec6fb6e",
      "contentId": "e8ae6093-18a9-4ec9-a415-1ef850f243f9",
      "name": "CustomRes",
      "description": null,
      "contentTypeId": "asd-resource-type",
      "mimeType": null,
      "tenantId": "qe",
      "subtenantId": null,
      "dependencies": [],
      "createdDate": "2015-08-18T20:56:11.052Z",
      "lastUpdated": "2015-08-18T20:56:11.052Z",
      "version": 0
    },
    {
      "@type": "Content",
      "id": "4754ad69-a6a7-447f-96de-2ed6fa260f7c",
      "contentId": "Software.Apache_LB",
      "name": "Apache_LB",
      "description": "Apache 2.2 The Apache HTTP Server is an open-source HTTP server for
modern operating systems including UNIX, Microsoft Windows, Mac OS/X and Netware. The goal
of this project is to provide a secure, efficient and extensible server that provides HTTP
services observing the current HTTP standards. Apache has been the most popular web server on
the Internet since April of 1996.",
      "contentTypeId": "software-component",
      "mimeType": null,
      "tenantId": "qe",
      "subtenantId": null,
      "dependencies": [],
      "createdDate": "2015-08-18T21:31:43.094Z",
      "lastUpdated": "2015-08-18T21:31:44.133Z",
      "version": 1
    },
    {
```


Input

Use the supported input parameters with your query URL to control command output.

Name	Description	Type
page	Page Number. Default is 1.	Query
limit	Number of entries per page. Default is 20.	Query
$orderby	Multiple comma-separated properties sorted in ascending or descending order.	Query
$top	The number of returned entries from the top of the response (total number per page in relation to skip).	Query
$skip	The number of entries to skip.	Query
$filter	Boolean expression for whether a particular entry should be included in the response.	Query

Output

The command output contains property names and values based on the command input parameters.

Parameter	Description

Links	Specifies an array of link objects, each of which contains the following parts:
	■ rel: Specifies the name of the link.
	  ■ `Self` refers to the object that was returned or requested. This parameter does not appear when you query a single profile.
	  ■ `First`, `Previous`, `Next`, and `Last` refer to corresponding pages of pageable lists.
	  ■ Specifies the application or service that determines the other names.
	■ href: Specifies the URL that produces the result.

Content	Specifies an array of data rows, each of which represents one of the objects returned in a pageable list. ■ id: Specifies the unique identifier for the content. This is also used as a folder name to group similar content artifacts. ■ contentId: The human readable immutable user or provider supplied content ID. ■ name: Specifies the name of a given content type provided in localized message key form. ■ description: Specifies additional information describing the package. ■ contentTypeId: Identifies the nature of the content. ■ mimeType: Identifies the mime type. ■ tenantId: The ID of the tenant associated with the package. Used to enforce ownership. ■ subtenantId: (Optional) The ID of the sub tenant or business group associated with the package. ■ dependencies: Represents the dependencies of the content unit in the form of content IDs. ■ createdDate: The creation date of the content. ■ lastUpdated: The date on which the content was last updated. ■ version: The version identifier of the content.
Metadata	Specifies the following paging-related data: ■ Size: Specifies the maximum number of rows per page. ■ totalElement: Specifies the number of rows returned. This parameter is not output when you query for a single profile. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped. ■ Size: Specifies the maximum number of rows per page.

Parameter	Description
	■ totalElement: Specifies the number of rows returned. This parameter is not output when you query for a single profile. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped.

Filter Content by Content Type Example

`GET /api/provider/contenttypes` with parameters to filter a list of returned content type items.

curl Command

The following command filters content by the contentTypeId named composite-blueprint.

```
$curl --insecure -s -H "Content-Type: application/json" -H
"Authorization: Bearer $token" https://$vRA/content-management-service/api/contents?
%24filter=contentTypeId+eq+%27composite-blueprint%27
```

JSON Output

In this example, the returned IDs correspond to composite blueprints that meet the filtering criteria.


```
{
  "links": [],
  "content": [
    {
      "@type": "Content",
      "id": "9b348c29-88ff-4fa8-b93e-f80bc7c3e723",
      "contentId": "vSphere",
      "name": "vSphere",
      "description": "vSphere",
      "contentTypeId": "composite-blueprint",
      "mimeType": null,
      "tenantId": "qe",
      "subtenantId": null,
      "dependencies": [],
      "createdDate": "2015-08-04T14:46:54.201Z",
      "lastUpdated": "2015-08-04T16:59:30.488Z",
      "version": 1
    },
    {
      "@type": "Content",
      "id": "968ae331-1ef2-44f8-bdc5-dfc2be78ca2f",
      "contentId": "Amazon",
      "name": "Amazon",
```

```
      "description": "Amazon",
      "contentTypeId": "composite-blueprint",
      "mimeType": null,
      "tenantId": "qe",
      "subtenantId": null,
      "dependencies": [
        "9e2005c3-c56e-48d0-801c-be36851f2b08"
      ],
      "createdDate": "2015-08-04T20:47:20.308Z",
      "lastUpdated": "2015-08-04T20:47:20.308Z",
      "version": 0
    }
  ],
  "metadata": {
    "size": 20,
    "totalElements": 2,
    "totalPages": 1,
    "number": 1,
    "offset": 0
  }
}
```


Input

Output

The command output contains property names and values based on the command input parameters.

Create a Package for Export Example

`POST /api/packages` creates a package for export use.

Creating a Package with Content

- For import or export purposes you must create a package to contain the desired content.
- The package is a logical unit that enables you to piece together different content elements.
- You can add multiple content IDs to the package.
  - Provide the input as an array with comma-separated content IDs.
  - To obtain the IDs of content that is available for export, you use `GET /api/contents`. See List Available Content Example.

A package represents an entity that you can export or import via the content management service. A set of references to the content instances can be bundled together as a package.

curl Command

The following command creates a package named Demo Package with a single content ID of 9b348c29-88ff-4fa8-b93e-f80bc7c3e723.

```
$curl --insecure -s -H "Content-Type: application/json" -H "Authorization: Bearer
$token" https://$vRA/content-management-service/api/packages -d'{"name" : "Demo Package",
"description" : "Package for demo purposes", "contents" : ["9b348c29-88ff-4fa8-b93e-
f80bc7c3e723" ]}'
```

JSON Output

The JSON output is a URL for the created package.

Input

Parameter	Description
createdDate	The package creation date.
lastUpdated	The date when the package was last updated.
version	The package version identifier.
tenantId	The ID of the tenant associated with the package. Used to enforce ownership.
subTenantId	(Optional) The ID of the sub tenant or business group associated with the package
id	Specifies the unique identifier for the content. This is also used as a folder name to group similar content artifacts.
name	Specifies the name of a given content type provided in localized message key form.
description	Specifies additional information describing the package.
contents	Collection of references that form the contents of the package.

Output

The command output contains property names and values based on the command input parameters.

Parameter	Description
createdDate	The package creation date.
lastUpdated	The date when the package was last updated.
version	The package version identifier.
tenantId	The ID of the tenant associated with the package. Used to enforce ownership.

Parameter	Description
subTenantId	(Optional) The ID of the sub tenant or business group associated with the package
id	Specifies the unique identifier for the content. This is also used as a folder name to group similar content artifacts.
name	Specifies the name of a given content type provided in localized message key form.
description	Specifies additional information describing the package.
contents	Collection of references that form the contents of the package.

List Packages in the Content Service Example

`GET /api/packages` lists the packages within the content service. Use this command to confirm the contents of a created package.

curl Command

The following command lists the packages within the content service.

```
$curl --insecure -s -H"Content-Type: application/json" -H "Authorization: Bearer
$token"https://$vRA/content-management-service/api/packages
```

JSON Output

The following output lists all packages within the content service.

