Cloud SQL Self-Service Storage Shrink

Introduction

> **Early access**: This is a Preview release of Self-Service Storage Shrink. This feature might be changed in backward-incompatible ways. It is not subject to any SLA or deprecation policy.
>
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Self-Service Storage Shrink is a feature that helps you manually shrink your storage. It has the following operations:

- **get-storage-shrink-config**
  This operation returns the minimum allowed shrink size for a given project and instance. This is only permitted on primary/standalone instances. For replicas we only support resetting the replica size to be the same as primary instances.
- **perform-storage-shrink**
  This operation works on primary/standalone instances and shrinks the storage size to a target value.
- **reset-replica-size**
  This operation resets replica size to be the same as primary instances

Storage Shrink Limitations and Caveats

Supported Instance Types

Instance type	Supported
Standalone / Primary instance	Yes
Shared core instances*	No
MySQL Legacy configuration for high availability	No
Read replica	Yes
Replication from an external server	No
Cascading read replica	No

- We do not support shared-core instances, but you can upsize your instance and perform the storage shrink.
- We have a minimal size limitation which is calculated based on the actual usage and potential performance impact. Please follow step#2 in the guide to understand the minimum allowed size for your instance.

Downtime and cancellation

Storage shrink has downtime on your instance. To cancel the storage shrink request, refer to section "Storage Shrink Cancellation".

Performance impact after storage shrink

Please note there is a potential impact on performance after storage shrink. Cloud SQL uses Compute Engine virtual machines (VMs) with persistent storage disks. Persistent disk performance is predictable and scales linearly with provisioned capacity until the limits for an instance's provisioned vCPUs are reached. For details, please see Quotas-IOPS.

Additionally, we recommend leaving an appropriate buffer for operational purposes, like reindexing, etc. We recommend a buffer of at least 100 GB or 20% more than current usage, whichever is larger. For details, please see Shared-responsibility.

Storage Shrink Steps

Step 1. Prepare for the shrink operation

1. File a support ticket to add every project containing the instances you need to shrink to the allowlist before you start. Share project ID with support agent. To get the project ID containing the instance, please refer to Creating and managing projects | Resource Manager Documentation | Google Cloud.

2. Get IAM permissions for *cloudsql.instances.getDiskShrinkConfig, cloudsql.instances.performDiskShrink, cloudsql.instances.resetReplicaSize*. These permissions are available in any of the following roles:

a. Cloud SQL Admin (roles/cloudsql.admin)
b. Cloud SQL Editor (roles/cloudsql.editor)
For more information about roles, see understanding roles and granting IAM permissions.

3. Check the current Instance State. (View instance information | Cloud SQL for MySQL)
   a. `gcloud sql instances describe` should return `RUNNABLE`.
   b. If not, start the instance following Start, stop, and restart instances | Cloud SQL for MySQL.

4. Take on demand backup for the instance following Create an on-demand backup. If anything goes wrong in storage shrink, you can restore your instance from this backup.

5. For PostgreSQL instances, `max_wal_size` flag should be less than 5128 MB. A large `max_wal_size` can cause a slow startup of instances and resulting in a failed operation.

6. For replica instances, please make sure you shrink primary instances first following steps below. And jump to *Step4: Perform storage shrink - Storage shrink for replica* to shrink replica size.

7. For gcloud CLI users, make sure you have **Google Cloud SDK 422.0.0** and **alpha 2023.03.10** or above installed. To install the latest version, please see Install the gcloud CLI.
   a. To get the current gcloud version, run `gcloud --version`.
   b. To update the gcloud version, run `gcloud components update`.
   c. To install the gcloud alpha component, run `gcloud components install alpha`.

Step 2. Check minimum target size (standalone/primary instances only)

You can check the minimum target size using storage shrink API or gcloud.

