# Lab Guide

## Extend your CMP:

## Build a New Connector to a Cloud Provider

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Default Login / Password: Knowledge17

admin / Knowledge17

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# Lab Overview

ServiceNow Cloud Management Platform (CMP) is the plugin through which enterprises can manage their clouds. The clouds could be internal or public or hybrid. ServiceNow CMP has Resource Blocks which are the building blocks.

- Blueprints are built using resource blocks.
- Resource Blocks abstract the functionality of a cloud element (like Virtual Server, Load Balancer) and provide a mechanism to delegate provider specific functionality to Cloud API's.
- Cloud API's allow the cloud admin to author API's that can consume API's from Cloud / Infrastructure providers and provide the functionality to be consumed by Resource Blocks.

Catalog items can be created out of the blueprints and the end user can consume them. When a catalog item is ordered and is successful, the end users get a "Stack" that represents the runtime instance of the various resources in that blueprint. The end user can then invoke life cycle operations on these stacks and manage them.

This lab explains the process of extending the Cloud Management Platform to add new cloud provider. In this example, we are going to be adding Google Compute Platform. This lab explores the following tasks

- Create a new CI Class to represent Google Datacenter (to store Google Datacenter instances)
- Create a new Resource Block for Google Datacenter (to enable operations)
- Setup Google Cloud Provider metadata and create Compute API
- Setup Resource Profiles for Google Datacenter
- Enable Google Datacenter as a choice for Multicloud VM blueprint
- Launch an instance of VM on Google Datacenter

# Lab Goal

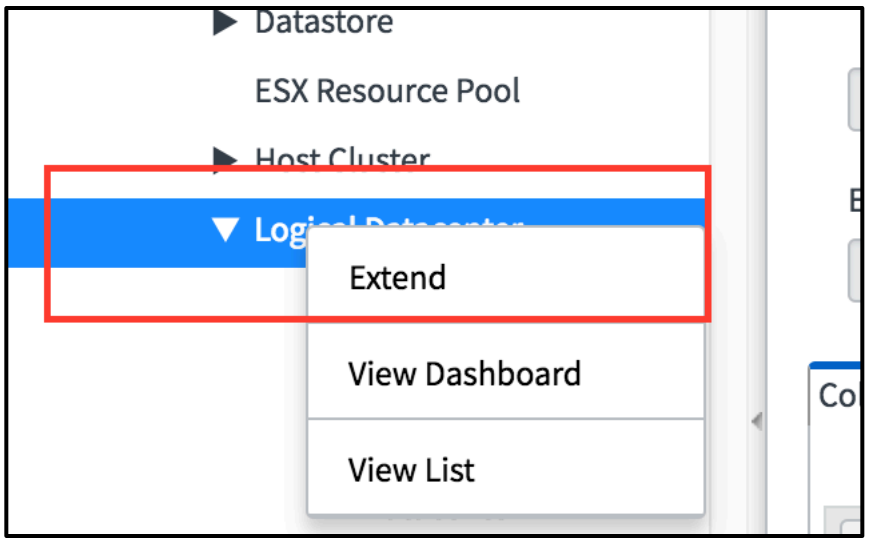
The goal of this lab is to create a new Datacenter CI class to represent Google Datacenter

A datacenter class provides functionality to create and manage datacenter instances.

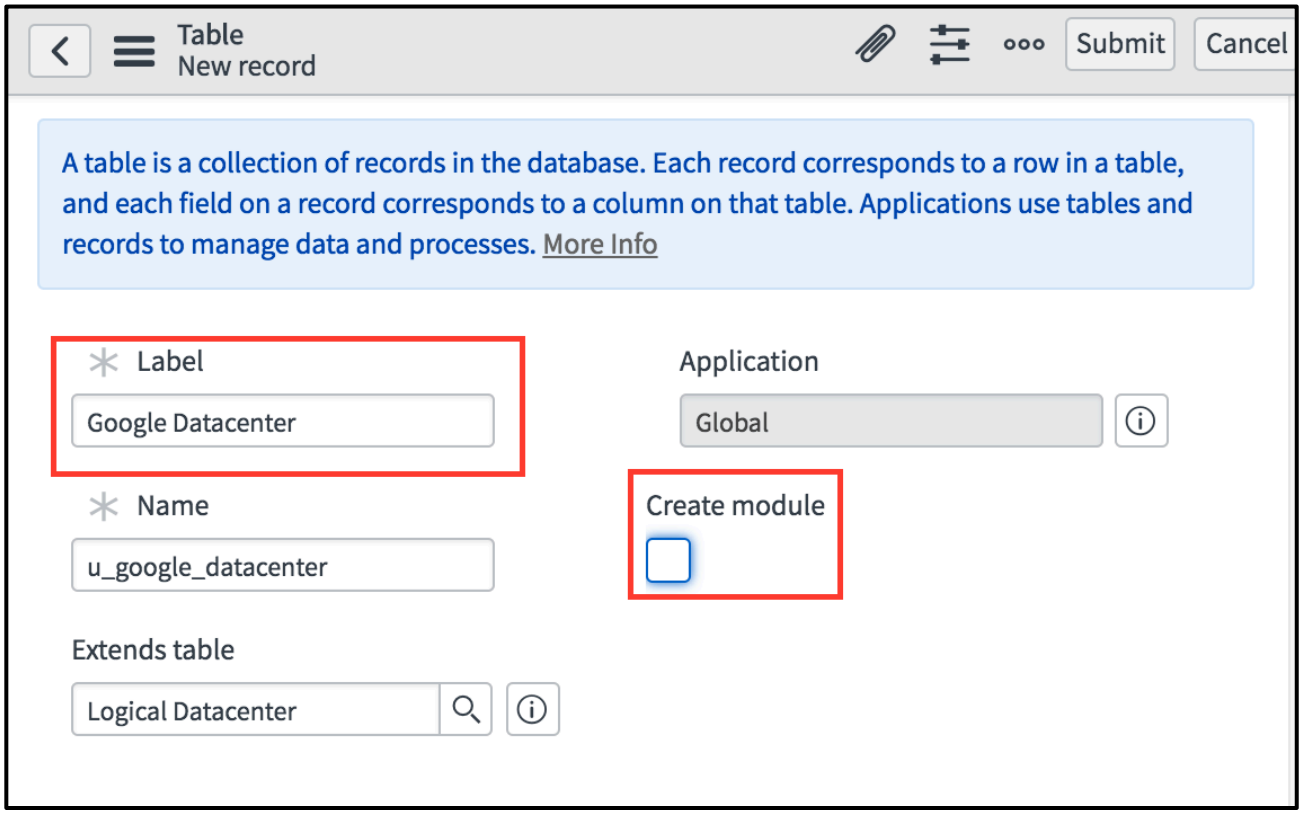
**Lab 1**
**Create a new Datacenter CI Class**

## Create a new Datacenter CI Class

1. Navigate to **CI Class Manager**.
2. Search for Logical Datacenter in the search box and hit Enter.
3. Right-click on Logical Datacenter and click Extend.




4. Type **Google Datacenter** in **Label**.
5. Uncheck **Create Module**.




6. Click **Submit**.

## Lab Success Verification

A new CI Class called Google Datacenter has been created.

# Lab Goal

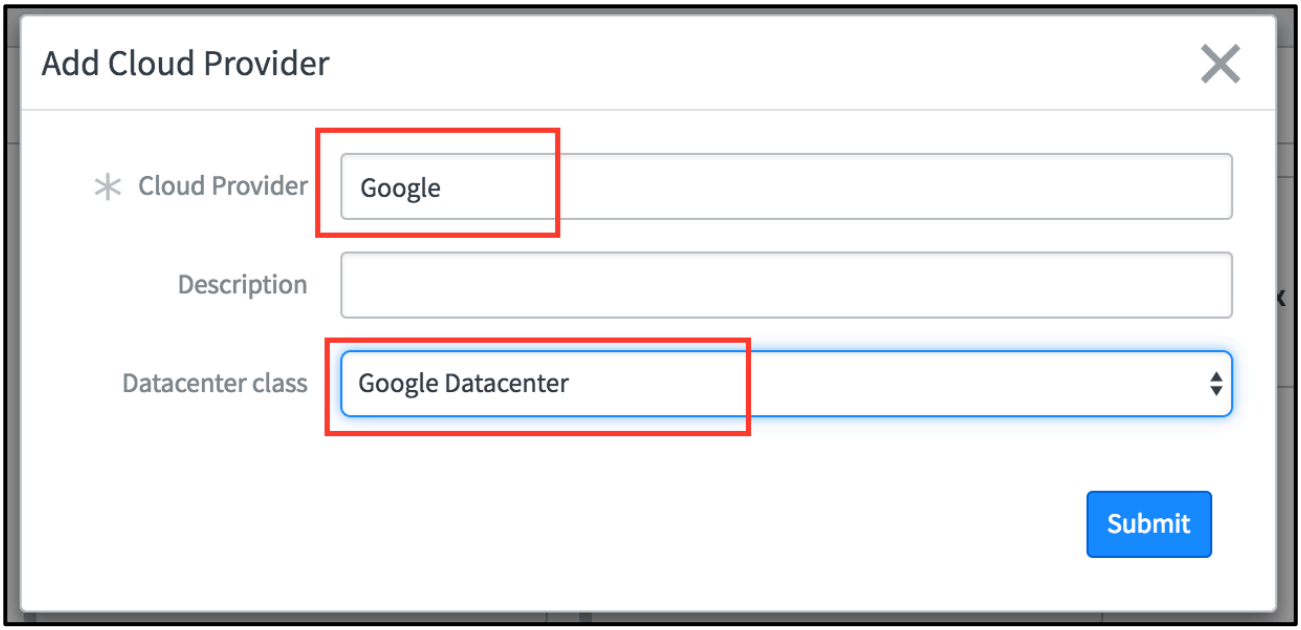
**Lab 2**
**Setup a Cloud Provider**

The goal of this lab is to create new Google Cloud Provider metadata.

A Cloud Provider metadata binds all the provider's supported products, Resource types and API's. Creating a Provider consists of creating metadata, products and resource types.

## Setup a Cloud Provider

1. Navigate to **Cloud API > Library**.
2. Click on **New** and type **Google** in Cloud Provider.
3. Select **Google Datacenter** in the Datacenter class list.