```
{
  "links": [
  ],
  "content": [
    {
      "@type": "Package",
      "createdDate": "2015-08-04T22:22:53.490Z",
      "lastUpdated": "2015-08-04T22:22:53.490Z",
      "version": 0,
      "id": "54f627bb-2277-48af-9fa0-7d7366b498f3",
      "name": "Demo Package",
      "description": "Package for demo purposes",
      "contents": [
        "9b348c29-88ff-4fa8-b93e-f80bc7c3e723"
      ],
      "tenantId": "qe",
      "subTenantId": null
    }
  ],
  "metadata": {
    "size": 20,
```

```
    "totalElements": 1,
    "totalPages": 1,
    "number": 1,
    "offset": 0
  }
}
```

Input

You must provide the appropriate request parameters to list packages within the content service.

Name	Description	Type
page	Page Number. Default is 1.	Query
limit	Number of entries per page. Default is 20.	Query
$orderby	Multiple comma-separated properties sorted in ascending or descending order.	Query
$top	The number of returned entries from the top of the response (total number per page in relation to skip).	Query
$skip	The number of entries to skip.	Query
$filter	Boolean expression for whether a particular entry should be included in the response.	Query

Output

The command output contains property names and values based on the command input parameters.

Parameter	Description

Links	Specifies an array of link objects, each of which contains the following parts:
	■ rel: Specifies the name of the link.
	  ■ `Self` refers to the object that was returned or requested. This parameter does not appear when you query a single profile.
	  ■ `First`, `Previous`, `Next`, and `Last` refer to corresponding pages of pageable lists.
	  ■ Specifies the application or service that determines the other names.
	■ href: Specifies the URL that produces the result.

Content	■ createdDate: The creation date of the content. ■ lastUpdated: The date on which the content was last updated. ■ version: The version identifier of the content. ■ id: Specifies the unique identifier for the content. This is also used as a folder name to group similar content artifacts. ■ contentId: The human readable immutable user or provider supplied content ID. ■ name: Specifies the name of a given content type provided in localized message key form. ■ description: Specifies additional information describing the package. ■ contentTypeId: The unique identifier of the contentType. ■ mimeType: The mime type file identifier. ■ tenantId: The ID of the tenant associated with the package. Used to enforce ownership. ■ subtenantId: (Optional) The ID of the sub tenant or business group associated with the package. ■ dependencies: These represent the content unit dependencies in the form of content IDs.
Metadata	Specifies the following paging-related data: ■ Size: Specifies the maximum number of rows per page. ■ totalElement: Specifies the number of rows returned. This parameter is not output when you query for a single profile. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped. ■ Size: Specifies the maximum number of rows per page. ■ totalElement: Specifies the number of rows returned. This parameter is not output when you query for a single profile.

Parameter	Description
	■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped.

Export a Package Example

`GET /api/packages/{id}` exports a package as a .zip file.

curl Command

The following command exports a package as a .zip file.

```
$curl --insecure -s -H "Accept: application/zip" -H "Authorization: Bearer $token"
https://$vRA/content-management-service/api/packages/54f627bb-2277-48af-9fa0-7d7366b498f3-o
package.zip
```

JSON Output

The export command returns a message that indicates whether or not the package was exported. A successful export produces a package.zip exported to the specified location. The returned message is `'200 - Successes'` with the Package or `404 - 'Not Found'` if it does not find a package with provided ID.

Input

The query URL for the export command must specify the ID of the package to export.

Table 13-2. Export Query URL Parameters

Name	Description	Type
id	The identifier of the package	Path
secureValueFormat	The format in which secure values should be sent. This parameter is optional and defaults to "BLANKOUT".	Query

Output

The output of this command is a .zip file.

Validate a Content Bundle Before Importing example

`POST /api/packages/validate` validates a content bundle before importing to a critical system. A best practice is to validate all packages before importing into to any system.

curl Command

The following command validates a content bundle prior to importing it. This example uses the DukesBankApp.zip file which is provided on the vRealize Automation virtual appliance. You can copy the file from `/usr/lib/vcac/tools/initial-config/sample-oob-content/DukesBankApp.zip` using WinSCP (Windows) or scp (Mac).

```
$curl --insecure -s -H" Content-Type: multipart/form-data" -H "Authorization: Bearer $token"
https://$vRA/content-management-service/api/packages/validate -F "file=@DukesBankApp.zip"
```

JSON Output

The validation output displays the validation status of each content item within the bundle.


```
{
  "contentImportStatus": "SUCCESS",
  "contentImportResults": [
    {
      "contentId": "Apache_LB",
      "contentName": "Apache_LB",
      "contentTypeId": "software-component",
      "contentImportStatus": "SUCCESS",
      "contentImportErrors": null
    },
    {
      "contentId": "MySql",
      "contentName": "MySql",
      "contentTypeId": "software-component",
      "contentImportStatus": "SUCCESS",
      "contentImportErrors": null
    },
    {
      "contentId": "JBossAppServer",
      "contentName": "JBossAppServer",
      "contentTypeId": "software-component",
      "contentImportStatus": "SUCCESS",
      "contentImportErrors": null
    },
    {
      "contentId": "Dukes-Bank-DB-setup",
      "contentName": "Dukes-Bank-DB-setup",
      "contentTypeId": "software-component",
      "contentImportStatus": "SUCCESS",
      "contentImportErrors": null
    },
    {
      "contentId": "Dukes_Bank_App",
      "contentName": "Dukes_Bank_App",
      "contentTypeId": "software-component",
      "contentImportStatus": "SUCCESS",
      "contentImportErrors": null
    },
    {
```

```
      "contentId": "DukesBankApplication",
      "contentName": "DukesBankApplication",
      "contentTypeId": "composite-blueprint",
      "contentImportStatus": "SUCCESS",
      "contentImportErrors": null
    }
  ]
}
```

Input

You can use optional request parameters with your query URL to customize the returned content.

Table 13-3. Package Validation Parameters

Name	Description	Type
file	The name of the package file to be validated	query
resolution mode	The resolution mode to be used for performing validation when the same entity exists in the system. Valid values are SKIP, OVERWRITE. SKIP will not update the existing entity with the new content while OVERWRITE will update the old entity with the new data. In case the resolution mode is not explicitly provided the default mode OVERWRITE will be used for conflict resolution.	query

Output

The package validation response body contains the following parameters.

Table 13-4. Import and Export Response Body Parameters

Parameter	Description
contentImportStatus	Over all status of the import/validation operation, one failure in import/validation result guarantees failed status. Values are as follows: ■ Success - Denotes the successful import or validation status at a particular component or package level. ■ Failed - Denotes an import or validation failure at a particular component package level. ■ Warning - Denotes a scenario that warrants a system level warning. Alerts the user about a possible error condition that the proposed action may create.
contentImportResults	Set of collected content import/validation results populated by the provider. The Content import operation result collection is the set of content that passed or failed. If failed the errors are populated in ContentImportError. Properties are as follows: ■ contentId - (string) Unique content ID within the file system. ■ contentName - (anyType) Name of the content being imported. ■ contentTypeId - (string) The ID for the content type being exported. This matches the folder structure in the exported zip. ■ contentImportStatus - Track the failed or succeeded status of an entity. ■ messages - Information returned by the provider. ■ contentImportErrors - Set of errors returned by the provider.

Import a Package Example

`POST /api/packages` imports a package.

curl Command

The following command imports a .zip file. This example uses the DukesBankApp.zip file which is provided on the vRealize Automation virtual appliance. You can copy the file from `/usr/lib/vcac/tools/initial-config/sample-oob-content/DukesBankApp.zip` using WinSCP (Windows) or scp (Mac).

```
$curl --insecure -s -H "Content-Type: multipart/form-data" -H "Authorization: Bearer $token"
https://$vRA/content-management-service/api/packages -F "file=@DukesBankApp.zip"
```

To verify success of a package import, use vRealize Automation to view the imported items on the target system.

JSON Output

The following JSON output is returned on the command input.

