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AIM: To create a cloud spanner instance, creating a populated database, querying the data, and then exporting it to Google Cloud Storage

STEPS:

1. Go to databases < Cloud Spanner < Create a provisioned instance

2. Create the cloud spanner instance by selecting the edition – Standard < then naming the instance < selecting the region configuration < and then finally allocating the compute capacity and number of nodes.

3. Once the instance is created go to overview < databases section < create a database.

4. Create the database by naming it < then choosing the required database dialect.

5. After the database is successfully created < go to overview < create table section.

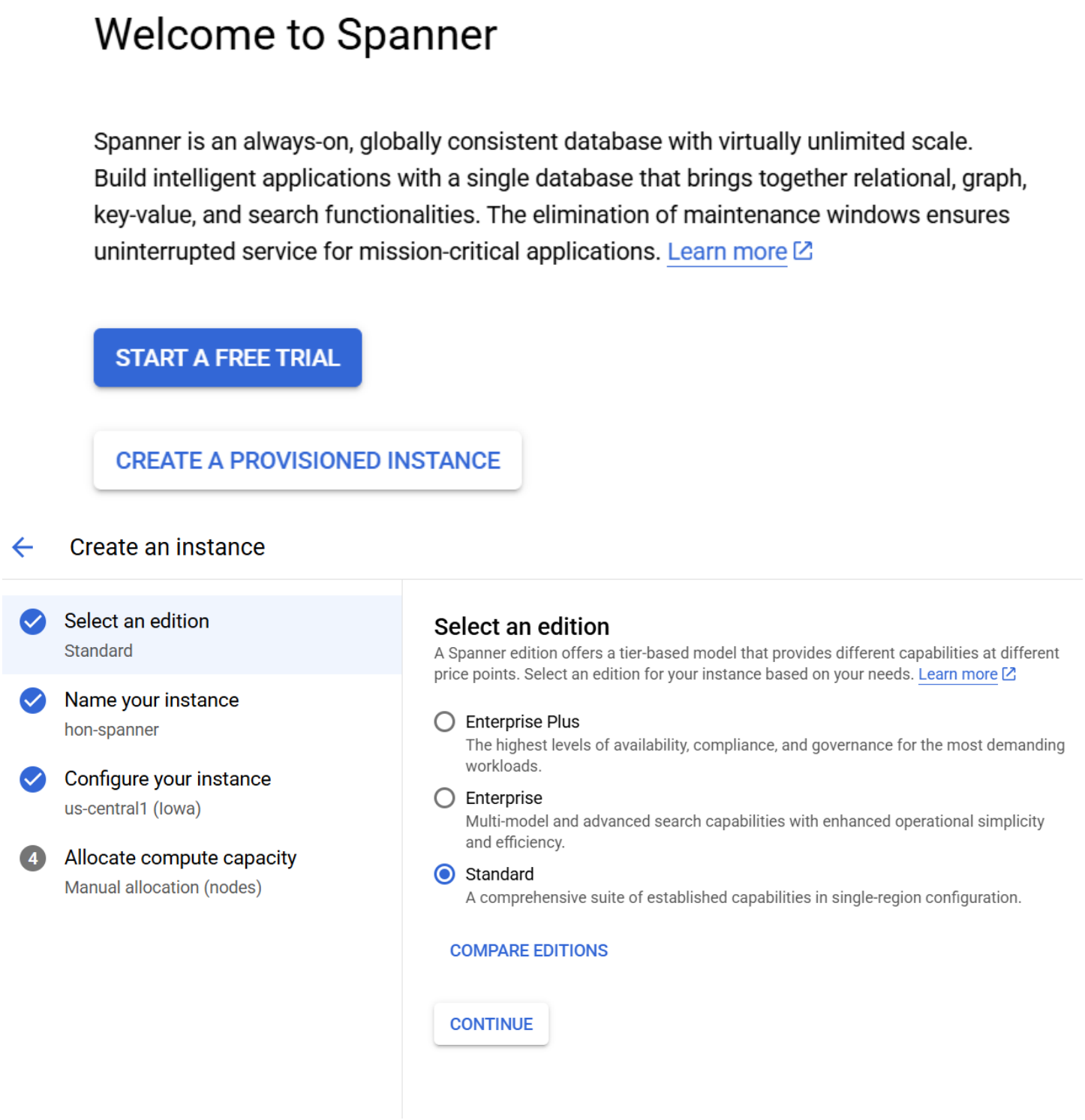
6. Use the desired schema to create the following tables.

