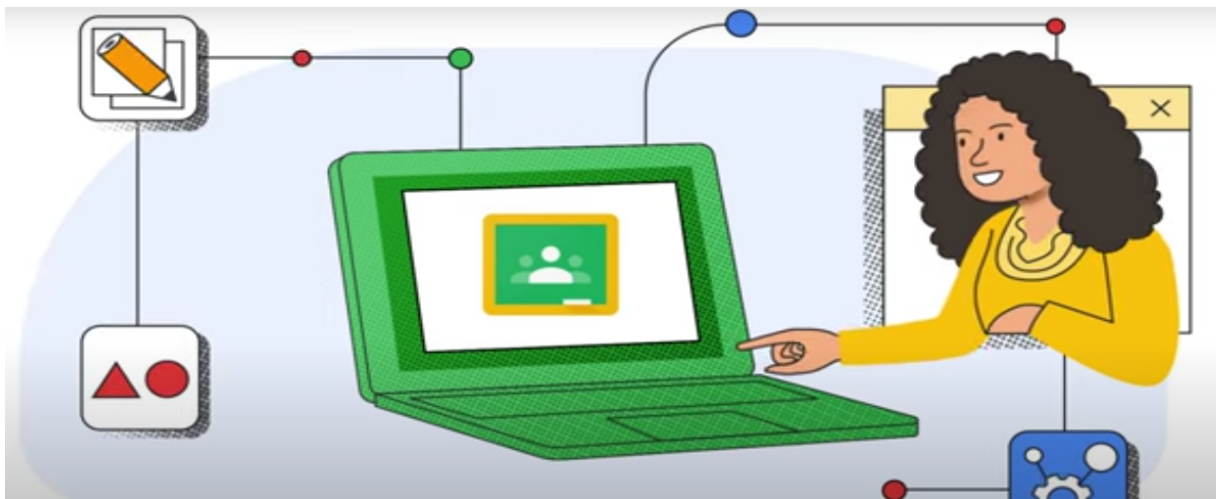

Architecture Diagramming Tool (ADT)

User Guide

Welcome to Architecture Diagramming Tool

Here you'll find everything you need to start using the Architecture Diagramming Tool. You'll also find user-focused tips, and more.



Architecture Diagramming Tool (ADT)

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Overview

Architecture Diagramming Tool helps users draw and visualize GCP architectures on a canvas and auto-generate terraform for it to deploy the corresponding GCP resources.

There are three ways to deploy an architecture using ADT



Deploy pre-built architecture:

We have a list of pre-built deployable architectures in the tool. You can simply drag and drop an architecture on canvas and the auto-generated terraform can be deployed in the console. There are some parameters that the users can edit in the form if they want to tweak resources names etc.



Deploy pre-built architecture with a few modifications:

The pre-built deployable architectures provide a starting point for users. They also help deal with “blank canvas” intimidation by providing something on the canvas to start with. Once the user has dragged and dropped a pre-built architecture on canvas they can edit one or more components as needed and then deploy it. The auto-generated terraform will reflect the changes that can then be deployed on the click of the button.



Deploy a new architecture from scratch:

We have created deployable resources, which is a list of most commonly used resources such as Compute Engine, Cloud Run, Load Balancing etc. The user can start with a blank canvas and drag and drop these resources on the canvas, provide relevant attribute values in the attribute form for the respective resource, establish relation between the resources and then also deploy them.



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Pre-requisites



A Google user account



Basic understanding of the resources in Google Cloud Platform.



Basic understanding of how to build a Cloud infrastructure architecture.



Access to a GCP environment with relevant IAM permission to be able to read resource information from your environment.



Get Started (Know your way around ADT)

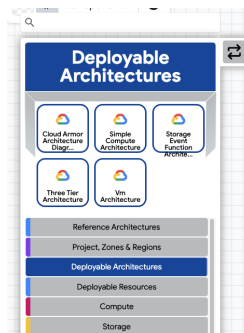


Know your way around ADT with few simple steps

Architecture Diagramming Tool (ADT)

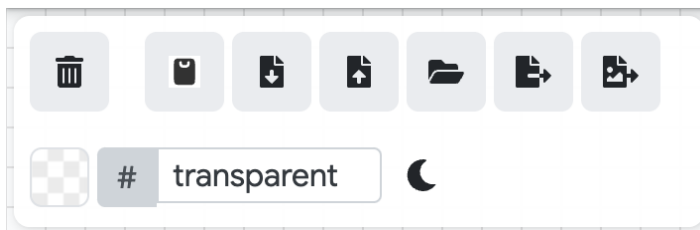
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- [This](#) is the homepage of the Developer Cheat Sheet.
- Click the Architecture tab at the top.
- This will open up a canvas that you can use to draw GCP architects.
- In the left pane, you will see the **Predefined Architectures** section where you will find the prebuilt architecture to drag and drop and start playing around.
- In the left pane you will also see the **'Deployable Resources'** section where you will find the currently



supported services for auto-generating terraform. This list will continue to grow.

