



Terraform Cloud Onboarding Program Kickoff & Overview



Agenda

- Welcome/Code of Conduct
- Customer Success Overview
- TFCB Onboarding Program
- Customer Support
- TFCB Getting Started
- Next Steps

Customer Success Overview

Partnering Together



HashiCorp Customers



FINANCIAL SERVICES



ENTERTAINMENT & TELCO



MANUFACTURING & LOGISTICS



SOFTWARE & TECHNOLOGY



INSURANCE & HEALTH





What You Can Expect from CS

Customer Success Manager (CSM)

Account & Success Management

- Providing a community-based onboarding program designed to get you up and running quickly
- Facilitating sessions to keep your team current with HashiCorp technology
- Joint discovery of objectives and success criteria
- Your customer advocate within HashiCorp

Customer Success Architect (CSA)

Technical Success & Advisory

- Technical resource for the onboarding process
- Providing product reference architecture information for better decision-making
- Thought leadership on best practices of product architecture and use-case patterns
- Timely education and enablement from a technical perspective

Other resources available to you



Ensure your team's success



Worldwide Support

With HashiCorp Worldwide Support, you can get assistance when you need it from anywhere in the world with our ready-to-serve ticketing system and expert support team.

[Learn More](#)



Implementation Services

Let highly skilled product domain experts help you achieve success by simplifying and accelerating the adoption of our cloud solutions starting at the implementation phase.

[Learn More](#)

Further information located at <http://hashicorp.com/customer-success>

TFCB Onboarding Program

Preview

Customer Responsibilities

These are critical for your onboarding success



Training Consumption

Ensure team members attend workshops, training

Use Case Guidance

Provide timely information on your intended use cases

Project Team Participation

Inclusive of any stakeholder required for successful completion of your onboarding

Single Point of Contact

Main contact for decision making

Escalation Process

Understanding of escalation process

Surveys Responses

Provide timely responses to surveys



Onboarding Checklist



Terraform Cloud Configured

- Terraform Organization created
- Terraform workspaces configured to at least 1 workflow (i.e.: API, CLI, VCS or UI)
- Standardize deployments using modules and private registry
- Enforce policy across workspaces



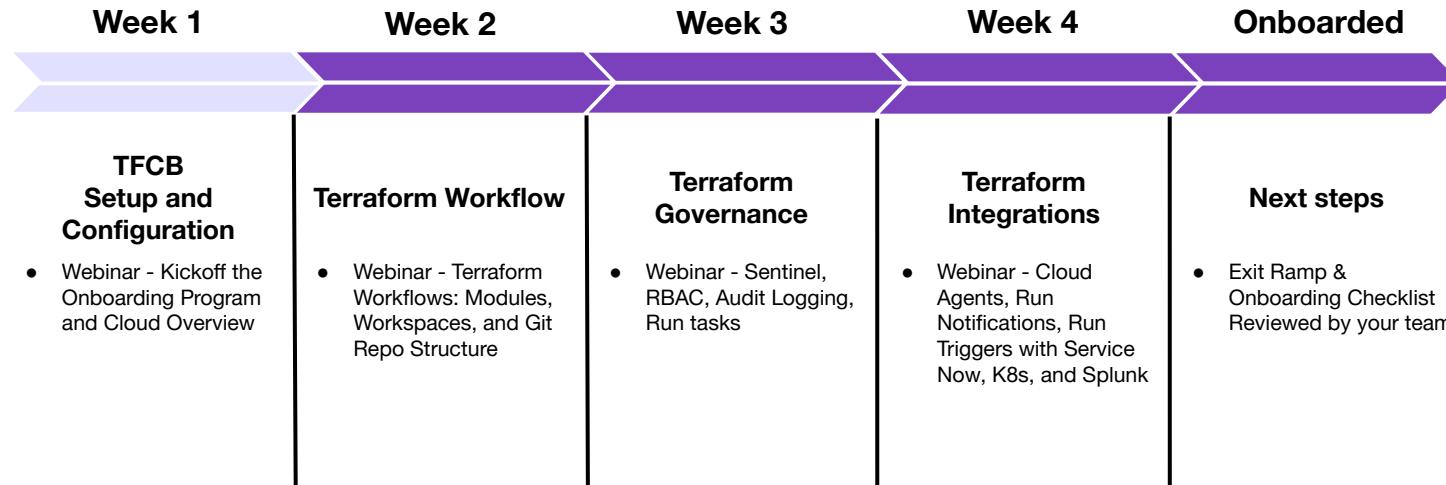
Terraform Cloud Adoption

- Getting the first use case (team/service/application) onboarded and consuming Terraform Cloud
- A roadmap created for onboarding additional use cases and validated with a HashiCorp CSM



Completed within 30 days

TFCB Path to Production



Customer Support

SLA, Contact Methods, Services, etc.

