PENERAPAN MULTISITE PADA CEPH OBJECT GATEWAY

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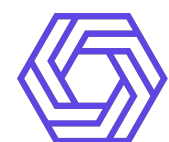
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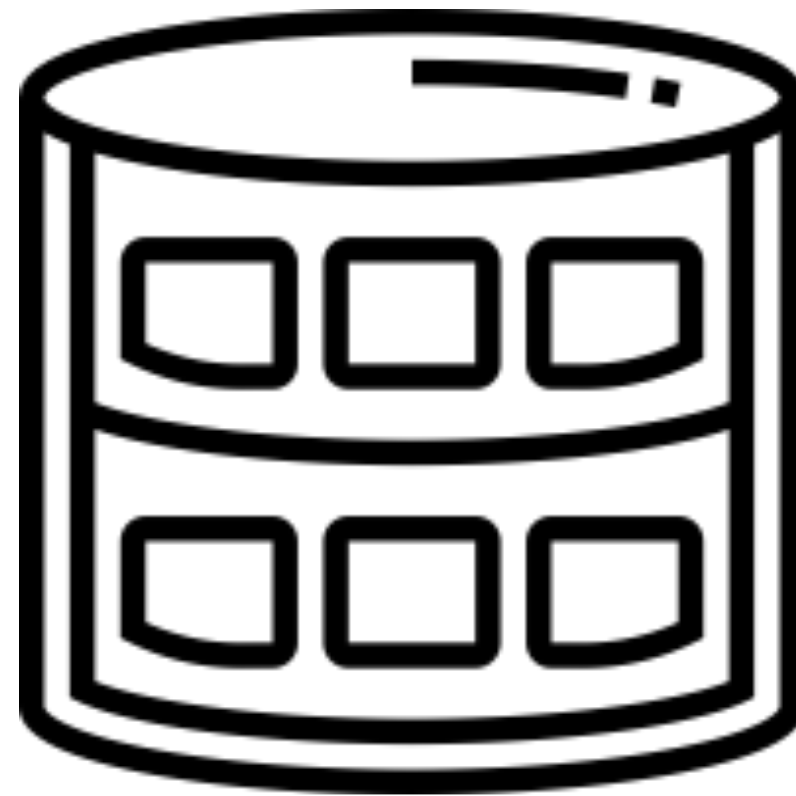
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OUTLINE

- Ceph Overview
- Ceph Object Storage
- Konsep Multisite Ceph Object Gateway
- Komponen Multisite
- Implementasi Multisite
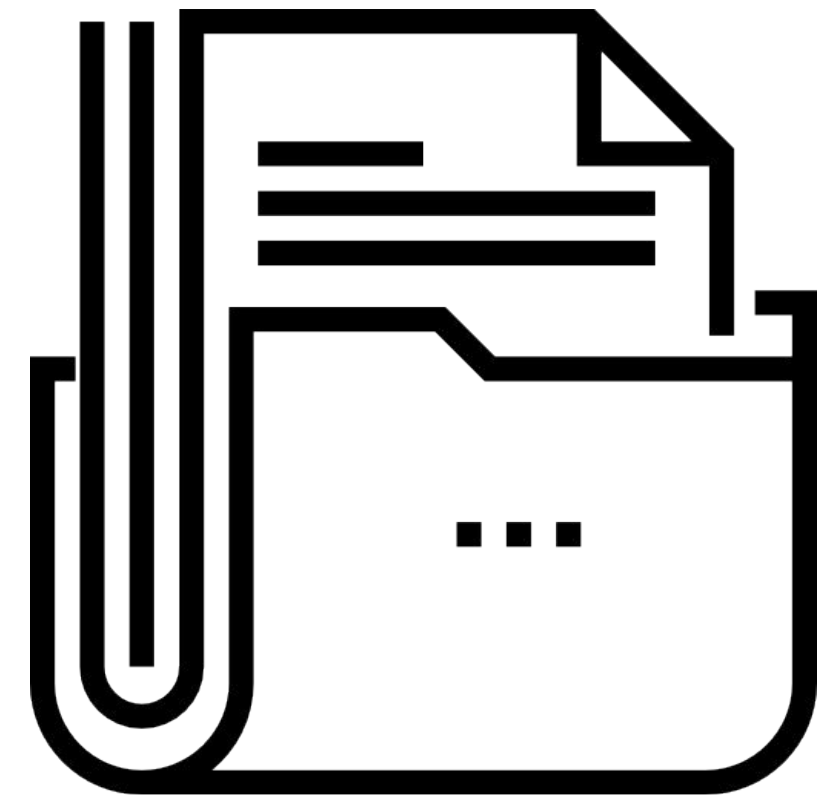- Topologi Implementasi Multisite
- Demo
- Q&A

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Ceph Overview

Object Storage
(via RGW)

Block Storage
(via RBD)

File Storage
(via CephFS)

Ceph Object Storage

- Layanan penyimpanan objek berbasis RADOS yang kompatibel dengan **S3** dan **Swift API**.