- At the top left hand corner, you will see the following pane



Here are the usages of the buttons from the left:

- Clear the canvas
- While working on the diagram, if you accidentally happen to reload/refresh the page, you can use this button to restore your work.
- Export diagram with resource parameters. For example if you dragged and dropped a project on to the canvas and filled its parameters like project_id and the like, on exporting the resource using this button, the project on the canvas along with its resource parameters are exported
- Load a diagram that you had previously exported
- Load an existing diagram into the canvas.
- Export the diagram on the canvas. Note that this just exports the diagram without loading any parameters. For example if you dragged and dropped a project onto the canvas and filled its parameters like project_id and the like, on exporting the resource, only the diagram on the canvas is exported, the fields associated with it are not. The same file can then be imported using the previous button
- Save the diagram on the canvas as an image

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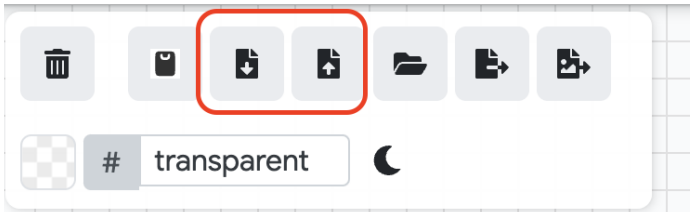
Deploy an architecture by uploading it from a file



Steps to deploy an architecture by uploading it from a file

Three-tier app

- Open the ADT staging application [here](#)
- Download [this](#) file and upload it using the button in the top left hand corner panel.



- Once uploaded you will see the architecture
- You can click on each of the components to see the form on the right which shows the pre-populated fields. You can edit the fields or deploy as is.
- Click "Deploy"



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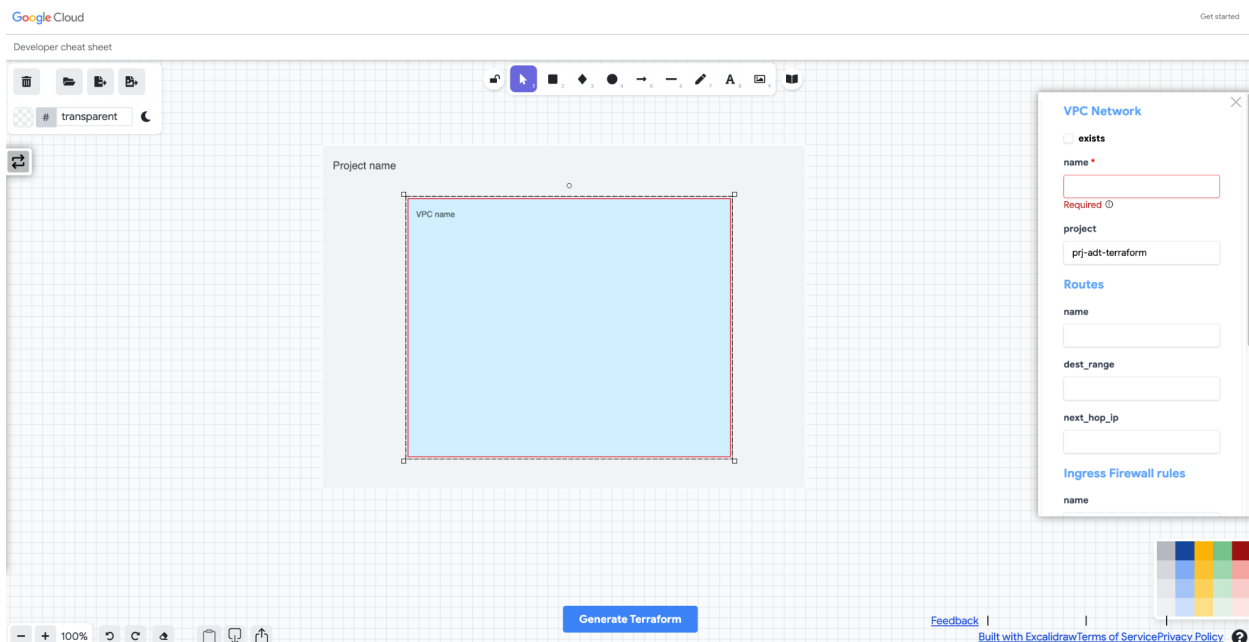
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Deploy a new architecture from scratch