Support Levels

This info can also be accessed from our [Support SLA Page](#)



		BRONZE	SILVER	GOLD
Hours of availability		N/A	9-5, Monday - Friday US PACIFIC TIME EUROPEAN CENTRAL TIME AUSTRALIA EASTERN TIME INDIA STANDARD TIME	24 X 7 (SEV-1 URGENT)
SEVERITY 1	FIRST RESPONSE	N/A	4 business hours*	60 minutes
	UPDATE FREQUENCY	N/A	8 business hours*	4 hours
SEVERITY 2	FIRST RESPONSE	N/A	8 business hours	4 business hours
	UPDATE FREQUENCY	N/A	2 business days	8 business hours
SEVERITY 3	FIRST RESPONSE	N/A	24 business hours	8 business hours
	UPDATE FREQUENCY	N/A	5 business days	3 business days
SEVERITY 4	FIRST RESPONSE	24 business hours	24 business hours	24 business hours
	UPDATE FREQUENCY	Reasonable best effort	Reasonable best effort	Reasonable best effort
Technical contacts allowed		2	3	4
* Clock hours for HCP Cluster down and TFC Stuck Runs				



Severity Definitions

Sev-1 (Urgent)	A Sev-1 incident is an operational outage as defined below: Any error reported by customer where majority of the users for a particular part of the software are affected, the error has high visibility, there is no workaround , and it affects the customer's ability to perform its business .
Sev-2 (High)	Any error reported by customer where the majority of the users for a particular part of the software are affected, the error has high visibility, a workaround is available ; however, performance may be degraded or functions limited and it is affecting revenue .
Sev-3 (Normal)	Any error reported by customer where the majority of the users for a particular part of the software are affected, the error has high visibility, a workaround is available; however, performance may be degraded or functions limited and it is NOT affecting revenue.
Sev-4 (Low)	Any error reported by customer where a single user is severely affected or completely inoperable or a small percentage of users are moderately affected or partially inoperable and the error has limited business impact.

For reference only - Subject to Change
Current info can also be accessed at the bottom of our [Support SLA Page](#)



Contacting Support

There are two ways to contact our support team:

1) **Support Portal:** Open a ticket through [our support portal](#)

- Once customer access is setup, authorized users can submit a ticket using the email address they provided us
- The **portal provides faster routing** via product and sub-product selection, the ability to send encrypted attachments, and set ticket priority

2) **Email Support:** Send an email to support@hashicorp.com

- All emailed support tickets default to “normal” priority - and cannot be changed
- Do not raise a SEV-1 over email, please use the support portal

Support Portal



Authorized technical contacts can log in through the “Sign in” button

The screenshot shows the HashiCorp Help Center homepage. At the top left is the HashiCorp logo and "Help Center". To the right are two buttons: "Open a new ticket" and "Sign in", with "Sign in" circled in yellow. Below this is a large heading "Get the help you need" and a subtext: "Find product docs and guides, community feedback, and learning resources or submit a ticket to our support team for an urgent request." A search bar below contains the placeholder text "Search for a topic or question....". At the bottom center is a "Browse Support Articles" button. The footer features logos for Terraform, Nomad, and Consul, along with their respective support portal links.

HashiCorp | Help Center

Open a new ticket **Sign in**

Get the help you need

Find product docs and guides, community feedback, and learning resources or submit a ticket to our support team for an urgent request.

Search for a topic or question....

Browse Support Articles

Terraform

Support Portal Link
<https://support.hashicorp.com/hc/en-us>

Nomad

Interacting with HashiCorp Support



Terraform - Best Practices

When submitting a ticket, provide as much detail as possible...