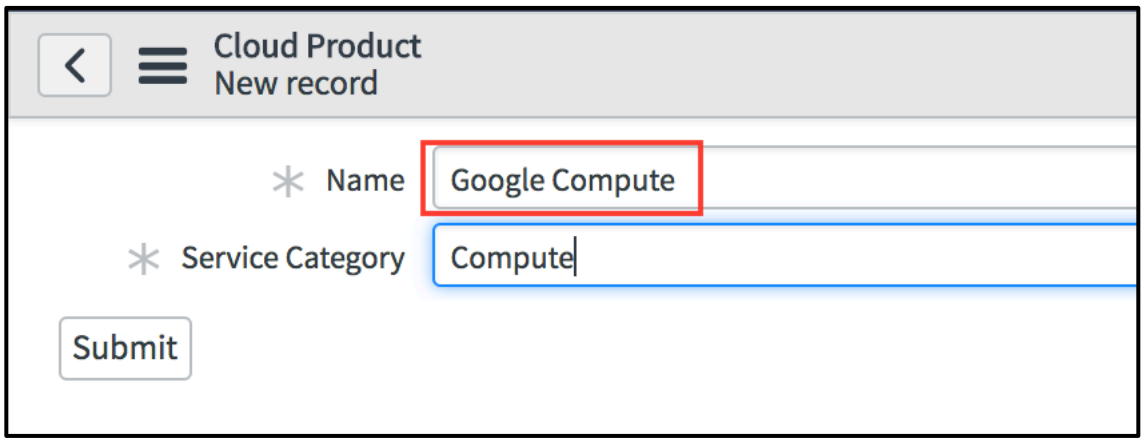

4. Click **Submit**.

5. Click **New** in the products grid.



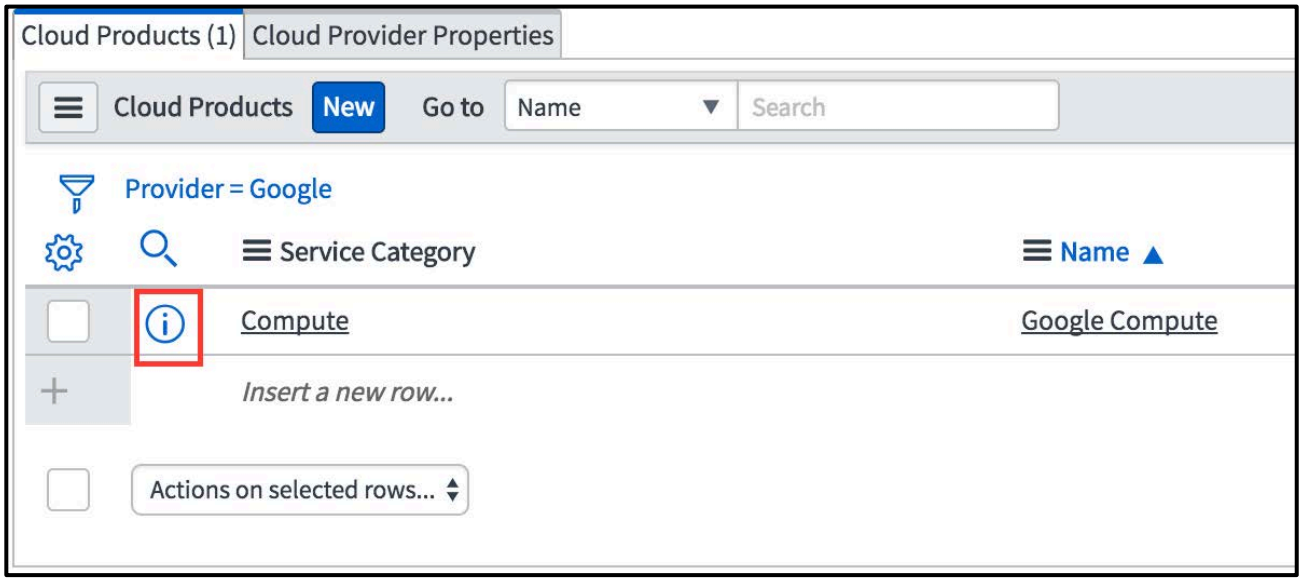

6. Type **Google Compute**.

7. Select **Compute** in the Service Category.

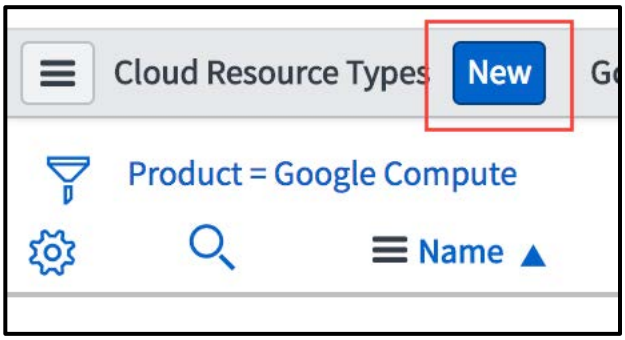



8. Click **Submit**.

9. Click on the first column in the products grid.

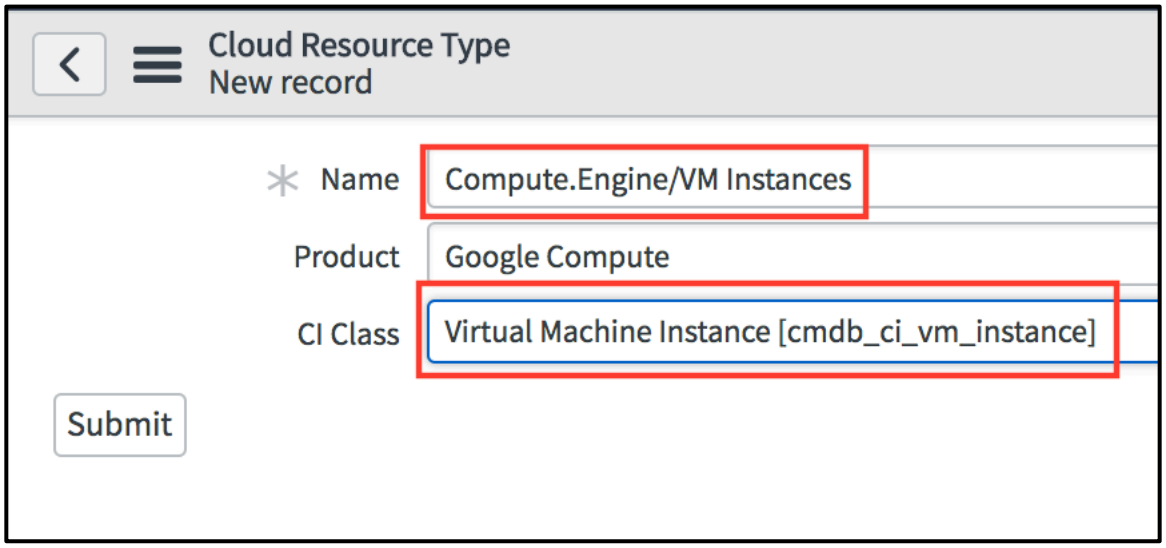



10. Click **New** in the Cloud Resource Types grid.




11. Type **Compute.Engine/VM Instances** in Name.

12. Select **cmdb_ci_vm_instance** in the CI Class.




13. Click **Submit**.

## Lab Success Verification

Cloud Provider metadata for Google has been set up with products and resource types.

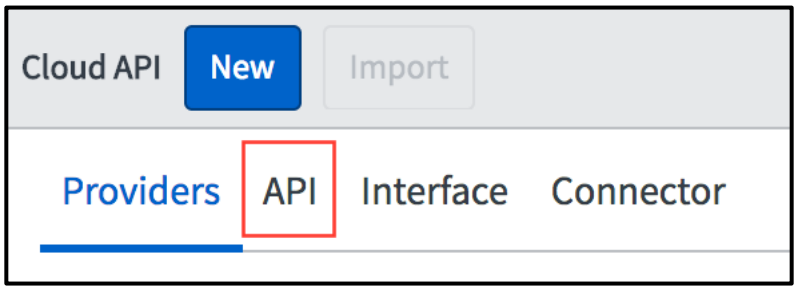
# Lab Goal

**Lab 3**
**Create a Cloud API**

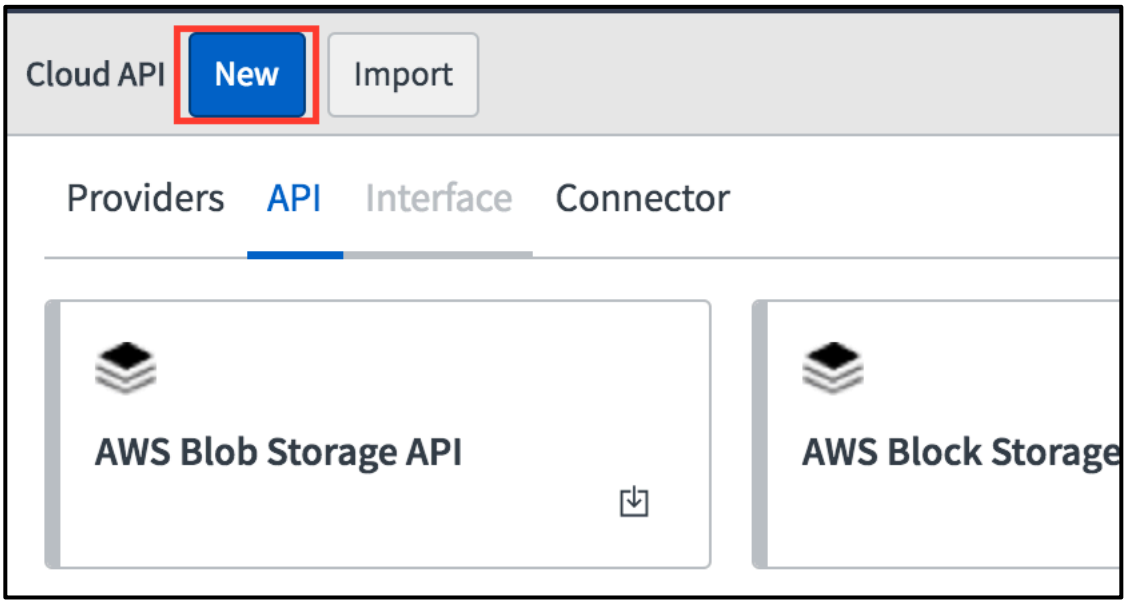
The goal of this lab is to create a new Create VM API for Google Cloud Provider.