```
{
  "contentImportStatus": "SUCCESS",
  "contentImportResults": [
    {
      "contentId": "Apache_LB",
      "contentName": "Apache_LB",
      "contentTypeId": "software-component",
```

```
      "contentImportStatus": "SUCCESS",
      "contentImportErrors": null
    },
    {
      "contentId": "MySql",
      "contentName": "MySql",
      "contentTypeId": "software-component",
      "contentImportStatus": "SUCCESS",
      "contentImportErrors": null
    },
    {
      "contentId": "JBossAppServer",
      "contentName": "JBossAppServer",
      "contentTypeId": "software-component",
      "contentImportStatus": "SUCCESS",
      "contentImportErrors": null
    },
    {
      "contentId": "Dukes-Bank-DB-setup",
      "contentName": "Dukes-Bank-DB-setup",
      "contentTypeId": "software-component",
      "contentImportStatus": "SUCCESS",
      "contentImportErrors": null
    },
    {
      "contentId": "Dukes_Bank_App",
      "contentName": "Dukes_Bank_App",
      "contentTypeId": "software-component",
      "contentImportStatus": "SUCCESS",
      "contentImportErrors": null
    },
    {
      "contentId": "DukesBankApplication",
      "contentName": "DukesBankApplication",
      "contentTypeId": "composite-blueprint",
      "contentImportStatus": "SUCCESS",
      "contentImportErrors": null
    }
  ]
}
```

Output

The command output contains property names and values based on the command input parameters.

Table 13-5. Import and Export Response Body Parameters

Parameter	Description
contentImportStatus	Over all status of the import/validation operation, one failure in import/validation result guarantees failed status. Values are as follows: ■ Success - Denotes the successful import or validation status at a particular component or package level. ■ Failed - Denotes an import or validation failure at a particular component package level. ■ Warning - Denotes a scenario that warrants a system level warning. Alerts the user about a possible error condition that the proposed action may create.
contentImportResults	Set of collected content import/validation results populated by the provider. The Content import operation result collection is the set of content that passed or failed. If failed the errors are populated in ContentImportError. Properties are as follows: ■ contentId - (string) Unique content ID within the file system. ■ contentName - (anyType) Name of the content being imported. ■ contentTypeId - (string) The ID for the content type being exported. This matches the folder structure in the exported zip. ■ contentImportStatus - Track the failed or succeeded status of an entity. ■ messages - Information returned by the provider. ■ contentImportErrors - Set of errors returned by the provider.

Export XaaS Content Example

`PUT /api/content/bundles/filters` exports a package as a .zip file.

curl Command

The following command exports an XaaS package as a .zip file at the specified location.

```
curl -X PUT -H "Authorization: Bearer $token" -H "Content-Type: application/json"-
d'{"jsonAccepted" : true, "tenantId" : "qe", "data" : [] }' 'https://$vRA/advanced-designer-
service/api/content/bundles/filters'
```

JSON Output

The output of a successful export command is a .zip file at the specified location.

Input

Table 13-6. XaaS Import Input Parameters

Name	Parameter
tenantId	Identifies the tenant associated with the export package.
data	Information about the export package. Includes the following: ■ entityType ■ id
jsonAccepted	Valid values are true or false.

Output

Import XaaS Content Example

`POST /api/content/bundles` imports an XaaS content bundle. You can use the command to import a 6.2.x package into vRealize Automation 7.0.

curl Command

The following command imports a file called `XaaSContent.zip`.

```
curl --insecure -X POST -H "Authorization: Bearer $token" -H "Content-Type:multipart/form-data"-F"file=@XaaSContent.zip"-F"prefix=prefix_"-F"prefixOnlyConflicting=true"' https://$vRA/advanced-designer-service/api/content/bundles'
```

JSON Output

The output of the command is a message indicating the status and details of the import operation.

```
{
  "importStatus" : "SUCCESSFUL",
  "data" : [ {
    "logLevel" : "INFO",
    "entityType" : "com.vmware.vcac.designer.service.domain.ServiceBlueprint",
    "entityId" : "4740aa54-61e6-47d7-945f-0bb50ff153c8",
    "entityName" : "XaaSBlueprint",
    "messageKey" : "import.blueprint.success",
    "message" : "Success"
  } ]
}
```

Input

Table 13-7. XaaS Import Input Parameters

Name	Parameter
file	Identifies the .zip file that is the content bundle to import.
prefix	The prefix to use with imported objects. Ensures avoidance of a duplicate name failure.
prefixOnlyConflicting	Set to true to rename or prefix conflicting objects.

Output

The command output contains property names and values based on the command input parameters.

Table 13-8. Import and Export Response Body Parameters

Parameter	Description
importStatus	Over all status of the import/validation operation, one failure in import/validation result guarantees failed status. Values are as follows: ■ Successful - Denotes the successful import or validation status at a particular component or package level. ■ Partial - Denotes a scenario that warrants a system level warning. Alerts the user about a possible error condition that the proposed action may create. ■ Failed - Denotes an import or validation failure at a particular component package level.
data	Set of collected content import/validation results populated by the provider. The Content import operation result collection is the set of content that passed or failed: ■ entityType - (string) The ID for the entity being imported. ■ entitytId - (string) Unique content ID within the file system. ■ messageKey - (string) ■ logLevel - The logging level to use for any errors that occur. ■ message - Information returned by the provider. ■ entityName - (anyType) Name of the entity being imported.

Updating Tenancy on a Security Object

14

You use the network service to perform tasks related to updating tenancy on a security object.

As a vRealize Automation system administrator, you can change the tenancy of a security group, security tag, or security policy. The tenancy levels are:

- Unscoped — Security object not visible to any tenant.
- Global — Security object visible to all tenants with a reservation on the specific endpoint in which the security object exists. To indicate that a tenancy is global, the tenantID must be set to **`null`**.
- TenantId — Security object visible only to the tenant specified.

This chapter includes the following topics:

- Update the Tenancy for a Security Group
- Network Service Examples for Updating Tenancy

Update the Tenancy for a Security Group

To set the tenancy level for an NSX security object, you pass the security object to its API with a tenant ID specified. To do this efficiently, you use the API to retrieve the object, alter its JSON, then pass the edited JSON back to the API.

This use case example updates the tenant ID for a security group, but the same procedure applies to security tags and security policies using similar APIs such as:

- `/network-service/api/security-tags/{id}`
- `/network-service/api/security-policies/{id}`

Prerequisites

- Log in to vRealize Automation as a **system administrator** or a **tenant administrator**.
- Verify that the appliance name and fully qualified domain name of the vRealize Automation instance are available.
- Verify that you have a valid HTTP bearer token that matches your login credentials. See Chapter 2 REST API Authentication.

Procedure

1 Retrieve the security group with ID=24.

```
curl --insecure -H "Accept: application/json" -H "Content-Type: application/json" -H
"Authorization: Bearer $token" https://$vRA/network-service/api/security-groups/24
```

For details regarding input and output for this request, see Syntax for Retrieving Security Groups.

2 Edit the JSON for the security group.

Name the JSON file `updateTenantId.json` and set the tenant ID to a single tenant named **`rainpole`**.

```
{
   "@type": "SecurityGroup",
   "id": "24",
   "name": "security-group-name",
   "description": "Managed by VMware vRealize Automation",
   "externalId": "securitygroup-19567",
   "tenantId": "rainpole",
   "extensionData": {
      "entries": [...]
   },
   "securityGroupTypeId": "Infrastructure.Network.SecurityGroup.NSX",
   "internal": false,
   "machineIdCollection": null,
   "ipAddressCollection": null
}
```

3 Submit a request to update the security group with ID=24 that calls the JSON file.