We have created deployable resources, which is a list of most commonly used resources such as Compute Engine, Cloud Run, Load Balancing etc. The user can start with a blank canvas and drag and drop these resources on the canvas, provide relevant attribute values in the attribute form for the respective resource, establish relation between the resources and then also deploy them. Let's take an example of adding a Cloud Run to the Canvas, below are the steps that the user has to follow:

- Open the ADT application.
- Click on “Deployable Resources” in the left panel
- Drag and drop “project”
- Drag and drop “Cloud Run” on the project
- Fill in the details of the project and Cloud Run in the form on the right.
 - Project details in the form: If the project already exists just click on the checkbox “exists”, then you can just add the name and project_id.
 - Cloud Run details in the form: Location: us-east1, Name: createdfromadt, project: <Yourproject>, Image: gcr.io/cloudrun/hello, container_port: 5000
- **Validation:** If you have filled invalid parameters or left required fields empty, you will see a red border around the resource on the canvas that has invalid values in fields.



- You can now click on “Generate Terraform”

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Deployable resources that are supported with the current release of ADT:

- ★ Cloud Run
- ★ Cloud Function
- ★ Compute Disk
- ★ Compute Instance
- ★ VPC
- ★ Cloud Router
- ★ Cloud NAT
- ★ Cloud DNS
- ★ Compute Security Policy
- ★ Subnet
- ★ Cloud Firestore
- ★ Cloud Storage
- ★ Region
- ★ Zone
- ★ Backend Service
- ★ Load Balancer
- ★ Managed Instance Group
- ★ Compute Autoscaler
- ★ Cloud Armor
- ★ Cloud SQL
- ★ Project
- ★ Cloud Memory Store
- ★ Cloud Build
- ★ Secret Manager
- ★ Cloud Pub Sub
- ★ GKE
- ★ Dataflow
- ★ BigQuery
- ★ Dataproc
- ★ AlloyDB



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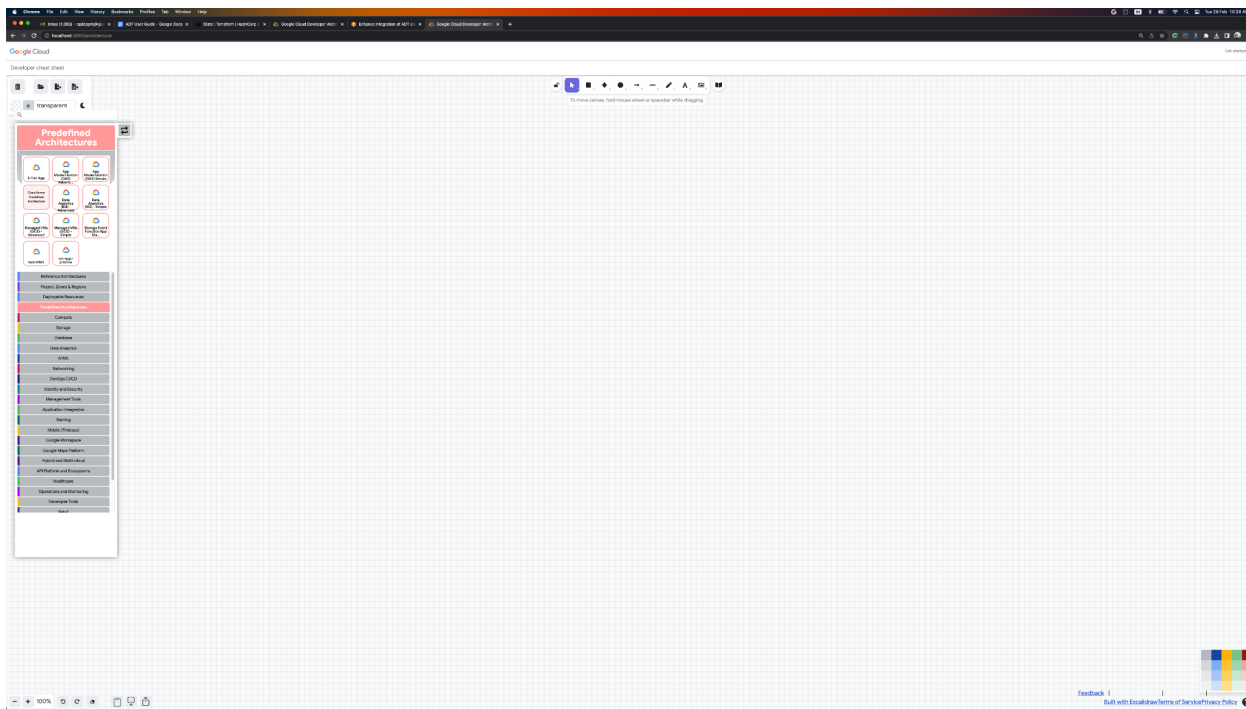
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Deploying Predefined architectures



Predefined architectures are sample architectures that you can drag into the canvas and fill in the parameters to deploy. We have already filled in most of the parameters for you, all you need to do is fill in the parameters that are relevant to your environment.