7. Insert the data into the following tables.

8. Queries:
    - Display the count of employees based on department id.
    - Display the Employee Id, FirstName, Email, Address and Type.
    - Display the Manager Name of all the employees.

9. Exporting Data to Google Cloud Storage:
    - Go to Export/Import Section < Export.
    - Create a new bucket to store the exported data.
    - Choose different storage options and retention policy for the bucket as required.
    - Also add the object lifecycle rule to delete the object by specifying two conditions: 365+ days since object was created and Storage Class matches Archive.
    - Select this newly created bucket as the destination < Select the database to be exported < and the region for the export job.
    - Finally export the database.

Output Screenshots:



Create an instance

- Select an edition
  Standard
- Name your instance
  hon-spanner
- Configure your instance
  us-central1 (Iowa)
- 4 Allocate compute capacity
  Manual allocation (nodes)

Name your instance

An instance has both a **name** and an **ID**. The name is for display purposes only. The ID is a permanent and unique identifier.

Instance name *
hon-spanner
Name must be 4-30 characters long

Instance ID *
hon-spanner
Lowercase letters, numbers, hyphens allowed

BACK CONTINUE

Create an instance

- Select an edition
  Standard
- Name your instance
  hon-spanner
- Configure your instance
  us-central1 (Iowa)
- 4 Allocate compute capacity
  Manual allocation (nodes)

Choose a configuration

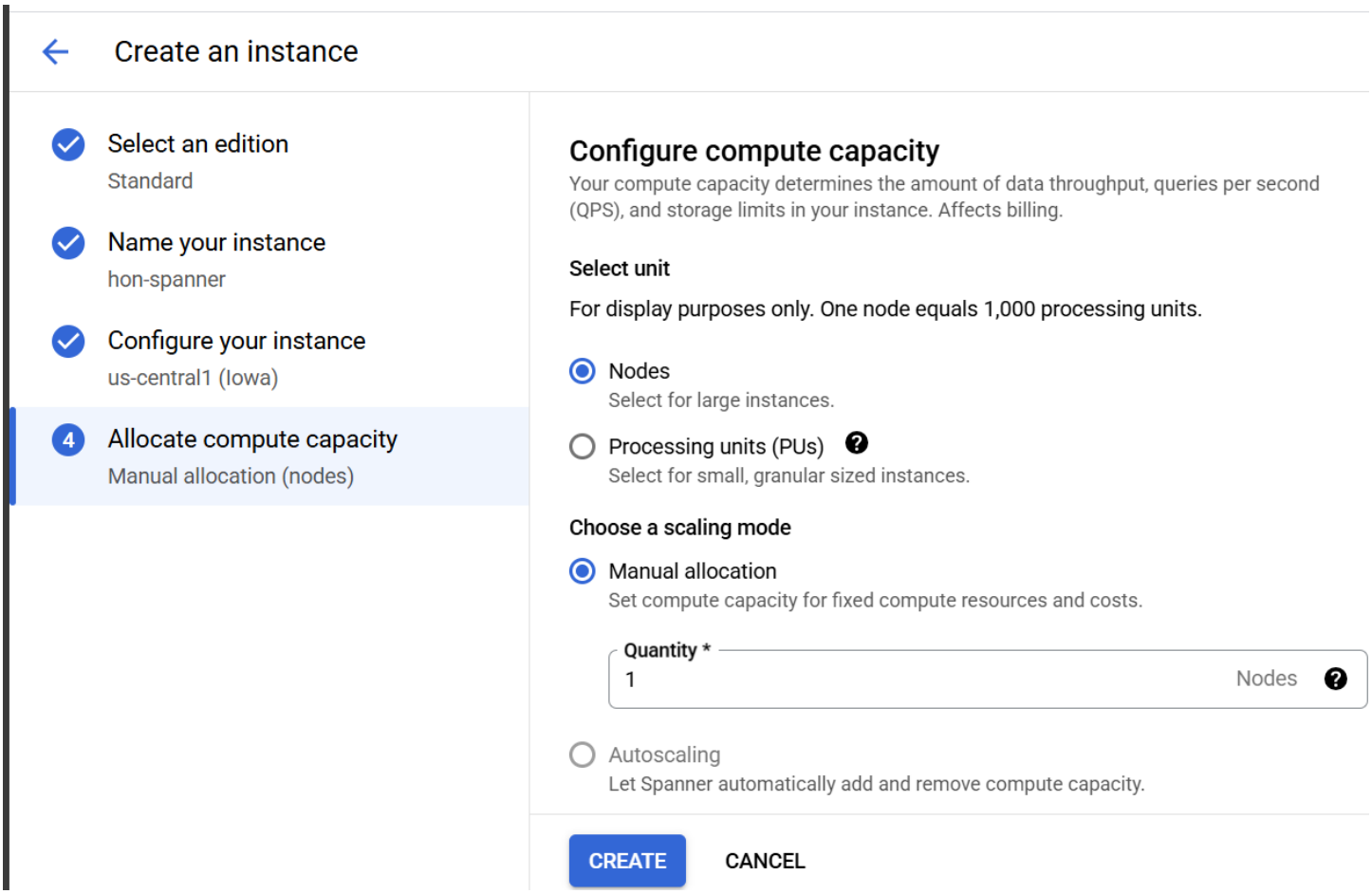
Determines location of nodes and data. A multi-region configuration provides higher availability and enables your application to achieve faster reads in multiple locations. Configuration choice affects cost, performance, and replication. Learn more