Note: The following command assumes that you are running on the latest gcloud CLI version and have logged in to the gcloud CLI with your user account by executing gcloud init or gcloud auth login, or by using Cloud Shell, which automatically logs you into the gcloud CLI. You can check the currently active account by executing gcloud auth list. To check or update the gcloud CLI version, please see Step 1.6.

gcloud

Execute the following command

```
Unset
gcloud alpha sql instances get-storage-shrink-config $instance_name
```

API

Before using any of the request data, make the following replacements:

- project-id: The project ID
- instance-id: The instance ID

v1 HTTP method and URL:

```
GET https://sqladmin.googleapis.com/v1/projects/PROJECT_ID/instances/INSTANCE_ID/getDiskShrinkConfig
```

v1beta HTTP method and URL:

```
GET https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/instances/INSTANCE_ID/getDiskShrinkConfig
```

curl (Linux, macOS, or Cloud Shell)

[v1]Execute the following command:

```
Unset
curl -X GET \
   -H "Authorization: Bearer $(gcloud auth print-access-token)" \
   -H "X-Goog-User-Project: PROJECT_ID" \

"https://sqladmin.googleapis.com/v1/projects/PROJECT_ID/instances/INSTANCE_ID/getDiskShrinkConfig"
```

[v1beta]Execute the following command:

```
Unset
curl -X GET \
   -H "Authorization: Bearer $(gcloud auth print-access-token)" \
   -H "X-Goog-User-Project:PROJECT_ID" \
```

```
"https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/instances/INSTANCE
_ID/getDiskShrinkConfig"
```

PowerShell (Windows)
[v1] Execute the following command:

```
Unset
$cred = gcloud auth print-access-token
$headers = @{ "Authorization" = "Bearer $cred" }

Invoke-WebRequest `
   -Method GET `
   -Headers $headers `
   -Uri
"https://sqladmin.googleapis.com/v1/projects/PROJECT_ID/instances/INSTANCE_ID/getDi
skShrinkConfig" | Select-Object -Expand Content
```

[v1beta] Execute the following command:

```
Unset
$cred = gcloud auth print-access-token
$headers = @{ "Authorization" = "Bearer $cred" }

Invoke-WebRequest `
   -Method GET `
   -Headers $headers `
   -Uri
"https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/instances/INSTANCE
_ID/getDiskShrinkConfig" | Select-Object -Expand Content
```

Expected results
You should receive a JSON response similar to the following:

```
Unset
{
  "kind": "sql#instance",
  "min_target_size_gb": "1234"
  "message": "The size of your instance's storage impacts IOPS, and therefore
shrinking your storage may have a negative impact on IOPS. Before shrinking your
storage, please refer to our documentation on Cloud SQL limits to understand what
impact shrinking your storage might have:
https://cloud.google.com/sql/docs/quotas#fixed-limits.\nAdditionally, we recommend
leaving an appropriate buffer for operational purposes, like reindexing, etc. We
recommend a buffer of at least 100 GB or 20% more than current usage, whichever is
larger. For more details, please refer to:
https://cloud.google.com/sql/docs/shared-responsibilit\nThe estimated operation
time is xx minutes."
}
```

Step 3. Estimate operation time

You can get the estimated operation time using get-storage-shrink-config API following step 2. The estimated operation time is shown at the end of the response, like this: *"The estimated operation time is xx minutes"*.

Step 4. Perform storage shrink

Storage shrink for standalone/primary instances

You can perform storage shrink operation using API or gcloud.

Note: The following command assumes that you are running on the latest gcloud CLI version and have logged in to the gcloud CLI with your user account by executing gcloud init or gcloud auth login, or by using Cloud Shell, which automatically logs you into the gcloud CLI. You can check the currently active account by executing gcloud auth list. To check or update the gcloud CLI version, please see Step 1.6.

gcloud

Execute the following command

```
Unset
gcloud alpha sql instances perform-storage-shrink $instance_name \
  --storage-size=TARGET_STORAGE_SIZE --async
```

- We recommend using `--async` to wait for operation asynchronously. You can check the operation status by running `gcloud sql operations describe OPERATION_ID`.
- This command has a prompt to let you confirm you've run `get-storage-shrink-config` and understand this operation can take a long time. You can disable it following disabling prompts.