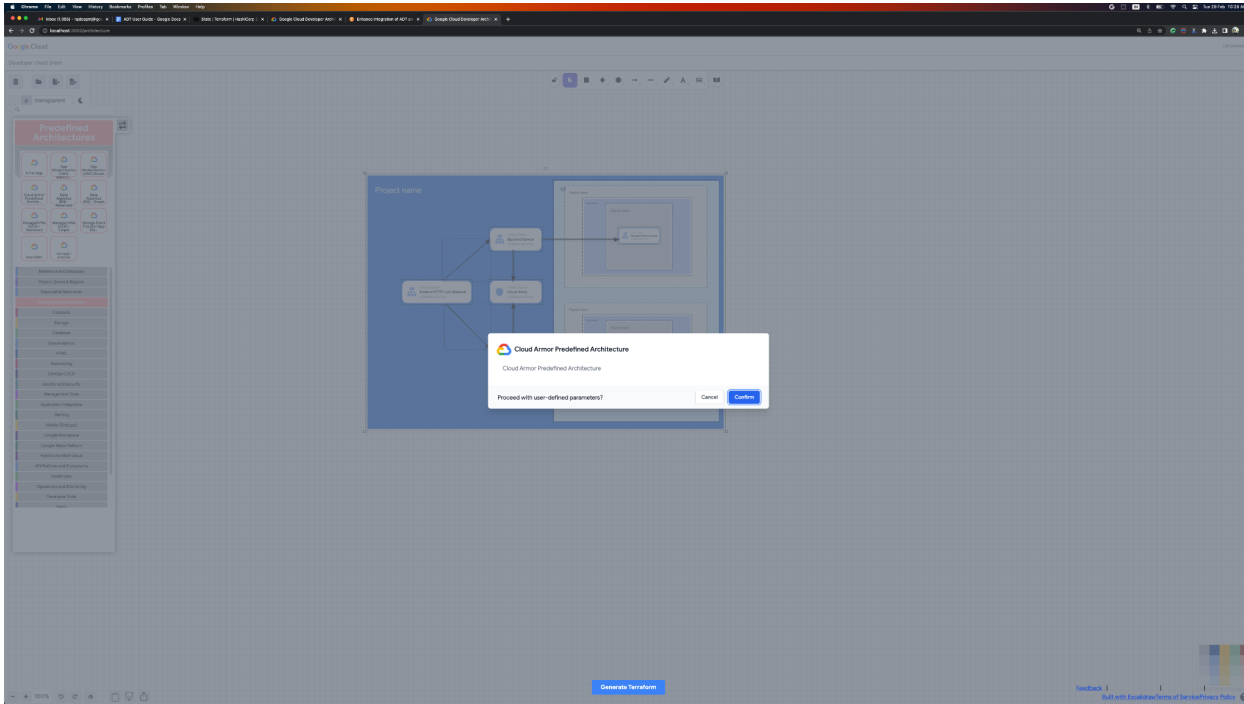
You can explore the kind of resource dependencies supported, by going ahead and dragging an architecture from the `predefined architectures` section of the catalog.



