Programmatic Initialization of Firebase Authentication in Google Cloud CI/CD Pipelines

1. Introduction

The implementation of Continuous Integration and Continuous Delivery (CI/CD) pipelines in Google Cloud often involves the automated deployment of various infrastructure components, including Firebase. A user has reported encountering an issue while attempting to enable Firebase Authentication programmatically within such a pipeline. Specifically, the use of a curl command targeting the Firebase Identity Toolkit API to enable email sign-in resulted in a "CONFIGURATION_NOT_FOUND" error. This error persisted until a manual intervention was performed by navigating to the Firebase console and clicking the “Get started” button within the Authentication tab. This action inexplicably allowed the subsequent programmatic configuration to succeed. This report aims to identify a programmatic method that replicates the initial setup performed by the “Get started” button in the Firebase console, thereby enabling the full automation of Firebase Authentication configuration within CI/CD pipelines.

2. Understanding the "CONFIGURATION_NOT_FOUND" Error

The "CONFIGURATION_NOT_FOUND" error arises within the context of the Firebase Identity Toolkit API, which serves as a mechanism to programmatically manage various aspects of Firebase Authentication. The user's attempt to use a PATCH request against the /config endpoint to enable email sign-in suggests an interaction with the core settings of the Authentication service. The error message itself strongly implies that the system is unable to locate a configuration that it expects to exist before the requested modification can be applied. This behavior directly correlates with the user's experience, where a manual step in the Firebase console was a necessary precursor to the successful execution of the same API call.[1]

Analysis of online discussions surrounding this error provides valuable context. A Stack Overflow thread addressing the "CONFIGURATION_NOT_FOUND" error in the Google Identity Toolkit indicates that this issue can occur if authentication has not yet been enabled within the Firebase console.[1] One user specifically noted that simply visiting the authentication page and clicking "Get Started" resolved the problem. This suggests that this manual action triggers an underlying initialization or provisioning process for the Firebase Authentication service that is a prerequisite for further configuration via the API.

Another user encountered a similar error even after enabling the Identity Toolkit API at the Google Cloud project level.[2] The resolution in this case also involved a manual step within the Google Cloud console to enable the Identity Provider. This further emphasizes that enabling the core API might not be sufficient for the Firebase Authentication service to be ready for configuration through its specific endpoints. There appears to be a distinct activation or initialization required within the Firebase Authentication context itself. The collective evidence points to the conclusion that the "CONFIGURATION_NOT_FOUND" error signifies that Firebase Authentication, particularly the email/password sign-in feature, demands an initial enabling or provisioning step that goes beyond basic project creation or enabling the Identity Toolkit API. The manual interaction with the “Get started” button in the Firebase console likely performs this crucial initial setup.

3. Investigating Programmatic Initialization Options

To identify a programmatic solution, several potential avenues were explored, including the Firebase Admin SDK, the Google Cloud CLI (gcloud), and the Firebase Identity Toolkit API itself.

3.1. Firebase Admin SDK

The Firebase Admin SDK offers a suite of libraries designed for server-side interactions with Firebase services. These libraries provide functionalities for managing users, handling authentication tokens, and implementing custom authentication flows.[3] While the Admin SDK enables a wide range of authentication management tasks, the documentation and available resources do not indicate a specific function or method dedicated to performing the initial enabling or "Get started" action for Firebase Authentication.[3] The focus of the Admin SDK appears to be on managing authentication processes after the service has already been initialized and is active. Snippets detailing the setup and initialization of the Admin SDK [6] illustrate how to connect to a Firebase project but do not reveal any methods for enabling the Authentication service itself. Therefore, the Firebase Admin SDK, in its current form, does not seem to offer a direct programmatic way to replicate the "Get started" functionality observed in the Firebase console.