API

Before using any of the request data, make the following replacements:

- project-id: The project ID
- instance-id: The instance ID

v1 HTTP method and URL:

```
POST https://sqladmin.googleapis.com/v1/projects/PROJECT_ID/instances/INSTANCE_ID/performDiskShrink
```

v1beta HTTP method and URL:

```
POST https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/instances/INSTANCE_ID/performDiskShrink
```

curl (Linux, macOS, or Cloud Shell)

[v1]Execute the following command:

```
Unset
curl -X POST \
   -H "Authorization: Bearer $(gcloud auth print-access-token)" \
   -H "X-Goog-User-Project: PROJECT_ID" \
   -H "Content-Type: application/json" -d "{targetSizeGb: TARGET_STORAGE_SIZE}" \

"https://sqladmin.googleapis.com/v1/projects/PROJECT_ID/instances/INSTANCE_ID/perfo
rmDiskShrink"
```

[v1beta]Execute the following command:

```
Unset
curl -X POST \
   -H "Authorization: Bearer $(gcloud auth print-access-token)" \
   -H "X-Goog-User-Project: PROJECT_ID" \
   -H "Content-Type: application/json" -d "{targetSizeGb: TARGET_STORAGE_SIZE}" \

"https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/instances/INSTANCE
_ID/performDiskShrink"
```

PowerShell (Windows)

[v1] Execute the following command:

```
Unset
$cred = gcloud auth print-access-token
$headers = @{ "Authorization" = "Bearer $cred" }

Invoke-WebRequest `
   -Method POST `
   -Headers $headers `
   -ContentType: "application/json; charset=utf-8" `
   -Body "{targetSizeGb: TARGET_STORAGE_SIZE}" `
```

```
   -Uri
"https://sqladmin.googleapis.com/v1/projects/PROJECT_ID/instances/INSTANCE_ID/perfo
rmDiskShrink" | Select-Object -Expand Content
```

[v1beta] Execute the following command:

Unset

```
$cred = gcloud auth print-access-token
$headers = @{ "Authorization" = "Bearer $cred" }

Invoke-WebRequest `
   -Method POST `
   -Headers $headers `
   -ContentType: "application/json; charset=utf-8" `
   -Body "{targetSizeGb: TARGET_STORAGE_SIZE}" `
   -Uri
"https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/instances/INSTANCE
_ID/performDiskShrink" | Select-Object -Expand Content
```

Expected results

You should receive a JSON response similar to the following:

[v1]

Unset

```
{
  "kind": "sql#operation",
  "targetLink":
"https://sqladmin.googleapis.com/v1/projects/PROJECT_ID/instances/INSTANCE_ID",
  "status": "PENDING",
  "user": "user@example.com",
  "insertTime": "2019-09-25T22:19:33.735Z",
  "operationType": "UPDATE",
  "name": "operation-id",
  "targetId": "INSTANCE_ID",
  "selfLink":
"https://sqladmin.googleapis.com/v1/projects/PROJECT_ID/operations/operation-id",
  "targetProject": "PROJECT_ID"
}
```

[v1beta]

Unset

```
{
  "kind": "sql#operation",
  "targetLink":
"https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/instances/INSTANCE
_ID",
  "status": "PENDING",
  "user": "user@example.com",
  "insertTime": "2019-09-25T22:19:33.735Z",
  "operationType": "UPDATE",
  "name": "operation-id",
  "targetId": "INSTANCE_ID",
  "selfLink":
"https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/operations/operati
on-id",
  "targetProject": "PROJECT_ID"
}
```

To check the status of storage shrink operation, refer to section "Check storage shrink operation status".

Storage shrink for replica instances

Warning: If replica and primary instances are in different database versions, the replica will use the primary database version, this is to make sure replica can successfully start after shrink.

This feature only works if the storage size of the replica instance is larger than the primary instance. The feature will shrink the replica instance size to be the same as the primary instance.

You may expect the duration of resetReplicaSize to be similar to create a new replica from your primary.

Note: The following command assumes that you are running on the latest gcloud CLI version and have logged in to the gcloud CLI with your user account by executing gcloud init or gcloud auth login, or by using Cloud Shell, which automatically logs you into the gcloud CLI. You can check the currently active account by executing gcloud auth list. To check or update the gcloud CLI version, please see Step 1.6.

gcloud

Execute the following command

```
Unset
gcloud alpha sql instances reset-replica-size $instance_name
```

API

Before using any of the request data, make the following replacements:

- project-id: The project ID
- instance-id: The instance ID

v1 HTTP method and URL:

```
POST https://sqladmin.googleapis.com/v1/projects/PROJECT_ID/instances/INSTANCE_ID/resetReplicaSize
```

v1beta HTTP method and URL:

```
POST https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/instances/INSTANCE_ID/resetReplicaSize
```

curl (Linux, macOS, or Cloud Shell)