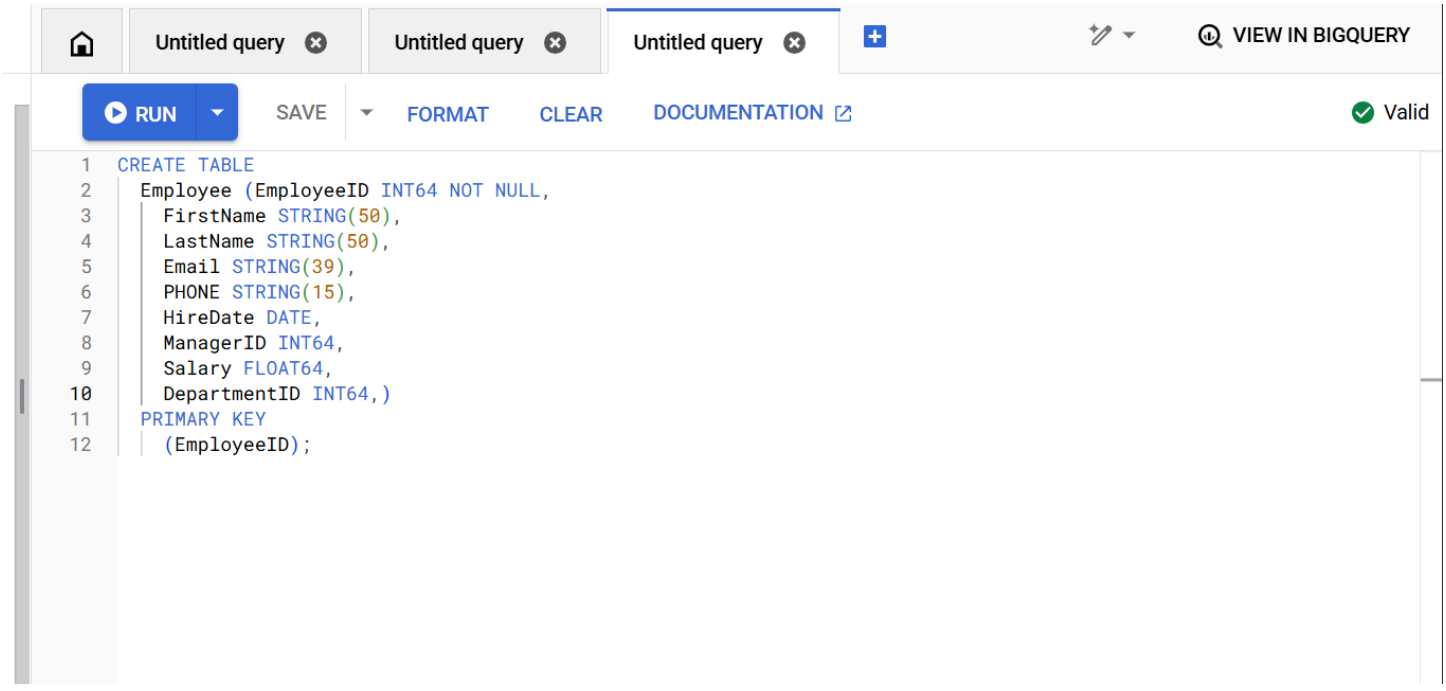
COMPARE REGION CONFIGURATIONS

- (•) Regional
  99.99% availability SLA, lower write latencies within region
- ( ) Dual-region
  99.999% availability SLA, from across two regions
- ( ) Multi-region
  99.999% availability SLA, from multi-geographic regions