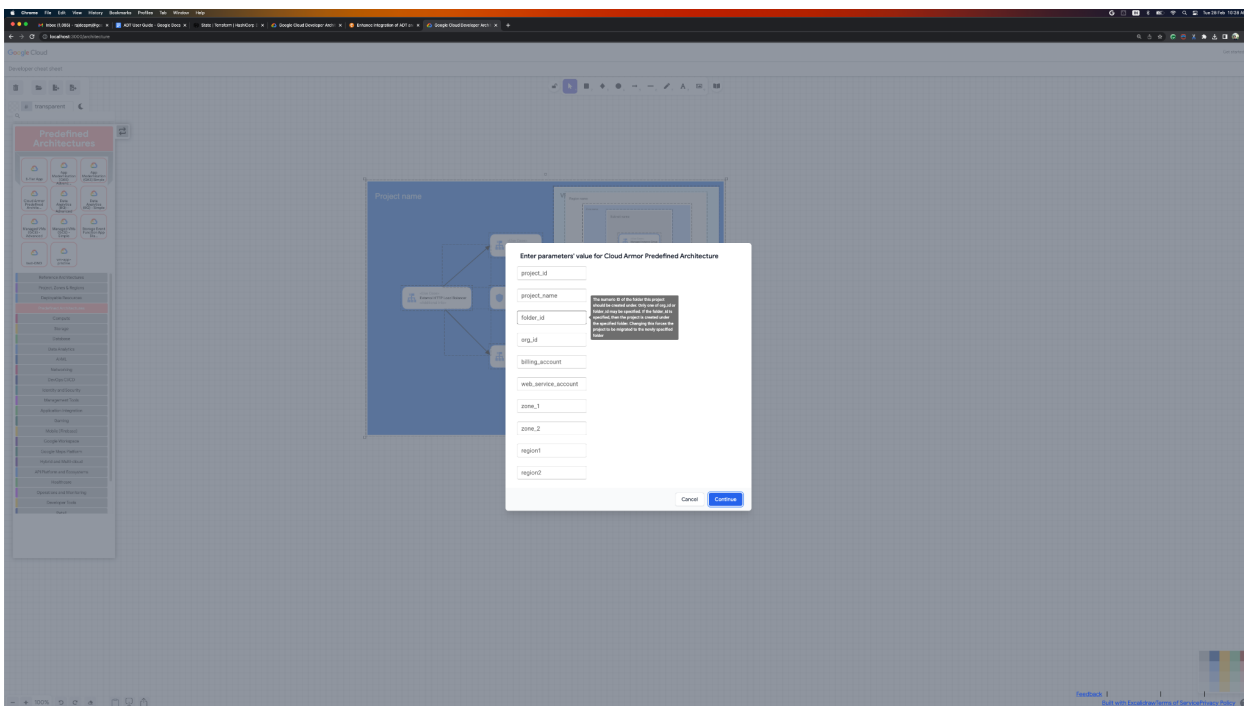
Once you drag and drop a predefined architecture you will get a pop-up defining the predefined architecture with a description.

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If you choose to proceed with the default values by clicking on `Confirm`, you will get a dialog box with all the parameters that are relevant to your environment. You can hover over each parameter to get a description of what the parameter is.



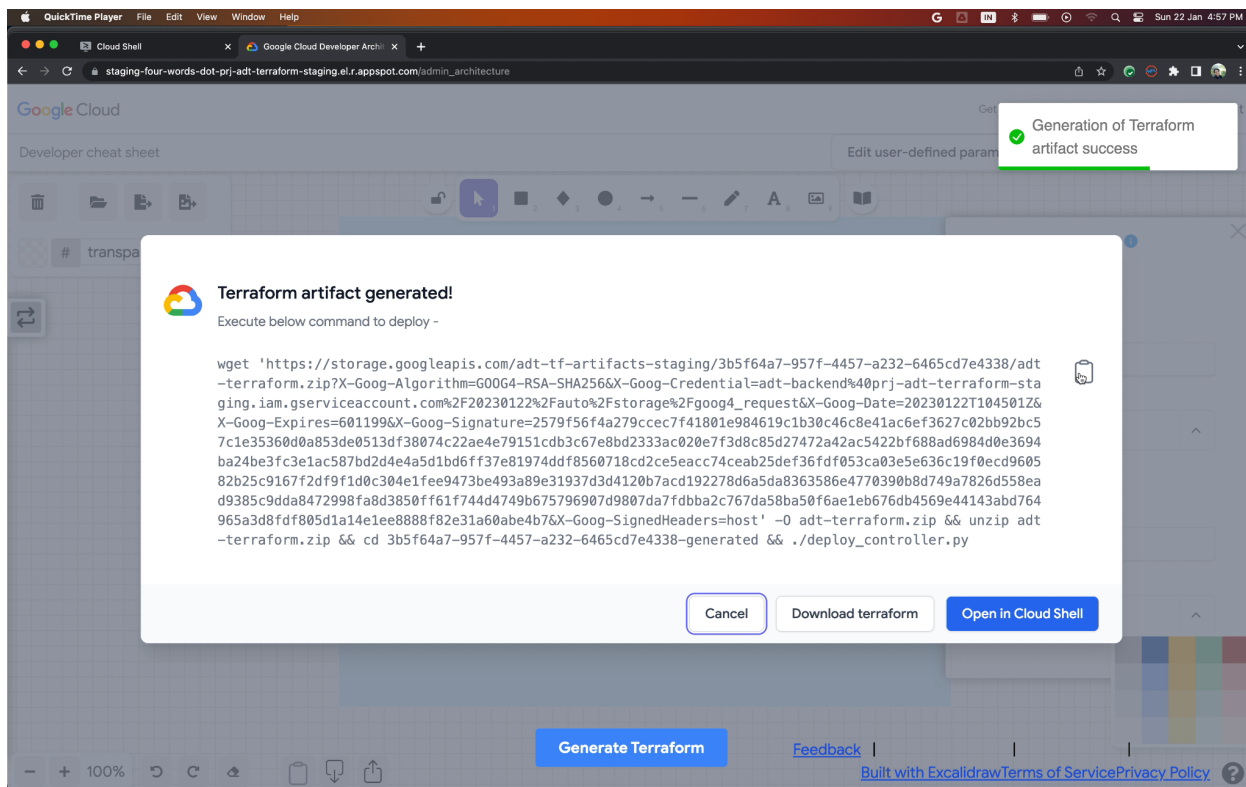
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Once you have filled in the parameters, you can click on `Continue`.