## Create a Cloud API

1. Navigate to **Cloud API > Library**.
2. Click **API** in the top menu.



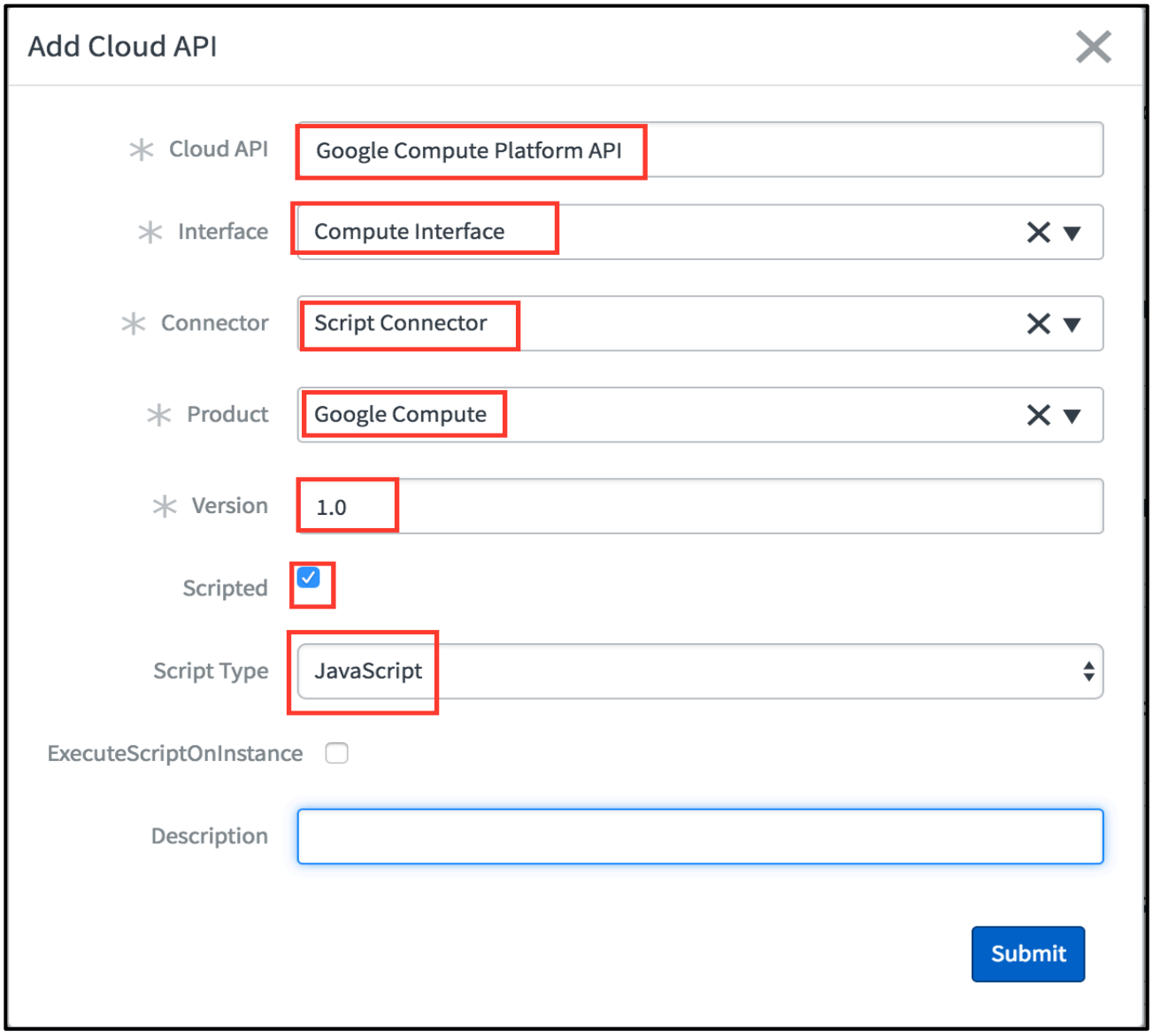

3. Click **New**.




4. Type **Google Compute Platform API** in Cloud API.

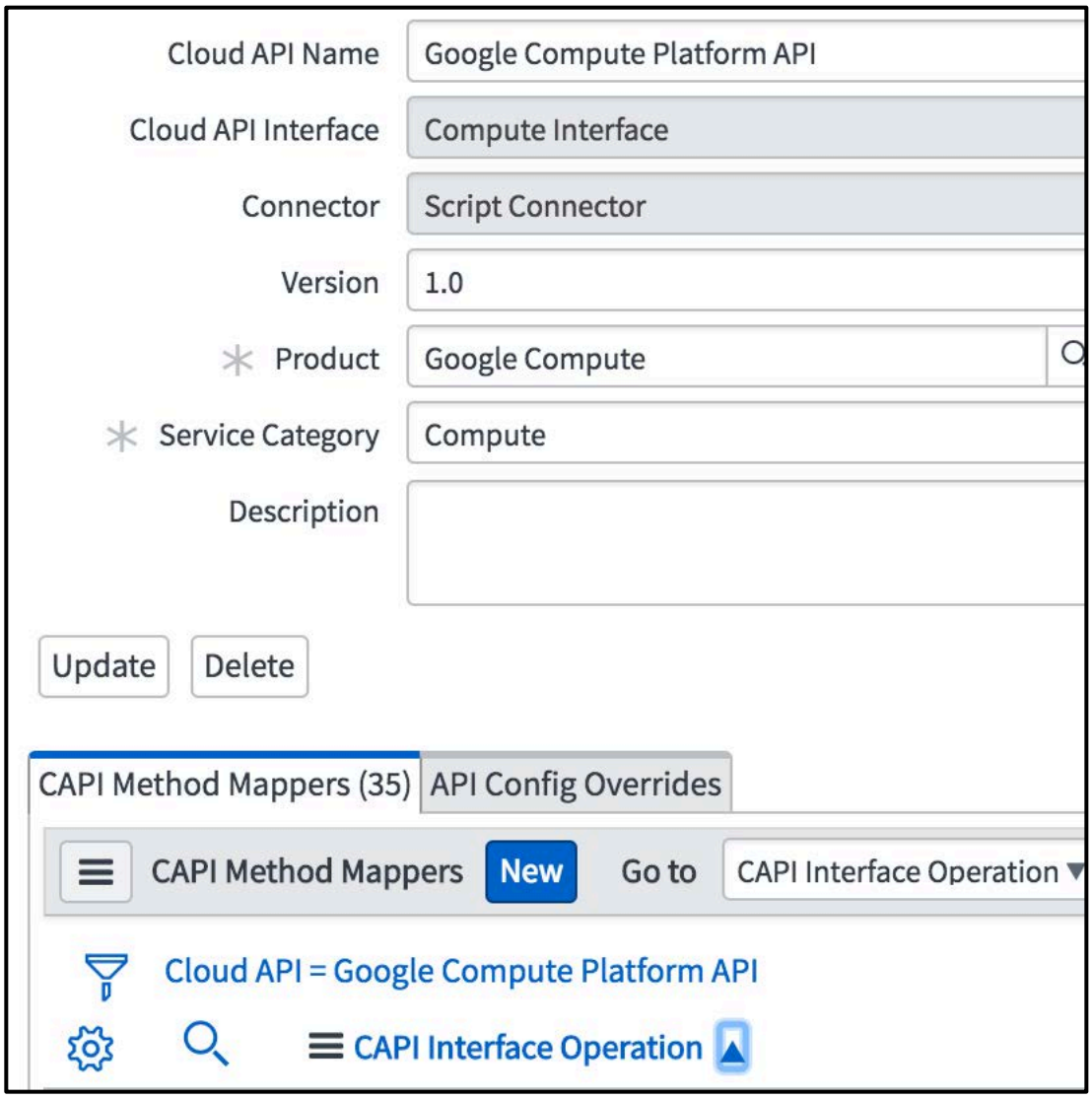
5. Select **Compute Interface** in the Interface list.
6. Select **Script Connector** in the Connector list.
7. Select **Google Compute** in the Product list.
8. Type **1.0** in Version.
9. Check **Scripted**.

10. Select **JavaScript** in the Script Type list.




11. Click **Submit**.

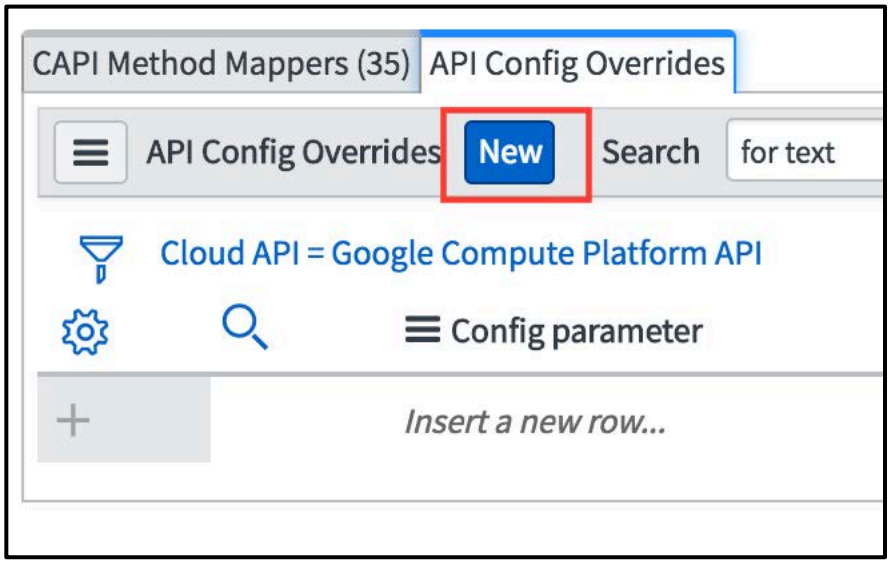
12. Default bindings and mappings are generated for all the methods defined in the Compute Interface.