Select a configuration *
us-central1 (Iowa)

To add read-only replicas to this base configuration, create a new configuration with Cloud Shell. Learn more


Create an instance
Select an edition
Standard
Name your instance
hon-spanner
Configure your instance
us-central1 (Iowa)
4
Allocate compute capacity
Manual allocation (nodes)
Configure compute capacity
Your compute capacity determines the amount of data throughput, queries per second (QPS), and storage limits in your instance. Affects billing.
Select unit
For display purposes only. One node equals 1,000 processing units.
Nodes
Select for large instances.
Processing units (PUs)
Select for small, granular sized instances.
Choose a scaling mode
Manual allocation
Set compute capacity for fixed compute resources and costs.
Quantity *
1
Nodes
Autoscaling
Let Spanner automatically add and remove compute capacity.
CREATE
CANCEL


Untitled query
Untitled query
Untitled query
VIEW IN BIGQUERY
RUN
SAVE
FORMAT
CLEAR
DOCUMENTATION
Valid
CREATE TABLE
Employee (EmployeeID INT64 NOT NULL,
FirstName STRING(50),
LastName STRING(50),
Email STRING(39),
PHONE STRING(15),
HireDate DATE,
ManagerID INT64,
Salary FLOAT64,
DepartmentID INT64,)
PRIMARY KEY
(EmployeeID);

RUN SAVE FORMAT CLEAR FORMAT CLEAR DOCUMENTATION

```sql
CREATE TABLE
  Address ( AddressId INT64,
    EmployeeID INT64 NOT NULL,
    Address STRING(50),
    Type STRING(10),
  CONSTRAINT
    FK_EmployeeAddress
  FOREIGN KEY
    (EmployeeID)
  REFERENCES
    Employee (EmployeeID) )
PRIMARY KEY
  (AddressID);
```

Untitled query Untitled query VIEW IN BIGQUERY

RUN SAVE FORMAT CLEAR FORMAT CLEAR DOCUMENTATION

```sql
  -- Each value must be type compatible with its associated column.
INSERT INTO
  Employee (EmployeeID,
    FirstName,
    LastName,
    Email,
    PHONE,
    HireDate,
    ManagerID,
    Salary,
    DepartmentID)
VALUES
  (110, -- type: INT64
    'James', -- type: STRING(50)
    'Anderson', -- type: STRING(50)
    'jad123@gmail.com', -- type: STRING(39)
    '8394332323', -- type: STRING(15)
    '2023-11-25', -- type: DATE
    506, -- type: INT64
    22000, -- type: FLOAT64
     906 -- type: INT64
    );
```

RESULTS EXPLANATION

RUN SAVE FORMAT CLEAR FORMAT CLEAR DOCUMENTATION

```sql
SELECT
  *
FROM
  `Address`
LIMIT
  10;
```

RESULTS EXPLANATION

AddressId	EmployeeID	Address	Type
801	101	Indore, MP	Office
802	101	Indore, MP	Home
803	102	Hyderabad, Telangana	Home
804	103	Hyderabad, Telangana	Home
805	103	Chennai, Tamil Nadu	Office
806	104	Chennai, Tamil Nadu	Office
807	105	Jaipur, Rajasthan	Office

RUN SAVE FORMAT CLEAR FORMAT CLEAR DOCUMENTATION

```sql
-- Add new values in the VALUES clause in order of the column list.
  -- Each value must be type compatible with its associated column.
INSERT INTO
  Address (EmployeeID,
    AddressId,
    Address,
    Type)
VALUES
  ( 110, -- type: INT64
    812, -- type: INT64
    'Lucknow, UP', -- type: STRING(50)
    'Office' -- type: STRING(10)
    );
```

