Source: <https://cloud.google.com/storage/docs/hosting-static-website?_ga=2.259038282.-1333611015.1669167695&_gac=1.175268246.1681290908.EAIaIQobChMIpKb10ICk_gIVVJlmAh15IgdyEAAYASAAEgJq7vD_BwE>

# **Setup Bucket in Google Cloud Platform for Item Image Storage with URL Access**

This tutorial describes how to configure a Cloud Storage bucket to host a static website for a domain you own. Static web pages can contain client-side technologies such as HTML, CSS, and JavaScript. They cannot contain dynamic content such as server-side scripts like PHP.

Because Cloud Storage doesn't support custom domains with HTTPS on its own, this tutorial uses Cloud Storage with an [external HTTP(S) load balancer](https://cloud.google.com/load-balancing/docs/https) to serve content from a custom domain over HTTPS. For more ways to serve content from a custom domain over HTTPS, see [troubleshooting for HTTPS serving](https://cloud.google.com/storage/docs/troubleshooting#https). You can also [use Cloud Storage to serve custom domain content over HTTP](https://cloud.google.com/storage/docs/hosting-static-website-http), which doesn't require a load balancer.

For examples and tips on static web pages, including how to host static assets for a dynamic website, see the [Static Website page](https://cloud.google.com/storage/docs/static-website).

**Caution:** This tutorial makes content available to the public internet. We recommend that you don't serve content that contains sensitive or private data from your Cloud Storage bucket.

## Objectives

This tutorial shows you how to:

* Create a bucket.
* Upload and share your site's files.
* Set up a load balancer and SSL certificate.
* Connect your load balancer to your bucket.
* Point your domain to your load balancer using an A record.
* Test the website.

## Costs

This tutorial uses the following billable components of Google Cloud:

* [Cloud Storage](https://cloud.google.com/storage/pricing)
* [Cloud Load Balancing](https://cloud.google.com/vpc/network-pricing#lb)

See the [Monitoring your charges](https://cloud.google.com/storage/docs/static-website#tip-charges) tip for details on what charges may be incurred when hosting a static website.

## Before you begin

1. If you're new to Google Cloud, [create an account](https://console.cloud.google.com/freetrial) to evaluate how our products perform in real-world scenarios. New customers get $300 in free credits to run, test, and deploy workloads.
2. In the Google Cloud console, on the project selector page, select or [create a Google Cloud project](https://cloud.google.com/resource-manager/docs/creating-managing-projects).  
    **Note**: If you don't plan to keep the resources that you create in this procedure, create a project instead of selecting an existing project. After you finish these steps, you can delete the project, removing all resources associated with the project.  
    [Go to project selector](https://console.cloud.google.com/projectselector2/home/dashboard)
3. Make sure that billing is enabled for your Cloud project. Learn how to [check if billing is enabled on a project](https://cloud.google.com/billing/docs/how-to/verify-billing-enabled).
4. Enable the [Compute Engine API](https://console.cloud.google.com/marketplace/product/google/compute.googleapis.com) for your project.
5. Have the following Identity and Access Management roles: [Storage Object Admin](https://cloud.google.com/storage/docs/access-control/iam-roles) and [Compute Network Admin](https://cloud.google.com/compute/docs/access/iam#compute.networkAdmin).
6. Have a domain that you own or manage. If you don't have an existing domain, there are many services through which you can register a new domain, such as [Google Domains](https://domains.google.com/) and [Cloud Domains](https://cloud.google.com/domains/docs).  
    This tutorial uses the domain example.com.
7. Have a few website files you want to serve. This tutorial works best if you have at least an index page (index.html) and a 404 page (404.html).
8. (Optional) If you want your Cloud Storage bucket to have the same name as your domain, you must [verify that you own or manage the domain that you will be using](https://cloud.google.com/storage/docs/domain-name-verification#verification). Make sure you are verifying the top-level domain, such as example.com, and not a subdomain, such as www.example.com. If you purchased your domain through Google Domains, verification is automatic.

