

Provision Oracle Cloud Infrastructure in ServiceNow Using Terraform

Installation and Administration Guide for the ServiceNow Cloud Provisioning and Governance: OCI Add-On for Terraform Connector

May 2023, version 2.0.1 Copyright © 2023, Oracle and/or its affiliates Public

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Revision History

The following revisions have been made to this document.

DATE	REVISION
May 2023	Updated for Tokyo and Utah releases of ServiceNow
May 2022	Initial publication



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Introduction

This document describes steps for provisioning resources on Oracle Cloud Infrastructure (OCI) by using the ServiceNow Cloud Provisioning and Governance: OCI Add-On for Terraform Connector.

The integration of HashiCorp Terraform and ServiceNow Cloud Provisioning and Governance enables users to provision infrastructure through ServiceNow self-service capabilities. ServiceNow users can create workspaces and perform Terraform runs by using prepared Terraform configurations hosted in version control system (VCS) repositories.

Integrating ServiceNow with Terraform Enterprise involves several configuration steps. You perform some of these steps in ServiceNow and some of them in Terraform Enterprise. After you perform these configuration steps, you can provision infrastructure on OCI by using the Cloud Provisioning and Governance: OCI Add-On for Terraform Connector.

Before You Begin

Before you can provision infrastructure on OCI by using the Cloud Provisioning and Governance: OCI Add-On for Terraform Connector, you must set up and configure Terraform Enterprise, Terraform Cloud, or Terraform Open Source and perform some prerequisite tasks in ServiceNow. This section provides information and instructions for those tasks.

Get Familiar with Terraform

Before you set up Terraform as a config provider, familiarize yourself with the following concepts and perform the following procedures from the Terraform documentation. Later sections refer to the tasks in these topics.

- Get started with infrastructure as code (IaC) with Terraform
- Install and configure Terraform Open Source (see also Terraform CLI)
- Set up and configure Terraform Cloud and Terraform Enterprise
- Get started with Terraform Cloud
- VCS integrations
- Workspaces in Terraform
- <u>Set up API credentials</u>

Prerequisite Tasks for Terraform Setup

Before you can provision infrastructure using the Cloud Provisioning and Governance: Terraform Connector integration, you must <u>set up and configure a Terraform Cloud or Terraform Enterprise account</u>. Following are some of the key steps that you perform in Terraform Cloud:

- 1. Create or choose an existing organization whose linked workspaces contain the infrastructure that you're provisioning.
- 2. <u>Connect to or integrate with</u> a supported VCS (GitHub or GitLab) provider.

The VCS must include workspaces, branches, and repositories with Terraform configurations.

3. Create a team with necessary permissions to manage workspaces in the organization that you create or choose.



- 4. Generate a Teams API token for the group so that the integration can use the user-group permissions.
- 5. Locate and save the OAuth token ID for the VCS provider or providers that you will use with Cloud Provisioning and Governance. Terraform uses the OAuth token ID to identify and authorize the VCS provider.

Prerequisite Tasks for ServiceNow Setup

To set up ServiceNow, perform the following actions. The links go to the ServiceNow documentation.

- 1. Install the MID Server.
- 2. Request the Cloud Provisioning and Governance application (plugin name: com.snc.cloud.mgmt).
- 3. <u>Request</u> the ServiceNow IntegrationHub Starter Pack Installer (plugin name: com.glide.hub.integrations).
- 4. <u>Request</u> ServiceNow Store applications:
 - o <u>Cloud Provisioning and Governance: Terraform Connector</u>
 - o Discovery and Service Mapping Patterns
 - o (Optional) Oracle Cloud Infrastructure discovery
 - o Install Cloud Provisioning and Governance: OCI Add-On for Terraform Connector from ServiceNow Store.
- 5. <u>Install</u> the Terraform version and complex variable fix.

Create and Configure Terraform Config Provider

- If you're using Terraform Open Source to provision resources, configure by using the instructions at <u>Create a</u> <u>Terraform Open Source config provider and run Discovery</u>.
- If you're using Terraform Cloud or Terraform Enterprise to provision resources, configure by using the instructions at <u>Create a Terraform Enterprise config provider and run Discovery</u>.

Note: When you use Terraform Cloud or Terraform Enterprise, ensure that the MID Server is configured with the Terraform Enterprise capability and Cloud Management application. For more information, see <u>MID Server capabilities</u>.