RUN SAVE FORMAT CLEAR FORMAT CLEAR DOCUMENTATION

```sql
SELECT
  DepartmentID,
  COUNT(EmployeeID) AS Employee_Count
FROM
  `Employee`
GROUP BY
  DepartmentID
ORDER BY
  DepartmentID;
```

DepartmentID	Employee_Count
901	2
902	1
903	2
904	2
905	1
906	2

Untitled query | Untitled query | VIEW IN BIGQUERY

RUN SAVE FORMAT CLEAR DOCUMENTATION Valid

```sql
SELECT
  e.EmployeeID,
  FirstName,
  Email,
  Address,
  Type
FROM
  `Employee` e
INNER JOIN
  `Address` a
ON
  e.EmployeeID=a.EmployeeID;
```

RESULTS EXPLANATION

RESULTS EXPLANATION

EmployeeID	FirstName	LastName	Email	PHONE	HireDate	ManagerID	Salary	Departı
101	Alok	Ranjan	abc123@gmail.com	9232232323	2024-...	107	16000	901
102	Arun	Rathore	aru123@gmail.com	923232323	2024-...	107	19000	902
103	Shyam	Verma	shu123@gmail.com	9232332323	2024-...	107	19000	901
104	Jane	Jones	jon123@gmail.com	9232332323	2024-...	107	19000	903
105	Ram	Krishna	rk123@gmail.com	9232332323	2024-...	107	19000	903
106	Vishnu	Shiva	vs123@gmail.com	9234332323	2023-...	109	19000	904
107	Raghu	Ram	rg123@gmail.com	8234332323	2023-...	109	21000	904
108	Kumar	Kartik	kk123@gmail.com	8254332323	2023-...	109	21000	905
109	Sean	Holmes	sh123@gmail.com	8354332323	2023-...	506	22000	906

Untitled query | Untitled query | Untitled query | VIEW IN BIGQUERY

RUN SAVE FORMAT CLEAR DOCUMENTATION Valid

```sql
SELECT
    e.FirstName AS EmployeeFirstName,
    e.LastName AS EmployeeLastName,
    m.FirstName AS ManagerFirstName,
    m.LastName AS ManagerLastName
FROM
    Employee AS e
LEFT JOIN
    Employee AS m
ON
    e.ManagerID = m.EmployeeID;

```

RESULTS EXPLANATION

RESULTS EXPLANATION

EmployeeFirstName	EmployeeLastName	ManagerFirstName	ManagerLastName
Alok	Ranjan	Raghu	Ram
Arun	Rathore	Raghu	Ram
Shyam	Verma	Raghu	Ram
Jane	Jones	Raghu	Ram
Ram	Krishna	Raghu	Ram
Vishnu	Shiva	Sean	Holmes
Raghu	Ram	Sean	Holmes
Kumar	Kartik	Sean	Holmes
James	Anderson	Sean	Holmes

Export data from hon-spanner

Before you get started. Spanner imports use multiple Cloud Platform products. Make sure you have the required permissions and/or quota in Spanner, Cloud Storage, Compute Engine, and Cloud Dataflow.

Choose where to store your export

Destination hon-lab-2121

Choose a database to export

Select a Spanner database to export into your Cloud Storage bucket.

