

# GCS FUSE Setup Complete - No Code Changes Required!

---

## What I Did

---

I analyzed your entire codebase and confirmed that **ZERO code changes are needed** to implement persistent file storage using Google Cloud Storage FUSE volumes.

## Why No Code Changes?

---

Your code already uses standard filesystem operations:




```
// Your existing code in app/api/comments/route.ts
const uploadsDir = path.join(process.cwd(), 'uploads', 'comments')
await writeFile(path.join(uploadsDir, filename), buffer)

// Your existing code in app/api/files/[...filename]/route.ts
const uploadsDir = path.join(process.cwd(), 'uploads')
const fileBuffer = await readFile(filepath)
```

When we mount the GCS bucket to `/app/nextjs_space/uploads`, these operations automatically use cloud storage instead of local disk. It's completely transparent to your code!

## Files Verified

---

-  `app/api/comments/route.ts` - Comment attachments (line 105)
-  `app/api/files/[...filename]/route.ts` - File serving (line 25)
-  `app/api/reports/create/route.ts` - Report attachments (line 72)

All use `process.cwd() + '/uploads'` which automatically maps to the mounted GCS bucket.

## What You Need To Do

---

Follow the complete GUI guide in: `GCS_SETUP_GUIDE.md`

### Quick Summary (15-30 minutes):

1. **Create GCS Bucket** (3 min)
  - Name: `hotel-shift-log-uploads`
  - Region: Same as Cloud Run
  - Storage class: Standard
2. **Grant Permissions** (2 min)
  - Service account: `143559442445-compute@developer.gserviceaccount.com`
  - Role: Storage Object Admin
3. **Mount to Cloud Run** (5 min)
  - Volume: uploads
  - Bucket: hotel-shift-log-uploads

- Mount path: `/app/nextjs_space/uploads`
- Enable Gen2 execution environment

#### 4. **Test** (5 min)

- Upload file via app
- Check it appears in GCS bucket
- Redeploy and verify files persist

## Benefits You'll Get

Before (Local Storage)	After (GCS FUSE)
✗ Files lost on redeploy	✓ Files persist forever
✗ Files lost on crash	✓ Files survive crashes
✗ Single instance only	✓ Works with multiple instances
✗ No backups	✓ Automatic durability
✗ Limited by disk size	✓ Unlimited storage
💰 Free but unreliable	💰 ~\$0.02/GB/month

## Cost Example

- 1GB of files: **\$0.02/month** (2 cents)
- 10GB of files: **\$0.20/month** (20 cents)
- 100GB of files: **\$2.00/month** (2 dollars)

For a typical hotel with 100 reports/month, each with 2-3 attachments averaging 500KB:

- Monthly: ~1.5GB
- **Cost: \$0.03/month** (3 cents)

## Testing Checklist






After setup, verify:

- [ ] Upload a file via employee report
- [ ] File appears in GCS bucket
- [ ] Can view/download the file in app
- [ ] Add comment with attachment
- [ ] File appears in `comments/` folder in GCS
- [ ] Redeploy the service
- [ ] Files still accessible after redeploy ✨

## Troubleshooting

---

If something doesn't work, check:

1.  Service account has "Storage Object Admin" permission
2.  Mount path is exactly `/app/nextjs_space/uploads`
3.  Execution environment is "Gen 2" (second generation)
4.  Bucket is in same region as Cloud Run
5.  Volume is not mounted as read-only






## Next Steps

---

1. **First:** Fix the Secret Manager permissions issue (from `why_did_this_happen.md` )
2. **Second:** Set up GCS volumes (this guide)
3. **Third:** Deploy and test!

## Documents Available

---

-  **GCS\_SETUP\_GUIDE.md** - Complete step-by-step GUI instructions
-  **why\_did\_this\_happen.md** - Deployment error analysis
-  **FILE\_STORAGE\_OPTIONS.md** - Comparison of all storage options
-  **DEPLOYMENT\_CHECKLIST.md** - Updated with secret permissions
-  **SETUP\_SUMMARY.md** - This document

All documents have PDF versions available!

---

**Bottom line:** Your code is already perfect for GCS FUSE. Just follow the GUI guide to configure Cloud Run, and you're done! 🎉