- Menggunakan komponen **RADOS Gateway (RGW)** untuk menyediakan akses **HTTP/HTTPS**.

- Data disimpan sebagai objek di dalam bucket, lengkap dengan metadata dan ID unik.

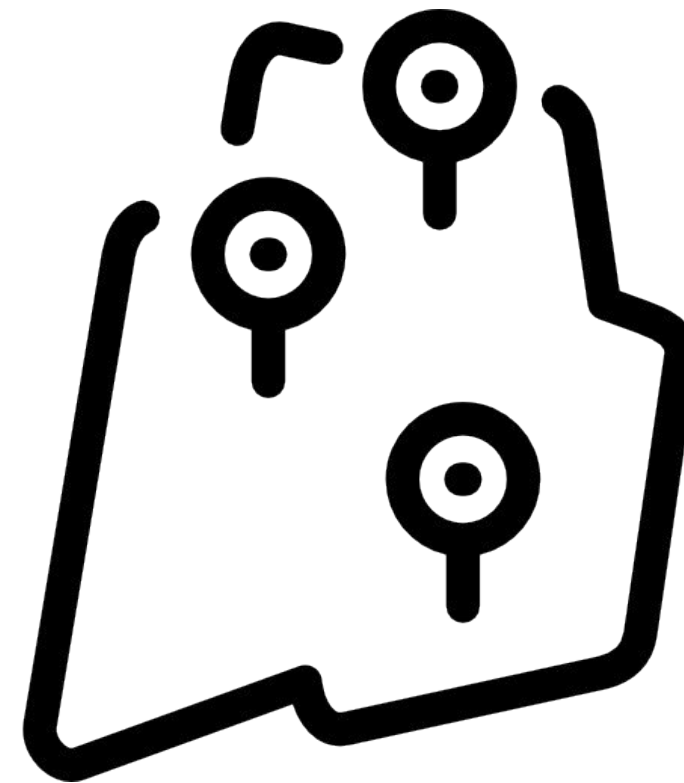- Memiliki fitur tambahan berupa **Multisite Replication.**

Konsep Multisite
Ceph Object Gateway

- Fitur replikasi **antar cluster Ceph RGW** (primer & sekunder)

- Sinkronisasi: bucket, objek, metadata, dan versi

- Menyediakan **redundansi geografis** dan **disaster recovery**

- Mendukung **replikasi dua arah** (bi-directional sync)

Komponen Multisite

REALM   ZONEGROUP   ZONE

Implementasi Multisite

Master Zone (Primary Cluster)

● Create Realm, Zonegroup dan Zone

```
# radosgw-admin realm create --rgw-realm={realm-name} [--default]
# radosgw-admin zonegroup create --rgw-zonegroup={name} --endpoints={url} --master --default
# radosgw-admin zone create --rgw-zonegroup={zone-group-name} --rgw-zone={zone-name} --master --default --endpoints={http://fqdn}
```

● Create User System untuk replikasi multisite

```
# radosgw-admin user create --uid="{user-name}" --display-name="{Display Name}" --system
# radosgw-admin zone modify --rgw-zone={zone-name} --access-key={access-key} --secret={secret}
# radosgw-admin period update --commit
```

● Restart RGW Service

Implementasi Multisite

Secondary Zone (Secondary Cluster)

- Pull Realm dan Create Secondary Zone

```
# radosgw-admin realm pull --url={url-to-master-zone-gateway} --access-key={access-key} --secret={secret}
# radosgw-admin realm default --rgw-realm={realm-name}
# radosgw-admin zone create --rgw-zonegroup={zone-group-name} --rgw-zone={zone-name} --access-key={system-key} --secret={secret}  \
       --endpoints=http://{fqdn}:80 [--read-only]
# radosgw-admin period update --commit
```

