Technical Guide

Bucket replication solutions

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SAMSUNG SDS

Contents

1. Overview

A bucket replication solution can be used if a backup or migration to a bucket in Object Storage is needed.

Users may perform bucket data replication using Ifsmover, and data replication (sync) with the S3 replication solution.

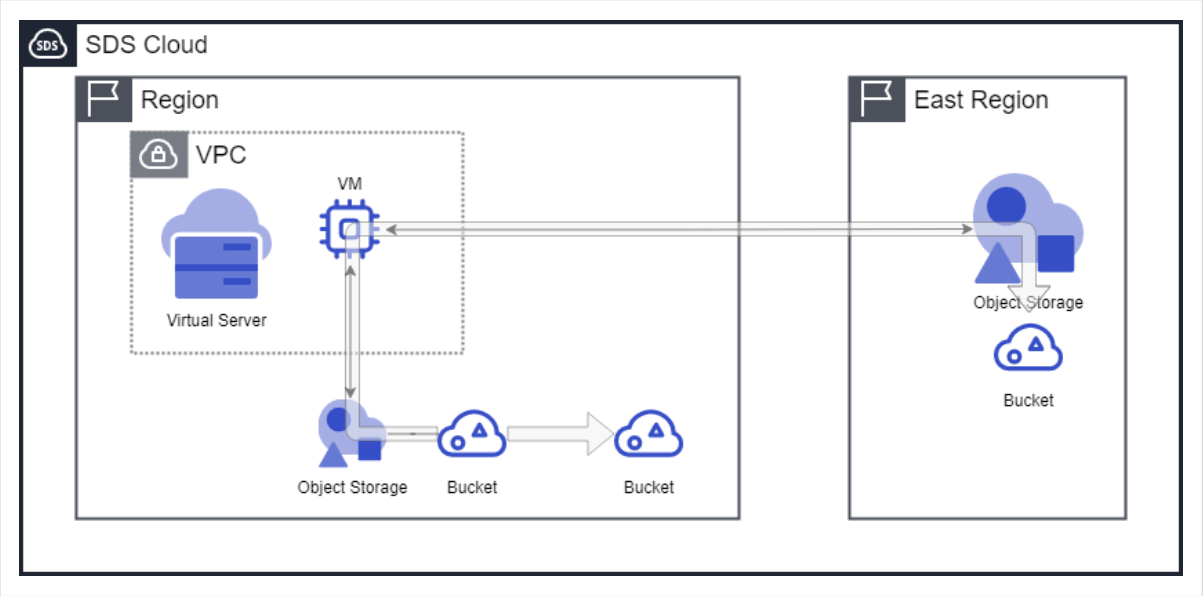

Figure 1. Architecture diagram of bucket replication

2. Installation guide

2.1 Installing Ifsmover

2.1.1 Download

Download files for build.

```
git clone https://github.com/infinistor/ifsmover.git
```

Download the distribution.

```
https://github.com/infinistor/ifsmover/releases
```

2.1.2 Installation guide for build

Check if maven has been installed with 'mvn -v', and if not, proceed with yum install -y maven installation.

If the mvn package command is entered in the location where the pom.xml file is located, the build begins. When the build is completed, ifs-mover.jar is created in the target folder.

Check if the folllowing 3 files below have been created.

- target/ifs-mover.jar : Execution file generated after source build
- script/ifs_mover : Script to run ifs-mover.jar
- script/ifs-mover.xml : Log file-related settings

2.1.3 Installation guide for distribution

Download, unzip and install the file.

```
# mkdir /usr/local/pspace
# mkdir /usr/local/pspace/bin
# cd /usr/local/pspace/bin
# wget "https://github.com/infinistor/ifsmover/releases/download/v0.x.x/
IfsMover-0.x.x.tar.gz"
# tar -xvf IfsMover-0.x.x.tar.gz
```

2.1.4 Installation directory

```
# cd /usr/local/pspace/bin/IfsMover
# vi source.conf
# vi target.conf
```

2.1.5 Config settings

source.conf

```
# mountpoint=/mnt/volume01/          : Mount Point
# endpoint=                          : http(https)://IP:Port | region
# access=                            : Access Key ID
# secret=                            : Secret Access Key
# bucket=                            : Bucket Name
# prefix=move_old_objects            : Prefix/Directory name to move
```

target.conf

```
# endpoint=                          : http(https)://IP:Port | region
# access=                            : Access Key ID
# secret=                            : Secret Access Key
# bucket=                            : Bucket Name
# prefix=move_old_objects            : Prefix/Directory name to save
```

2.2 Installing S3 replication

2.2.1 Creating Replication.json files

vi replication.json

```
{
    "Role": "",
    "Rules": [
        {
            "Status": "Enabled", // Enabled | Disabled
            "Priority": 1, //우선순위(현재 지원하지 않음)
            "DeleteMarkerReplication": { "Status": "Disabled" },// Enabled | Disabled
            "Filter" : { "Prefix": ""},
            "Destination": {
                "Bucket": "arn:aws:s3:Ip:AccessKey-SecretKey:BucketName"
            }
        }
    ]
}
```

- IP: IP address of the target system
- AccessKey: Access key of the target system
- SecretKey: Secret key of the target system

※ If the target is the same user in the same system, the above information is unnecessary.

