

[Start Lab](#)

01:30:00

Monitoring and Managing Bigtable Health and Performance

 Lab  1 hour  No cost  Introductory**GSP1056****Google Cloud Self-Paced Labs**

Lab instructions and tasks

GSP1056

Overview

Setup and requirements

Task 1. Monitor disk usage
autoscalingTask 2. Configure node
replicationTask 3. Configure replication
data in Bigtable

Task 4. Back up and restore

Congratulations!



Overview

[Bigtable](#) is Google's fully managed, scalable NoSQL database service. Bigtable is ideal for storing large amounts of data in a key-value store and for use cases such as personalization, ad tech, financial tech, digital media, and Internet of Things (IoT). Bigtable supports high read and write throughput at low latency for fast access to large amounts of data for processing and analytics.

Bigtable provides many options for monitoring and managing the health and performance of your instance, including charts for storage (disk) and compute (CPU) utilization, flexible options for autoscaling of nodes, replication to improve the durability and availability of your data, and backup and restoration of tables.

In this lab, you access various charts to monitor disk usage in a Bigtable instance, update an existing cluster to use node autoscaling, implement replication in an instance, and back up and restore data in Bigtable.

What you'll do

In this lab, you learn how to monitor and manage the health and performance of a Bigtable instance.

- Monitor disk and CPU usage for a Bigtable instance.
- Configure node autoscaling and replication in Bigtable.
- Back up and restore data in Bigtable.

Prerequisites

- Basic understanding of database concepts and terms such as instances, schemas, and keys
- Completion of the lab titled [Designing and Querying Bigtable Schemas](#)

Setup and requirements

Before you click the Start Lab button

Read these instructions. Labs are timed and you cannot pause them. The timer, which starts when you click **Start Lab**, shows how long Google Cloud resources will be made available to you.

This hands-on lab lets you do the lab activities yourself in a real cloud environment, not in a simulation or demo environment. It does so by giving you new, temporary credentials that you use to sign in and access Google Cloud for the duration of the lab.

What you need

To complete this lab, you need:

- Access to a standard internet browser (Chrome browser recommended).
- Time to complete the lab.

Note: If you have a personal Google Cloud account or project, do not use it for this lab.

Note: If you are using a Pixelbook, open an Incognito window to run this lab.

Log in to Google Cloud Console

1. Using the browser tab or window you are using for this lab session, copy the **Username** from the **Connection Details** panel and click the **Open Google Console** button.

Note: If you are asked to choose an account, click **Use another account**.

2. Paste in the **Username**, and then the **Password** as prompted.

3. Click **Next**.

4. Accept the terms and conditions.

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2. Click on the instance ID named **sandiego**.

3. In the navigation menu for Bigtable, under **Insights**, click **Monitoring**.

4. For **Group by**, select **Cluster**.

Review the charts with names beginning with the prefix **Storage**.

Which chart displays the storage usage as a percent of the total storage capacity for each cluster?

- Storage utilization (bytes)
- Read throughput
- Storage utilization

Submit

You can calculate the storage usage per node by dividing the storage utilization in bytes by the number of nodes in the cluster.

For the existing cluster, is the storage utilization per node below the recommended limit of 60%?

- No
- Yes
- Equal to 60%

Submit

Task 2. Configure node autoscaling

After reviewing the disk and CPU utilization of your clusters, you may need to increase the number of nodes to satisfy the recommended levels for compute and storage. Bigtable provides options for either manual allocation or autoscaling of node count in a cluster.

When autoscaling is enabled for a cluster, Bigtable adjusts the number of nodes to meet the targets for CPU and storage utilization. In this task, you enable autoscaling of nodes in an existing cluster in your Bigtable instance.

1. In the navigation menu for Bigtable, under **Instance**, click **Overview**.
2. From the list of cluster IDs, click on the cluster ID named **sandiego-traffic-sensors-c1**.

Review the details provided in the **Overview** section. The node scaling mode is currently set to *Manually scale nodes*.