You can now click on the resources on the canvas and you should find all the relevant parameters filled in. If all the values have been set correctly, you will be able to generate terraform for the drawn architecture.

The remaining process is the same as before. You can go ahead and click `Generate Terraform` at the bottom. Once the terraform is generated, it is saved in a bucket which can be accessed from your cloudshell environment. You will see a popup that looks like this



Next you can open cloudshell and execute the command mentioned. This will start deploying the generated terraform.




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Additional details

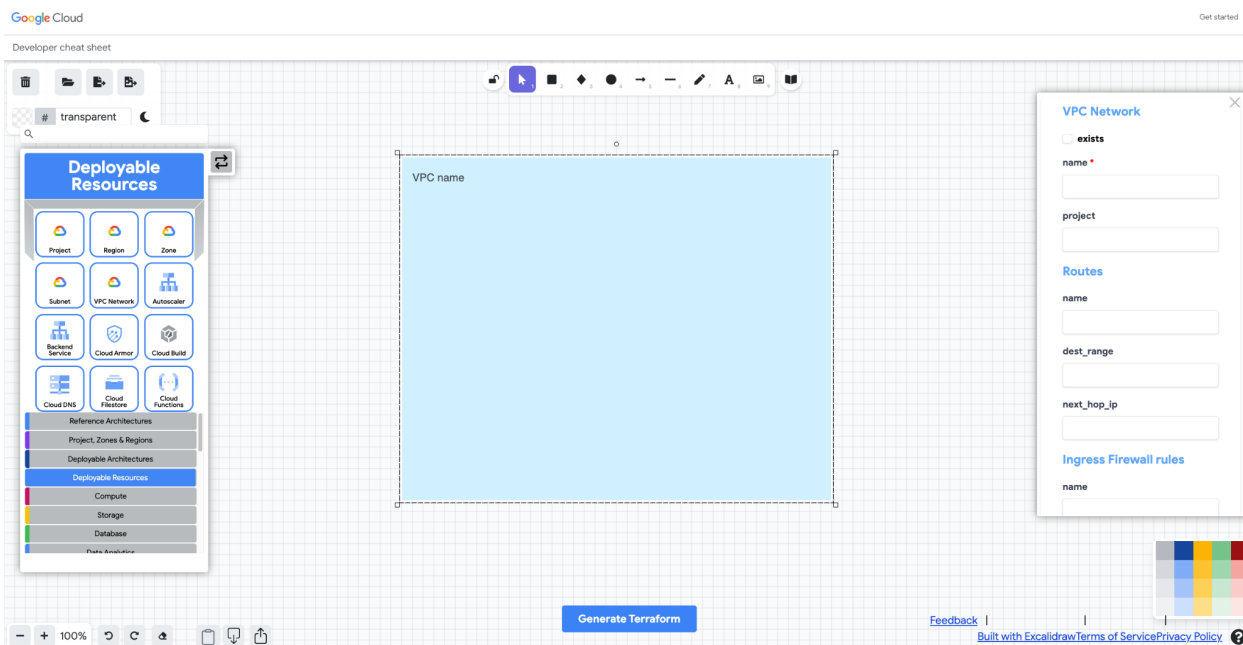


Get a feel of the tool by dragging and dropping a resource from the list of ‘Deployable Resources’. You will also find a tool palette on top. This palette can be used to enhance the visual representation of the diagram and make it richer. In some cases you can also define