Set Up Cloud Provisioning and Governance: OCI Add-On for Terraform Connector

To set up the Cloud Provisioning and Governance: OCI Add-On for Terraform Connector, you need to create the required OCI credentials, a service account, and a cloud account in the ServiceNow environment.

To initially create the credentials information in the Oracle Cloud Console before you complete these tasks, follow the instructions in <u>Required Keys and OCIDs</u> on the Oracle documentation site.



Create Oracle API Credentials

Oracle API credentials are used as provider credentials in Oracle OCI Terraform templates.

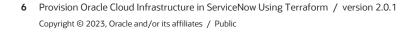
- 1. Log in to your ServiceNow instance, and go to Cloud Admin Portal.
- 2. In the navigation menu, expand **Manage** and then click **Credentials**. On the **Credentials** tab, click **New** and then click **Oracle API Credentials**.

Cloud Admin Portal	Credentials Provider Credential Mapping
😚 Overview	Docker Credentials Docker Repositories List
🖶 Manage 1 🛛 🕀	Google API Credentials
Service Accounts	IBM Credentials
Cloud Accounts	JDBC Credentials
Discovery Schedules IaC Discovery	JMS Credentials Kafka SSL credentials
Resource Profiles	Kubernetes Credentials
Networks & IPAM	OAuth 2.0 Credentials OpenStack Credentials
Config Management	Oracle API Credentials 3
Alert Configurations Resource Pools	RHV Credentials SNMP Community Credentials (Password Only)
Credentials 2	SNMPv3 Credentials
🖌 Design 🕀	SSH Private Key Credentials SSH Credentials
	VMware Credentials Windows Credentials

- 3. Enter the following values, copied from the Oracle Cloud Account as needed:
 - **Name**: Enter a unique and descriptive name for the credentials.
 - Active: Select this option to be able to use the credentials.
 - **Tenancy Id**: Enter the OCID for the OCI tenancy.
 - **User Id**: Enter the OCID for the OCI user.
 - Key Fingerprint: Enter the key's fingerprint.
 - **Private Key**: Enter the RSA private key, which must be supplied for authentication.

Note: Be sure to enter the private key as an RSA-formatted key. Use the <u>RSA Keys Converter</u> page for quick conversion.

Cracle API	Credentials I		Ø	Submit
Name		Applies to	All MID servers	
Active	 ✓ 	Classification		
Туре	oci	Order	100	
⊁ Tenancy Id				
★ User Id				
★ Key Fingerprint				
\star Private Key				





Create a Service Account

A service account is a secure record on your instance that stores the credentials and access information for your provider account. For more information, see the <u>ServiceNow documentation</u>.

1. On the Cloud Admin Portal, expand Manage, click Service Accounts, and then click New.

servicenow	Service Accoun			System	Administrator
Cloud Admin Portal	Cloud Service	e Account	P	÷ •••	Submit
🕋 Overview				2	_
🖶 Manage 2 🕀	* Name			J	
Service Accounts 3	* Account Id				
Cloud Accounts	Discovery credentials		Q		
Discovery Schedules	Datacenter URL				
IaC Discovery	Datacenter One				
Resource Profiles	* Datacenter Type	None	•		
Networks & IPAM	Datacenter discovery				
Config Management	status				
Alert Configurations	Accessor account		Q		
Resource Pools					
Credentials	Submit				

- 2. Enter the following values to create an account, or select an existing account:
 - **Name**: Enter a unique and descriptive name for the account.
 - Account Id: The compartment OCID copied from <u>Oracle Cloud Account</u>. In the Oracle Cloud Console navigation menu, select Identity & Security and then Compartment. Copy the compartment OCID for your organization.
 - **Discovery credentials**: Select the OCI credentials that you created in the preceding section.
 - Datacenter URL: Enter https://\$service.<your_region>.oraclecloud.com. For example, https://\$service.us-ashburn-1.oraclecloud.com.
 - **Datacenter Type**: Select the OCI datacenter [cmdb_ci_oci_datacenter].

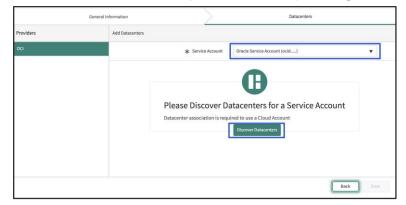
Create a Cloud Account

A cloud account is the logical representation in ServiceNow Cloud Provisioning and Governance of all or part of your managed cloud infrastructure. A cloud account can include multiple service accounts, even service accounts from different providers. For each service account, you specify which datacenters to include in the cloud account.