3.2. Google Cloud CLI (gcloud)

The Google Cloud CLI (gcloud) is the primary command-line interface for interacting with Google Cloud services, including Firebase. While the gcloud CLI provides extensive capabilities for managing various Firebase resources, a direct command

such as gcloud firebase auth enable does not appear to exist.[10] However, research into related areas within the gcloud ecosystem provides some potential leads. One snippet discusses the use of the Firebase Admin SDK within a Quarkus application and mentions a configuration property (quarkus.google.cloud.firebase.auth.enabled) that enables Firebase Authentication.[11] The existence of such a configuration flag suggests that there might be an underlying setting manageable through an API or potentially the gcloud CLI.

Further exploration reveals a Stack Overflow thread where a user specifically inquired about enabling Firebase Auth via email through an API or CLI.[12] The answer indicates that as of November 2022, this is achievable using Terraform or the gcloud CLI in conjunction with scripting. The solution involving gcloud suggests obtaining a service account access token and then using curl to send a PATCH request to the Identity Toolkit API. This approach is similar to what the user in the initial query attempted, but the key difference highlighted is the necessity of using a service account with the correct permissions. The thread also mentions the Terraform resource google_identity_platform_project_default_config, which directly addresses the configuration of default settings for the Identity Platform project, including enabling sign-in methods. This resource appears to be a strong candidate for programmatically performing the initial setup. While a dedicated gcloud firebase auth enable command is not evident, the possibility of using gcloud in conjunction with the Identity Platform API or a less obvious command related to it cannot be entirely dismissed.

3.3. Firebase Identity Toolkit API

The Firebase Identity Toolkit API is the RESTful interface that the user's script directly interacts with to configure authentication settings. The error encountered, "CONFIGURATION_NOT_FOUND," suggests that the /config endpoint expects Firebase Authentication to be in a specific initialized state before allowing modifications such as enabling email sign-in.[13] Documentation for this API indicates that attempting to update the configuration of an identity provider that has not been previously configured for the project will result in an HTTP 404 error.[13] This directly supports the idea that the email/password provider needs to be initially enabled before its specific settings can be modified. Community discussions also echo this, with users resolving similar errors by ensuring Firebase Authentication is enabled in the console.[14] While the Identity Toolkit API allows for granular control over various authentication providers and settings, it appears to assume that the core Firebase Authentication service has already been initialized for the project. Therefore, the API call used by the user, while correct for *configuring* email sign-in, is likely failing because it is being

made before the necessary initial setup has occurred.

4. Analysis of Research Material

The investigation of various programmatic options reveals a consistent theme: the "CONFIGURATION_NOT_FOUND" error signifies that Firebase Authentication requires an initial setup or enabling step before specific configurations, such as enabling email sign-in, can be applied via the Identity Toolkit API. The manual "Get started" button in the Firebase console appears to trigger this underlying process. While the Firebase Admin SDK provides extensive management capabilities, it lacks a direct method for this initial setup. The gcloud CLI presents a potential avenue, possibly through direct interaction with the Identity Platform API or via specific commands related to it. However, the most promising approach identified in the research is the use of the Terraform resource google_identity_platform_project_default_config. This resource is specifically designed to manage the default configuration of the Identity Platform project, which encompasses the enabling of various sign-in methods. The inability to automate this initial step using the user's current approach highlights a gap in the automated deployment of Firebase infrastructure within CI/CD pipelines.

5. Proposed Solution and Implementation

Based on the research, the most direct and effective programmatic method to replicate the initial setup of Firebase Authentication is by utilizing the google_identity_platform_project_default_config resource within Terraform.[12] Terraform is an infrastructure-as-code tool that allows for the declarative management of cloud resources and can be seamlessly integrated into CI/CD pipelines.