resource dependencies using the arrow  in the tool palette



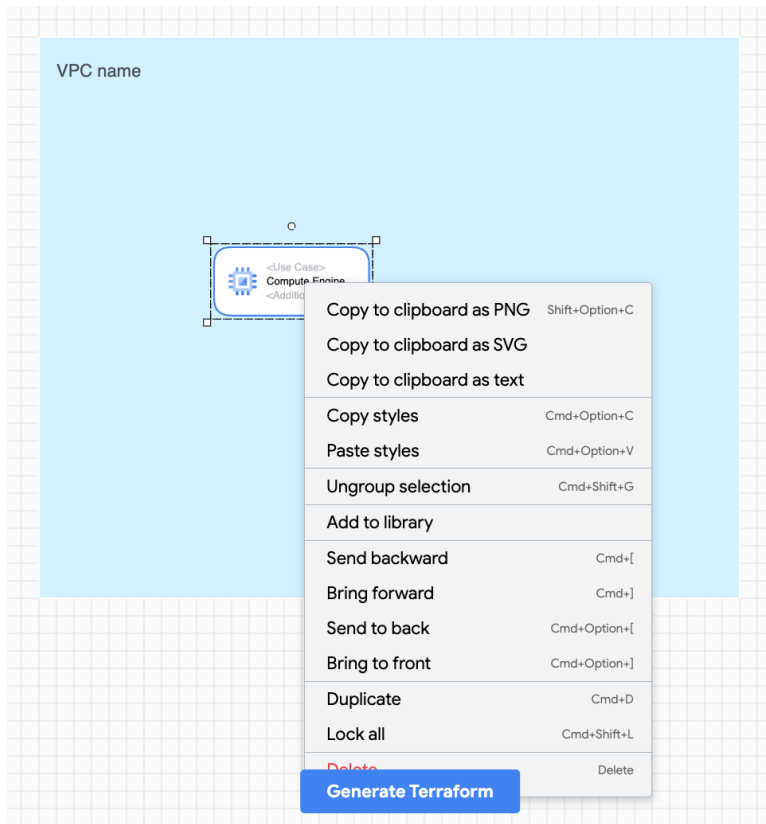
Now let's go ahead and drag and drop a VPC network from Deployable Resources. Once the resource is on the canvas, you can click on it to reveal a form on the right hand side. You can fill in all the necessary information and metadata regarding a VPC in the form and use it to generate the corresponding terraform.



Go ahead and drag and drop a compute engine on the canvas on top of the VPC network. Ctrl+click or right-click on the compute engine resource and you should find a bunch of options related to the block on the canvas. You can change the ordering of the blocks by using ‘Send to Back’, ‘Bring forward’ and so on.

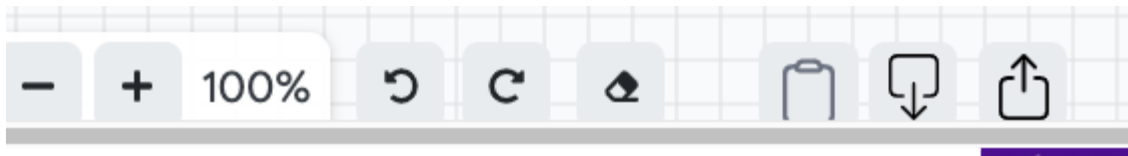
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Go ahead and send the compute engine block to the back, you will no longer be able to see it as the VPC network block is covering it. Drag the VPC network block away and you should find the Compute Engine block underneath. The correct ordering of blocks is important when multiple blocks are overlapping each other as resource dependencies are figured out based on this ordering.

Now go ahead and simply refresh the page directly by hitting ctrl+R or hit refresh on chrome. The diagram will go away but you can bring it back to its previous state by clicking on the clipboard button at the bottom of the page. The clipboard option is the third button from the right in the following image.



Go ahead and click on it. You should find the entire diagram that you previously drew back on the canvas.

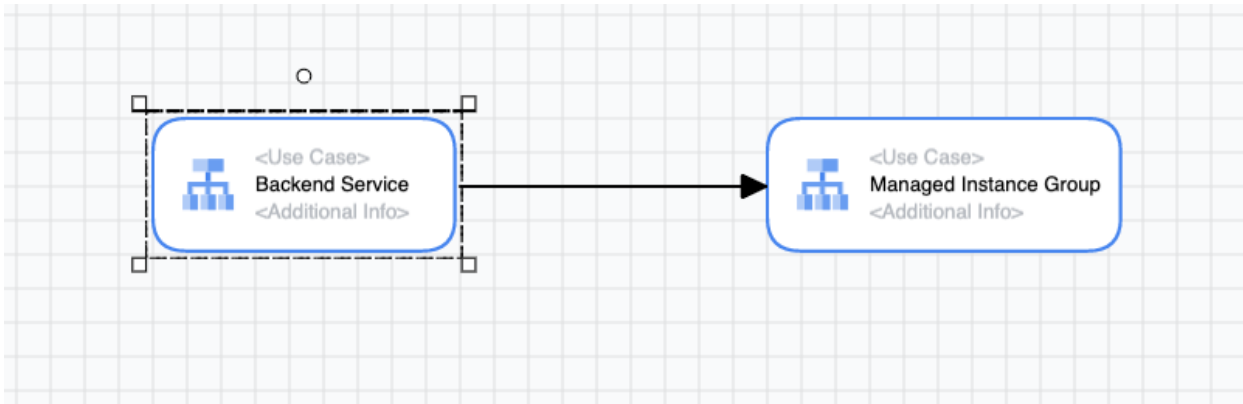
You will also find 2 other buttons to the right of the clipboard button. The one on the right of the clipboard button is for downloading a diagram to your local machine. Go ahead and try downloading the diagram. You can now delete the diagram on the canvas and then load it back using the upload button(rightmost in the image).

