Google Cloud Platform SDK: Instance, Disk, and Snapshot Management

This document outlines the usage of Google Cloud SDK (Software Development Kit) for managing instances, disks, and snapshots. It includes API calls, input/output types, execution behavior, and synchronous/asynchronous operations type.

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# References

- Google Cloud Compute v1 SDK Documentation for Snapshots: https://cloud.google.com/python/docs/reference/compute/latest/google.cloud.compute\_v1.types.Snapshot

- Google Cloud Compute REST API for Snapshot Insert: https://cloud.google.com/compute/docs/reference/rest/beta/snapshots/insert

# 1. Creating Credentials from Service Account Info

The line of code below creates Google Cloud service account credentials from a JSON object containing service account information.

Code Snippet:

storage\_credentials = service\_account.Credentials.from\_service\_account\_info(info: dict) -> Credentials

Method Overview:

- \*\*Method:\*\* from\_service\_account\_info  
- \*\*Purpose:\*\* To create a Credentials object for authenticating API requests to Google Cloud services using a service account.

Input Parameter:

1. \*\*info\*\* (Type: dict): A dictionary containing the service account key information, typically parsed from a JSON file. Key fields include:  
 - type: The type of the credential (usually "service\_account").  
 - project\_id: The ID of the Google Cloud project.  
 - private\_key\_id: The unique identifier for the private key.  
 - private\_key: The private key used for authentication.  
 - client\_email: The service account email.  
 - client\_id: The unique client identifier.  
 - auth\_uri: The authorization endpoint.  
 - token\_uri: The token endpoint.  
 - auth\_provider\_x509\_cert\_url: The URL for the authentication provider's certificate.

Output Type:

- \*\*Return Type:\*\* An instance of Credentials (typically service\_account.Credentials) used for authenticating requests.

Execution Type:

- \*\*Synchronous/Asynchronous:\*\* Synchronous; immediately returns the credentials object upon being called.  
  
# Example JSON information (usually loaded from a file or environment variable)  
info = {  
 "type": "service\_account",  
 "project\_id": "my-project-id",  
 "private\_key\_id": "your-private-key-id",  
 "private\_key": "-----BEGIN PRIVATE KEY-----\n...\n-----END PRIVATE KEY-----\n",  
 "client\_email": "your-service-account-email@my-project-id.iam.gserviceaccount.com",  
 "client\_id": "your-client-id",  
 "auth\_uri": "https://accounts.google.com/o/oauth2/auth",  
 "token\_uri": "https://oauth2.googleapis.com/token",  
 "auth\_provider\_x509\_cert\_url": "https://www.googleapis.com/oauth2/v1/certs",  
 "client\_x509\_cert\_url": "https://www.googleapis.com/robot/v1/metadata/x509/your-service-account-email"  
}  
  
# Create the service account credentials  
storage\_credentials = service\_account.Credentials.from\_service\_account\_info(info)

# 2. Retrieving Instance Information

Code Snippet:

instance\_info = instances\_client.get(project: str, zone: str, instance: str) -> Instance

Input Types:

- project: String (str)  
- zone: String (str)  
- instance: String (str)

Return Type:

Instance: An object representing the details of the requested instance (usually an instance of a class).

Execution Type:

Synchronous: Blocks execution until the instance details are returned.

# 3. Retrieving Disk Details

Code Snippet:

disk\_details = disks\_client.get(project: str, zone: str, disk: str) -> Disk

Input Types:

- project: String (str)  
- zone: String (str)  
- disk: String (str)

Return Type:

Disk: An object containing disk details (usually an instance of a class).

Execution Type:

Synchronous: Blocks execution until the disk details are returned.

# 4. Creating a Snapshot

Code Snippet:

snapshot = compute\_v1.Snapshot(  
 name: str,  
 source\_disk: str,  
 labels: dict,  
 description: str,  
 storage\_locations: list  
) -> Snapshot

Input Types:

- name: String (str)  
- source\_disk: String (str)  
- labels: Dictionary (dict)  
- description: String (str)  
- storage\_locations: List (list)

Return Type:

Snapshot: An instance of the Snapshot class containing the configured snapshot properties.

Execution Type:

Synchronous: Blocks execution until the snapshot is created.

# 5. Initiating Snapshot Creation

Code Snippet:

operation = snapshots\_client.insert(project: str, snapshot\_resource: Snapshot) -> Operation

Input Types:

- project: String (str)  
- snapshot\_resource: Snapshot (Instance of the Snapshot class)

Return Type:

Operation: An object representing the ongoing snapshot creation process.

Execution Type:

Asynchronous: The operation starts immediately, and the returned object allows monitoring.

# 6. Checking Operation Result

Code Snippet:

operation.result() -> Snapshot

Input Types:

None required.

Return Type:

Snapshot: The result of the operation (e.g., the created snapshot).

Execution Type:

Blocking: Pauses execution until the operation is complete.

Behavior:

Blocks the execution until the snapshot creation is finished.

# 7. Retrieving Snapshot Information

Code Snippet:

snapshot\_info = snapshots\_client.get(project: str, snapshot: str) -> Snapshot

Input Types:

- project: String (str)  
- snapshot: String (str)

Return Type:

Snapshot: An object containing the snapshot details (Instance of the Snapshot class).

Execution Type:

Synchronous: Blocks execution until the snapshot information is returned.