# **Connecting to IBM Cloud Object Storage (COS) using HMAC Authentication from a Workspace in Domino**

## **1. Introduction**

This documentation explains how to connect to **IBM Cloud Object Storage (COS)** using **HMAC authentication** from a workspace in **Domino**. You will learn how to retrieve the necessary credentials from **HashiCorp Vault** and use them to interact with IBM COS, with Python and curl examples provided.

## **2. Prerequisites**

Before you start, ensure you have the following:

* **Access to HashiCorp Vault** where your COS HMAC keys are stored.
* **IBM Cloud Object Storage (COS)** credentials including:
  + HMAC **Access Key ID**
  + HMAC **Secret Access Key**
  + **COS Endpoint**
  + **Bucket Name**

## **3. Workflow Overview**

This workflow involves retrieving credentials from HashiCorp Vault, configuring HMAC authentication, and connecting to COS to perform operations such as creating objects.

## **4. Retrieving Credentials from HashiCorp Vault**

Follow these steps to retrieve the necessary HMAC keys and other credentials:

1. **Access Vault**: Go to your Vault instance and navigate to the secrets path where the HMAC keys are stored (e.g., kv/cos\_hmac\_keys).
2. **Extract the following details**:
   * cos\_hmac\_keys\_access\_key\_id
   * cos\_hmac\_keys\_secret\_access\_key
   * resource\_instance\_id (CRN)
   * COS Endpoint (e.g., https://your-endpoint.com)

* Example Vault JSON:  
  json  
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  {
* "cos\_hmac\_keys\_access\_key\_id": "8cac968e8be4775a706551937d1bd1a",
* "cos\_hmac\_keys\_secret\_access\_key": "9bdadc074ae7ae587e4df4...",
* "resource\_instance\_id": "crn:v1:bluemix:public:cloud-object-storage:..."
* }

## **5. Connecting to COS using Python**

You can use the following Python code to connect to COS, authenticate via HMAC, and perform actions such as creating a text file.

### **Python Code Example:**

python

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* import ibm\_boto3
* from ibm\_botocore.client import Config, ClientError
* # IBM COS HMAC credentials
* COS\_ENDPOINT = "<COS\_ENDPOINT>"
* COS\_HMAC\_ACCESS\_KEY\_ID = "<HMAC\_ACCESS\_KEY\_ID>"
* COS\_HMAC\_SECRET\_ACCESS\_KEY = "<HMAC\_SECRET\_ACCESS\_KEY>"
* # Create an IBM COS resource using HMAC
* cos\_client = ibm\_boto3.client(
* "s3",
* aws\_access\_key\_id=COS\_HMAC\_ACCESS\_KEY\_ID,
* aws\_secret\_access\_key=COS\_HMAC\_SECRET\_ACCESS\_KEY,
* config=Config(signature\_version="s3v4"),
* endpoint\_url=COS\_ENDPOINT
* )
* def create\_text\_file(bucket\_name, file\_name, file\_text):
* try:
* cos\_client.put\_object(
* Bucket=bucket\_name,
* Key=file\_name,
* Body=file\_text
* )
* print(f"Successfully created {file\_name} in {bucket\_name}.")
* except ClientError as e:
* print(f"Error: {e}")
* # Use the function to create a file in COS
* create\_text\_file("my-bucket", "test.txt", "This is a test file.")

Replace the placeholders (<COS\_ENDPOINT>, <HMAC\_ACCESS\_KEY\_ID>, etc.) with the actual values retrieved from Vault.

## **6. Connecting to COS using curl**

You can also use curl for a quick connection to COS to verify access via HMAC. Here's an example using curl:

### **curl Example:**

bash

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* curl -H "Authorization: AWS <HMAC\_ACCESS\_KEY\_ID>" \
* -H "x-amz-content-sha256: UNSIGNED-PAYLOAD" \
* "https://<COS\_ENDPOINT>/my-bucket/test.txt"

Replace <HMAC\_ACCESS\_KEY\_ID> and <COS\_ENDPOINT> with your actual values.

## **7. Workflow Diagram**

Below is a diagram illustrating the architecture and workflow for connecting to IBM COS from a workspace in Domino:

### **Diagram Explanation:**

* **Step 1:** Retrieve HMAC credentials from HashiCorp Vault.
* **Step 2:** Establish a connection to IBM COS using HMAC authentication.
* **Step 3:** Perform operations such as creating or retrieving objects in COS using Python or curl.

## **8. Troubleshooting**

### **Common Errors:**

* **403 Forbidden**: Verify that your HMAC keys have the correct permissions to access the COS bucket.
* **InvalidAccessKeyId**: Ensure that the HMAC credentials are correctly configured and match what is stored in Vault.

### **Network Issues:**

* Ensure that the **endpoint** is accessible from your environment and that there are no firewall restrictions blocking the connection.

## **9. Conclusion**

This documentation provides the necessary steps and code examples to connect to **IBM Cloud Object Storage** using **HMAC authentication**. Both Python and curl methods have been provided, allowing you to choose the approach that best fits your use case.

### **Additional Resources:**

* IBM COS Documentation
* HashiCorp Vault Documentation

### **How to Integrate into Confluence:**

1. **Text Format**: Copy and paste the above markdown structure directly into a Confluence page.
2. **Diagram**: Upload the diagram generated in your workspace and link it appropriately within the documentation.
3. **Code Blocks**: Confluence supports code formatting, so you can use the built-in code block macro to format the Python and curl examples for readability.