[v1]Execute the following command:

```
Unset
curl -X POST \
   -H "Authorization: Bearer $(gcloud auth print-access-token)" \
   -H "X-Goog-User-Project: PROJECT_ID" \

"https://sqladmin.googleapis.com/v1/projects/PROJECT_ID/instances/INSTANCE_ID/reset
ReplicaSize"
```

[v1beta]Execute the following command:

```
Unset
curl -X POST \
   -H "Authorization: Bearer $(gcloud auth print-access-token)" \
   -H "X-Goog-User-Project: PROJECT_ID" \

"https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/instances/INSTANCE
_ID/resetReplicaSize"
```

PowerShell (Windows)

[v1] Execute the following command:

```
Unset
$cred = gcloud auth print-access-token
$headers = @{ "Authorization" = "Bearer $cred" }

Invoke-WebRequest `
   -Method POST `
   -Headers $headers `
   -Uri
"https://sqladmin.googleapis.com/v1/projects/PROJECT_ID/instances/INSTANCE_ID/reset
ReplicaSize" | Select-Object -Expand Content
```

[v1beta] Execute the following command:

```
Unset
$cred = gcloud auth print-access-token
$headers = @{ "Authorization" = "Bearer $cred" }

Invoke-WebRequest `
   -Method POST `
   -Headers $headers `
   -Uri
"https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/instances/INSTANCE
_ID/resetReplicaSize" | Select-Object -Expand Content
```

Expected results

You should receive a JSON response similar to the following:

[v1]

```
Unset
{
  "kind": "sql#operation",
  "targetLink":
"https://sqladmin.googleapis.com/v1/projects/PROJECT_ID/instances/INSTANCE_ID",
  "status": "PENDING",
  "user": "user@example.com",
  "insertTime": "2019-09-25T22:19:33.735Z",
  "operationType": "RECREATE_REPLICA",
  "name": "operation-id",
  "targetId": "INSTANCE_ID",
  "selfLink":
"https://sqladmin.googleapis.com/v1/projects/PROJECT_ID/operations/operation-id",
  "targetProject": "PROJECT_ID"
}
```

[v1beta]

```
Unset
{
  "kind": "sql#operation",
  "targetLink":
"https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/instances/INSTANCE
_ID",
  "status": "PENDING",
  "user": "user@example.com",
  "insertTime": "2019-09-25T22:19:33.735Z",
  "operationType": "RECREATE_REPLICA",
  "name": "operation-id",
  "targetId": "INSTANCE_ID",
  "selfLink":
"https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/operations/operati
on-id",
  "targetProject": "PROJECT_ID"
}
```

Step 5. Post checks

- Check the current Instance State. (View instance information | Cloud SQL for MySQL)
  - `gcloud sql instances describe` should return `RUNNABLE`.
- Check data storage storage. (View instance information | Cloud SQL for MySQL)
- If you have shrunk the primary instance, its replica (if any) will continue having larger disks. You need to follow *"Step4: Perform storage shrink - Storage shrink for replica"* to shrink the replica.

Storage Shrink Cancellation

To cancel the storage shrink operation, you need the ID of the operation. You need to specify this ID in the gcloud or REST API command so that Cloud SQL knows which operation to cancel.

The operation ID is returned in the name field of the response for the request in "Storage Shrink Steps - Step 4. Perform storage shrink".

You can also find the operation ID using `gcloud sql operations list` or by making an operations.list call on the Cloud SQL instance.

Send cancellation request

gcloud

Execute the following command

```
Unset
gcloud sql operations cancel $OPERATION_ID
```

The "OPERATION_ID" is the ID of the storage shrink operation.