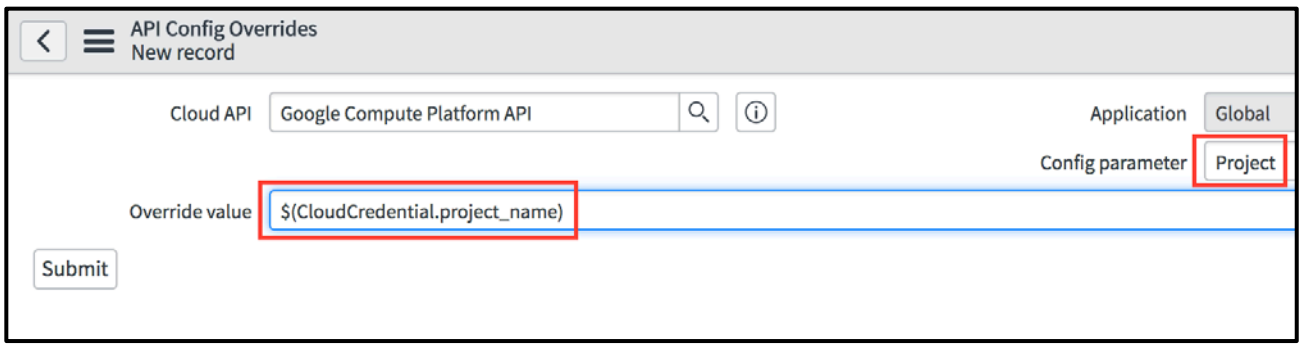

13. To connect to Google Compute Platform, the API needs to provide ProjectName, ClientEmail and PrivateKey. These 3 parameters are sent as API Config Overrides.

14. Click **API Config Overrides**.

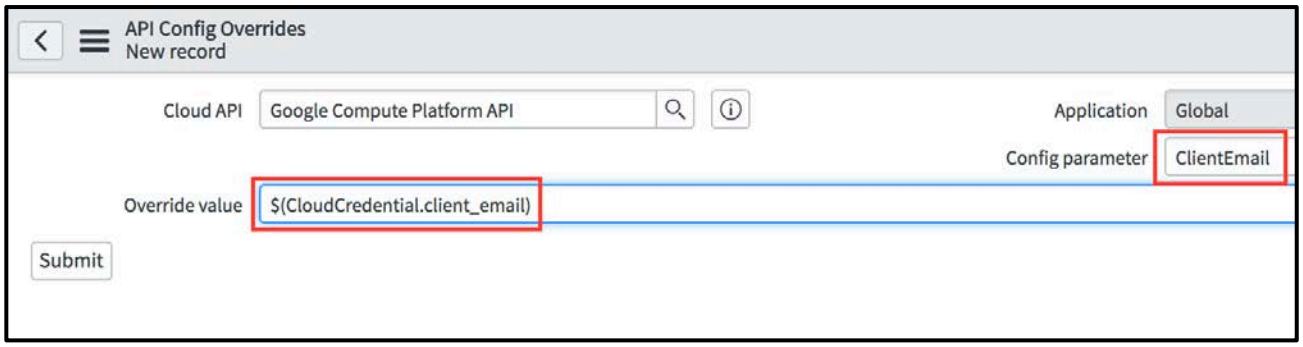
15. Click **New**.



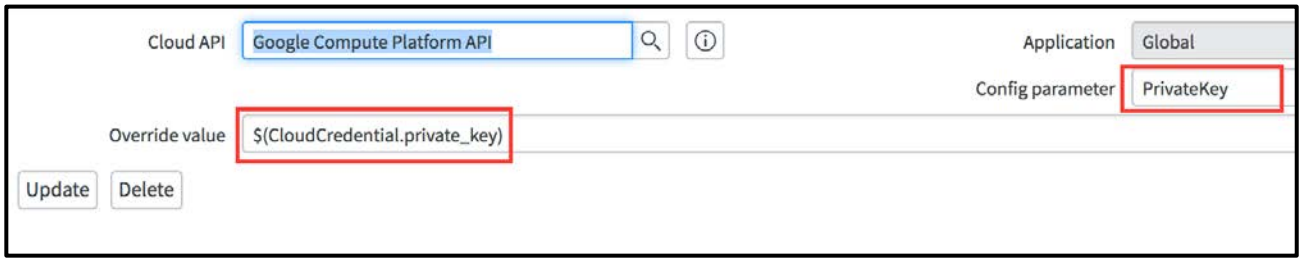

16. Create override with details as shown.




17. Create override with details as shown.



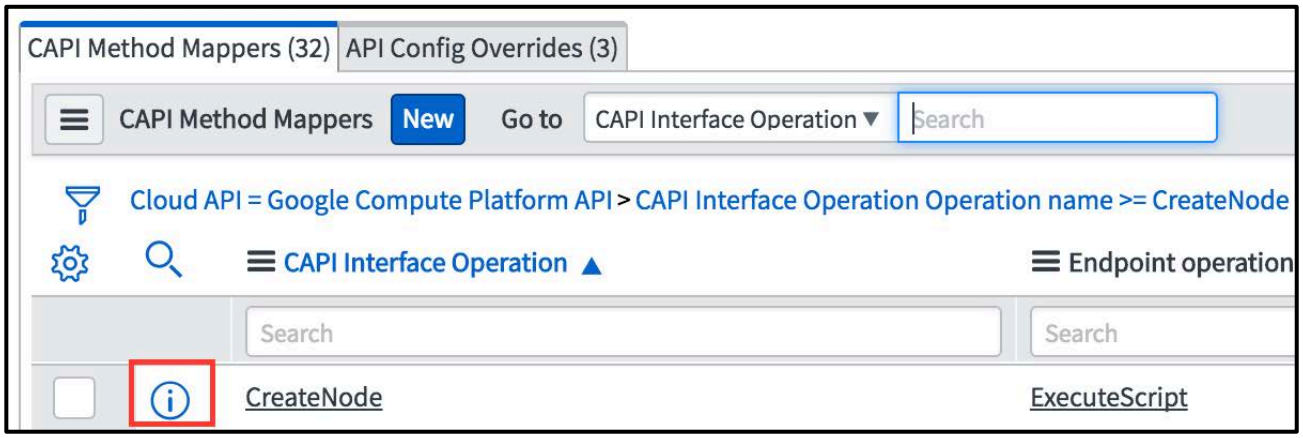
18. Create override with details as shown.




19. Click on **CAPI Method Mappers**.

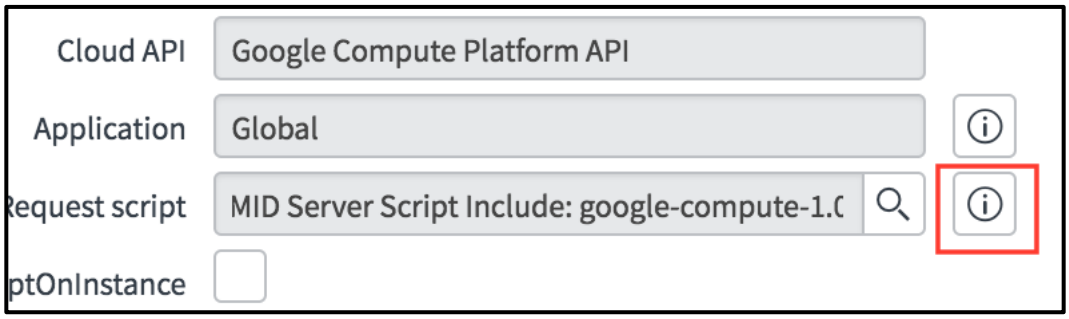
20. Select **CAPI Interface Operation** in **Go to**.