```
curl -X PUT --insecure -H "Accept: application/json" -H "Content-type: application/
json" -H "Authorization: Bearer $token” -H "Cache-control: no cache" https://$vRA/network-
service/api/security-groups/24 --data @C:/Temp/updateTenantId.json
```

For details regarding input and output for this request see Syntax for Updating a Tenant ID .

4 Examine the response to verify that the security group has the tenant you specified.

Results

With the tenancy changed to **`rainpole`**, rainpole is the only tenant on this endpoint that can now see the security group with ID=24 .

Network Service Examples for Updating Tenancy

Syntax for each service example lists input parameters, output parameters, and curl commands.

Syntax for Retrieving Security Groups

`GET /api/security-groups/{id}` retrieves a security group identified by its ID.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/network-service/api/security-groups/{id}, where *id* is the ID of the security group.
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.

Output

The command output contains property names and values based on the command input parameters.

Parameter	Description
Content	Specifies an array of data rows, each of which represents one of the security objects returned in a pageable list. Each security object can contain the following information: ■ id: Specifies the unique security object identifier. ■ name: Specifies the name of the security object. ■ description: Specifies a description of the security object. ■ externalId: Specifies the external ID of the security object. ■ tenantId: Specifies the tenant ID value. Default value is null. ■ extensionData: Contains an array of Literals name "entries". Each Literanl contains a key and a value. The value, in turn, contains a type (such as a string or integer) and the Literal's value. ■ securityGroupTypeId: For internal use only. Applies to security groups only. ■ internal: For internal use only. Applies to security groups only. ■ machineIdCollection: For internal use only. Applies to security groups only. ■ ipAddressCollection: For internal use only. Applies to security groups only.

Example: curl Command to Retrieve Security Groups

The following example command retrieves information about security group with ID=24.

```
curl -X --insecure -H "accept: application/json"
-H "Authorization: Bearer $token”  https://$vRA/network-service/api/security-groups/24
```

The response in JSON lists the information for the security group specified.

```
{
    "links": [],
    "content": [
        {
```

```
            "@type": "SecurityGroup",
            "id": "24",
            "name": "security-group-name",
            "description": "Managed by VMware vRealize Automation",
            "externalId": "securitygroup-19567",
            "tenantId": null,
            "extensionData": {
                  "entries": [...]
            },
            "securityGroupTypeId": "Infrastructure.Network.SecurityGroup.NSX",
            "internal": false,
            "machineIdCollection": null,
            "ipAddressCollection": null
        }
    ],
}
```

Syntax for Updating a Tenant ID

`PUT /api/security-groups/{id}` updates the tenant for the security group with a specified ID.

Input

Use the supported input parameters to control the command output.

Table 14-1. Input parameters

Parameter	Description
URL	https://*$vRA*/network-service/api/security-groups/{id}, where *id* is the ID of the security group to update.
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.
$securityId	Specifies the unique security object identifier.
$securityName	Specifies the name of the security object.
$description	Specifies a description of the security object.
$externalId	Specifies the external ID of the security object.

Table 14-1. Input parameters (continued)

Parameter	Description
$tenantId	Specifies the tenant ID value. Valid values are: **`<unscoped>`**, **`null`**, and *tenant_name*, where: ■ `"tenantID": "<unscoped>"` — Hides the security object from all tenants. ■ `"tenantID": null` — Specifies global tenancy. The object is visible to all tenants with a reservation on the specific endpoint in which the security object exists. ■ `"tenantID": "my_tenant_example"` — The security object is only visible to the tenant named **`my_tenant_example`**.
$extensionData	Contains an array of Literals name "entries". Each Literanl contains a key and a value. The value, in turn, contains a type (such as a string or integer) and the Literal's value.

JSON Input File Template

To simplify command line input, you can call a JSON file with input parameters from the command line. You create the JSON file using a text editor, replacing italicized variables in the following template with your specific values.

```
{
   "@type": "SecurityGroup",
   "id": "$securityId",
   "name": "$securityName",
   "description": "$description",
   "externalId": "$externalId",
   "tenantId": "$tenantId",
   "extensionData": {
      "entries": [...]
   },
   "securityGroupTypeId": "$securityGroupTypeId",
   "internal": false,
   "machineIdCollection": null,
   "ipAddressCollection": null
}
```

Output

The command output contains property names and values based on the command input parameters.

Parameter	Description

Links	Specifies an array of link objects, each of which contains the following parts:
	■ rel: Specifies the name of the link.
	  ■ `Self` refers to the object that was returned or requested. This property does not exist when you query for a single profile.
	  ■ `First`, `Previous`, `Next`, and `Last` refer to corresponding pages of pageable lists.
	  ■ Specifies the application or service that determines the other names.
	■ href: Specifies the URL that produces the result.

Content	Specifies an array of data rows, each of which represents one of the security objects returned in a pageable list. Each security object can contain the following information: ■ id: Specifies the unique security object identifier. ■ name: Specifies the name of the security object. ■ description: Specifies a description of the security object. ■ externalId: Specifies the external ID of the security object. ■ tenantId: Specifies the tenant ID value. Default value is null. ■ extensionData: Contains an array of Literals name "entries". Each Literanl contains a key and a value. The value, in turn, contains a type (such as a string or integer) and the Literal's value. ■ securityGroupTypeId: For internal use only. Applies to security groups only. ■ internal: For internal use only. Applies to security groups only. ■ machineIdCollection: For internal use only. Applies to security groups only. ■ ipAddressCollection: For internal use only. Applies to security groups only.
Metadata	Specifies the following paging-related data: ■ Size: Specifies the maximum number of rows per page. ■ totalElement: Specifies the number of rows returned. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped.

Example: curl Command to Update the Tenant ID for a Security Group With JSON File

The following sample `updateTenantId.json` file contains parameters for the request to update a security group with ID=24.

```
{
   "@type": "SecurityGroup",
   "id": "24",
   "name": "security-group-name",
   "description": "Managed by VMware vRealize Automation",
   "externalId": "securitygroup-19567",
   "tenantId": "my_tenant_example",
   "extensionData": {
      "entries": [...]
   },
   "securityGroupTypeId": "Infrastructure.Network.SecurityGroup.NSX",
```

```
   "internal": false,
   "machineIdCollection": null,
   "ipAddressCollection": null
}
```

The following example requests a tenant ID update for security group with ID=24 by calling the `updateTenantId.json` file.

```
curl -X PUT --insecure -H "Accept: application/json" -H "Content-type: application/json" -H
"Authorization: Bearer $token” -H "Cache-control: no cache" https://$vRA/network-service/api/
security-groups/24 --data @C:/Temp/updateTenantId.json
```

Example: curl Command to Update the Tenant ID for a Security Group With Parameters Inline

The following example requests a tenant ID update for security group with ID=24 with input parameters specified inline.

```
curl -X PUT --insecure -H "Accept: application/json" -H "Content-type: application/json" -H
"Authorization: Bearer $token” -H "Cache-control: no cache" https://$vRA/network-service/api/
security-groups/24 --data
{
   "@type": "SecurityGroup",
   "id": "24",
   "name": "security-group-name",
   "description": "Managed by VMware vRealize Automation",
   "externalId": "securitygroup-19567",
   "tenantId": "my_tenant_example",
   "extensionData": {
      "entries": [...]
   },
   "securityGroupTypeId": "Infrastructure.Network.SecurityGroup.NSX",
   "internal": false,
   "machineIdCollection": null,
   "ipAddressCollection": null
}
```

Triggering an Active Directory Synchronization

15

You use the identity service to initiate the synchronization process for an active directory.

On-demand directory synchronization brings users and groups into vRealize Automation without reading and saving the active directory configuration first. In this way, you can automate the process.

This chapter includes the following topics:

- Trigger Sync to an Active Directory
- Identity Service Examples for Triggering Active Directory Synchronization

Trigger Sync to an Active Directory

To initiate synchronization to an active directory, you retrieve the domain name of the directory then use that domain name in the API request to synchronize the groups and users to that directory.

Prerequisites

- Log in to vRealize Automation as a **system administrator** or a **tenant administrator**.
- Verify that the appliance name and fully qualified domain name of the vRealize Automation instance are available.
- Verify that you have a valid HTTP bearer token that matches your login credentials. See Chapter 2 REST API Authentication.

Procedure

1. Retrieve the directories for the specified tenant.

```
curl --insecure -H "Accept: application/json" -H "Content-Type: application/json" -H
"Authorization: Bearer $token" https://$vRA/identity/api/$tenantId/directories
```

   For details regarding input and output for this request, see Syntax for Retrieving Directories.

2. Examine the result to find the domain name of the directory for which you want to initiate synchronization.

