Cross-Org GCS Transfers via STS + Composer with VPC-SC

This guide outlines how to securely configure VPC Service Controls (VPC-SC) for GCS-to-GCS transfers between:

- Org1 / Project A / Bucket: five9
- Org2 / Project B / Bucket: cdmp

Transfers are triggered by Composer DAGs using Storage Transfer Service (STS) in push and pull modes.

VPC-SC Setup: five9 to cdmp (Push & Pull)

Use Case:

- Push: Org1/Project A/Composer triggers STS to transfer files from five9 (source) to cdmp (destination)
- Pull: Org2/Project B/Composer triggers STS to pull from five9 to cdmp

Required Setup for Both Directions:

1. Enable Required APIs:
   - storage.googleapis.com (GCS)
   - storagetransfer.googleapis.com (STS)

2. Add All Involved Projects into a Common VPC-SC Perimeter:
   - Project A (Composer, Source Bucket: five9)
   - Project B (Destination Bucket: cdmp)

3. Add Services to the VPC-SC Perimeter:
   - storage.googleapis.com
   - storagetransfer.googleapis.com

4. IAM Setup:
   - Composer SA in push project (e.g. Project A) needs:
     - storagetransfer.admin
     - storage.objectViewer on five9
     - storage.objectCreator on cdmp
   - STS Service Account:
     - roles/storage.objectViewer on five9
     - roles/storage.objectCreator on cdmp

5. If Projects Are in Different Perimeters:
   - Use Access Levels (allow SA identity)
   - Configure Egress Policies between orgs/projects

6. STS Job Type:

- Use pre-created STS job

- Trigger using Composer DAG via `transferJobs().run(...)`

- Use prefix filtering (`includePrefixes`) and timestamp filtering via DAG

VPC-SC Ingress and Egress Rules (Detailed)

When using separate VPC-SC perimeters for Org1 and Org2, STS job execution must be explicitly allowed via ingress and egress policies.

Ingress Policy (for Pull: Org2 pulling from Org1):

- Perimeter Target: Project A (Org1, five9 bucket)
- Direction: INGRESS
- Identity Type: Service Account (Composer SA or STS SA from Org2)
- Access Level: Create Access Level including allowed identities
- Allowed Services:
  - storage.googleapis.com
  - storagetransfer.googleapis.com
- Example Access Level Expression:

principal://iam.googleapis.com/projects/PROJECT-NUMBER/serviceAccounts/your-composer-sa@project.iam.gserviceaccount.com

Egress Policy (for Push: Org1 pushing to Org2):

- Perimeter Target: Project B (Org2, cdmp bucket)
- Direction: EGRESS
- Destination: All Projects or specific Project B
- Identity Type: Service Account (Composer SA or STS SA in Org1)
- Services:
  - storage.googleapis.com
  - storagetransfer.googleapis.com
- Recommended Condition:
  - Source: Project A
  - Identity in Access Level: true
- Enable `use_restrictions` and test using dry-run before enforcing

Best Practice:

- Monitor Cloud Audit Logs for denied VPC-SC events (policyDenied)