21. Type **CreateNode** and hit Enter.



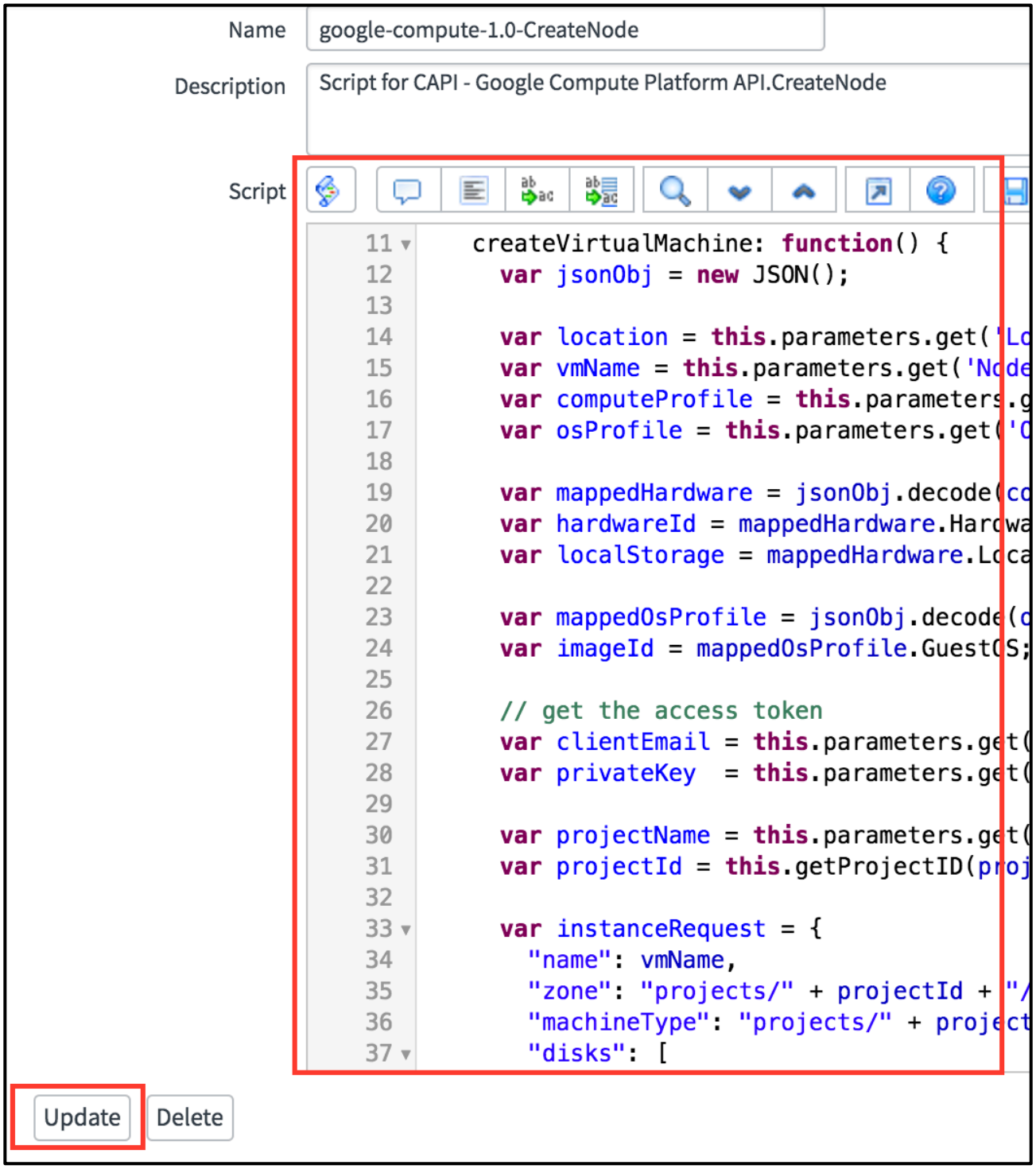

22. Open the highlighted link.

23. Follow the link in **Request script**.



24. In a new tab, Navigate to **Knowledge > Articles > Unpublished**. Open **KB000011201**.

25. Copy the contents of the text field and paste into the previous tab.



26. Click **Update**.

## Lab Success Verification

A new API has been created and the CreateNode function has been implemented.

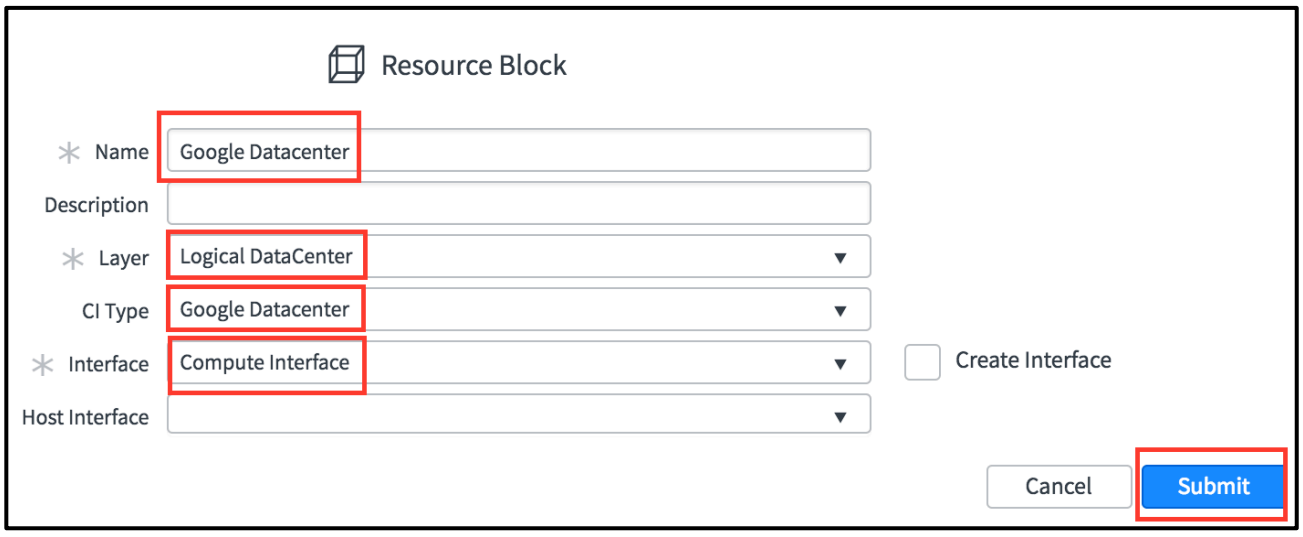
# Lab Goal

**Lab 4**
**Create a Resource Block**

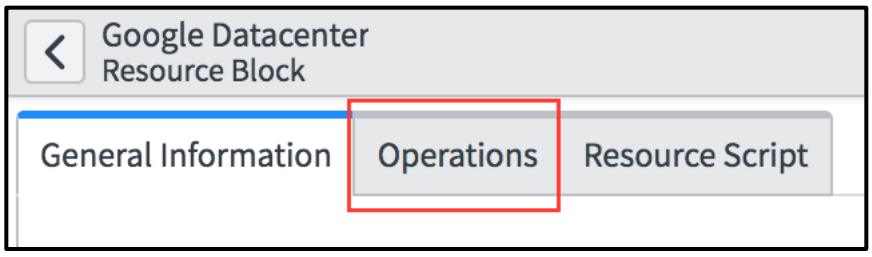
The goal of this lab is to create a new Resource Block to represent Google Datacenter.

## Create a Resource Block

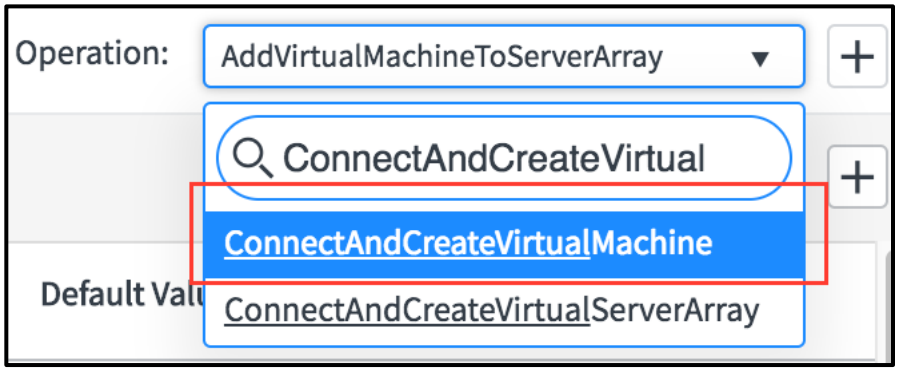
1. Navigate to **Cloud Management Platform > Resource Blocks**.
2. Click **New**.
3. Type **Google Datacenter** in Name**.**
4. Select **Logical DataCenter** in the Layer list.
5. Select **Google Datacenter** in the CI Type list.
6. Select **Compute Interface** in the Interface list.
7. Click **Submit**.



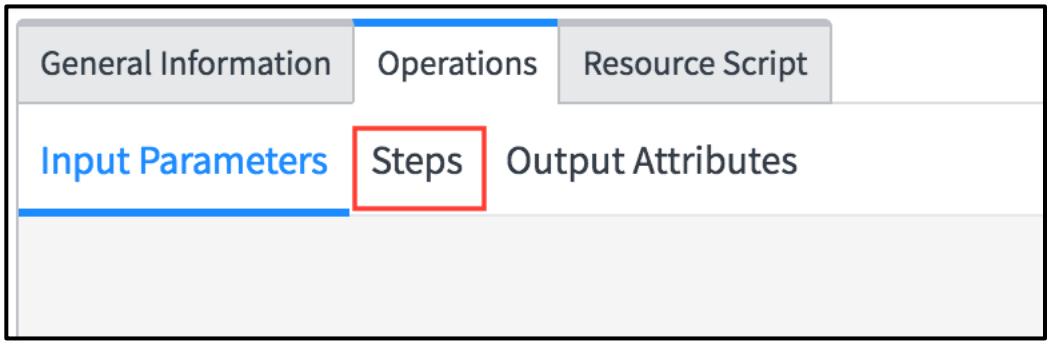
8. After the resource block is created, the resource block screen loads to show the new resource block. Click on the **Operations** tab.