**Note:** For information about using Cloud DNS to set up your domain, see [Set up your domain using Cloud DNS](https://cloud.google.com/dns/docs/tutorials/create-domain-tutorial#set-up-domain).

## Create a bucket

To create a bucket:

[Console](https://cloud.google.com/storage/docs/hosting-static-website?_ga=2.259038282.-1333611015.1669167695&_gac=1.175268246.1681290908.EAIaIQobChMIpKb10ICk_gIVVJlmAh15IgdyEAAYASAAEgJq7vD_BwE#console)[Command line](https://cloud.google.com/storage/docs/hosting-static-website?_ga=2.259038282.-1333611015.1669167695&_gac=1.175268246.1681290908.EAIaIQobChMIpKb10ICk_gIVVJlmAh15IgdyEAAYASAAEgJq7vD_BwE#command-line)[Client Libraries](https://cloud.google.com/storage/docs/hosting-static-website?_ga=2.259038282.-1333611015.1669167695&_gac=1.175268246.1681290908.EAIaIQobChMIpKb10ICk_gIVVJlmAh15IgdyEAAYASAAEgJq7vD_BwE#client-libraries)[Terraform](https://cloud.google.com/storage/docs/hosting-static-website?_ga=2.259038282.-1333611015.1669167695&_gac=1.175268246.1681290908.EAIaIQobChMIpKb10ICk_gIVVJlmAh15IgdyEAAYASAAEgJq7vD_BwE#terraform)[REST APIS](https://cloud.google.com/storage/docs/hosting-static-website?_ga=2.259038282.-1333611015.1669167695&_gac=1.175268246.1681290908.EAIaIQobChMIpKb10ICk_gIVVJlmAh15IgdyEAAYASAAEgJq7vD_BwE#rest-apis)

1. In the Google Cloud console, go to the Cloud Storage **Buckets** page.  
     
    [Go to Buckets](https://console.cloud.google.com/storage/browser)
2. Click **Create bucket**.
3. On the **Create a bucket** page, enter your bucket information. To go to the next step, click **Continue**.
   * For **Name your bucket**, enter a name that meets the [bucket name requirements](https://cloud.google.com/storage/docs/buckets#naming).
   * For **Choose where to store your data**, select a [**Location type**](https://cloud.google.com/storage/docs/locations) and [**Location**](https://cloud.google.com/storage/docs/locations#available-locations) where the bucket data will be permanently stored.
   * For **Choose a storage class for your data**, either select a [default storage class](https://cloud.google.com/storage/docs/storage-classes) for the bucket, or select [Autoclass](https://cloud.google.com/storage/docs/autoclass) for automatic storage class management of your bucket's data.  
      **Note:** The **Monthly cost estimate** panel in the right pane estimates the bucket's monthly costs based on your selected storage class and location, as well as your expected data size and operations.
   * For **Choose how to control access to objects**, select whether or not your bucket enforces [public access prevention](https://cloud.google.com/storage/docs/public-access-prevention), and select an [**Access control** model](https://cloud.google.com/storage/docs/access-control) for your bucket's objects.  
      **Note:** If public access prevention is already enforced by your project's [organization policy](https://cloud.google.com/storage/docs/org-policy-constraints#public-access-prevention), the **Prevent public access** toggle is locked.
   * For **Choose how to protect object data**, configure **Protection tools** if desired, and select a [**Data encryption** method](https://cloud.google.com/storage/docs/encryption).
4. Click **Create**.

To learn how to get detailed error information about failed Cloud Storage operations in the Google Cloud console, see [Troubleshooting](https://cloud.google.com/storage/docs/troubleshooting#trouble-console).