Terraform Cloud Specific		If using CLI, provide...
Organization Name & Workspace Name	<ul style="list-style-type: none">Name of your organization in Terraform Cloud and the name of the workspace you are working with directly.	Operating System (version)
Run ID	<ul style="list-style-type: none">The ID for the run you are working with. (e.g. #run-XXX1234)	Platform Details (physical/virtual)
Run Errors	<ul style="list-style-type: none">Provide debug logs by setting <code>TF_LOG</code> environment variable.	Cloud Provider(s)
Terraform CLI Version	<ul style="list-style-type: none">Terraform version can be found within Workspace settingsIf using Terraform CLI, the CLI version can be found using <code>terraform version</code>.	

Recommended additional resources



We strongly urge you to subscribe to the Terraform Cloud status web page, this can be done here

<https://status.hashicorp.com/>

We also recommend and hope you will take an active part in the Hashicorp community, you can find more information about that here

<https://www.hashicorp.com/community>



Terraform Cloud for Business (TFCB) Getting Started

January, 2023



Terraform Cloud for Business Overview

1. Overview
2. Organizations
3. SSO, Teams, Users
4. Private Module Registry
5. Workspaces
6. Run Types
7. What's new in Terraform

Terraform Cloud for Business

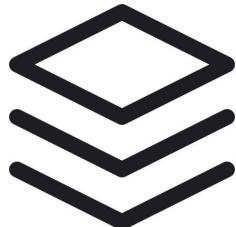


- Central platform running in the cloud, that HashiCorp manages for you
- Terraform Cloud has a robust set of enterprise-ready features including:
 - SSO, Teams, Users, Tokens, RBAC which are **a priority to set up** during our onboarding initiatives
 - VCS Connections, Private Module Registry, Workspaces, State Management, Variables to **facilitate collaboration** across your users and teams
 - Cost Estimation, Run Triggers, Run Tasks, Run Notifications, Policy as Code with Sentinel to **support governance and compliance** needs
- Terraform was built to establish a Producer/Consumer model, to create a separation of duties across your ops and devs teams (covered in depth during Terraform Workflows webinar)

Organizations



- Security boundary and shared space for teams to collaborate on workspaces
- Users can belong to multiple organizations, the UI allows users to self-select and operate in the organization they choose



Organizations Components

- SSO Settings
- Teams
- Users
- API Tokens (Org, Teams, Users)
- VCS Provider / Git Connections
- Private Module Registry
- Workspaces (TF Code + Statefile)
- Variables, ENV Variables, CLI Flags
- SSH Keys
- Sentinel Policy Sets
- Cloud Agents

Teams



Teams are groups of users within an organization that can be assigned to workspaces within the organization

Teams can be assigned to multiple workspaces and have different permissions in each workspace

Teams + Organizations

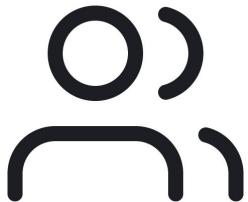
Teams can also be assigned organization-level permissions including:

- Managing Policies
- Manage Workspaces
- Manage VCS Settings

Each organization contains an Owners team which has all of the above permissions

Users

- Users in TFCB are members of Teams within Organizations
- When TFCB is not configured with an identity provider, users can self-register
- Users do not belong to any organization or workspaces until an owner of them has added them to a team



User Settings

Users can control these account level settings:

- Username
- Email
- Avatar
- Password
- Two Factor Authentication
- Multiple User API Tokens



Authentication Methods

Username/Password

- Default authentication method
- Allows users to self register
- Requires users to provide an email address and password

SAML SSO

- Direct integrations with Azure AD and Okta for single sign on are included
- TFCB can also integrate with your SAML capable identity provider.

API Tokens

Once logged in, users can generate API token(s)

API tokens are necessary for:

- Auth with TFCB API
- Auth with TF remote backend for CLI runs
- Using private modules in command-line runs on local machine

SAML SSO



- TFCB supports integrating with SAML 2.0 compliant identity solutions
- Enabling SAML causes the login prompt to redirect users to the IDP for login and then redirects back to TFCB upon authentication
- Team membership mapping can be enabled so users are added to teams based on SAML attribute assertion

Identity Provider Guides

[Azure Active Directory](#)

[Okta](#)

[SAML](#)



Service Accounts

Team Service Accounts

- Designed to perform API operations on workspaces
- API token will have the same access and permissions as team
- Token is generated in the team page and can be used interactively