- Restart RGW Service

Verifikasi Multisite

Master Zone →

```
root@multisite-dc4-ceph-rgw2:/home/ubuntu# radosgw-admin sync status --rgw-realm jbbk-tdn-realm
          realm 49a38353-8db6-4ca5-85fe-ebb5f81eea8b (jbbk-tdn-realm)
      zonegroup e3a75ced-b44a-4e68-8ad6-2e74b01f8348 (jbbk-tdn-zonegroup)
           zone 6f8dcc2f-a41b-4b80-b0a0-525a5fc75919 (jbbk-zone)
   current time 2025-07-15T04:20:20Z
zonegroup features enabled: notification_v2,resharding
               disabled: compress-encrypted
  metadata sync no sync (zone is master)
      data sync source: ad67d259-71af-419c-9e6c-8503c9dafd39 (tdn-zone)
                        syncing
                        full sync: 0/128 shards
                        incremental sync: 128/128 shards
                        data is caught up with source
```

```
root@multisite-dc3-ceph-rgw2:/home/ubuntu# radosgw-admin sync status --rgw-realm jbbk-tdn-realm
          realm 49a38353-8db6-4ca5-85fe-ebb5f81eea8b (jbbk-tdn-realm)
      zonegroup e3a75ced-b44a-4e68-8ad6-2e74b01f8348 (jbbk-tdn-zonegroup)
           zone ad67d259-71af-419c-9e6c-8503c9dafd39 (tdn-zone)
   current time 2025-07-15T04:20:34Z
zonegroup features enabled: notification_v2,resharding
               disabled: compress-encrypted
  metadata sync syncing
                full sync: 0/64 shards
                incremental sync: 64/64 shards
                metadata is caught up with master
      data sync source: 6f8dcc2f-a41b-4b80-b0a0-525a5fc75919 (jbbk-zone)
                        syncing
                        full sync: 0/128 shards
                        incremental sync: 128/128 shards
                        data is caught up with source
```

← Secondary Zone

Failover

Secondary Zone (Secondary Cluster)

● Modify Secondary Zone sebagai Master Zone

```
# radosgw-admin zone modify --rgw-zone={zone-name} --master --default [--read-only=false]
# radosgw-admin period update --commit
```