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Now let's try connecting 2 resource blocks using an arrow.

Go ahead and drag and drop a Managed Instance Group block from Deployable Resources. Next drag Backend Service. You can now connect an arrow from Backend Service to Managed Instance Group (or the other way round). To do so click on the arrow button on the tool palette on top and drag your mouse pointer starting from one resource block to the other to create the arrow. Make sure the arrow is anchored to both the resources. You can check this by dragging the resources in the canvas connected by the arrow to make sure the arrow is getting dragged along with the resources.



Connecting resources using arrows is one way of establishing a dependency between 2 resources. Not all combinations of resource dependency will make sense. For example an arrow connecting a managed instance group to a load balancer does not establish a real dependency as a backend service is required in between. Nevertheless you can use arrows to annotate a diagram to make it more understandable and intuitive.

Resource Dependencies



Resource dependencies are resolved by the tool in 2 different scenarios:

- A resource is nested in another resource
- A resource is connected to another resource using an arrow

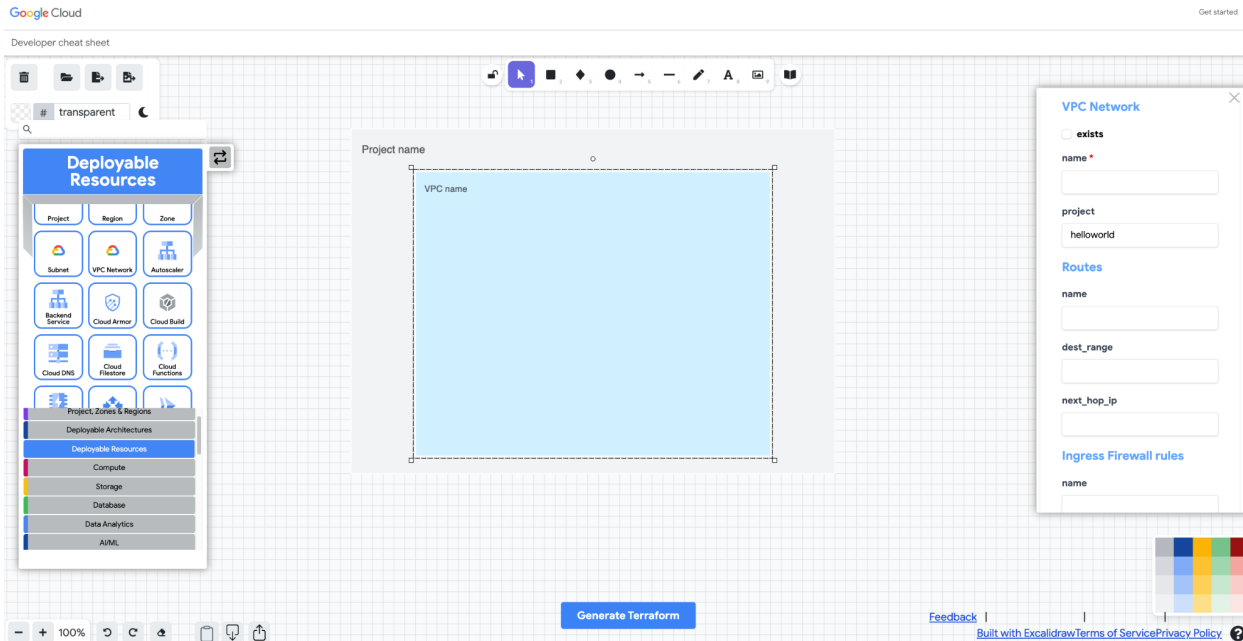
An example of a resource dependency is the VPC network being dependent on the project or a compute engine being dependent on the vpc and the subnet.

Go ahead and drag a project on the canvas. Click on it to reveal the form on the right hand side and fill in **project_id**. Now drag and drop a VPC inside the project such that the VPC is completely nested inside the project.

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Now on clicking the VPC, you will find that the **project** field of the VPC is already populated with the value of the **project_id** field in project.



In a similar way you can establish resource dependencies using arrows as well.

Drag a backend service and a managed instance group into the canvas. Name the managed instance group `mig1`. Now connect an arrow from the managed instance group to the backend service. Click on the backend service and you should see mig1 showing up in the instance_groups field

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