```
{
   "@type": "IdentityStore",
```

```
    "domain": "demo.ad-example.local",
    "name": "Demo AD for sync",
    "description": "Demo AD for sync",
    "alias": "",
    "type": "AD",
    ...
}
```

In this example, the directory is `Demo AD for sync` with domain name `demo.ad-example.local`.

3 Use the domain name to initiate the synchronization process.

```
curl -X POST --insecure -H "Accept: application/json" -H "Content-type: application/json"
-H "Authorization: Bearer $token" -H "Cache-control: no cache" https://$vRA/identity/api/
tenants/$tenantId/directories/demo.ad-example.local/sync
```

For details regarding input and output for this request, see Syntax for Synchronizing the Active Directory.

4 Check the state of the synchronization process.

```
curl -X GET --insecure -H "Accept: application/json" -H "Content-type: application/json"
-H "Authorization: Bearer $token" -H "Cache-control: no cache" https://$vRA/identity/api/
tenants/$tenantId/directories/demo.ad-example.local/status
```

For details regarding input and output for this request, see Syntax for Checking the Synchronization Process.

5 Examine the result for the value of the syncStatus attribute.

```
{
    "syncStatus": {
        "status": "RUNNING",
        "message": null
    }
}
```

In this example, the status is `RUNNING`.

Results

When the synchronization process completes successfully, the status is `COMPLETED` and the directory with the name `Demo AD for sync` appears with synced groups and users under **Administration > Directories** in the vRealize Automation interface.

Identity Service Examples for Triggering Active Directory Synchronization

Syntax for each service example lists input parameters, output parameters, and curl commands.

Syntax for Retrieving Directories

`GET /api/tenants/{tenantId}/directories` retrieves a list of directories for a tenant.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/identity/api/tenants/{tenantId}/directories, where *tenantId* is the ID of the tenant.
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials. The bearer token is included in the HEADER of the request.

Output

The command output contains property names and values based on the command input parameters.

Parameter	Description

Links	Specifies an array of link objects, each of which contains the following parts:
	■ rel: Specifies the name of the link.
	  ■ `Self` refers to the object that was returned or requested. This property does not exist when you query for a single profile.
	  ■ `First`, `Previous`, `Next`, and `Last` refer to corresponding pages of pageable lists.
	  ■ Specifies the application or service that determines the other names.
	■ href: Specifies the URL that produces the result.

Content	Specifies an array of data rows, each of which represents one of the objects returned in a pageable list. Each object can contain the following information: ■ domain: Specifies the domain name for the directory. ■ name: Specifies the name of the directory. ■ description: Specifies a description of the directory. ■ alias: Specifies the alternate name of the directory, if applicable. ■ type: Specifies the type of directory, such as active directory or local directory.
Metadata	Specifies the following paging-related data: ■ Size: Specifies the maximum number of rows per page. ■ totalElement: Specifies the number of rows returned. This parameter is not output when you query for a single profile. ■ totalPages: Specifies the total number of pages of data available. ■ Number: Specifies the current page number. ■ Offset: Specifies the number of rows skipped.

Example: curl Command to Retrieve Directories

The following example command retrieves all directories for the tenant.

```
curl -X --insecure -H "accept: application/json" -H "Authorization: Bearer $token”  https://
$vRA/identity/api/$tenantId/directories
```

The response in JSON lists the information for the tenant specified.


```
{
    "links": [],
    "content": [
        {
            "@type": "IdentityStore",
            "domain": "domain_name1",
            "name": "Active Directory Example 1",
            "description": "Active Directory Example 1",
            "alias": "",
            "type": "AD",
            ...
        }
        {
            "@type": "IdentityStore",
            "domain": "domain_name2",
            "name": "Active Directory Example 2",
            "description": "Active Directory Example 2",
            "alias": "",
            "type": "AD",
            ...
        }
    ],
    "metadata": {
        "size": 20,
        "totalElements": 1,
        "totalPages": 1,
        "number": 1,
        "offset": 0
    }
}
```


Syntax for Synchronizing the Active Directory

`POST /api/tenants/{tenantId}/directories/{id}/sync` initiates the sync process on the directory identified by its domain name.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/identity/api/tenants/{tenantId}/directories/{id}/sync, where: ■ *tenantId* is the ID of the tenant ■ *id* is the domain name of the directory for synchronization
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials. The bearer token is included in the HEADER of the request.

Response Status Codes

One of the following codes is displayed as a result of your synchronization request.

Status Code	Description
200 OK	Your request succeeded and a sync process was initiated.
401 UNAUTHORIZED	The request might not authenticate the user or authentication credentials required.
404 NOT FOUND	The domain name is incorrect or there is no such domain in the tenant. For example: `Cannot find a directory with domain name 'someDomain' in tenant 'someTenant'!` Use the information in the response to troubleshoot the problem with the request.

Example: curl Command to Synchronize the Active Directory

The following example command initiates the synchronization process for a directory with domain name `demo.ad-example.local`.

```
curl -X --insecure -H "accept: application/json" -H "Authorization: Bearer $token"  https://
$vRA/identity/api/tenants/$tenantId/directories/demo.ad-example.local/sync
```

Syntax for Checking the Synchronization Process

`GET /api/tenants/{tenantId}/directories/{id}/status` shows the status of the synchronization.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/identity/api/tenants/{tenantId}/directories/{id}/sync, where: ■ *tenantId* is the ID of the tenant ■ *id* is the domain name of the directory for synchronization
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials. The bearer token is included in the HEADER of the request.

Output

The command output contains property names and values based on the command input parameters.

Parameter	Description
syncStatus	Specifies the status of the synchronization: ■ status: Specifies the status of the sync process. Positive responses include: RUNNING and COMPLETED. If a negative status code is returned, the message included with the error provides troubleshooting suggestions. ■ message: Provides additional information regarding the status.

Example: curl Command to Check Status of Synchronization

The following example command checks the synchronization process for a directory with domain name `demo.ad-example.local`.

```
curl -X --insecure -H "accept: application/json" -H "Authorization: Bearer $token”  https://
$vRA/identity/api/tenants/$tenantId/directories/demo.ad-example.local/status
```

The response in JSON provides the status of the synchronization process. The following example is a positive response that shows the synchronization is running.

```
{
    "syncStatus": {
        "status": "RUNNING",
        "message": null
    },
}
```

Retrieving Health Test Results

16

You use the health broker proxy server to retrieve and examine results of a health test configuration.

A configuration includes one or more test suites that you create and run on a schedule to check the health of your vRealize Automation or vRealize Orchestrator installation. vRealize Automation Health Service is a plug-in to vRealize Automation, and each configuration corresponds to a tile on the Health page of the user interface.

This chapter includes the following topics:

- Retrieve Health Test Results
- Health Broker Proxy Server Examples to Obtain Test Results

Retrieve Health Test Results

To find the results of a health test, you retrieve a list of all configurations, query for an execution of a particular configuration, then query for the individual results of that execution.

This example shows how to retrieve results for the latest execution of a health test configuration. You can also retrieve results for tests executed at a different time.

Prerequisites

- Log in to vRealize Automation as a **system administrator** and a **tenant administrator**. In addition, the tenant administrator must have fabric administrator permissions to use the health broker proxy server.
- Verify that the appliance name and fully qualified domain name of the vRealize Automation instance are available.
- Verify that you have a valid HTTP bearer token that matches your login credentials. See Chapter 2 REST API Authentication.

Procedure

1 Use the health broker proxy server to get an authentication token for the health services API.

```
curl -X GET --insecure "https://$vRA/healthbroker-proxy-server/api/authn/all HTTP/1.1" -H
"accept: text/html" -H "authorization: Bearer $token"
```

For details regarding input and output for this request, see Syntax for Requesting a Health Services Token.

A successful request returns an authentication token that you include in subsequent API requests.

2 For convenience, store the token in a variable.

```
export healthtoken="EXAMPLE-HEALTH-TOKEN-TEXT"
```

3 Retrieve a list of health test configurations.