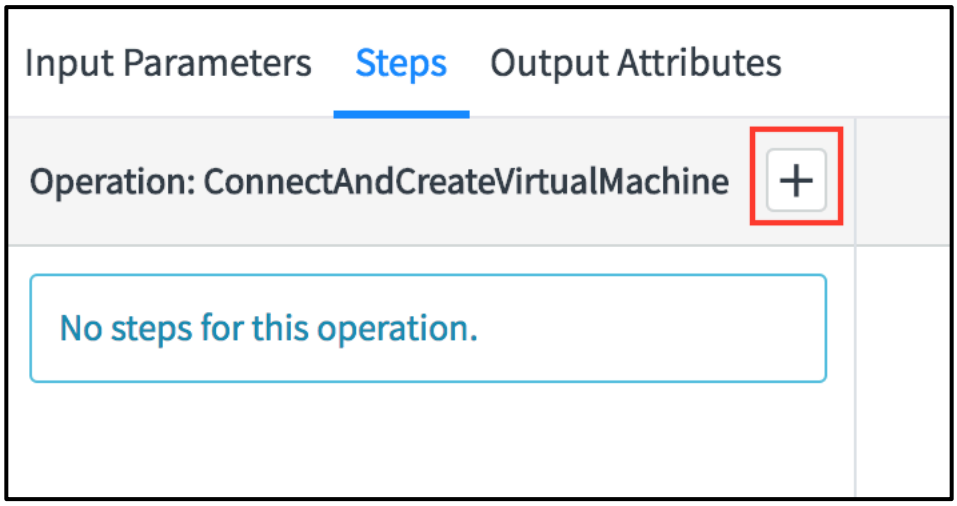

9. Select **ConnectAndCreateVirtualMachine** in the Operation list.




10. Click on **Steps**.



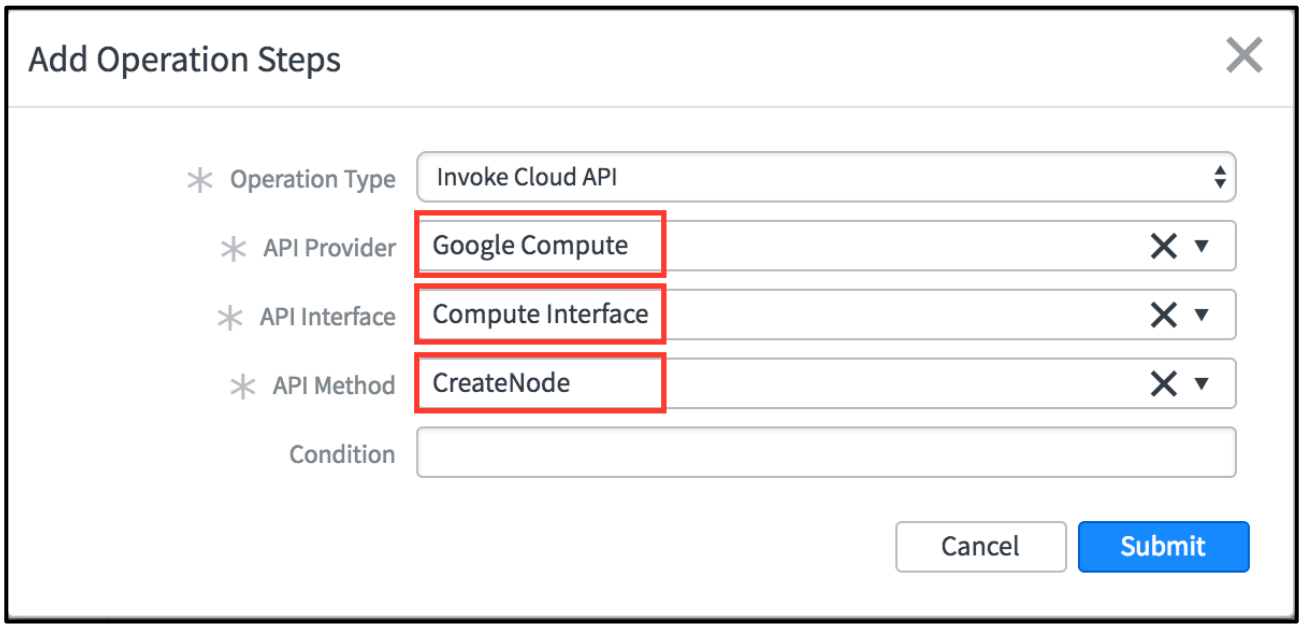
11. Click on the **+**




12. Select **Google Compute** in the API Provider list.

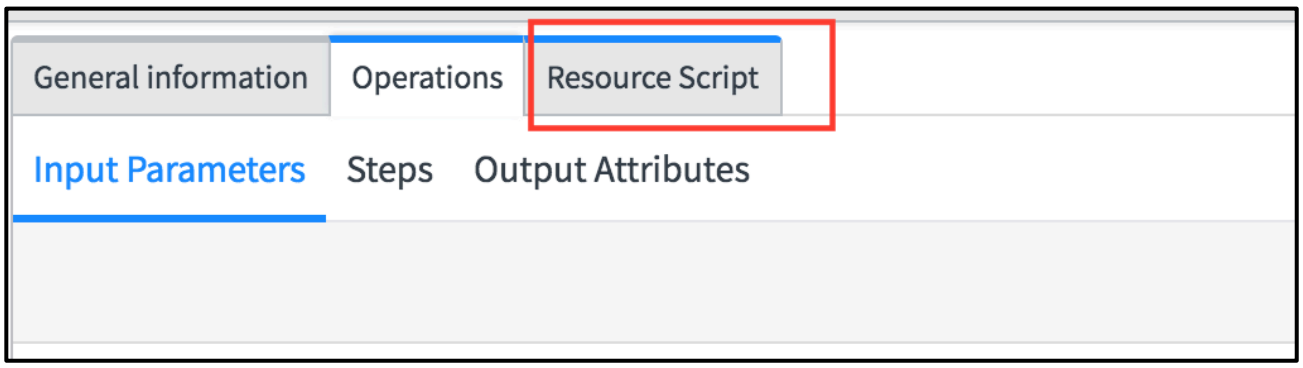
13. Select **Compute Interface** in the API Interface list.

14. Select **CreateNode** in the API Method list.

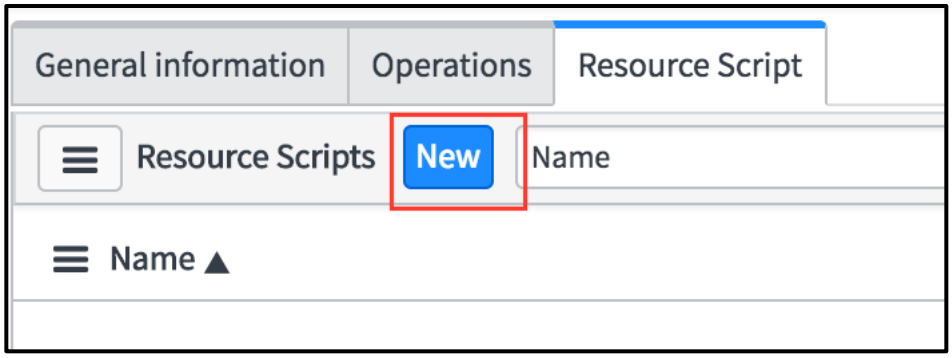



15. Click **Submit**.

16. Click on **Resource Script** tab.




17. Click on **New**.

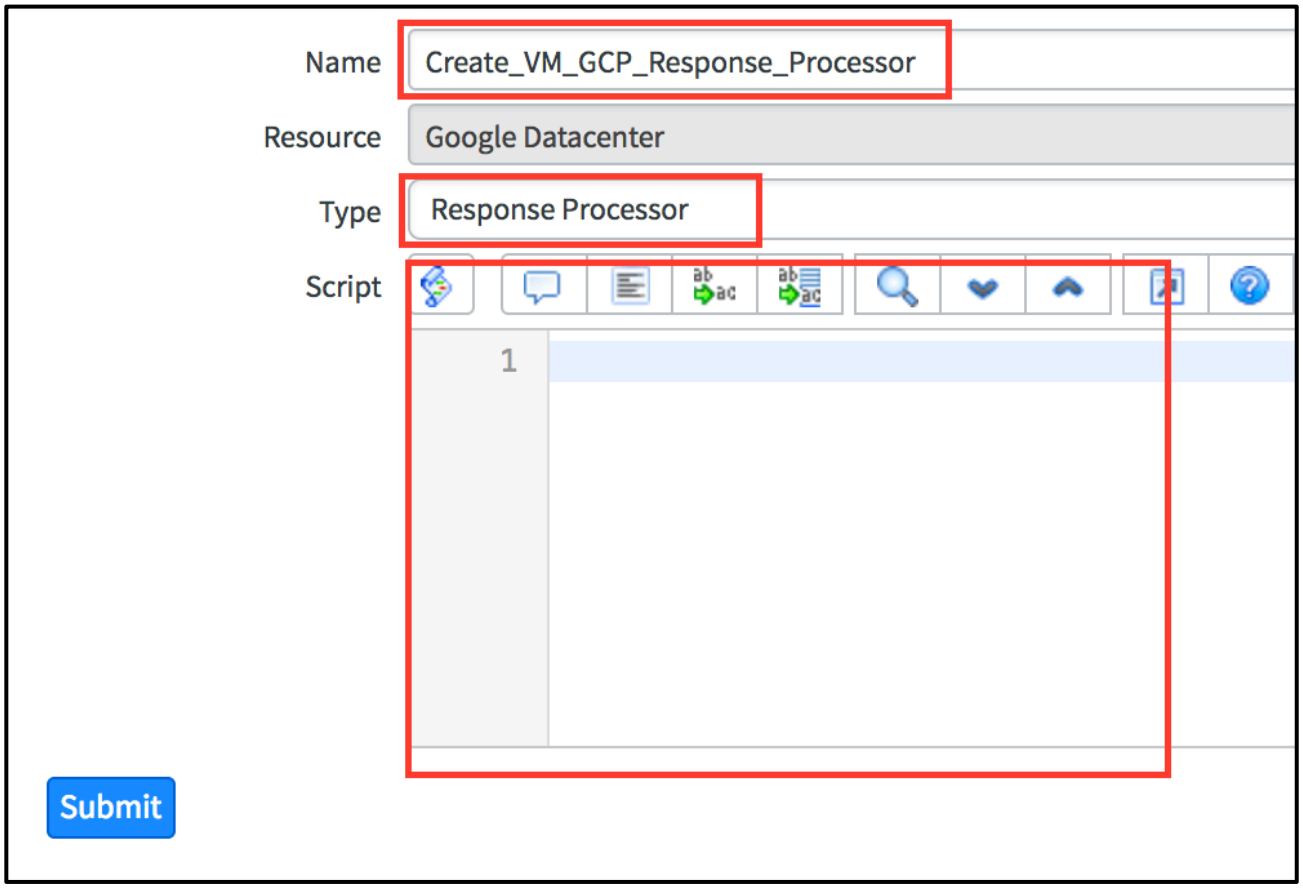



18. Type **Create_VM_GCP_Response_Processor** in Name.

19. Select **Response Processor** in the Type list.

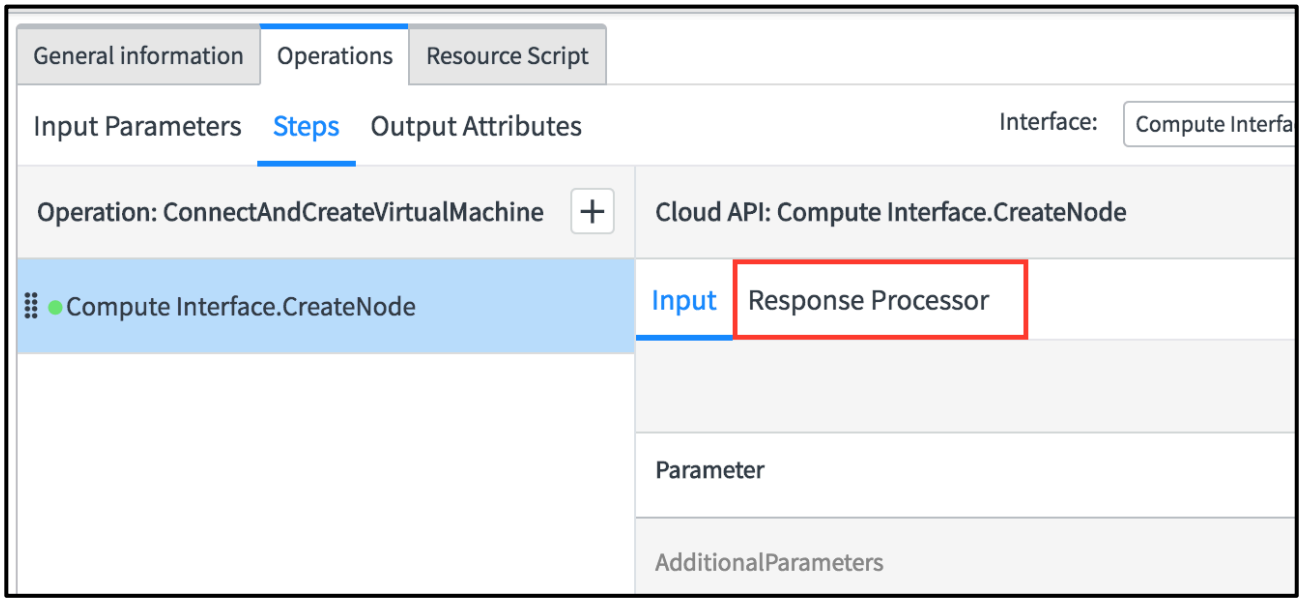
20. In a new tab, Navigate to **Knowledge > Articles > Unpublished**. Open **KB000011202**.