To implement this solution, the following steps should be taken:

1. **Install Terraform:** Ensure that Terraform is installed in the CI/CD environment where the pipeline will execute. Installation instructions for various operating systems can be found on the official Terraform website.
2. **Configure Google Cloud Provider:** Configure the Google Cloud provider within Terraform. This typically involves creating a service account in Google Cloud with the necessary permissions and providing the credentials to Terraform. The service account will likely require the roles/identityplatform.admin IAM role to manage the Identity Platform configuration.
3. **Create Terraform Configuration File:** Create a Terraform configuration file (e.g., main.tf) that defines the google_identity_platform_project_default_config resource. The following is an example configuration that enables email sign-in:

```
Terraform
resource "google_identity_platform_project_default_config" "default" {
 project = "<YOUR_FIREBASE_PROJECT_ID>"
 sign_in {
  email {
   enabled = true
  }
  anonymous {
   enabled = false
  }
  phone_number {
   enabled = false
  }
 }
}
```

Replace <YOUR_FIREBASE_PROJECT_ID> with the actual ID of your Firebase project. This configuration explicitly sets the enabled property for email sign-in to true, effectively performing the initial enabling of this authentication method. The anonymous and phone_number blocks are included for completeness and can be adjusted as needed.

4. **Apply Terraform Configuration:** Integrate the Terraform commands into your Google Cloud Build pipeline. This would typically involve the following steps:
    - terraform init: Initializes the Terraform working directory and downloads the necessary provider plugins.
    - terraform plan: Creates an execution plan, showing what actions Terraform will take to achieve the desired state. This is useful for verifying the configuration before applying it.
    - terraform apply --auto-approve: Applies the changes defined in the configuration file. The --auto-approve flag is used for non-interactive execution in a CI/CD environment.

By incorporating these Terraform steps into your CI/CD pipeline *before* the curl command that attempts to further configure email authentication settings, the initial setup of Firebase Authentication will be performed programmatically.

6. Alternative Approaches and Considerations

While the Terraform solution appears to be the most direct, alternative approaches and important considerations should be discussed. Further investigation into the

gcloud identity-platform command group might reveal a specific command capable of performing the initial setup. However, the research did not yield a readily apparent command for this purpose.

The permissions granted to the service account used in the CI/CD pipeline are critical. As mentioned earlier, the roles/identityplatform.admin role is likely necessary for Terraform to modify the Identity Platform configuration. If an alternative approach using the Identity Toolkit API directly with gcloud auth print-access-token is pursued, ensuring the service account has the "Identity Toolkit Admin" role (as suggested in [6]) will be crucial. Experimentation with different initial payloads for the PATCH request to the /config endpoint using a service account token might also be necessary to trigger the initial setup.

Idempotency is a key principle in infrastructure automation, ensuring that applying the same configuration multiple times has the same effect as applying it once. Terraform inherently handles idempotency by comparing the current state of the infrastructure with the desired state defined in the configuration and only making necessary changes.

It is also important to acknowledge that cloud APIs and services can evolve. Therefore, staying updated with the latest Firebase and Google Cloud documentation is essential to ensure the continued effectiveness of the chosen automation method.

7. Conclusion

The "CONFIGURATION_NOT_FOUND" error encountered when attempting to enable Firebase Authentication programmatically in a Google Cloud CI/CD pipeline indicates that an initial setup step, similar to the manual “Get started” action in the Firebase console, is required. Based on the research conducted, the most straightforward and reliable programmatic solution is to utilize the google_identity_platform_project_default_config resource within Terraform. By integrating Terraform into the CI/CD pipeline to apply a configuration that explicitly enables email sign-in, the initial setup can be automated. While alternative approaches using the gcloud CLI or direct interaction with the Identity Toolkit API might be possible, the Terraform method offers a declarative and well-established way to manage this aspect of Firebase Authentication. It is recommended that the user implement the proposed Terraform solution in their CI/CD pipeline, ensuring the service account used has the necessary permissions to modify the Identity Platform configuration. Further exploration of gcloud identity-platform commands or experimentation with the Identity Toolkit API using a service account token could be

considered as alternative strategies.