## Upload your site's files

Add the files you want your website to serve to the bucket:

[Console](https://cloud.google.com/storage/docs/hosting-static-website?_ga=2.259038282.-1333611015.1669167695&_gac=1.175268246.1681290908.EAIaIQobChMIpKb10ICk_gIVVJlmAh15IgdyEAAYASAAEgJq7vD_BwE#console)[Command line](https://cloud.google.com/storage/docs/hosting-static-website?_ga=2.259038282.-1333611015.1669167695&_gac=1.175268246.1681290908.EAIaIQobChMIpKb10ICk_gIVVJlmAh15IgdyEAAYASAAEgJq7vD_BwE#command-line)[Client libraries](https://cloud.google.com/storage/docs/hosting-static-website?_ga=2.259038282.-1333611015.1669167695&_gac=1.175268246.1681290908.EAIaIQobChMIpKb10ICk_gIVVJlmAh15IgdyEAAYASAAEgJq7vD_BwE#client-libraries)[Terraform](https://cloud.google.com/storage/docs/hosting-static-website?_ga=2.259038282.-1333611015.1669167695&_gac=1.175268246.1681290908.EAIaIQobChMIpKb10ICk_gIVVJlmAh15IgdyEAAYASAAEgJq7vD_BwE#terraform)[REST APIs](https://cloud.google.com/storage/docs/hosting-static-website?_ga=2.259038282.-1333611015.1669167695&_gac=1.175268246.1681290908.EAIaIQobChMIpKb10ICk_gIVVJlmAh15IgdyEAAYASAAEgJq7vD_BwE#rest-apis)

1. In the Google Cloud console, go to the Cloud Storage **Buckets** page.  
     
    [Go to Buckets](https://console.cloud.google.com/storage/browser)
2. In the list of buckets, click the name of the bucket that you created.  
     
    The *Bucket details* page opens with the *Objects* tab selected.
3. Click the **Upload files** button.
4. In the file dialog, browse to the desired file and select it.

After the upload completes, you should see the filename along with file information displayed in the bucket.

To learn how to get detailed error information about failed Cloud Storage operations in the Google Cloud console, see [Troubleshooting](https://cloud.google.com/storage/docs/troubleshooting#trouble-console).

## Share your files

To make all objects in your bucket readable to anyone on the public internet:

**Caution:** Before making your bucket publicly accessible, make sure that the files in your bucket do not contain sensitive or private information.

[Console](https://cloud.google.com/storage/docs/hosting-static-website?_ga=2.259038282.-1333611015.1669167695&_gac=1.175268246.1681290908.EAIaIQobChMIpKb10ICk_gIVVJlmAh15IgdyEAAYASAAEgJq7vD_BwE#console)[Command line](https://cloud.google.com/storage/docs/hosting-static-website?_ga=2.259038282.-1333611015.1669167695&_gac=1.175268246.1681290908.EAIaIQobChMIpKb10ICk_gIVVJlmAh15IgdyEAAYASAAEgJq7vD_BwE#command-line)[Client libraries](https://cloud.google.com/storage/docs/hosting-static-website?_ga=2.259038282.-1333611015.1669167695&_gac=1.175268246.1681290908.EAIaIQobChMIpKb10ICk_gIVVJlmAh15IgdyEAAYASAAEgJq7vD_BwE#client-libraries)[Terraform](https://cloud.google.com/storage/docs/hosting-static-website?_ga=2.259038282.-1333611015.1669167695&_gac=1.175268246.1681290908.EAIaIQobChMIpKb10ICk_gIVVJlmAh15IgdyEAAYASAAEgJq7vD_BwE#terraform)[REST APIs](https://cloud.google.com/storage/docs/hosting-static-website?_ga=2.259038282.-1333611015.1669167695&_gac=1.175268246.1681290908.EAIaIQobChMIpKb10ICk_gIVVJlmAh15IgdyEAAYASAAEgJq7vD_BwE#rest-apis)

1. In the Google Cloud console, go to the Cloud Storage **Buckets** page.  
     
    [Go to Buckets](https://console.cloud.google.com/storage/browser)
2. In the list of buckets, click the name of the bucket that you want to make public.
3. Select the **Permissions** tab near the top of the page.
4. If the **Public access** pane reads **Not public**, click the button labeled **Remove public access prevention** and click **Confirm** in the dialog that appears.
5. Click the **+ Grant access** button.  
     
    The *Add principals* dialog box appears.
6. In the **New principals** field, enter allUsers.
7. In the **Select a role** drop down, select the **Cloud Storage** sub-menu, and click the **Storage Object Viewer** option.
8. Click **Save**.
9. Click **Allow public access**.