21. Copy the contents of the text field and paste into the Script field in the previous tab.

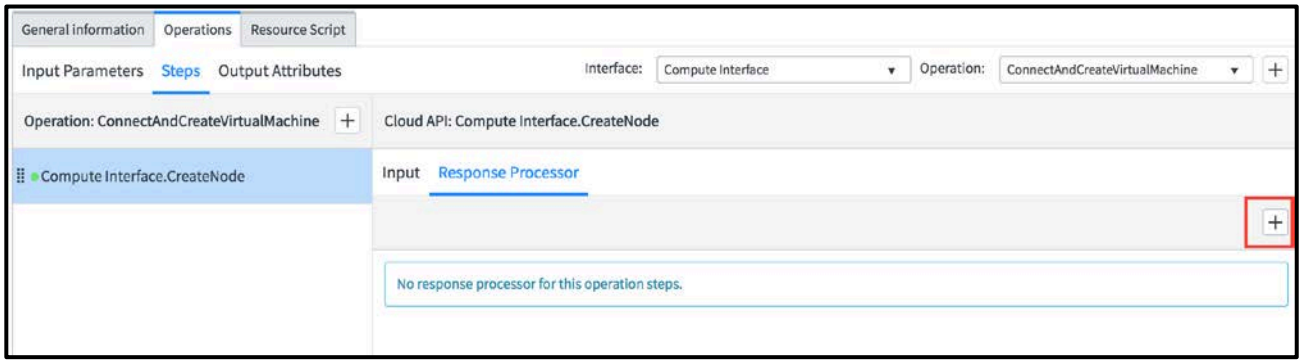



22. Navigate to **Google Datacenter > Operations > ConnectAndCreateVirtualMachine > Steps**.

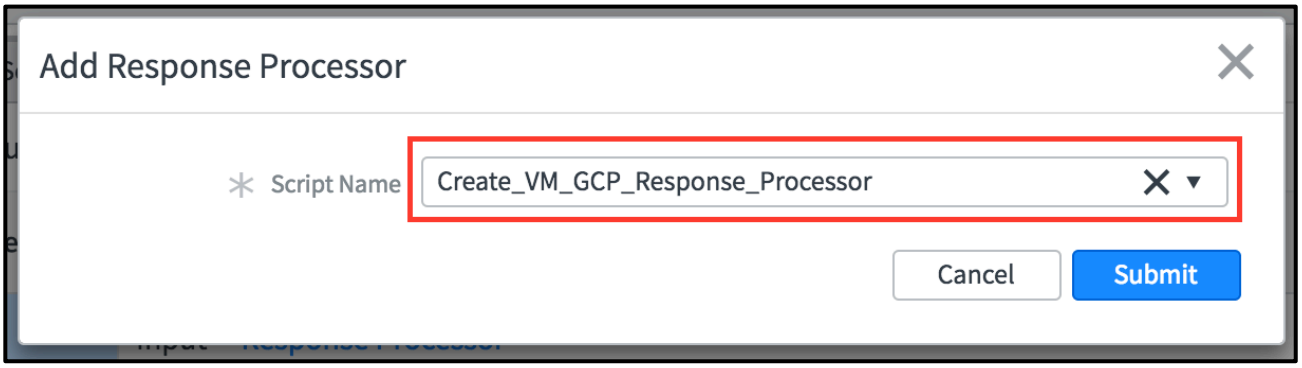
23. Click on **Response Processor**.




24. Click on the **+**.

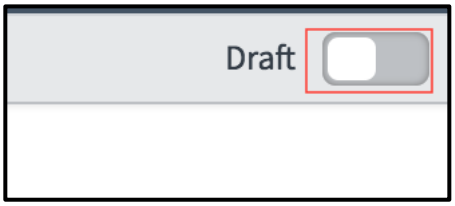


25. Select **Create_VM_GCP_Response_Processor** in the Script Name list.




26. Click **Submit**.

27. Click **Draft**.




28. The Resource Block is toggled to the Published state and further changes are disallowed. Changes to a resource block can be done only if the status is set to Draft.

## Lab Success Verification

A new Resource Block called Google Datacenter has been created and setup to delegate calls to the new CAPI implementation.

# Lab Goal

The goal of this lab is to add Google Datacenter as a host to the Virtual Server resource block.

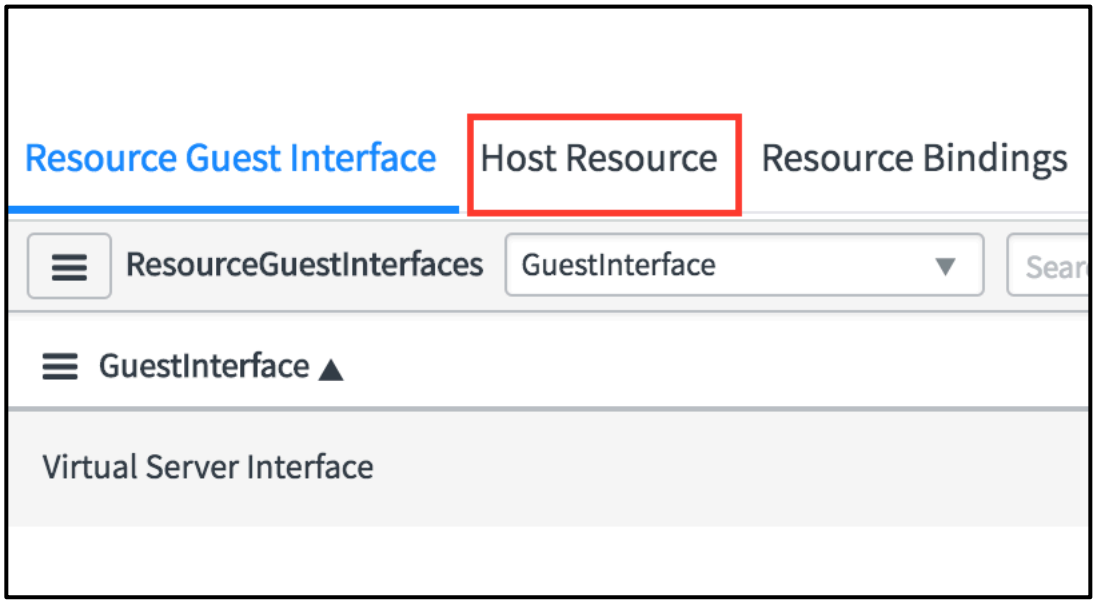
A virtual server can be hosted on any of the supported datacenter blocks. All provisioning and lifecycle calls are delegated to the appropriate datacenter resource block.

**Lab 5**
**Add Google Datacenter as host to Virtual Server**

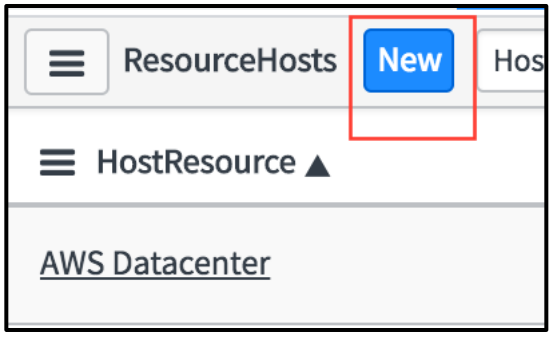
## Add Google Datacenter as host to Virtual Server

1. Navigate to **Cloud Management > Resource Blocks.**
2. Click on **Virtual Server.**
3. Click **Published** to toggle the Resource Block to **Draft** mode.

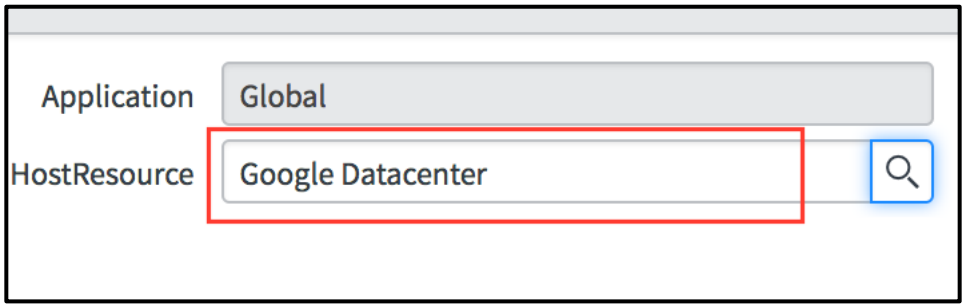
4. Click **Host Resource.**




5. Click **New.**




6. Select **Google Datacenter** in **HostResource.**



7. Click **Submit**.
8. Navigate to **Virtual Server.**
9. Click **Draft** to toggle the Virtual Server resource block to Published mode.

## Lab Success Verification

Google Datacenter is listed as a host resource for Virtual Server in the Host Resource tab.

# Lab Goal

**Lab 6**
**Setup Google Cloud Account**

The goal of this lab is to setup Google Cloud Account.