Organization Service Accounts

- Designed to create and configure workspaces and teams
- Not recommended to be used for all-purpose interface to TFCB
- Should be used for initial setup and delegation of workspace(s) to team(s)
- Team service account should be used for regular operations



Workspaces

Workspaces can be run in the following ways:

1. Uploading a .zip file of TF code via the API
2. Connected to a Git Repository from your VCS provider and will monitor for changes using Git Webhooks

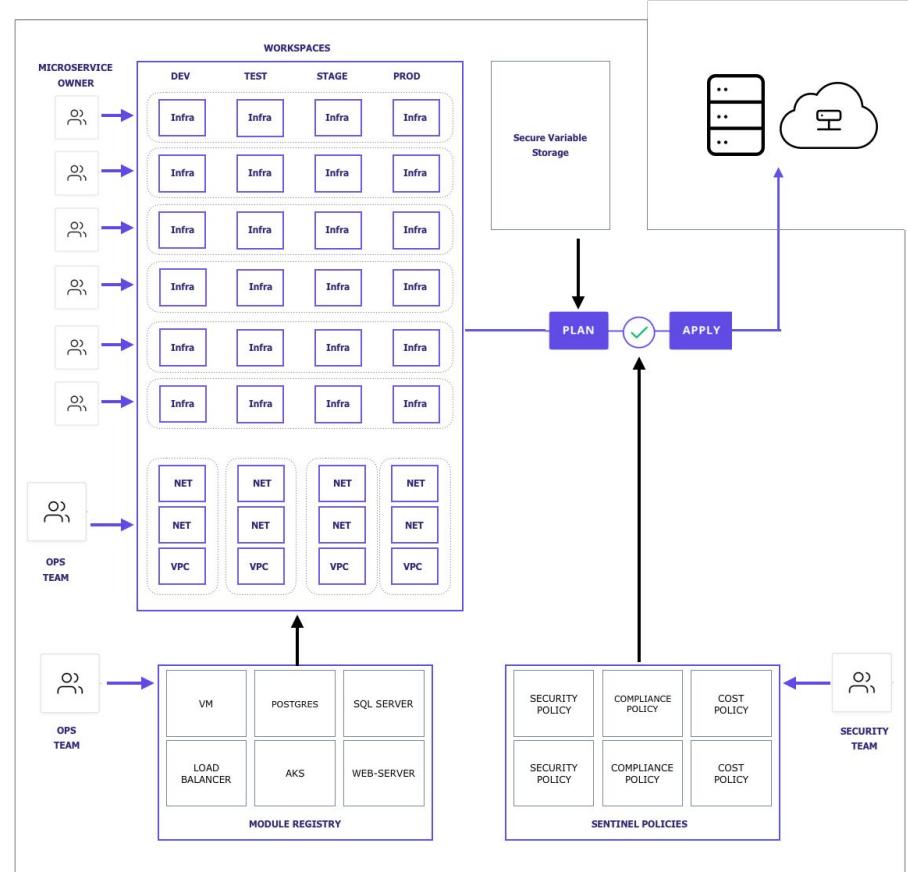
Workspaces Contain:

- Terraform Code, from a VCS Git Repo or uploaded as a .zip file to the API
- Variables (can be marked as Sensitive)
- Environment Variables
- Persistently stored TF Statefiles for cloud resources that are managed
- Historical TF Statefiles and Run logs

Workspaces



- Organize and decompose monolithic infrastructure into micro-infrastructures
- Match the organization of your application or teams with your infrastructure
- “Micro-infrastructures” are linked to create the complete infrastructure for the application



UI/VCS-Driven Runs



Workflow

UI and VCS workflows are the primary mode of operation in TFCB

1. Each Workspace is connected with a specific Git Branch in a Git Repo on your VCS Provider
2. TFCB registers Git Webhooks with your VCS Provider during Workspace creation
3. As new Git Commits are Merged into a Git Branch, TFCB will automatically queue a Workspace Run

Auto-apply

- By default, runs require confirmation before TFCB will apply them
- Auto-apply can be configured in the workspaces “General Settings” page

VCS Integration



- TFCB will interact with most providers using the providers API and OAuth token
- Azure DevOps Server & BitBucket Server require an SSH key for downloading repo contents
- TFCB supports integrating with multiple VCS providers within an Organization
- During workspace creation a configured Git provider is selected

Supported VCS Providers

[GitHub](#)