API

Before using any of the request data, make the following replacements:

- project-id: The project ID
- operation-id: The operation ID of the storage shrink operation

v1 HTTP method and URL:

```
POST https://sqladmin.googleapis.com/v1/projects/PROJECT_ID/operations/OPERATION_ID/cancel
```

v1beta HTTP method and URL:

```
POST https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/operations/OPERATION_ID/cancel
```

curl (Linux, macOS, or Cloud Shell)

[v1]Execute the following command:

```
Unset
curl -X POST \
    -H "Authorization: Bearer $(gcloud auth print-access-token)" \
    -H "Content-Type: application/json; charset=utf-8" \
    -d "" \

"https://sqladmin.googleapis.com/v1/projects/PROJECT_ID/operations/OPERATION_ID/can
cel"
```

[v1beta]Execute the following command:

```
Unset
curl -X POST \
    -H "Authorization: Bearer $(gcloud auth print-access-token)" \
    -H "Content-Type: application/json; charset=utf-8" \
    -d "" \

"https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/operations/OPERATI
ON_ID/cancel"
```

PowerShell (Windows)

[v1] Execute the following command:

```
Unset
$cred = gcloud auth print-access-token
$headers = @{ "Authorization" = "Bearer $cred" }

Invoke-WebRequest `
    -Method GET `
    -Headers $headers `
    -Uri
"https://sqladmin.googleapis.com/v1/projects/PROJECT_ID/operations/OPERATION_ID" |
Select-Object -Expand Content
```

[v1beta] Execute the following command:

```
Unset
$cred = gcloud auth print-access-token
$headers = @{ "Authorization" = "Bearer $cred" }

Invoke-WebRequest `
    -Method GET `
    -Headers $headers `
    -Uri
"https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/operations/OPERATI
ON_ID" | Select-Object -Expand Content
```

Expected results

This REST API call doesn't return any response. For more information about checking the cancellation status of the storage shrink operation, see section "Check cancellation status" below.

Check cancellation status

The cancellation status can be checked by checking the status of the storage shrink operation following section "Check storage shrink operation status". The cancellation status will be shown in the error field of the response.

Successful cancellation

Example response:

```
Unset
{
  "kind": "sql#operation",
  "targetLink":
"https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/instances/example_
instance",
  "status": "DONE",
  "user": "user@example.com",
  "insertTime": "2023-12-18T22:54:11.663Z",
  "startTime": "2023-12-18T22:54:12.047Z",
  "error": {
    "kind": "sql#operationErrors",
    "errors": [
      {
        "kind": "sql#operationError",
        "code": "CANCEL_SUCCESSFUL",
        "message": "The UPDATE operation is canceled."
      }
    ]
  },
  "operationType": "UPDATE",
  "name": "OPERATION_ID",
  "targetId": "example_instance",
  "selfLink":
"https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/operations/OPERATI
ON_ID",
  "targetProject": "PROJECT_ID"
}
```

Unsuccessful cancellation

Example response:

```
Unset
{
  "kind": "sql#operation",
  "targetLink":
"https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/instances/example_
instance",
  "status": "RUNNING",
  "user": "user@example.com",
```

```
  "insertTime": "2023-12-18T22:54:11.663Z",
  "startTime": "2023-12-18T22:54:12.047Z",
  "error": {
    "kind": "sql#operationErrors",
    "errors": [
      {
        "kind": "sql#operationError",
        "code": "CANCEL_ERROR",
        "message": "The UPDATE operation 490cdbe6-8b75-415c-99c1-ccc80000004f can
not be cancelled."
      }
    ]
  },
  "operationType": "UPDATE",
  "name": "OPERATION_ID",
  "targetId": "example_instance",
  "selfLink":
"https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/operations/OPERATI
ON_ID",
  "targetProject": "PROJECT_ID"
}
```


It is likely because the storage shrink operation is almost complete. You can wait a few minutes and check again. If the cancellation error persists after the operation completes, please contact our support team.

Check storage shrink operation status

gcloud

Execute the following command

Unset
```
gcloud sql operations describe OPERATION_ID
```

The "OPERATION_ID" is the ID of the storage shrink operation.

API

Before using any of the request data, make the following replacements:

- project-id: The project ID
- operation-id: The operation ID of the storage shrink operation

v1 HTTP method and URL:

```
GET https://sqladmin.googleapis.com/v1/projects/PROJECT_ID/operations/OPERATION_ID
```

v1beta HTTP method and URL:

```
GET https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/operations/OPERATION_ID
```

curl (Linux, macOS, or Cloud Shell)

[v1]Execute the following command:

Unset
```
curl -X GET \
    -H "Authorization: Bearer $(gcloud auth print-access-token)" \

"https://sqladmin.googleapis.com/v1/projects/PROJECT_ID/operations/OPERATION_ID"
```

[v1beta]Execute the following command:

Unset
```
curl -X GET \
```

```
    -H "Authorization: Bearer $(gcloud auth print-access-token)" \

"https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/operations/OPERATI
ON_ID"
```

PowerShell (Windows)

[v1] Execute the following command:

```
Unset
$cred = gcloud auth print-access-token
$headers = @{ "Authorization" = "Bearer $cred" }

Invoke-WebRequest `
    -Method GET `
    -Headers $headers `
    -Uri
"https://sqladmin.googleapis.com/v1/projects/PROJECT_ID/operations/OPERATION_ID" |
Select-Object -Expand Content
```

[v1beta] Execute the following command:

```
Unset
$cred = gcloud auth print-access-token
$headers = @{ "Authorization" = "Bearer $cred" }

Invoke-WebRequest `
    -Method GET `
    -Headers $headers `
    -Uri
"https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/operations/OPERATI
ON_ID" | Select-Object -Expand Content
```

Expected results

You should receive a JSON response similar to the following.

[v1]

```
Unset
{
  "kind": "sql#operation",
  "targetLink":
"https://sqladmin.googleapis.com/v1/projects/PROJECT_ID/instances/example_instance"
,
  "status": "RUNNING",
  "user": "user@example.com",
  "insertTime": "2023-12-18T22:43:09.849Z",
  "startTime": "2023-12-18T22:43:10.373Z",
  "operationType": "UPDATE",
  "name": "OPERATION_ID",
  "targetId": "example_instance",
  "selfLink":
"https://sqladmin.googleapis.com/v1/projects/project-ID/operations/OPERATION_ID",
  "targetProject": "PROJECT_ID"
}
```

[v1beta]

```
Unset
{
  "kind": "sql#operation",
  "targetLink":
"https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/instances/example_
instance",
  "status": "RUNNING",
  "user": "user@example.com",
```

```
  "insertTime": "2023-12-18T22:54:11.663Z",
  "startTime": "2023-12-18T22:54:12.047Z",
  "operationType": "UPDATE",
  "name": "OPERATION_ID",
  "targetId": "example_instance",
  "selfLink":
"https://sqladmin.googleapis.com/sql/v1beta4/projects/PROJECT_ID/operations/OPERATI
ON_ID",
  "targetProject": "PROJECT_ID"
}
```

Supportability, Diagnosis, Troubleshooting

Can not perform storage shrink

If you get an error message like this, please contact our support team to give you the permission to perform storage shrink.

Unset

```
{
  "error": {
    "code": 400,
    "message": "Invalid request: Storage shrink API is not enabled on project
PROJECT_NAME.",
    "errors": ...
}
```

Insufficient storage space

If you encounter not enough storage space during shrinking storage, please make sure you follow all storage shrink steps and your target size is larger than minimum target size allowed in step2. Example error message:

Unset

```
{
  "error": {
    "code": 400,
    "message": "Invalid target storage size TARGET_SIZE. ...",
    "errors": ...
}
```

max_wal_size should be less than 5120 MB for postgres

`max_wal_size` can potentially lead to a slow checkpoint rate and a huge amount of logs to replay after a shutdown. This could lead to timeout failure when waiting for instance to come up after the shrink. Example error message:

Unset

```
{
  "error": {
    "code": 400,
    "message": "Operation not allowed on instance INSTANCE_NAME with max_wal_size =
MAX_WAL_SIZE, should be set less than 5120 before disk shrink operation..",
    "errors": ...
}
```

To resolve this, please update your max_wal_size following Configure database flags. Below is an example command:

Unset

```
gcloud sql instances patch INSTANCE_NAME --database-flags=max_wal_size=MAX_WAL_SIZE
```

Storage shrink failed after 10 days

The workflow enforced a 10 day timeout for disk shrink operations. You can upgrade the CPU of the instance to reduce overall shrink time.

Storage shrink failed with internal error

Please contact our support team for any internal errors.

Storage shrink gcloud command return error after 10 minutes

You may experience timeout running perform-storage-shrink if the operation is taking over 10 minutes. Example error message:

```
Performing a storage size decrease on a Cloud SQL instance....failed.
```

The shrink operation will be completed on your instance with no extra downtime on top of the previous estimation. To avoid this, you can add `--async` flag to the end of the command to wait for operation asynchronously.

Feedback

During the preview stage of this feature, please email us at cloudsql-storage-shrink-feedback@google.com.