

# Step-by-Step Implementation

## Step 1: Primary Bucket Creation

### What was done:

- Created S3 bucket: shloka-backup-origin in ap-south-1
- Enabled Block all public access
- Enabled Versioning during Bucket Creation
- Configured SSE-S3 encryption

### Why was it done

Versioning is required to maintain object history for replication functionality. The primary bucket serves as the source of truth for backup data with all security measures in place.

The screenshot shows the AWS S3 console interface for the 'shloka-backup-origin' bucket. The 'Properties' tab is selected. In the 'Bucket overview' section, the ARN is listed as 'arn:aws:s3:::shloka-backup-origin'. The 'Creation date' is December 3, 2025, 10:57:26 (UTC+05:30). In the 'Bucket Versioning' section, there is a note about versioning and a link to learn more. Below it, 'Bucket Versioning' is set to 'Enabled', indicated by a red arrow. In the 'Multi-factor authentication (MFA) delete' section, 'Enabled' is also indicated by a red arrow. Other sections shown include 'Bucket ABAC' (disabled) and 'Tags'.

## Step 2: Destination Bucket Creation (N. Virginia)

### What was done:

- Created S3 bucket: shloka-backup-destination in us-east-1

- Enabled Block all public access
- Enabled Versioning during Bucket Creation
- Configured SSE-S3 encryption

### Why was it done

Geographic diversity between Mumbai (ap-south-1) and N. Virginia (us-east-1) ensures that regional failures do not impact data availability. Cross-region replication achieves 11 9's durability.

Buckets created:

The screenshot shows the Amazon S3 console with the 'General purpose buckets' tab selected. A search bar at the top contains the query 'shloka'. Below the search bar, there are two buckets listed:

Name	AWS Region	Creation date
shloka-backup-destination	US East (N. Virginia) us-east-1	December 3, 2025, 10:59:14 (UTC+05:30)
<b>shloka-backup-origin</b>	Asia Pacific (Mumbai) ap-south-1	December 3, 2025, 10:57:26 (UTC+05:30)

## Step 3: Replication Rule Configuration

### What was done:

- Created replication rule: prod-objects-replication
- Configured tag-based filter: env=prod
- Enabled delete marker replication
- Configured for existing objects
- Checked auto assign IAM role

### How was it done

- Navigated through the console
- Amazon S3 → Origin Bucket → Management → Replication rule

The screenshot shows the Amazon S3 Management console. The top navigation bar has 'Amazon S3' and 'Buckets' selected. Below it, the bucket name 'shloka-backup-origin' is displayed. A horizontal menu bar includes 'Objects', 'Metadata', 'Properties', 'Permissions', 'Metrics', 'Management' (which is underlined in blue), and 'Access Points'. The main content area is titled 'shloka-backup-origin'.

## Why was it done

- Tag-based filtering ensures only production objects replicate, reducing costs while maintaining critical data protection. This selective approach optimizes both storage and bandwidth

The screenshot shows the 'Replication rules' section of the Amazon S3 Management console. It displays a single replication rule named 'shloka-replicate-rule'. The rule summary shows it is enabled with a priority of 0. The 'Source bucket' section shows 'shloka-backup-origin' as the source bucket and 'Asia Pacific (Mumbai) ap-south-1' as the source region. The 'Destination' section shows 'shloka-backup-destination' as the destination bucket and 'US East (N. Virginia) us-east-1' as the destination region. Arrows point to the 'Source bucket' name and 'Tags' section, which contains 'Key: env, Value: prod'. The 'Destination' section also has an arrow pointing to the 'Destination bucket name'.

## Step 4: Bucket Lifecycle Configuration

### What was done:

- Created lifecycle rule: intelligent-tiering-transition
- Configured 60-day transition to INTELLIGENT\_TIERING
- Configured 30-day noncurrent version expiration

### How was it done

- Navigated through the console
- Amazon S3 → Origin Bucket → Management → Life Cycle

### Why was it done

- These tiered actions optimize costs while maintaining data availability and compliance. The 60-day transition to INTELLIGENT\_TIERING reflects typical

backup access patterns.

The screenshot shows the 'Lifecycle rule configuration' section for the 'shloka-lifecycle-prod' rule. It includes fields for 'Lifecycle rule name' (shloka-lifecycle-prod), 'Status' (Enabled), and 'Scope' (Entire bucket). The 'Review transition and expiration actions' section lists 'Current version actions' (Day 0: Objects uploaded; Day 60: Objects move to Intelligent-Tiering) and 'Noncurrent versions actions' (Day 0: Objects become noncurrent; Day 30: 0 newest noncurrent versions are retained, all others move to Intelligent-Tiering). An arrow points to the 'Current version actions' section.

## Step 5 : Uploading Objects

### What was done:

- Uploaded 3 objects in the shloka-backup-origin

The screenshot shows the 'Objects' list for the 'shloka-backup-origin' bucket. It displays three objects: 'v1index.html', 'v2index.html', and 'v3index.html', all of which are HTML files. The objects were uploaded on December 3, 2025, at different times. The 'Actions' dropdown menu is open, showing options like Copy S3 URI, Copy URL, Download, Open in, Delete, and Upload.

- While uploaded objects, added tags to each of them individually
  - v1index.html - env:prod
  - v2index.html - env:prod
  - v3index.html - env:test

Name	Type	Last modified	Size	Storage class
v1index.html	html	December 3, 2025, 11:19:02 (UTC+05:30)	301.0 B	Standard
v2index.html	html	December 3, 2025, 11:19:27 (UTC+05:30)	988.0 B	Standard
v3index.html	html	December 3, 2025, 11:19:51 (UTC+05:30)	1.4 KB	Standard

# Testing & Validation

## Test 1: Replication Rule Functionality

**Objective** - Verify that only env=prod tagged objects replicate

**Verdict** - Passed. Only v1index.html and v2index.html were replicated

Name	Type	Last modified	Size	Storage class
v1index.html	html	December 3, 2025, 11:19:02 (UTC+05:30)	301.0 B	Standard
v2index.html	html	December 3, 2025, 11:19:27 (UTC+05:30)	988.0 B	Standard
v3index.html	html	December 3, 2025, 11:19:51 (UTC+05:30)	1.4 KB	Standard