[GitHub Enterprise](#)

[GitLab.com](#)

[GitLab EE and CE](#)

[BitBucket Cloud](#)

[BitBucket Server](#)

[Azure DevOps](#)

CLI-Driven Runs



Remote Backend

- Enables developers who are already familiar with Terraform CLI workflow to integrate with Terraform Cloud for Business
- Runs execute remotely in TFCB while displaying progress in the terminal where the run is executed

Terraform CLI Tool

- Provides a CLI interface that leverages the Terraform Cloud for Business API
- Useful for modifying variables and workspace settings from the terminal

API-Driven Runs



- Provide a flexible workflow for teams to build tooling to determine when configuration has changed and a run should occur
- Allows for custom integration and configuration from unsupported version control systems
- Automatically generate Terraform configurations from a non-VCS source of data
- Build a variety integrations

Resources

- [Automation script examples](#)
- [Tutorial: API-driven runs](#)

Terraform Cloud Agents



- [Terraform Cloud Agents](#) allow TFCB to communicate with isolated, private, or on-premises infrastructure
- Deployed as lightweight Docker-based agents within a specific network segment
- Useful for on-premises infrastructure types such as vSphere, Nutanix, OpenStack, enterprise networking providers, and anything in a protected enclave
- **The agent architecture is pull-based, so no inbound public internet connectivity is required**
- Agents poll Terraform Cloud for work and carry out execution of that work locally

Private Module Registry



- Terraform modules are a container for multiple cloud resources that are used together
- Modules can be used to create lightweight abstractions, to describe infrastructure in terms of its architecture, rather than directly in terms of specific cloud resources
- The [Private Module Registry](#) (PMR) works similarly to the [public registry](#) and includes support for versioning and a searchable list

The screenshot shows a Terraform module page for the `vnet` module by `AZURERM`. The page includes:

- Provision Instructions:** A code block showing how to use the module in a Terraform configuration.
- Usage:** An example HCL code snippet for using the module.
- Dependencies:** A table showing dependencies on `azurerm`.
- Outputs:** A table showing outputs from the module.
- Inputs:** A table showing inputs required for the module.
- Readme:** A link to the module's README file.

Cost Estimation



- TFCB provides cost estimates for many resources found in Terraform configuration
- For each resource an hourly and monthly cost is shown, along with the monthly delta
- The display includes total cost and delta of all estimable resources

✓ APPLIED Canary Test

API integration triggered a run from Terraform Enterprise API 3 minutes ago [Run details](#)

✓ Plan finished 3 minutes ago Resources: 1 to add, 0 to change, 1 to destroy

✓ Cost estimation finished BETA 4 minutes ago Resources: 2 of 15 estimated + \$1,674.88/mo (+\$1,674.88)

[Download CSV](#)

TYPE	NAME	COST/HR	ESTIMATED MONTHLY COST	DELTA
aws_instance	web	\$2.304	\$1,656.88	+\$1,656.88
aws_elb	lb	\$0.025	\$18.00	+\$18.00

⚠ 13 of 15 resources couldn't be estimated. [Show](#)

✓ Policy check passed 3 minutes ago Policies: 1 passed, 0 failed

✓ Apply finished 3 minutes ago Resources: 1 to add, 0 to change, 1 to destroy

Sentinel



Sentinel is a framework for Policies as Code (PaC) similar to how Terraform implements Infrastructure as Code (IaC)

- Sandboxing
- Codification
- Version Control
- Automation
- Testing

Sentinel is covered in detail later in the program

A screenshot of a code editor window titled "CODE EDITOR". The code is written in a custom language called "tfconfig" and is designed to validate Terraform modules. It imports "tfconfig" and "strings" packages, defines a function "validate_modules_from_pmr", and iterates over "tfconfig.modules". It checks if each module's source URL does not start with "app.terraform.io/jrx", prints a warning, and sets the validation status to false. Finally, it returns the validation status.

```
import "tfconfig"
import "strings"

# Require all modules directly under root module
# to come from Terraform

validate_modules_from_pmr  = func() {
    validated = true
    for tfconfig.modules as _, m {
        if not strings.has_prefix(m.source, "app.terraform.io/jrx") {
            print("Module with source", m.source, "is not in the PMR")
            validated = false
        }
    }
    return validated
}
```