```
curl -X GET --insecure "https://$vRA:8090/health/config/configurations HTTP/1.1" -H "x-xenon-auth-token: $healthtoken"
```

For details regarding input and output for this request see Syntax to Retrieve a List of Configurations.

4 Examine the response for configurations listed under `documentLinks`.

```
"documentLinks": [
    "/health/config/configurations/80dc3a6f1478553368707000",
    "/health/config/configurations/8277769f1478213933292000",
    "/health/config/configurations/80dc3a6f1478545923685000"
],
```

Every time the Health Broker runs a test configuration, an execution is created.

5 Submit a request to find the latest execution for one of the health test configurations.

```
curl -X POST --insecure "https://$vRA:8090/core/health-query-tasks HTTP/1.1" -H "content-type: application/json" -H "x-xenon-auth-token: $healthtoken"
```

The query body specifies the configuration `/health/config/configurations/8277769f1478213933292000` as the value to match.

```
{
    "taskInfo": {
        "isDirect": true
    },
    "querySpec": {
        "query": {
            "occurance": "MUST_OCCUR",
            "booleanClauses": [{
                "occurance": "MUST_OCCUR",
                "term": {
                    "propertyName": "documentKind",
                    "matchValue": "com:vmware:healthbroker:states:ExecutionServiceState",
                    "matchType": "TERM"
                }
            },
            {
                "occurance": "MUST_OCCUR",
                "term": {
```

```
                    "propertyName": "configurationLink",
                    "matchValue": "/health/config/configurations/8277769f1478213933292000",
                    "matchType": "TERM"
                }
            }]
        },
        "sortTerm": {
            "propertyName": "startedTimestamp",
            "propertyType": "LONG"
        },
        "sortOrder": "DESC",
        "resultLimit": 1,
        "options": ["TOP_RESULTS",
        "EXPAND_CONTENT",
        "SORT"]
    }
}
```

For details regarding input and output for this request see Syntax to Filter for Latest Execution of a Configuration .

6 Examine the execution document contained in the response to find the `overallResultLink`.

```
"overallResultsLink": "/health/result/overall-results/Report_vRA_20161103-22.59.03.0373",
```

This is the latest execution of the configuration.

7 Submit a request to find all the individual results for the latest execution.

```
curl -X POST --insecure "https://$vRA:8090/core/health-query-tasks HTTP/1.1" -H "content-
type: application/json" -H "x-xenon-auth-token: $healthtoken"
```

The query body specifies the value for the **`overallResultsLink`** as the value to match.

```
{
    "taskInfo": {
        "isDirect": true
    },
    "querySpec": {
        "query": {
            "occurance": "MUST_OCCUR",
            "booleanClauses": [{
                "occurance": "MUST_OCCUR",
                "term": {
                    "propertyName": "documentKind",
                    "matchValue":
"com:vmware:healthbroker:states:IndividualTestResultServiceState",
                    "matchType": "TERM"
                }
            },
            {
                "occurance": "MUST_OCCUR",
                "term": {
                    "propertyName": "overallResultsLink",
```

```
                    "matchValue": "/health/result/overall-results/
Report_vRA_20161103-22.59.03.0373",
                    "matchType": "TERM"
                }
            }]
        },
        "sortTerm": {
            "propertyName": "state",
            "propertyType": "STRING"
        },
        "sortOrder": "DESC",
        "options": ["EXPAND_CONTENT",
        "SORT"]
    }
}
```

For details regarding input and output for this request see Syntax to Find All Individual Results.

Results

Detailed test results output in a textual representation facilitate programmatic post-processing. In cases where a check fails, a message describing the failure appears in the output.

```
{
  "testMethod": {
    "name": "vRealize Automation Node Common Name Certificate Check",
    "description": "This test case verifies that the vRA node certificate Common names match
that of it's server. This test is most useful for distributed/HA environments.",
    "descriptionType": "text",
    "severity": "CRITICAL",
    "methodName": "areVraNodeCertsCommonNameValid",
    "accessLevel": "INFRASTRUCTURE",
    "enabled": false,
    "configurationReferences": []
  },
  "startTime": "1478213951731",
  "endTime": "1478213960684",
  "state": "FAILED",
  "message": "Not all checks were successful. See the following errors for more
details: \njava.io.IOException: Unable to get the certificate of your server [cava-
pn-210-066.eng.vmware.com:443]. Please confirm configuration information. The returned
exception is: [java.net.UnknownHostException: cava-pn-210-066.eng.vmware.com] \n",
  "remediationType": "html",
  "remediation": "http://kb.vmware.com/selfservice/microsites/search.do?
language=en_US&cmd=displayKC&externalId=2106583",
  "overallResultsLink": "/health/result/overall-results/Report_vRA_20161103-22.59.03.0373",
}
```

Health Broker Proxy Server Examples to Obtain Test Results

Syntax for each service example lists input parameters, output parameters, and curl commands.

Syntax for Requesting a Health Services Token

`GET /api/authn/all` requests an authentication token for the health services API.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*/healthbroker-proxy-server/api/authn/all
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$token	Specifies a valid HTTP bearer token with necessary credentials.

Output

The output is a text file with the token to authenticate to the health services API.

Example: curl Command to Retrieve Directories

The following example command requests the authentication token.

```
curl -X --insecure -H "accept: text/html" -H "Authorization: Bearer $token"  https://$vRA/
healthbroker-proxy-server/api/authn/all
```

The text response is the authentication token for requests to the health services API.

Syntax to Retrieve a List of Configurations

`GET /health/config/configurations` retrieves a list of health test configurations.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*:8090/health/config/configurations
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$healthtoken	Specifies a valid authentication token for the health services API.

Note The request does not use the API endpoint so `healthbroker-proxy-service/api` is not used.

Output

The command output contains property names and values based on the command input parameters.

Parameter	Description
Content	Specifies an array of data rows, each of which represents one of the objects returned in a pageable list. Each object can contain the following information: ■ documentLinks: Specifies the configurations. ■ documentCount: Specifies the number of configurations ■ queryTimeMicros: Specifies ■ documentOwner: Specifies

Example: curl Command to Retrieve List of Configurations

The following example command retrieves a list of all configurations.

```
curl -X --insecure -H "x-xenon-auth-token: $healthtoken" https://$vRA:8090/health/config/
configurations
```

The response lists all configurations.

```
{
    "documentLinks": [
        "/health/config/configurations/12858d4c34f278755680551b52340"
    ],
    "documentCount": 1,
    "queryTimeMicros": 3000,
    "documentVersion": 0,
    "documentUpdateTimeMicros": 0,
    "documentExpirationTimeMicros": 0,
    "documentOwner": "213feac8-675e-49da-b882-0fca7149962a"
}
```

Syntax to Filter for Latest Execution of a Configuration

`POST /core/health-query-tasks` submits a request for the latest execution of a configuration.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*:8090/core/health-query-tasks
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$healthtoken	Specifies a valid authentication token for the health services API.

Note The request does not use the API endpoint so `healthbroker-proxy-service/api` is not used.

Response Status Codes

One of the following codes is displayed as a result of your synchronization request.

Status Code	Description
200 OK	Your request succeeded and the object was updated.
400 BAD REQUEST	The data you provided in the POST failed validation. Inspect the response body for details.
401 UNAUTHORIZED	The request might not authenticate the user or authentication credentials required.

Example: curl Command to Filter for Latest Execution of a Configuration

The following example command retrieves the latest execution of the configuration named `/health/config/configurations/12858d4c34f278755680551b52340`.