- 1. On the Cloud Admin Portal, expand Manage, click Cloud Accounts, and then click New.
- 2. Enter a name for the account, select **OCI** as the provider, and then click **Next**.

Create Cloud Account						×
General Information				Dat	acenters	
		Cloud Ac	count			
* Name	Oracle Demo Cloue	d Account				
Description						
* Provider						
	AWS	Azure	Google	IBM		
	OCI	VMware vCenter				
						Next

7 Provision Oracle Cloud Infrastructure in ServiceNow Using Terraform / version 2.0.1 Copyright © 2023, Oracle and/or its affiliates / Public 3. Select the service account that you created in the preceding section, and click **Discover Datacenters**.



4. After the list of datacenters is populated, select the datacenter where you need resources to be provisioned. Then click **Save**.

Providers	Add Datacenters		
oci	* Service Account	ServiceNow in Laurence - Adda	Association - V
	Select datacenters for oci provider		Select All Clear All
	переказанения. плезала	тивора нисторията	
	me-jeddah-1 sa-sant	ago-1 sa-saopaulo-1	
	sa-vinhedo-1 uk-card	iff-1 wk-london-1	
	us-ashburn-1 us-phor	enix-1 us-sanjose-1	
			Back Save

Create and Configure a Sample OCI Terraform Cloud Catalog

Create a cloud catalog item for provisioning, based on a Terraform template, and publish the catalog item to provide a service. For details, see <u>Create or update a catalog item based on a Terraform template</u> in the ServiceNow documentation.

Create a Cloud Catalog Item

- 1. In ServiceNow, go to the Cloud Admin Portal.
- 2. In the navigation menu, expand **Design** and then click **Cloud Catalog Item**.
- 3. Click New and then provide the following values:
 - Name: Enter a name for the catalog.
 - **Short Description**: Enter a short description for the catalog.
 - Source: Select Configuration Management Template.
 - Provider Type: Select the relevant Terraform provider from the list.
 - Provider: Select the config provider that you created in "Create and Configure Terraform Config Provider."
 - Picture and Icon: Select the picture and icon to display for the cloud catalog item.

4. Click **Submit**.

The cloud catalog item	is created, as show	n in the followin	g example image.
			5

Cloud Catalog Item Oracle Core Compute			Catalogs	• ooo Update Delete
Name	Oracle Core Compute	Catalogs	Cloud Service Catalog	
Active		Category	Compute Q,	0
Workflow	Blueprint Request	▲ Source	Configuration Management Template]
Catalog type	Provision	Provider Type	Terraform Enterprise	0
Icon	Click to add	Provider	Terraform Config Prov	
Picture	[Update][Delete]	Blueprint		
Shart description Description 교교교	Provision Oracle Core Compute resources using Terr	raform Template	-+]
	B I ⊻ ↔ ↔ Verdana IΞ - IΞ - 55	・ 8pt ・ 囲* <u>A * 通 * </u> & 次		

- 5. Open the newly created catalog record. On the **Cloud Templates** related list, click **New**.
- 6. Select the correct configuration installable from the list. The configuration installable is the VCS repository that's attached to the Terraform provider or folder for Terraform Open Source. Then, click **Submit**.

< E ServiceNow Cloud Template Version	ons		1	ļ 🗒	₽	000 9	Submit
author.	tent and generate attributes under this record. In case be activated and catalog variables would be updated	an update conflict is detected, a decision to either update catalog variable with to based on the decisions recorded.	emplate attribute or skip update to retain variable value	has to b	e made l	y the ver	rsion
Name	Oracle Core Compute	Туре	Terraform Enterprise Template				
Version		Format					
State	Draft						
Short description							
★ Configuration Installable	intelibliss/oci_vm_instance::main		Q	0			
Validation status	None						
Body							
Submit							

7. Open the newly created Draft version from the catalog item related list, validate the template details and the template version parameters, and then click **Activate**.

Note: Template version parameters are automatically parsed input variables from the Terraform template. They're automatically created as variables on the cloud catalog item and exposed to end users who order the service.

