This page describes how to schedule an automatic export of your Firestore in Datastore mode entities.

To schedule exports of your entities, we recommend you deploy an App Engine service that calls the Datastore mode managed export feature. Once deployed, you can run this service on a schedule with the App Engine Cron Service.

Before you can schedule data exports with App Engine and the managed export feature, you must complete the following tasks:

1. Enable billing for your Google Cloud project (/billing/docs/how-to/modify-project#enable_billing_for_a_project). Only Google Cloud projects with billing enabled can use the export and import feature.
2. Create a Cloud Storage bucket for your project (/storage/docs/creating-buckets). All managed exports and imports rely on Cloud Storage. You must use the same location for your Cloud Storage bucket and your Datastore mode database.

   To find your Datastore mode database location, see viewing the location of your project (/datastore/docs/locations##viewing_the_location_of_your_project).
3. Install the Google Cloud SDK (/sdk/install) to deploy the application.

After completing the requirements above, set up scheduled exports by completing the following procedures.

This app uses the App Engine default service account to authenticate and authorize its export requests. When you create a project, App Engine creates a default service account for you with the following format:

The service account requires permission to start Datastore mode database export operations and to write to your Cloud Storage bucket. To grant these permissions, assign the following IAM roles to the default service account:

- `Datastore Import Export Admin`
- `Storage Admin` of the Cloud Storage bucket

You can use the `gcloud` and `gsutil` command-line tools from the Cloud SDK to assign these roles:

1. Use the `gcloud` command-line tool to assign the **Datastore Export Admin** role:

   Alternatively, you can assign this role using the Cloud Console (/iam/docs/granting-changing-revoking-access#using_the).

2. Use the `gsutil` command-line tool to assign the **Storage Admin** role on your bucket:

   Alternatively, you can assign this role using the Cloud Console (/storage/docs/access-control/using-iam-permissions#bucket-add).

Deploy the following sample app in either Python or Java:

The service receives export requests at `[SERVICE_URL]/cloud-datastore-export` and sends an authenticated request to the Datastore Admin API (/datastore/docs/reference/admin/rest/) to begin the export.

The service uses the following URL parameters to configure the export request:

- `output_url_prefix` (required): specifies where to save your Datastore mode database export. If the URL ends with a /, it's used as is. Otherwise, the app adds a timestamp to the url.
- `kind` (optional, multiple): restricts export to only these kinds.
- `namespace_id` (optional, multiple): restricts export to only these namespaces.

To set up a cron job that calls the `schedule-datastore-exports` app, create and deploy a `cron.yaml` file.

1. Create a `cron.yaml` file:

Replace `[BUCKET_NAME]` with the name of your Cloud Storage bucket.

2. Configure the cron job. The example `cron.yaml` starts an export request of every entity once every 24 hours. For more scheduling options, see Schedule format (/appengine/docs/standard/python/config/cronref#schedule_format).

   To export entities of only specific kinds, add `kind` parameters to the `url` value. Similarly, add `namespace_id` parameters to export entities from specific namespaces. For example:

   - Export entities of kind `Song`:

   - Export entities of kind `Song` and kind `Album`:

   - Export entities of kind `Song` and kind `Album` if they are in either the `Classical` namespace or the `Pop` namespace:

3. Deploy the cron job. Run the following command in the same directory as your `cron.yaml` file:

You can test your deployed cron job by running the cron job early in the **Cron Jobs** page of the Google Cloud Console:

1. Open the **Cron Jobs** page in the Cloud Console.
   Open the Cron Jobs page (https://console.cloud.google.com/appengine/taskqueues/cron)
2. Click the **Run now** button for your cron job.
3. After the job completes, verify the status message under **Status**. To see the cron job's log file, click **View** under the **Log** column.

After a cron job successfully completes, you can view the exports in your Cloud Storage bucket:

1. Open the Cloud Storage browser in the Cloud Console.
   Open the Cloud Storage browser (https://console.cloud.google.com/storage/browser)
2. In the list of buckets, click on the bucket that you created for your exports.
3. Verify exports are listed in the bucket.

- To learn how to import data from a Datastore mode database export, see Importing Entities (/datastore/docs/export-import-entities#importing_entities).