```
curl -X --insecure -H "content-type: application/json" -H "x-xenon-auth-token: $healthtoken"
https://$vRA:8090/core/health-query-tasks
{
    "taskInfo": {
        "isDirect": true
    },
    "querySpec": {
        "query": {
            "occurance": "MUST_OCCUR",
            "booleanClauses": [{
                "occurance": "MUST_OCCUR",
                "term": {
                    "propertyName": "documentKind",
                    "matchValue": "com:vmware:healthbroker:states:ExecutionServiceState",
                    "matchType": "TERM"
                }
            },
            {
                "occurance": "MUST_OCCUR",
                "term": {
                    "propertyName": "configurationLink",
                    "matchValue": "/health/config/configurations/
12858d4c34f278755680551b52340",
                    "matchType": "TERM"
                }
            }]
        },
        "sortTerm": {
            "propertyName": "startedTimestamp",
            "propertyType": "LONG"
        },
        "sortOrder": "DESC",
        "resultLimit": 1,
        "options": ["TOP_RESULTS",
```

```
        "EXPAND_CONTENT",
        "SORT"]
    }
}
```

Example: JSON Output

The following sample shows the latest execution of the configuration specified by the `overallResultsLink`.

```
{
    "taskInfo": {
    ...
    },
    "querySpec": {
        "query": {
        ...
        }
    },
    "results": {
       "documentLinks": [
           "/health/exec/executions/12858d4c34f278755680551d322f0"
       ],
    "documents": {
        "/health/exec/executions/12858d4c34f278755680551d322f0": {
            "configurationLink": "/health/config/configurations/
12858d4c34f278755680551b52340",
            "started": "2018-03-22T19:29:00.471Z",
            "overallResultsLink": "/health/result/overall-results/Report_089adaf3-44d3-4cb2-
a1a5-d2de4f376e73-20180322-19.29.00.0471",

        ...
        },
    ...
    },
}
```

Syntax to Find All Individual Results

`POST /core/health-query-tasks` submits a request for all individual results for the latest execution of a configuration.

Input

Use the supported input parameters to control the command output.

Parameter	Description
URL	https://*$vRA*:8090/core/health-query-tasks
$vRA	Specifies the appliance name and fully qualified domain name, or IP address of the vRealize Automation server.
$healthtoken	Specifies a valid authentication token for the health services API.

Note The request does not use the API endpoint so `healthbroker-proxy-service/api` is not used.

Response Status Codes

One of the following codes is displayed as a result of your synchronization request.

Status Code	Description
200 OK	Your request succeeded and the object was updated.
400 BAD REQUEST	The data you provided in the POST failed validation. Inspect the response body for details.
401 UNAUTHORIZED	The request might not authenticate the user or authentication credentials required.

Example: curl Command to Retrieve all the Individual Results for the Latest Execution

The following example command retrieves the individual results for the execution named `/health/result/overall-results/Report_089adaf3-44d3-4cb2-a1a5-d2de4f376e73-20180322-19.29.00.0471`.

```
curl -X --insecure -H "content-type: application/json" -H "x-xenon-auth-token: $healthtoken"
https://$vRA:8090/core/health-query-tasks
{
    "taskInfo": {
        "isDirect": true
    },
    "querySpec": {
        "query": {
            "occurance": "MUST_OCCUR",
            "booleanClauses": [{
                "occurance": "MUST_OCCUR",
                "term": {
                    "propertyName": "documentKind",
                    "matchValue":
"com:vmware:healthbroker:states:IndividualTestResultServiceState",
                    "matchType": "TERM"
                }
            },
            {
                "occurance": "MUST_OCCUR",
```

```
                "term": {
                    "propertyName": "overallResultsLink",
                    "matchValue": "/health/result/overall-results/Report_089adaf3-44d3-4cb2-
a1a5-d2de4f376e73-20180322-19.29.00.0471",
                    "matchType": "TERM"
                }
            }]
        },
        "sortTerm": {
            "propertyName": "state",
            "propertyType": "STRING"
        },
        "sortOrder": "DESC",
        "options": ["EXPAND_CONTENT",
        "SORT"]
    }
}
```

Example: JSON Output

The following snippet is from the output that shows all the individual results for the latest execution of the configuration. This section shows an example of the message that appears if the test fails. The value of the `overallResultsLink` is the matched value from the input body.

```
{
    "taskInfo": {
    ...
    },
    "querySpec": {
        "query": {
        ...
        }
    },
    "results": {
        "documentLinks": [
            "/health/exec/executions/12858d4c34f278755680551d322f0"
        ],
        "documents": {
            "/health/result/individual-result/Report_089..." : {
                "testMethod": {
                    "name": "Check Storage Reservation Policy to Reservation
Assignments",
                    "description": "This test collects all storages that are assigned
a storage reservation policy(from all tenants), and checks them against created
reservations(in the specified tenant) to see if that storage is assigned to a
reservation.",
                    "descriptionType": "text",
                    "severity": "NORMAL",
                    "methodName":
"CheckIfAllStorageReservationPoliciesAreAssignedToReservations",
                    "accessLevel": "NORMAL",
                    "enabled": false,
                    "configurationReferences": []
                },
```

```
                "startTime": "1521746961853",
                "endTime": "1521746962763",
                "state": "FAILED",
                "message": "[Storage reservation policy [Rainpole High Speed] is assigned
to storage [Datastore1], but the storage is not in any reservation in tenant [rainpole].]
\n[Storage reservation policy [Rainpole Low Cost] is assigned to storage [VNXe:nsx61-data1],
but the storage is not in any reservation in tenant [rainpole].]\n[Storage reservation policy
[Rainpole High Speed] is assigned to storage [VNXe:nsx61-data2], but the storage is not in
any reservation in tenant [rainpole].] expected [false] but found [true]",
                "remediationType": "html",
                "remediation":
"http://pubs.vmware.com/vrealize-automation-72/index.jsp#com.vmware.vrealize.automation.doc/
GUID-95AADE6A-4CE2-4AC9-9D1F-1E42DC3E52FF.html",
                "overallResultsLink": "/health/result/overall-results/
Report_089adaf3-44d3-4cb2-a1a5-d2de4f376e73-20180322-19.29.00.0471",
            ...
            },
        ...
        },
    ...
    },
...
}
```

Related Tools and Documentation 17

In addition to the provided use case code snippets, you can expand your options for working with the vRealize Automation REST API by using related tools and documentation.

You can use the vRealize CloudClient to simplify your interaction with the vRealize Automation REST API. You can also use third party tools such as Chrome Developer Tools or Firebug to further expand your vRealize Automation REST API programming options.

This chapter includes the following topics:

- Using vRealize CloudClient
- Using Third Party Tools

Using vRealize CloudClient

vRealize CloudClient is a separate command-line utility that provides a unified interface for working with the vRealize Automation APIs.

For information about vRealize CloudClient, see the VMware Developer site at https://developercenter.vmware.com/tool/cloudclient.

Enabling vRealize CloudClient Multi-Factor Authentication for vRealize Automation Users

To provide a higher level of security than basic username and password authentication, you can enable vRealize CloudClient to use multi-factor authentication with vRealize Automation.

Configuring vRealize CloudClient for multi-factor authentication is a two-step process. First, the vRealize Automation administrator creates or registers a new OAuth2 client in vRealize Automation. Then vRealize CloudClient uses the new client to obtain an access token from vRealize Automation.

Creating the New OAuth2 Client

The vRealize Automation administrator runs a command to create a new OAuth2 client. Any vRealize CloudClient user who wants to authenticate with vRealize Automation needs the new OAuth2 client ID and secret.

Creating a new OAuth2 client in vRealize Automation is a privileged operation. To create a new OAuth2 client, the administrator must authenticate with vRealize Automation using an existing client ID and secret.

Obtaining the Existing OAuth2 Client ID and Secret

During the initial deployment of vRealize Automation, an OAuth2 client is created for internal use. The vRealize Automation administrator logs in to the vRealize Automation virtual appliance as root using SSH and runs the following commands to obtain the client ID and secret.

- To obtain the existing client ID.

```
$(grep -i csp-admin= /etc/vcac/solution-users.properties | sed -e 's/csp-admin=//')
```

- To obtain the existing client secret.

```
$ (grep -i csp-admin.secret /etc/vcac/solution-users.properties | sed -e 's/csp-
admin.secret=//'| xargs -n 1 vcac-config prop-util -d --p)
```

Creating the New OAuth2 Client

To create a new OAuth2 client, the vRealize Automation administrator logs in to vRealize CloudClient and runs the following command.