2.2.2 Replicating all objects to bucket

```
{
    "Role": "",
    "Rules": [
        {
            "Status": "Enabled",
            "Priority": 1,
            "DeleteMarkerReplication": { "Status": "Disabled" },
            "Filter" : { "Prefix": ""},
            "Destination": {
                "Bucket": "arn:aws:s3:::bucket-full-copy-target"
            }
        }
    ]
}
```

2.2.3 Replicating only specific objects to bucket

```
{
    "Role": "",
    "Rules": [
        {
            "Status": "Enabled",
            "Priority": 1,
            "DeleteMarkerReplication": { "Status": "Disabled" },
            "Filter" : { "Prefix": "mytest/"},
            "Destination": {
                "Bucket": "arn:aws:s3:::bucket-copy-target"
            }
        }
    ]
}
```

2.2.4 Replicating all objects in bucket and clone delete markers

```
{
    "Role": "",
    "Rules": [
        {
            "Status": "Enabled",
            "Priority": 1,
            "DeleteMarkerReplication": { "Status": "Enabled" },
            "Filter" : { "Prefix": ""},
            "Destination": {
                "Bucket": "arn:aws:s3:::bucket-full-copy-and-del-target"
            }
        }
    ]
}
```

2.2.5 Replicating specific objects to bucket and clone delete markers

```
{
    "Role": "",
    "Rules": [
        {
            "Status": "Enabled",
            "Priority": 1,
            "DeleteMarkerReplication": { "Status": "Enabled" },
            "Filter" : { "Prefix": "mytest/"},
            "Destination": {
                "Bucket": "arn:aws:s3:::bucket-copy-and-del-target"
            }
        }
    ]
}
```

2.2.6 Pausing replication

```
{
    "Role": "",
    "Rules": [
        {
            "Status": "Disabled",
            "Priority": 1,
            "DeleteMarkerReplication": { "Status": "Disabled" },
            "Filter" : { "Prefix": ""},
            "Destination": {
                "Bucket": "arn:aws:s3:::bucket-full-copy-target"
            }
        }
    ]
}
```

2.2.7 Replicating all objects in bucket to a bucket in another system

```
{
    "Role": "",
    "Rules": [
        {
            "Status": "Enabled",
            "Priority": 1,
            "DeleteMarkerReplication": { "Status": "Disabled" },
            "Filter" : { "Prefix": ""},
            "Destination": {
                "Bucket": "arn:aws:s3:192.168.11.228::bucket-full-copy-target"
            }
        }
    ]
}
```

3. Detailed user guides

3.1 IfsMover usage guide

3.1.1 Validation of configuration files

```
#./ifs_mover -check -t=s3 -source=source.conf -target=target.conf
```

3.1.2 Performing replication

```
# ./ifs_mover -t=s3 -source=source.conf -target=target.conf
```

3.1.3 Checking replication status

```
# ./ifs_mover –status
```

3.1.4 Additional execution options

Move Objects

-t=nas|s3 // source type, NAS or S3
-source=source.conf // source configuration file path
-target=target.conf // target configuration file path
-o=ea, perm, time // object meta info(not yet implemented)
1) ea : save fils's extented attribute in S3 meta
2) perm : save file's permission(rwxrwxrwx) in S3 meta
744, READ permission granted to AUTHENTICATED_USER and PUBLIC
3) time : save file's C/M/A time in S3 meta
-thread=n // thread count

```
Stop job
  -jobstop=jobid                  // stop a job in progress
Remove Job
  -jobremove=jobid                // delete stopped job information
Rerun
  -rerun=jobid                    // function to execute only the DELTA part by performing it again
                                     based on the previously performed JOB information
    -source=source.conf           // source configuration file path
    -target=target.conf           // target configuration file path
    -thread= number               // thread count
Check
  -check                          // check source and target configuration
    -t=nas|s3                     // source type, NAS or S3
    -source=source.conf           // source configuration file path
    -target=target.conf           // target configuration file path
```

3.2 How to implement S3 replication

3.2.1 Creating source bucket

```
# aws s3api create-bucket --endpoint-url http://192.168.11.227:8080 --bucket bucket-source
```

3.2.2 Creating target bucket

```
# aws s3api create-bucket --endpoint-url http://192.168.11.227:8080 --bucket bucket-copy-target
```

3.2.3 Applying source bucket versioning

```
# aws s3api put-bucket-versioning --endpoint-url http://192.168.11.227:8080 --versioning-configuration Status=Enabled --bucket bucket-source
```

3.2.4 Applying target bucket versioning

```
# aws s3api put-bucket-versioning --endpoint-url http://192.168.11.227:8080 --versioning-configuration Status=Enabled --bucket bucket-copy-target
```

3.2.5 Bucket synchronization

```
# aws s3api put-bucket-replication \
  --bucket bucket-source \
  --replication-configuration file://replication.json \
  --endpoint-url http://192.168.11.227:8080
```

3.2.6 Checking bucket synchronization

```
# aws s3api get-bucket-replication \
  --bucket bucket-source \
  --endpoint-url http://192.168.11.227:8080
```

3.2.7 Delete bucket synchronization

```
# aws s3api delete-bucket-replication \
  --bucket bucket-source \
  --endpoint-url http://192.168.11.227:8080
```

3.3 Prerequisites

When using AWS CLI S3 replication, check the private ACL information of the bucket to be mounted in advance.

- Object Storage Endpoint, Access key ID, and secret access key

If access control is required, it can be set in two parts. In order to transfer the backup data to Object Storage to store the data in the Virtual Server located inside the VPC, it is necessary to set up communications between the Virtual Server and the VPC.

For this purpose, a Security Group (for Virtual Server or VPC) has to be configured.

- Source: IP address of Virtual Server
- Destination: IP address of Object Storage Endpoint
- Port: 80, 443 / TCP
- Direction: One way from Virtual Server to Object Storage

In Object Storage, users may also set the IP address to access in units of buckets.

- Target: Bucket to mount
- Settings: Public IP address of Virtual Server

4. Considerations

In summary, the S3 replication function synchronizes the modifications of the original file. During the initial replication, it must be synchronized after replication of the original through IfsMover.

Prior to implementing S3 replication, source and replication destination buckets must have been created, as well as versioning setting.