Database name hon-db

Choose a region for the export job

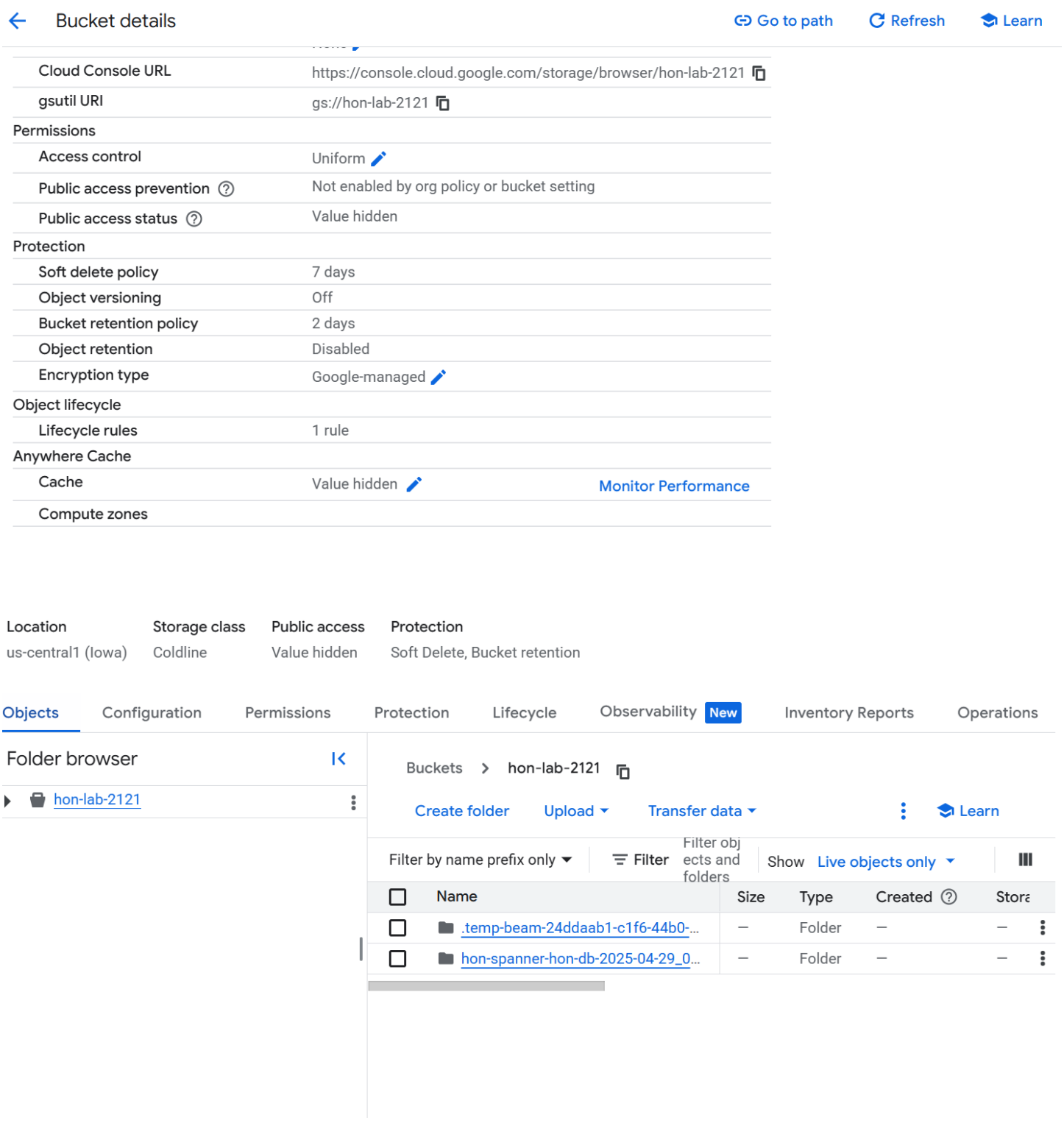
Region us-central1

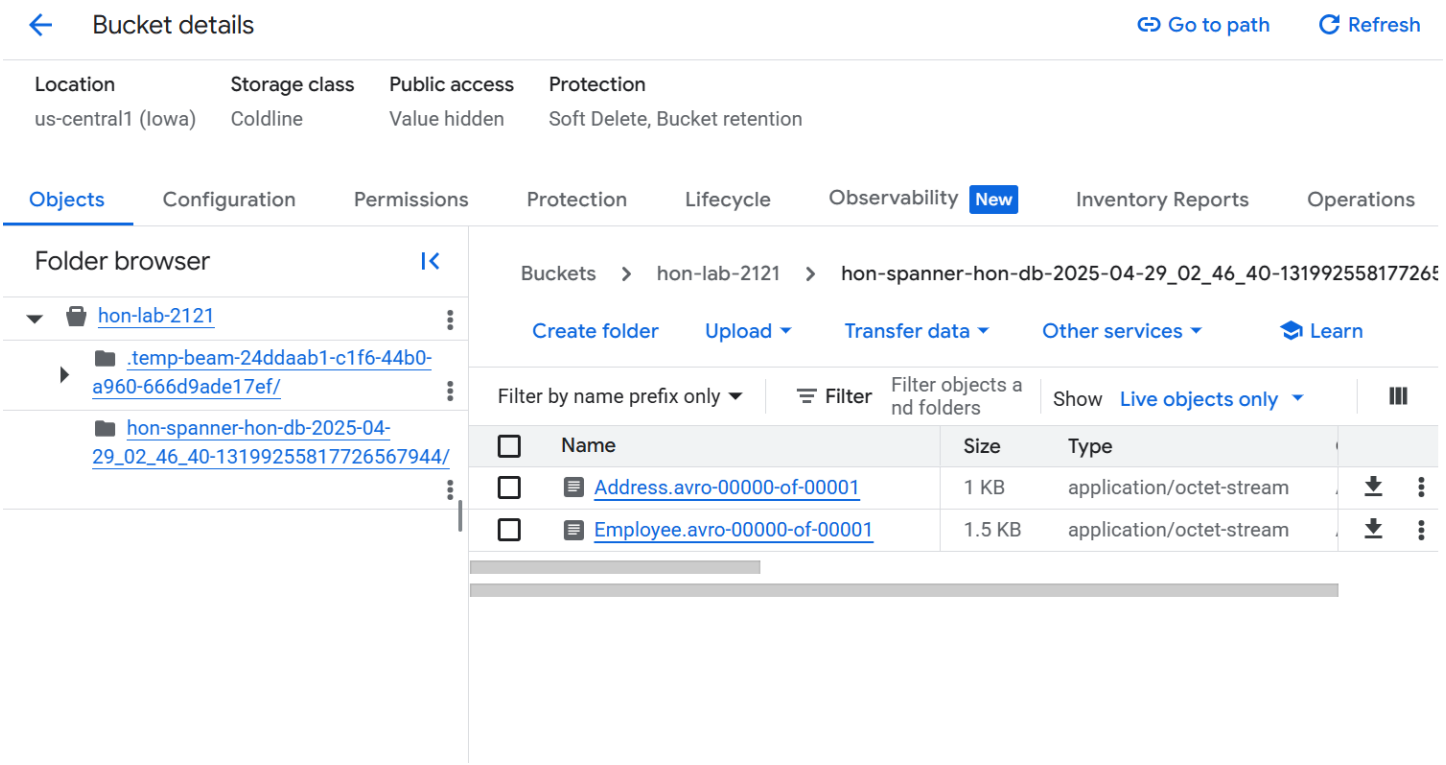
☐ Use Spanner Data Boost
Incurs an additional charge Learn more

☐ I understand that this export will incur Cloud Dataflow charges at the standard rate, as well as additional charges for independent compute resources or network data transfer out charges if used.

PRICING INFO

EXPORT CANCEL


Bucket details
Go to path
Refresh
Learn
Cloud Console URL
https://console.cloud.google.com/storage/browser/hon-lab-2121
gsutil URI
gs://hon-lab-2121
Permissions
Access control
Uniform
Public access prevention
Not enabled by org policy or bucket setting
Public access status
Value hidden
Protection
Soft delete policy
7 days
Object versioning
Off
Bucket retention policy
2 days
Object retention
Disabled
Encryption type
Google-managed
Object lifecycle
Lifecycle rules
1 rule
Anywhere Cache
Cache
Value hidden
Monitor Performance
Compute zones
Location
us-central1 (Iowa)
Storage class
Coldline
Public access
Value hidden
Protection
Soft Delete, Bucket retention
Objects
Configuration
Permissions
Protection
Lifecycle
Observability
New
Inventory Reports
Operations
Folder browser
hon-lab-2121
Buckets
hon-lab-2121
Create folder
Upload
Transfer data
Learn
Filter by name prefix only
Filter
Filter objects and folders
Show
Live objects only
Name
Size
Type
Created
Stora
.temp-beam-24ddaab1-c1f6-44b0-...
Folder
hon-spanner-hon-db-2025-04-29_0...
Folder


Bucket details
Go to path
Refresh
Location
us-central1 (Iowa)
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Folder browser
hon-lab-2121
.temp-beam-24ddaab1-c1f6-44b0-a960-666d9ade17ef/
hon-spanner-hon-db-2025-04-29_02_46_40-13199255817726567944/
Buckets
hon-lab-2121
hon-spanner-hon-db-2025-04-29_02_46_40-131992558177265
Create folder
Upload
Transfer data
Other services
Learn
Filter by name prefix only
Filter
Filter objects and folders
Show
Live objects only
Name
Size
Type
Address.avro-00000-of-00001
1 KB
application/octet-stream
Employee.avro-00000-of-00001
1.5 KB
application/octet-stream