TF OSS to TFCB Migration



- Migrating Terraform state to Terraform Cloud allows teams to continue managing infrastructure without de-provisioning anything
- [Migrating to Terraform Cloud or Terraform Enterprise](#)
- [Medium Blog on State Migration via Terraform API](#)

What's New with Terraform



Notable/Recent Additions & Changes



- [Terraform Changelog](#)
- [Run Tasks](#)
- [Terraform 1.2 \(May 2022\)](#)
- [Terraform 1.3 \(September 2022\)](#)
- [Drift Detection](#)

Drift Detection



- We recognize not every organization follows Infrastructure as Code
- Cloud or service providers make changes to their API that's not updated in your configuration
- Emergency “Break-ceiling” scenarios

Enter Drift Detection, new in Terraform Cloud

The screenshot shows the Terraform Cloud interface for the workspace 'hashicorp-v2'. The top navigation bar includes links for Workspaces, Usage, Registry, Compliance, Settings, and HashiCorp Cloud Platform. The main content area is titled 'Workspaces' and shows '20 of 122 matching'. A table lists workspaces with columns for Name, Run status, Source, and Latest change. Several workspaces are marked as having 'Drift' issues, such as 'kitchen-sink' and 'attlast-mixin'. A search bar at the top allows filtering by workspace name.

Name	Run status	Source	Latest change
kitchen-sink	Errored	terr...security-group@master	a few seconds ago
aws-shared-east-SHARD	Applied	terr...security-group@master	a day ago
attlast-mixin	Applied	terr...security-group@master	2 days ago
aws-app-c00002-shared-edo-shared-east-shard	Applied	terr...security-group@master	2 days ago
c00002-shared-edo-shared-east	Applied	terr...security-group@master	2 days ago
sandbox-run-triggers	Applied	terr...security-group@master	a few seconds ago

Next Steps



Upcoming Webinars



Terraform Workflow Management

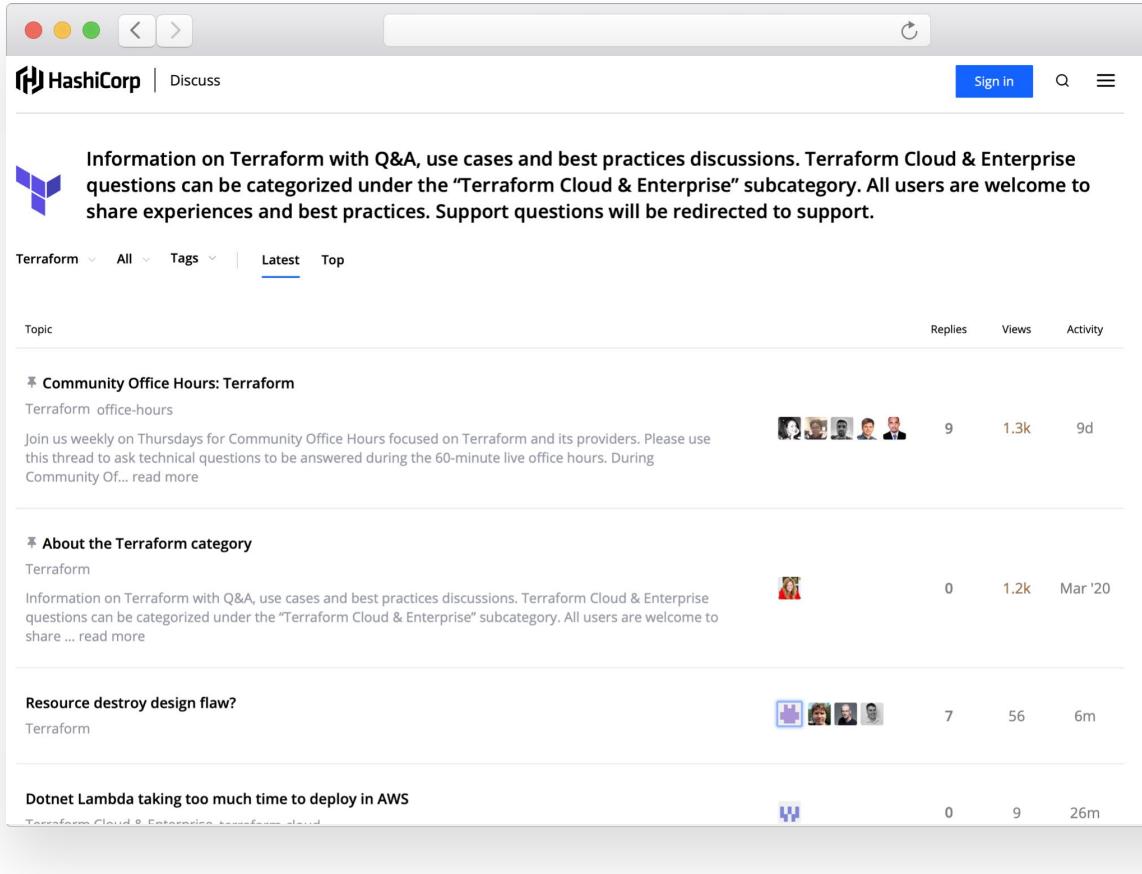
Deep dive into best practices around run workflows, workspaces, variables, modules, and Git repo structure