Setting up the cloud account involves adding a service account, associating a new datacenter to this cloud account and setting up Compute and OS profiles.

As a convenience, a script will be provided to setup the cloud account and resource profiles. The same can achieved by using the UI.

## Setup Google Cloud Account

1. Navigate to **Knowledge > Articles > Unpublished**. Open **KB000011203**.
2. Copy the contents of the text field.
3. Navigate to **System Definition > Scripts - Background**.
4. Paste the copied content into the text area.
5. Select **sn_cmp** in scope.
6. Click Run script.

## Lab Success Verification

Google Cloud Account has been setup.

# Lab Goal

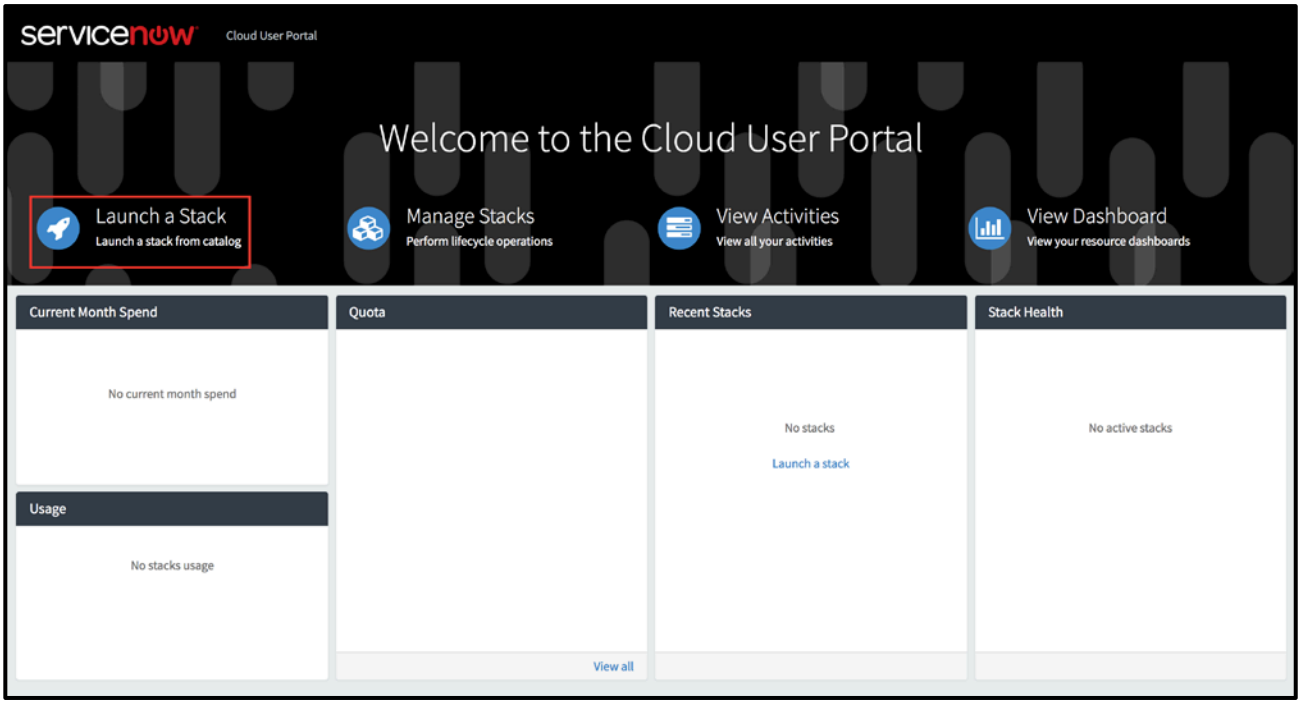
The goal of this lab is to launch a VM on Google Compute Platform.

**Lab 7**
**Launch a Stack**

## Launch a Stack

1. Navigate to **Cloud Management Platform > User Portal**.

2. Click **Launch a Stack**.

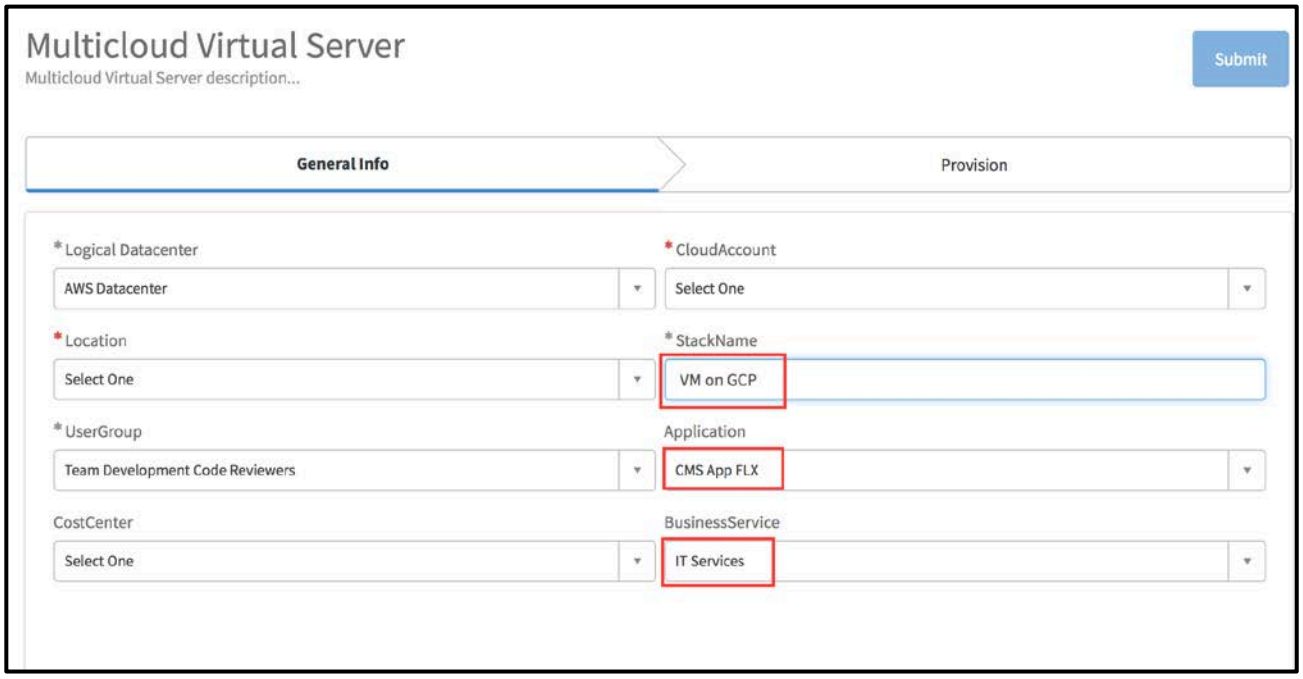



3. Click **Multicloud Virtual Server**.

4. Enter **Virtual Server on GCP** for Stack Name.

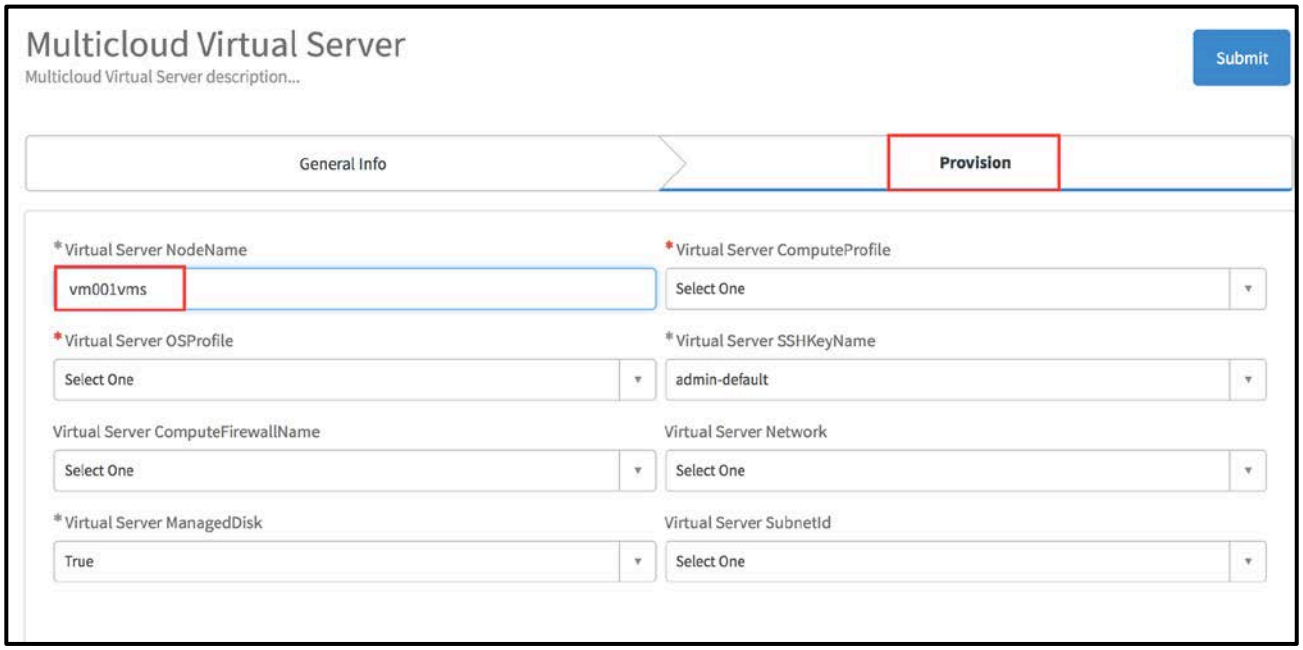
5. Select any value from the **Application** drop-down list.

6. Select any value from the **Business Service** drop-down list.




7. Click the **Provision** tab.

8. Enter **vm001SUFFIX** for Virtual Server Name. Replace **SUFFIX** with **your name** without spaces.




9. Click **Submit**.

## Lab Success Verification

After you click submit, the progress window shows the steps that are being worked on to spin up a new VM in Google Compute Platform. After the stack completes processing, you can click the Manage Stacks link to see the details of the stack that you just provisioned.