3. To apply node autoscaling to the cluster, run the following command:

```
gcloud bigtable clusters update sandiego-traffic-sensors-c1 \
--instance=sandiego \
--autoscaling-min-nodes=1 \
--autoscaling-max-nodes=3 \
--autoscaling-cpu-target=60
```

4. Refresh the page, and click **Show details** for *Autoscale nodes*.

Autoscaling has been applied to the cluster, starting with one node autoscaling up to three nodes. The CPU utilization target is set to the recommended value of 60%.

What is the storage utilization target for this cluster?

70%

60%

50%

Click **Check my progress** to verify the objective.

Configure node autoscaling.

Task 3. Configure replication

If an instance has only one cluster, the durability and availability of your data are limited to the zone where that cluster is located. Replication can improve both durability and availability by storing separate copies of your data in multiple zones or regions and automatically failing over between clusters if needed.

In this task, you configure replication in your Bigtable instance by adding a new cluster with autoscaling enabled to ensure the adequate provisioning of resources for the new cluster.

1. To return to the **Overview** page for the instance, click instance **sandiego**.
2. Click **Edit instance**.
3. Click **Add cluster**.
4. Enter the required information to create a new cluster:

Property	Value
Cluster ID	sandiego-traffic-sensors-c2
Region	Region
Zone	Select any available zone.
Node scaling mode	Autoscaling
Minimum	1
Maximum	3
CPU utilization target	60

5. Click **Add**.

6. Click **Save**.

In the list of cluster IDs, there are now two clusters:

- sandiego-traffic-sensors-c1
- sandiego-traffic-sensors-c2

Click **Check my progress** to verify the objective.

Configure replication.

Task 4. Back up and restore data in Bigtable

In Bigtable, you can back up the schema and data of a table, and then restore the backup to a new table as needed. While replication is intended to enable failover to different regions or zones, backups are intended to help recover data from application-level data corruption or operational errors such as accidental table deletions.

In this task, you create a backup of the table named *current_conditions*, and then restore the backup to a new table in your instance.

Create a backup

1. In the navigation menu for Bigtable, under **Instance**, click **Tables**.
2. From the list of table IDs, in the line for **current_conditions**, click the **Table action (⋮)** menu, and then click **Create backup**.

The **Table ID** is prepopulated as **current_conditions**, and it will be the first available backup for the table.

3. For **Cluster ID**, select **sandiego-traffic-sensors-c1**.

The cluster ID identifies the cluster from which the table is backed up *and* the cluster where the backup is stored.

4. For **Backup ID**, type **current_conditions_30**.

5. For **Set an expiration date**, select **30 days**.

The expiration date is automatically updated to 30 days from the present time.

6. Click **Create**.

Restore backup

In Bigtable, backups are not readable. To access the data in a backup, you can use the option for Restore on the Backups tab for Bigtable.

1. From the list of backup IDs, in the line for **current_conditions_30**, click **Restore**.
2. For **Table ID**, type **current_conditions_30_restored**.
3. Click **Restore**.
4. To remove the filter for table ID, click on the **x** next to **Table: current_conditions_30_restored**.

In the list of table IDs, there are now two tables:

- **current_conditions**
- **current_conditions_30_restored**

Click **Check my progress** to verify the objective.

Create the backup and restore it.

[Check my progress](#)

Delete backup

You can also easily delete a backup when it is no longer needed.

1. In the navigation menu for Bigtable, under **Instance**, click **Backups**.
2. From the list of backup IDs, in the line for **current_conditions_30**, click on the three vertical dots, and select **Delete**.
3. In the confirmation dialog, type **current_conditions_30**
4. Click **Delete**.

Congratulations!

You have now completed key tasks to monitor and manage the health and performance of your Bigtable instance, including reviewing disk utilization, enabling node autoscaling and replication, and backing up and restoring data.

Next steps / Learn more

- Check out the lab titled [Create and Manage Bigtable Instances: Challenge Lab](#).

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