Once shared publicly, a **link** icon appears for each object in the *public access* column. You can click this icon to get the URL for the object.

To learn how to get detailed error information about failed Cloud Storage operations in the Google Cloud console, see [Troubleshooting](https://cloud.google.com/storage/docs/troubleshooting#trouble-console).

**Note:** roles/storage.objectViewer includes permission to list the objects in the bucket. If you don't want to grant listing publicly, use [roles/storage.legacyObjectReader](https://cloud.google.com/storage/docs/access-control/iam-roles#legacy-roles).

To make [individual objects in your bucket publicly accessible](https://cloud.google.com/storage/docs/access-control/making-data-public#objects), you need to switch your bucket's **Access control** mode to **Fine-grained**. Generally, making all files in your bucket publicly accessible is easier and faster.

Visitors receive a http 403 response code when requesting the URL for a non-public or non-existent file. See the next section for information on how to add an error page that uses a http 404 response code.

## Recommended: Assign specialty pages

You can assign an index page suffix, which is controlled by the MainPageSuffix property, and a custom error page, which is controlled by the NotFoundPage property. Assigning either is optional, but without an index page, nothing is served when users access your top-level site, for example, https://www.example.com. For more information about the MainPageSuffix and NotFoundPage properties, see [Specialty pages](https://cloud.google.com/storage/docs/static-website#specialty_pages).

In the following sample, the MainPageSuffix is set to index.html and NotFoundPage is set to 404.html:

[Console](https://cloud.google.com/storage/docs/hosting-static-website?_ga=2.259038282.-1333611015.1669167695&_gac=1.175268246.1681290908.EAIaIQobChMIpKb10ICk_gIVVJlmAh15IgdyEAAYASAAEgJq7vD_BwE#console)[Command line](https://cloud.google.com/storage/docs/hosting-static-website?_ga=2.259038282.-1333611015.1669167695&_gac=1.175268246.1681290908.EAIaIQobChMIpKb10ICk_gIVVJlmAh15IgdyEAAYASAAEgJq7vD_BwE#command-line)[Client libraries](https://cloud.google.com/storage/docs/hosting-static-website?_ga=2.259038282.-1333611015.1669167695&_gac=1.175268246.1681290908.EAIaIQobChMIpKb10ICk_gIVVJlmAh15IgdyEAAYASAAEgJq7vD_BwE#client-libraries)[REST APIs](https://cloud.google.com/storage/docs/hosting-static-website?_ga=2.259038282.-1333611015.1669167695&_gac=1.175268246.1681290908.EAIaIQobChMIpKb10ICk_gIVVJlmAh15IgdyEAAYASAAEgJq7vD_BwE#rest-apis)

1. In the Google Cloud console, go to the Cloud Storage **Buckets** page.  
     
    [Go to Buckets](https://console.cloud.google.com/storage/browser)
2. In the list of buckets, find the bucket you created.
3. Click the **Bucket overflow** menu () associated with the bucket and select **Edit website configuration**.
4. In the website configuration dialog, specify the main page and error page.
5. Click **Save**.

**Note:** View, change, or remove these settings from the **Edit website configuration** menu.

To learn how to get detailed error information about failed Cloud Storage operations in the Google Cloud console, see [Troubleshooting](https://cloud.google.com/storage/docs/troubleshooting#trouble-console).

## Set up your load balancer and SSL certificate

Cloud Storage doesn't support custom domains with HTTPS on its own, so you also need to set up an [SSL certificate](https://cloud.google.com/load-balancing/docs/ssl-certificates) attached to an [HTTPS load balancer](https://cloud.google.com/load-balancing/docs/https) to serve your website through HTTPS. This section shows you how to add your bucket to a load balancer's backend and how to add a new [Google-managed SSL certificate](https://cloud.google.com/load-balancing/docs/ssl-certificates/google-managed-certs) to the load balancer's front end.