```
CloudClient> vra oauth2client create --server <vra-server-fqdn>
             --tenant <tenant-id>
             --newoauth2clientid <cc-oauth2-client-id>
             --newoauth2clientsecret <cc-oauth2-client-secret>
             --existingoauth2clientid <existing-oauth2-client-id>
             --existingoauth2clientsecret <existing-oauth2-client-secret>
             --port <port-number>
             --accesstokenttl <token-lifetime-in-seconds>
             --refreshtokenttl <token-lifetime-in-seconds>
```

Table 17-1. Input parameters for the `vra oauth2client create` command

Parameter	Description
vra-server-fqdn	Hostname of the vRealize Automation server
tenant-id	Tenant with which the user is authenticating
cc-oauth2-client-id	ID of the new OAuth2 client provided by the vRealize Automation administrator
cc-oauth2-client-secret	Secret of the new OAuth2 client provided by the vRealize Automation administrator
existing-oauth2-client-id	ID of existing OAuth2 client registered with vRealize Automation
existing-oauth2-client-secret	Secret of existing OAuth2 client registered with vRealize Automation

Table 17-1. Input parameters for the `vra oauth2client create` command (continued)

Parameter	Description
port-number	Port on the physical machine where vRealize CloudClient is running. vRealize Automation sends the OAuth2 authorization code to the vRealize CloudClient listener on this port.
token-lifetime-in-seconds	(optional) Number of seconds from generation to expiration of the access token that is to be generated when the OAuth2 Client ID and secret are used during authentication by the end user. If unspecified, the default value is 3600 or 1 hour.
token-lifetime-in-seconds	(optional) Number of seconds from generation to expiration of the refresh token that is to be generated when the OAuth2 Client ID and secret are used during authentication by the end user. If unspecified, the default value is 2592000 or 30 days.

If the command is successful, the following output appears.

```
Successfully created OAuth2 Client
```

In a large organization, a vRealize Automation administrator may want to create an OAuth2 client per business group rather than per individual user. vRealize CloudClient end users in the same business group would use the same OAuth2 client. If a user were to leave the organization, the administrator would delete the existing OAuth2 client and create a new client for the business group.

Obtaining the Access Token

With the new OAuth2 client information provided by the vRealize Automation administrator, the vRealize CloudClient end user can use vRealize CloudClient to obtain an access token that is later used when vRealize CloudClient makes vRealize Automation API calls.

Understanding How Multi-Factor Authentication Works with vRealize Automation

When the end user enters the vRealize CloudClient command to obtain an access token, this initiates the Authorization Code Grant flow process. A browser opens with the vRealize Automation login page and the user provides login credentials. Once vRealize Automation validates the credentials, it generates an authorization code and sends it to the port on the machine where vRealize CloudClient is running. When vRealize CloudClient receives the authorization code, it provides the code along with the new OAuth2 client ID and client secret to vRealize Automation so that vRealize Automation can provide the access token to vRealize CloudClient.

In addition to the access token used to authenticate the current vRealize CloudClient session, vRealize Automation provides a refresh token that is a valid for a longer period and can be used to obtain a new access token after the initial access token expires.

Obtaining the Initial Access Token and Refresh Token

To obtain the initial access token and a refresh token, the vRealize CloudClient end user runs the following command.

```
CloudClient> vra login authzcode --server <vra-server-fqdn>
             --tenant <tenant-id>
             --oauth2clientid <cc-oauth2-client-id>
             --oauth2clientsecret <cc-oauth2-client-secret>
             --port <port-number>
```

Table 17-2. Input parameters for the `vra login authzcode` command

Parameter	Description
vra-server-fqdn	Hostname of the vRealize Automation server
tenant-id	Tenant with which the user is authenticating
cc-oauth2-client-id	ID of the new OAuth2 client provided by the vRealize Automation administrator
cc-oauth2-client-secret	Secret of the new OAuth2 client provided by the vRealize Automation administrator
port-number	Port on the physical machine where vRealize CloudClient is running. vRealize Automation sends the OAuth2 authorization code to this port.

The output includes a refresh token, such as `refreshToken=[2Cov05jaxFWSJaNbxlBDAsCcyH2HkOci]`.

Obtaining a New Access Token with the Refresh Token

To obtain a new access token using a refresh token, the vRealize CloudClient end user runs the following command.

```
CloudClient> vra login refreshtoken --server <vra-server-fqdn>
             --tenant <tenant-id>
             --oauth2clientid <cc-oauth2-client-id>
             --oauth2clientsecret <cc-oauth2-client-secret>
             --refreshtoken <refresh-token>
```

Table 17-3. Input parameters for the `vra login refreshtoken` command

Parameter	Description
vra-server-fqdn	Hostname of the vRealize Automation server
tenant-id	Tenant with which the user is authenticating
cc-oauth2-client-id	ID of the new OAuth2 client provided by the vRealize Automation administrator

Table 17-3. Input parameters for the `vra login refreshtoken` command (continued)

Parameter	Description
cc-oauth2-client-secret	Secret of the new OAuth2 client provided by the vRealize Automation administrator
refresh-token	Refresh token obtained from the `vra login authzcode` command.

The output is a new refresh token.

Cron jobs or other scheduled jobs can use `vra login refreshtoken` and a *refresh-token* to authenticate with vRealize Automation. This avoids the browser interaction requiring username and password credentials that is part of the `vra login authzcode` authentication process.

Using Third Party Tools

You can use third party tools such as Chrome Developer Tools or Firebug to reveal the data that you can then use to construct a vRealize Automation REST API service call.

You can adapt these steps to perform a different action, such as adding a tenant.

Prerequisites

This example shows how you might use the Chrome Developer Tools to perform a catalog service query. This option is not available for all vRealize Automation functions.

- Open a Chrome browser session and log in to the vRealize Automation console as a business group user with access to catalog items.
- Open a command prompt or a shell and log in to the vRealize Automation command line interface.

Procedure

1. Click the **Catalog** tab in the vRealize Automation console.
2. Click the catalog Item you want to request.
3. Enter the request information for the catalog item, but do not submit your changes.
4. Press the Ctrl-Shift-I keys simultaneously to open the Chrome Developer Tools. For example:
   a. Click the **Network** tab.
   b. Click **Record Network Log**.
   c. Click **Submit** in the console.

5 Verify that the network logs in the Chrome Developer Tools contain the relevant data. For example:

   a Locate a `makeRequest POST` in the network recordings.

   b Click **makeRequest POST** to view its details.

   c Scroll to view the `Form Data url` and `postData` sections.

   The `url` section shows the vRealize Automation service and URI for you to use. This example uses the catalog-service, under the uri consumer/requests.

   The `postData` section shows the JSON data passed in the HTTP POST call. You can insert the JSON data in a JSON file, for example `request.json`, and submit it with the POST method in the command line.

   Note Click **Clear** to purge the network logs if they become too large to navigate easily.

6 Enter the following call in the vRealize Automation shell, where the `request.json` text file contains the JSON data from the postData section.

```
rest post --headers --service catalog-service --uri consumer/requests --data request.json
```

   This call makes the same request that was submitted by using the console.

Filtering and Formatting REST API Information

18

You can filter and format your vRealize Automation REST API command line and command line output.

You can use filters in your command line to limit JSON output to specific conditions. For example, you can use a filter in a catalog item request to display only catalog items that contain a specific catalog ID. Or you can use the requestID resource call to format the output of a command that displays request status. You can also use an Odata equivalent to format that same information For details, see Syntax for Getting Information for a Catalog Item.

Note You must URL encode all filter parameters when using curl commands.

You can also reduce command line errors by using a JSON formatter to validate the JSON data and present it in an easy-to-read format.

You can use command line options or JSON formatting tools, such as Open Data Protocol (OData), to control the JSON results of your vRealize Automation REST API commands.

To simplify your JSON output, consider using command line options or a to filter out unnecessary data and display only the information that you are interested in, such as the following information categories:

- Published catalog items
- Request status
- Provisioned machine identifiers