- Avoid wildcard-based access; use fine-grained access levels

- Work with Org Policy Admins to get cross-org access policies reviewed

Diagram: Single-Direction STS Workflow

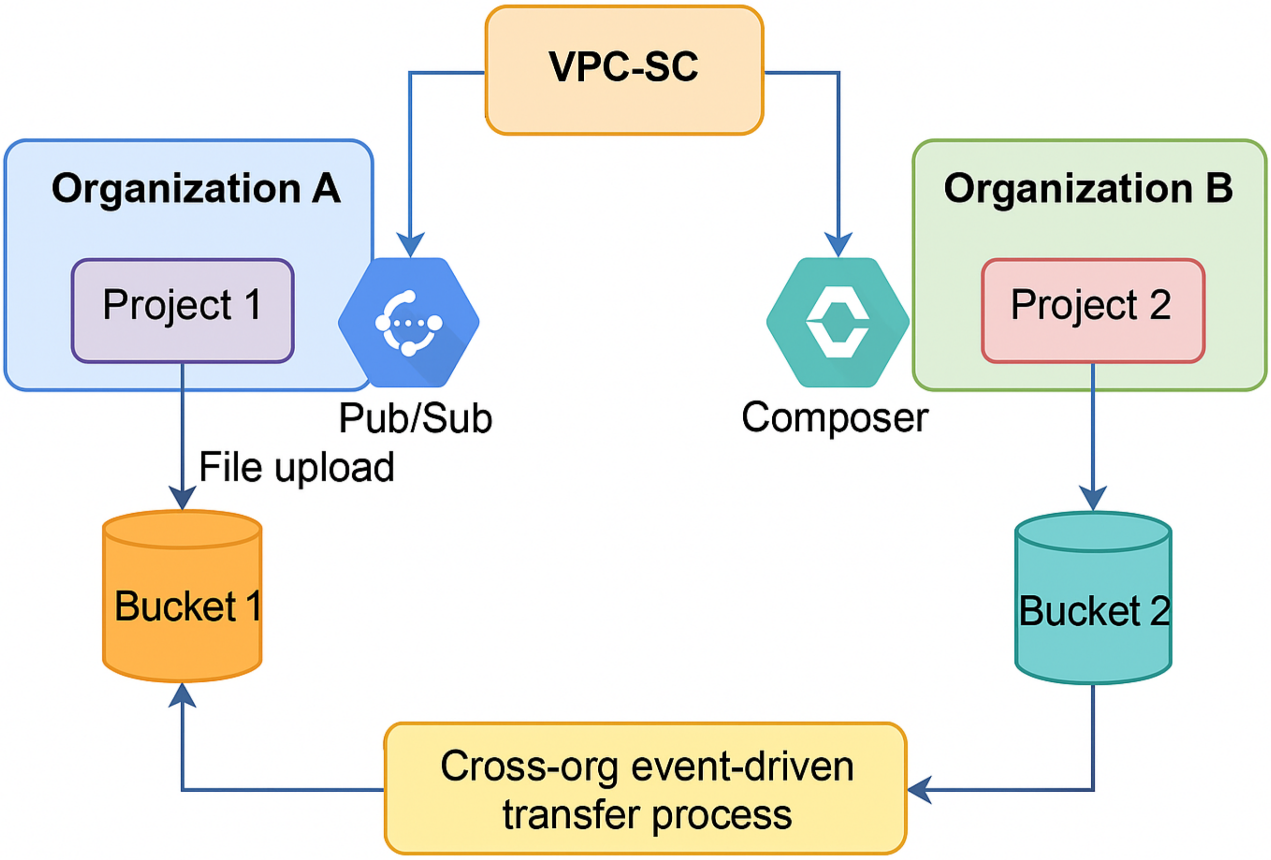
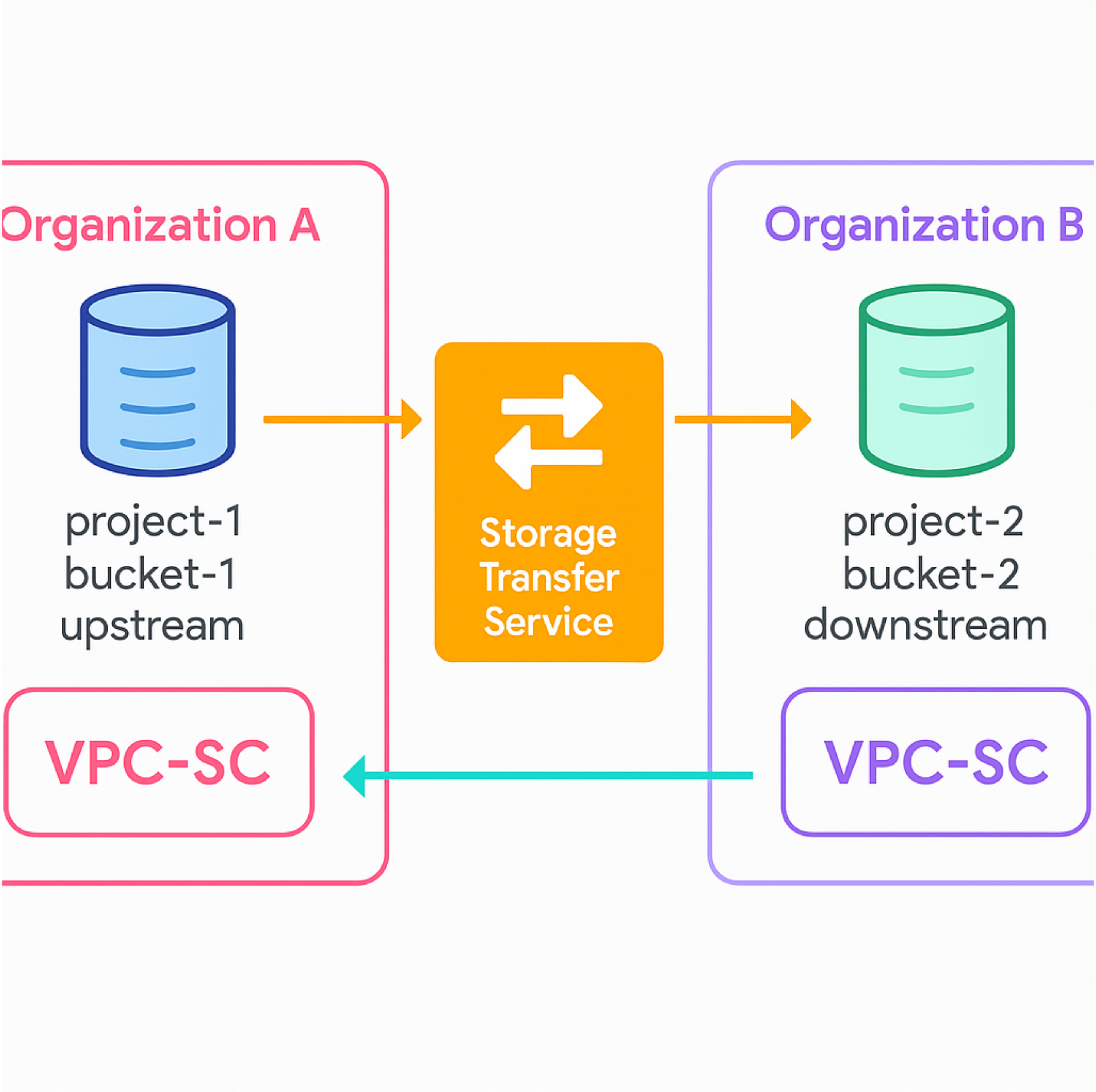


Diagram: Push & Pull STS Workflow (five9 <-> cdmp)


Organization A
project-1
bucket-1
upstream
VPC-SC
Storage
Transfer
Service
Organization B
project-2
bucket-2
downstream
VPC-SC