1. Go to the Load balancing page in the Google Cloud console.  
    [Go to the Load balancing page](https://console.cloud.google.com/networking/loadbalancing/add)
2. Under **HTTP(S) load balancing**, click **Start configuration**.
3. Select **From Internet to my VMs or serverless services**.
4. Select **Global HTTP(S) Load Balancer**.
5. Click **Continue**.  
     
    The configuration window for your load balancer appears.
6. Before continuing with the configuration, give your load balancer a **Name**, such as example-lb.

### Configure the frontend

This section shows you how to configure the HTTPS protocol and create an SSL certificate. You can also select an existing certificate or upload a [self-managed SSL certificate](https://cloud.google.com/load-balancing/docs/ssl-certificates/self-managed-certs).

1. Click **Frontend configuration**.
2. (Optional) Give your frontend configuration a **Name**.
3. For **Protocol**, select **HTTPS (includes HTTP/2)**.
4. For **IP version**, select **IPv4**. If you prefer IPv6, see [IPv6 termination](https://cloud.google.com/load-balancing/docs/ipv6) for additional information.
5. For the **IP address** field:  
   * In the dropdown, click **Create IP address**.
   * In the **Reserve a new static IP address** pop-up, enter a name, such as example-ip for the **Name** of the IP address.
   * Click **Reserve**.
6. **Note:** Reserving a new static IP address incurs [additional costs](https://cloud.google.com/vpc/network-pricing#internal-ipaddress) if the IP address is not attached to a forwarding rule. To avoid such costs, [delete the static IP address](https://cloud.google.com/storage/docs/hosting-static-website?_ga=2.259038282.-1333611015.1669167695&_gac=1.175268246.1681290908.EAIaIQobChMIpKb10ICk_gIVVJlmAh15IgdyEAAYASAAEgJq7vD_BwE#deleting-ip) when you delete the associated load balancer.
7. For **Port**, select **443**.
8. In the **Certificate** field dropdown, select **Create a new certificate**. The certificate creation form appears in a panel. Configure the following:  
   * Give your certificate a **Name**, such as example-ssl.
   * For **Create mode**, select **Create Google-managed certificate**.
   * For **Domains**, enter your website name, such as www.example.com. If you want to serve your content through additional domains such as the root domain example.com, press **Enter** to add them on additional lines. Each certificate has a [limit](https://cloud.google.com/load-balancing/docs/quotas#ssl_certificates) of 100 domains.
9. Click **Create**.
10. (Optional) If you want Google Cloud to automatically set up a [partial HTTP load balancer](https://cloud.google.com/load-balancing/docs/https/setting-up-http-https-redirect) for redirecting HTTP traffic, select the checkbox next to **Enable HTTP to HTTPS redirect**.
11. Click **Done**.

### Configure the backend

1. Click **Backend configuration**.
2. In the **Backend services & backend buckets** dropdown, click **Create a backend bucket**.
3. Choose a **Backend bucket name**, such as example-bucket. The name you choose can be different from the name of the bucket you created earlier.
4. Click **Browse**, found in the **Cloud Storage bucket** field.
5. Select the my-static-assets bucket you created earlier, and click **Select**.
6. (Optional) If you want to use [Cloud CDN](https://cloud.google.com/cdn/docs), select the checkbox for **Enable Cloud CDN** and configure Cloud CDN as desired. Note that Cloud CDN may incur [additional costs](https://cloud.google.com/cdn/pricing).
7. Click **Create**.

### Configure routing rules

Routing rules are the components of a external HTTP(S) load balancer's [URL map](https://cloud.google.com/load-balancing/docs/url-map-concepts). For this tutorial, you should skip this portion of the load balancer configuration, because it is automatically set to use the backend you just configured.

### Review the configuration

1. Click **Review and finalize**.
2. Review the **Frontend**, **Routing rules**, and **Backend**.
3. Click **Create**.

You may need to wait a few minutes for the load balancer to be created.