● Restart RGW Service

Revert Failover

Recovery Zone

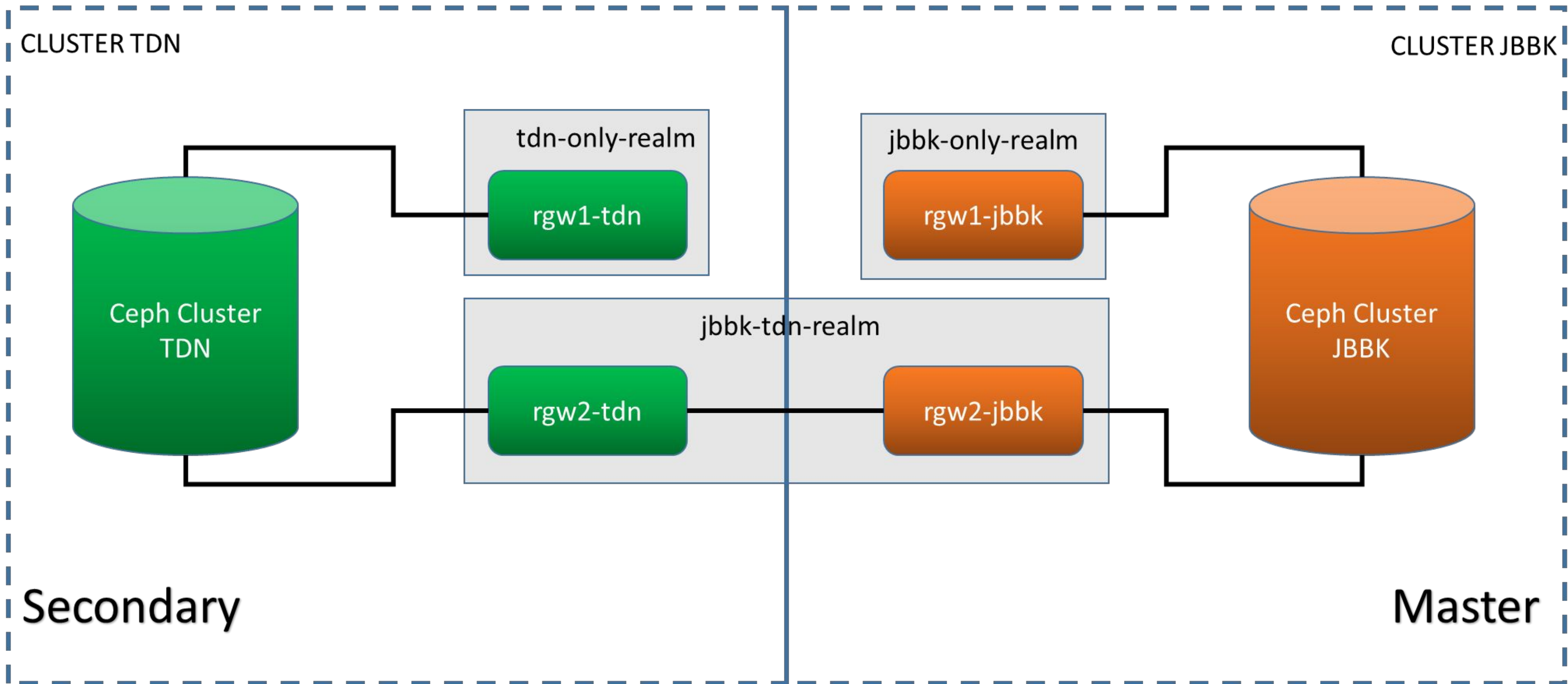- Pull Realm dan Modify Recovery Zone sebagai Master Zone

```
# radosgw-admin realm pull --url={url-to-master-zone-gateway}  --access-key={access-key} --secret={secret}
# radosgw-admin zone modify --rgw-zone={zone-name} --master --default
# radosgw-admin period update --commit
```