< E ServiceNow Cloud Template Versions					A 🖹	≧ , √ ∄ …	Update Activate	Delete	个 」
Version	1			Format Terrafo	rm		3		
State	Draft								
Short description									
Configuration Installable	intelibliss/ocl_vm_instance:main								
Validation status	Success								
Validation message	Template is valid and saved.								
Body	#Directory = /intelibliss/oci_vm_instance::main #File1 = instance:ff #File2 = metadata1.snc	0							
	#File = instance.tf // Copyright (c) 2017, 2023, Oracle and/or its affiliates. All rights reser // Licensed under the Mozilla Public License v2.0	rved.							
	variable "tenancy_ocid" { }								
	variable "instance_prefix" { default = "cpg_oci." }								
	variable "user_ocid" (}								
	variable "fingerprint" { }								
	variable "private_key" { }								
Update Activate Delete									
Related Links									
Add to Update Set									
Template Version Parameters Search Order	• Search					44	1 to 1	6 of 16 🕨	>> =
Template version = 1									
Q ≡ Name		■ Type ■ DataSource	Datasource Value	E Default Value	≡ Regex	Error Text	■ Help Text	Order	•
instance_prefix	Use Template New	String Text	_	cpg-oci-					C
asizer ()	 Use Template New 	String Text							1
i compartment_ocid	 Use Template New 	String Text							2
i) ssh_public_key	Use Template New	String Text							3

8. Open the cloud catalog item and select the **Active** check box.

Note: For more options to customize the catalog item, see Create a cloud catalog item.

< E Cloud Catalog Item Oracle Core Compute			🖋 🚉 🙀 🗮 🚥 Update 🛛 Delete
Name	Oracle Core Compute	Catalogs	A × Cloud Service Catalog
Active	2	Cetepary	Compute Q. O
Workflow	Blueprint Request	▲ Source	Configuration Management Template
Catalog type	Provision	Provider Type	Terraform Enterprise
Icon	Click to add	Provider	Terraform Config Prov
Picture	[Update][Delete]	Blueprint	Oracle Core Compute
		Operation	Provision
Short description	Provision Oracle Core Compute resources using Terraform Template		
Description (말) 달)			- +
	B I 및 ↔ ↔ Verdana → 8pt	- Ⅲ- ▲- ■- & ※ ■ 回 · E Ξ ヨ	
			4
Update Delete			
elated Links dd to Update Set			
sport Catalog Item em Diagnostic anage Attributes eset Catalog Item			
Cloud Templates (1) Variable Sets (2) Pre Provision (peration Post Provision Operation Rules (3) Lifecycle Operations (6)	Categories (1)	
Cloud Templates New Search for text	▼ Search		≪≪ ≪ tolof1 >> >>
ServiceNow Cloud Template Versions			
(i) Q	Short description		Validation status
1		Active <u>Terraform</u>	• Success

Order a Cloud Catalog from the Cloud User Portal

After the catalog item is created, users in the ServiceNow environment can launch that item through ServiceNow's Cloud User Portal. Depending on the settings used by the owning entity of the ServiceNow account, limits can be placed on users and approvals required to launch the catalog item.

Note: For details about the Cloud User Portal, see Cloud User Portal.

- 1. Open the Cloud User Portal, for example, <instance_url>/cloud_portal.
- 2. Click Launch a Stack.
- 3. Select the catalog item, fill in the details, and click **Submit**.
- 4. Track and manage the status by using the **Activities** tab.

The stack is deployed through the Terraform Enterprise or Terraform Cloud account. Check that environment because sometimes an "approve" action might be required, depending on the account settings.

A successfully completed deployment should look like the following image in your ServiceNow **Activities** environment, and you should be able to view the deployed resources in your Oracle Cloud Infrastructure tenancy.

servicen	Cloud User Pa	rtal			▼ Admin Portal	9
overview	🖶 Catalog	🗞 Stacks	Resources	Activities	lılıl Dashboard	
Cloud Activities					Search	۹
Activities	Requests					S
Track 🖯	Filter Request Items	Status	Comments/Work Notes	Request Details	Tasks	
Requests Change Requests Incidents Tasks Lease Operations Business Schedule Operations Monitor Cloud Events Manage Reys	ZkTestitem zk_stack_db Request ID: REQ0010002 Request Item ID: RITM0010 Created 20d ago ZkTestitem zkteststack Request ID: REQ0010001 Request ID: REQ0010001 Created 20d ago	♥ ⊘ App Blueprin Policy ⊘ Quo Check St 0001 ⊘ Dep	ITM0010002	2022-02-24 13:48:58 : [2 2022-02-24 13:48:58 : [2 core_instance::	ZkTestitem Interface] ZkTe ZkTestitem Interface] ZkTe ZkTestitem Interface] ZkTe	stitem.Prov



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