Terraform Governance

Topics include TFCB's RBAC model and usage, along with using Sentinel, Run Tasks, and Audit logging for governance and guardrails for your teams and infrastructure

Terraform Integrations & Series Closing

Discussion of TFCB integration with Splunk, ServiceNow, & Kubernetes alongside best practices for run triggers & notifications and Production Readiness guidelines



The screenshot shows a web browser window with the HashiCorp logo and "Discuss" tab selected. The main content area displays a list of topics under the "Terraform" category. The topics include:

- Community Office Hours: Terraform** (Terraform office-hours): A post asking for weekly Thursday office hours focused on Terraform and its providers. It includes a note about technical questions and a link to "Community Of...".
- About the Terraform category** (Terraform): A general information post about the Terraform category, mentioning Q&A, use cases, and best practices.
- Resource destroy design flaw?** (Terraform): A post asking about a potential design flaw in resource destruction logic.
- Dotnet Lambda taking too much time to deploy in AWS** (Terraform Cloud & Enterprise): A post asking about deployment times for Dotnet Lambda functions in AWS.

Each post includes a user icon, reply count, view count, and a timestamp.



Discuss

Engage with the HashiCorp Cloud community including HashiCorp Architects and Engineers.

discuss.hashicorp.com

Developer

<https://developer.hashicorp.com/terraform>



Our new documentation platform makes it easy to learn from dozens of interactive lab environments, hundreds of tutorials, and thousands of reference docs.

The screenshot shows a web browser window displaying the Terraform Developer documentation. The URL in the address bar is <https://developer.hashicorp.com/terraform>. The page title is "Terraform". The main content area is titled "Get Started - Terraform Cloud". It includes a brief description: "Collaborate on version-controlled configuration using Terraform Cloud. Follow this track to build, change, and destroy infrastructure using remote runs and state." Below this, there is a link to "Create an account" and a "Start" button. A sidebar on the left lists various categories: Tutorials, Overview, Get Started (with sub-options for AWS, Azure, Docker, GCP, OCI), Fundamentals, CLI, Configuration Language, and Modules. The "Terraform Cloud" option under "Get Started" is currently selected and highlighted in grey. The main content area also shows the first few steps of the "What is Terraform Cloud - Intro and Sign Up" tutorial, which has a duration of 5min.

A screenshot of a web browser displaying the HashiCorp Help Center. The page features a navigation bar with the HashiCorp logo, a search bar, and links for "Open a new ticket" and "Sign in". The main content area includes a heading "Get the help you need", a search bar with placeholder text "Search for a topic or question....", and a section titled "Browse Support Articles" featuring icons for Terraform, Vault, Consul, and Nomad. At the bottom, there is a button labeled "Open a new ticket" with a plus sign icon.

HashiCorp | Help Center

Open a new ticket Sign in

Get the help you need

Find product docs and guides, community feedback, and learning resources or submit a ticket to our support team for an urgent request.

Search for a topic or question....

Browse Support Articles

Terraform

Vault

Consul

Nomad

Open a new ticket



Support

<https://support.hashicorp.com>

Action Items



- Identify your use case and define your goals with TFCB
- Share to customer.success@hashicorp.com
 - Authorized technical contacts for support
 - Stakeholders contact information (name and email addresses)
 - TFCB Organization Name

Q & A



Thank You

customer.success@hashicorp.com
www.hashicorp.com/customer-success