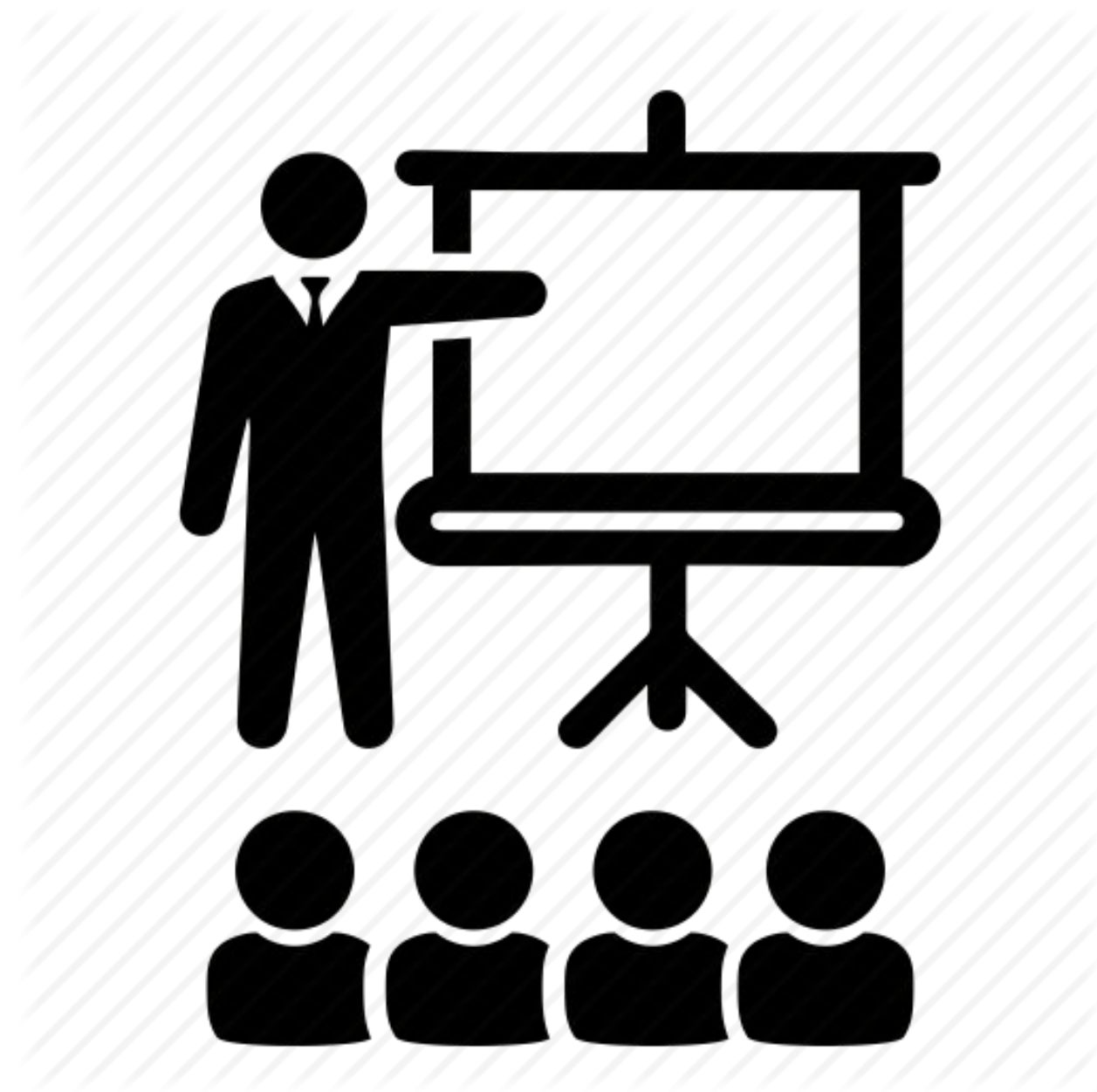
- Restart RGW Service

```
Note: Jika Secondary Zone perlu diset sebagai read-only jalankan command berikut pada secondary cluster
# radosgw-admin zone modify --rgw-zone={zone-name} --read-only
# radosgw-admin period update --commit
```
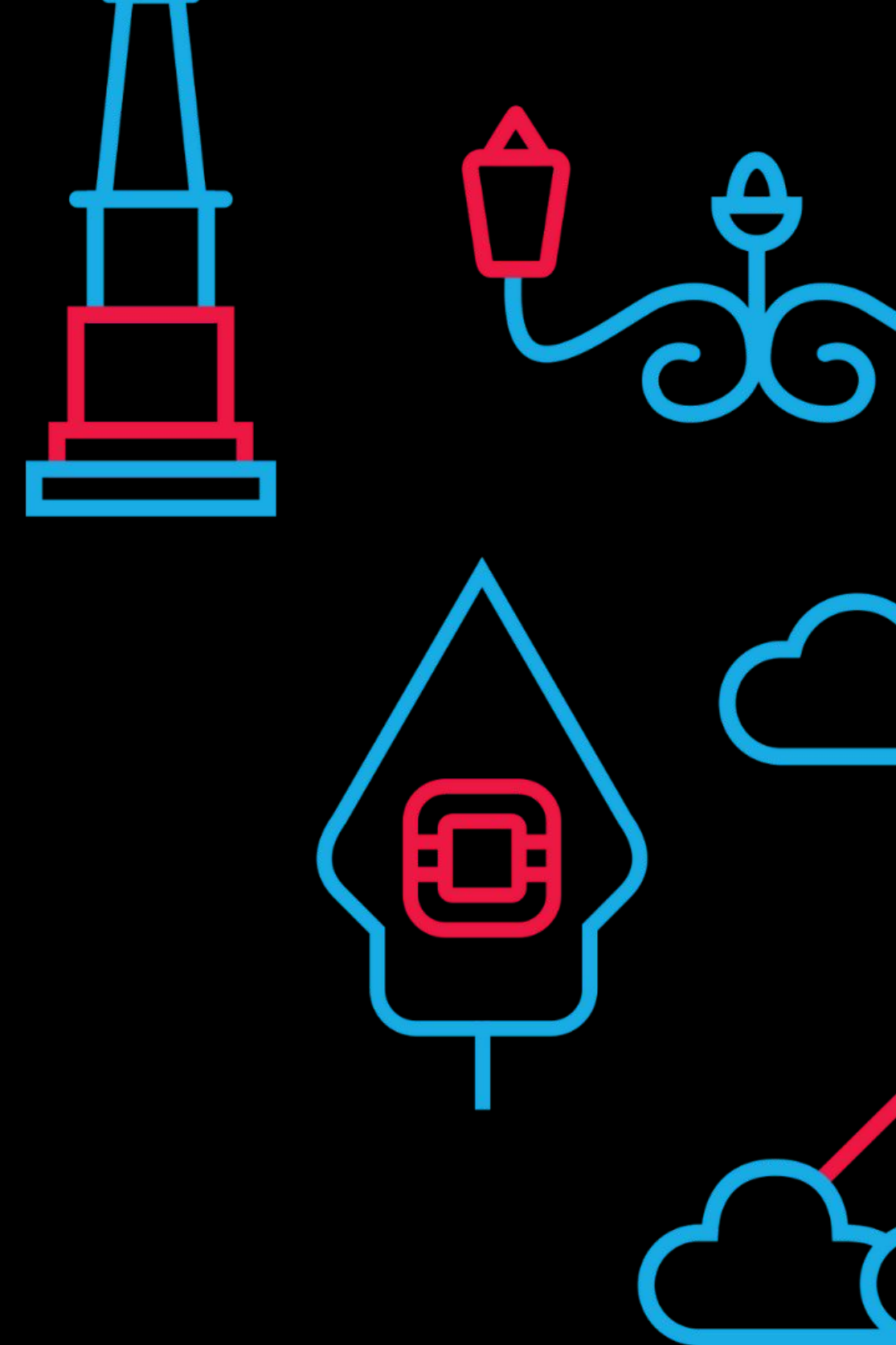
Topologi Implementasi Multisite

DEMO

THANK YOU