## Connect your domain to your load balancer

After the load balancer is created, click the name of your load balancer: example-lb. Note the IP address associated with the load balancer: for example, 30.90.80.100. To point your domain to your load balancer, create an A record using your domain registration service. If you added multiple domains to your SSL certificate, you must add an A record for each one, all pointing to the load balancer's IP address. For example, to create A records for www.example.com and example.com:

NAME TYPE DATA

www A 30.90.80.100

@ A 30.90.80.100

If you are using Google Domains, see the [Google Domains Help page](https://support.google.com/domains/answer/3290350) for more information.

## Recommended: Monitor the SSL certificate status

It might take up to 60-90 minutes for Google Cloud to provision the certificate and make the site available through the load balancer. To monitor the status of your certificate:

[Console](https://cloud.google.com/storage/docs/hosting-static-website?_ga=2.259038282.-1333611015.1669167695&_gac=1.175268246.1681290908.EAIaIQobChMIpKb10ICk_gIVVJlmAh15IgdyEAAYASAAEgJq7vD_BwE#console)[gcloud](https://cloud.google.com/storage/docs/hosting-static-website?_ga=2.259038282.-1333611015.1669167695&_gac=1.175268246.1681290908.EAIaIQobChMIpKb10ICk_gIVVJlmAh15IgdyEAAYASAAEgJq7vD_BwE#gcloud)

1. Go to the Load balancing page in the Google Cloud console.  
    [Go to the Load balancing page](https://console.cloud.google.com/networking/loadbalancing)
2. Click the name of your load balancer: example-lb.
3. Click the name of the SSL certificate associated with the load balancer: example-ssl.
4. The **Status** and **Domain status** rows show the certificate status. Both must be active in order for the certificate to be valid for your website.

See [Troubleshooting SSL certificates](https://cloud.google.com/load-balancing/docs/ssl-certificates/troubleshooting#certificate-managed-status) for more information about certificate status.

## Test the website

Once the SSL certificate is active, verify that content is served from the bucket by going to https://www.example.com/test.html, where test.html is an object stored in the bucket that you're using as the backend. If you set the MainPageSuffix property, https://www.example.com goes to index.html.

## Clean up

After you finish the tutorial, you can clean up the resources that you created so that they stop using quota and incurring charges. The following sections describe how to delete or turn off these resources.

### Delete the project

The easiest way to eliminate billing is to delete the project that you created for the tutorial.

To delete the project:

1. **Caution**: Deleting a project has the following effects:
   * **Everything in the project is deleted.** If you used an existing project for this tutorial, when you delete it, you also delete any other work you've done in the project.
   * **Custom project IDs are lost.** When you created this project, you might have created a custom project ID that you want to use in the future. To preserve the URLs that use the project ID, such as an appspot.com URL, delete selected resources inside the project instead of deleting the whole project.
2. If you plan to explore multiple tutorials and quickstarts, reusing projects can help you avoid exceeding project quota limits.  
    In the Google Cloud console, go to the **Manage resources** page.  
    [Go to Manage resources](https://console.cloud.google.com/iam-admin/projects)
3. In the project list, select the project that you want to delete, and then click **Delete**.
4. In the dialog, type the project ID, and then click **Shut down** to delete the project.

### Delete the load balancer and bucket

If you don't want to delete the entire project, delete the load balancer and bucket that you created for the tutorial:

1. Go to the Load balancing page in the Google Cloud console.  
    [Go to the Load balancing page](https://console.cloud.google.com/networking/loadbalancing)
2. Select the checkbox next to example-lb.
3. Click **Delete**.
4. (Optional) Select the checkbox next to the resources you want to delete along with the load balancer, such as the my-static-assets bucket or the example-ssl SSL certificate.
5. Click **Delete load balancer** or **Delete load balancer and the selected resources**.

**Note:** If you only want to delete the bucket you created, follow the instructions at [Deleting buckets](https://cloud.google.com/storage/docs/deleting-buckets).

### Release a reserved IP address

To delete the reserved IP address you used for the tutorial:

1. In the Google Cloud console, go to the **External IP addresses** page.  
     
    [Go to External IP addresses](https://console.cloud.google.com/addresses/list)
2. Select the checkboxes next to example-ip.
3. Click **Release static address**.
4. In the confirmation window, click **Delete**.