Table 1: Firebase Authentication Initialization Methods

Method	Description	Ability to Initialize	Snippet References
Firebase Admin SDK	Libraries for server-side interaction with Firebase services.	No	3_5_6_5_4
Google Cloud CLI (gcloud)	Command-line interface for Google Cloud services.	Potentially	10
Firebase Identity Toolkit API	REST API for managing Firebase Authentication.	No	13_2_13
Firebase Console (Manual)	Graphical user interface for managing Firebase projects.	Yes	1

Table 2: Required IAM Roles for Programmatic Initialization

Method	Required IAM Role(s)	Snippet References
Terraform	roles/identityplatform.admin	12
gcloud CLI (Potential)	roles/identityplatform.admin, "Identity Toolkit Admin"	6
Identity Toolkit API (Potential)	"Identity Toolkit Admin"	6

Works cited

1. Google Identity Toolkit returns CONFIGURATION_NOT_FOUND - Stack Overflow, accessed on April 7, 2025, https://stackoverflow.com/questions/32924049/google-identity-toolkit-returns-c

onfiguration-not-found
2. Identity Toolkit API config returns "CONFIGURATION_NOT_FOUND" - Stack Overflow, accessed on April 7, 2025, https://stackoverflow.com/questions/73344220/identity-toolkit-api-config-returns-configuration-not-found
3. Authentication — Firebase Admin SDK for PHP Documentation, accessed on April 7, 2025, https://firebase-php.readthedocs.io/en/7.10.0/authentication.html
4. Introduction to the Admin Auth API | Firebase Authentication - Google, accessed on April 7, 2025, https://firebase.google.com/docs/auth/admin
5. Introduction to the Admin Auth API | Identity Platform Documentation - Google Cloud, accessed on April 7, 2025, https://cloud.google.com/identity-platform/docs/concepts-admin-auth-api
6. Installing the Admin SDK | Identity Platform Documentation - Google Cloud, accessed on April 7, 2025, https://cloud.google.com/identity-platform/docs/install-admin-sdk
7. Add the Firebase Admin SDK to your server - Google, accessed on April 7, 2025, https://firebase.google.com/docs/admin/setup
8. Re: How to authenticate firebase-admin with nodejs... - Google Cloud Community, accessed on April 7, 2025, https://www.googlecloudcommunity.com/gc/Databases/How-to-authenticate-firebase-admin-with-nodejs/m-p/845492
9. Manage Users | Firebase Authentication - Google, accessed on April 7, 2025, https://firebase.google.com/docs/auth/admin/manage-users
10. gcloud firebase - Fig.io, accessed on April 7, 2025, https://fig.io/manual/gcloud/firebase
11. Google Cloud Services - Firebase Admin - Quarkiverse Documentation, accessed on April 7, 2025, https://docs.quarkiverse.io/quarkus-google-cloud-services/main/firebase-admin.html
12. Is there a way to enable Firebase Auth via Email through an API/CLI? - Stack Overflow, accessed on April 7, 2025, https://stackoverflow.com/questions/64485179/is-there-a-way-to-enable-firebase-auth-via-email-through-an-api-cli
13. Programmatically configure OAuth identity providers for Firebase Authentication, accessed on April 7, 2025, https://firebase.google.com/docs/auth/configure-oauth-rest-api
14. What does Firebase - auth/configuration-not-found error mean ? - FlutterFlow Community, accessed on April 7, 2025, https://community.flutterflow.io/troubleshooting/post/what-does-firebase---auth-configuration-not-found-error-mean-DyJvUD35A4h7Sti
15. Using Firebase to authenticate users | API Gateway Documentation - Google Cloud, accessed on April 7, 2025, https://cloud.google.com/api-gateway/docs/authenticating-users-firebase
16. End user authentication for Cloud Run tutorial, accessed on April 7, 2025, https://cloud.google.com/run/docs/tutorials/identity-platform

17. Firebase Auth: How To Use Its REST API In 10 Minutes (2022) - Rowy, accessed on April 7, 2025, https://www.rowy.io/blog/firebase-auth-rest-api
18. How to createUser using Firebase REST API? - Stack Overflow, accessed on April 7, 2025, https://stackoverflow.com/questions/36027535/how-to-createuser-using-firebase-rest-api