

Deployment Runbooks

Operational runbooks for staging, demo, and production deployments across ALAI products

- [Bilko Stage→Demo→Prod Cutover Runbook](#)

Bilko Stage?Demo?Prod Cutover Runbook

Bilko Stage?Demo?Prod Cutover Runbook

Document ID: BILKO-RUNBOOK-001

Last Updated: 2026-05-10

Owner: Skillforge (ALAI Holding AS)

Status: Active

Purpose

This runbook documents the promotion path from Bilko `stage` environment to `demo` and eventually `prod`. It incorporates all changes delivered in Rounds 11-27, including massive test coverage expansion, 7+ production bug fixes, RBAC enforcement, permanent CORS configuration, and database migrations V14-V20.

Context: As of 2026-05-10, Bilko stage is on revision `00185-fay` (image `stage-3a4a9e9`). Demo environment has only a subset of these changes. Prod does not exist as a separate environment yet and currently uses demo as customer-facing.

1. Pre-Cutover Checklist

Complete ALL items before proceeding with cutover:

Item	Verification Command	Success Criteria	Status
High/Blocker MCs Resolved	<pre>node ~/system/tools/mc.js list --project bilko -- priority H,BLOCKER --status open</pre>	0 open tasks, or all explicitly waived by CEO	<input type="checkbox"/>

Item	Verification Command	Success Criteria	Status
Cloud Build Health	<code>gcloud builds list --project=tribal-sign-487920-k0 --limit=5 --filter="source.repoSource.branchName=main"</code>	Last 5 builds on main = SUCCESS	<input type="checkbox"/>
Coverage Gate	<code>cd apps/api && ./gradlew koverVerify</code>	Exit code 0 (current threshold $\geq 60\%$)	<input type="checkbox"/>
E2E Regression Tests	<code>cd apps/web && npm run test:e2e</code>	Phase A pass rate $\geq 50\%$ (Round 24 regression specs)	<input type="checkbox"/>
Database Backup	<code>gcloud sql backups create --instance=bilko-demo-db --project=tribal-sign-487920-k0</code>	Backup ID returned + status=SUCCESSFUL	<input type="checkbox"/>
CEO Sign-Off	MC task comments or Slack approval	Explicit approval captured with timestamp	<input type="checkbox"/>

2. Database Migration Plan (V14-V20)

Flyway migrations are applied automatically when Cloud Run starts. This section documents migration order and critical dependencies.

Migration Sequence

Version	Description	MC Reference	Critical Notes
V14	Demo + CI test seed	Round 12.7	Creates demo@bilko.rs user + test tenant for CI
V15	Trial fields (plan_tier, trial_start, trial_end)	MC #100326	Adds subscription trial mechanic to organizations table
V16	RLS column widening (country constraint)	MC #100406	Expands country VARCHAR to support TaxJurisdiction enum values
V17	RLS PERMISSIVE policies	MC #100387	REQUIRES: bilko_app role exists. V17 includes idempotent <code>CREATE ROLE IF NOT EXISTS bilko_app</code> block (Round 25 fix)
V18	InvoiceStatus enum	MC #100406 (drugi agent)	Creates PostgreSQL ENUM for invoice states (DRAFT, SENT, PAID, etc.)

Version	Description	MC Reference	Critical Notes
V19	ExpenseStatus enum	MC #100406 (drugi agent)	Creates PostgreSQL ENUM for expense states (DRAFT, APPROVED, PAID, etc.)
V20	Demo org name fix	Round 25	Updates demo organization name to "Bilko Demo Firma" (Croatian/Serbian localization)

Migration Execution

Migrations are applied automatically by Flyway during Cloud Run startup via `FlywayPlugin` in `apps/api/src/main/kotlin/no/alai/bilko/Application.kt`.

Manual Verification After Deployment:

```
# Connect to bilko-demo-db
gcloud sql connect bilko-demo-db --user=bilko_admin --project=tribal-sign-487920-k0

# Check Flyway schema history
SELECT version, description, success, installed_on
FROM flyway_schema_history
ORDER BY installed_rank DESC
LIMIT 10;

# Verify V20 demo org name
SELECT id, name FROM organizations WHERE name = 'Bilko Demo Firma';
```

3. Cloud Run Image Promotion Sequence

Stage ? Demo Promotion

Current State (2026-05-10):

- **Stage API:** `bilko-api-stage` — image `europa-north1-docker.pkg.dev/tribal-sign-487920-k0/bilko/api:stage-3a4a9e9`
- **Demo API:** `bilko-api-demo` — image TBD (promote from stage)

- **Stage Web:** bilko-web-stage — image europe-north1-docker.pkg.dev/tribal-sign-487920-k0/bilko/web:stage-<SHA>
- **Demo Web:** bilko-web-demo — image TBD (promote from stage)

Promotion Commands

API Service

```
# Get current stage image SHA
STAGE_SHA=$(gcloud run services describe bilko-api-stage \
  --region=europe-north1 \
  --project=tribal-sign-487920-k0 \
  --format='value(spec.template.spec.containers[0].image)' | \
  awk -F':' '{print $2}')

echo "Promoting API image: stage-`${STAGE_SHA}`"

# Promote to demo (use gcloud-write.sh for safety)
bash ~/system/tools/gcloud-write.sh --mc 100424 run services update bilko-api-demo \
  --region=europe-north1 \
  --project=tribal-sign-487920-k0 \
  --image=europe-north1-docker.pkg.dev/tribal-sign-487920-k0/bilko/api:stage-`${STAGE_SHA}`
```

Web Service

```
# Get current stage web image SHA
WEB_SHA=$(gcloud run services describe bilko-web-stage \
  --region=europe-north1 \
  --project=tribal-sign-487920-k0 \
  --format='value(spec.template.spec.containers[0].image)' | \
  awk -F':' '{print $2}')

echo "Promoting Web image: stage-`${WEB_SHA}`"

# Promote to demo
bash ~/system/tools/gcloud-write.sh --mc 100424 run services update bilko-web-demo \
  --region=europe-north1 \
  --project=tribal-sign-487920-k0 \
  --image=europe-north1-docker.pkg.dev/tribal-sign-487920-k0/bilko/web:stage-`${WEB_SHA}`
```

Traffic Shift (Gradual Rollout)

If gradual rollout is needed:

```
# Split traffic 10% new revision, 90% old
bash ~/system/tools/gcloud-write.sh --mc 100424 run services update-traffic bilko-api-demo \
  --region=europe-north1 \
  --project=tribal-sign-487920-k0 \
  --to-revisions=bilko-api-demo-00186-xyz=10,bilko-api-demo-00185-abc=90

# After soak period (30 min), shift to 100%
bash ~/system/tools/gcloud-write.sh --mc 100424 run services update-traffic bilko-api-demo \
  --region=europe-north1 \
  --project=tribal-sign-487920-k0 \
  --to-latest
```

4. Cloudflare DNS + CORS Verification

DNS Configuration

Demo Environment URLs:

- **API:** `https://bilko-demo-api.alai.no` → Cloud Run `bilko-api-demo`
- **Web:** `https://bilko-demo.alai.no` → Cloud Run `bilko-web-demo`

DNS records managed in Cloudflare dashboard under `alai.no` zone.

CORS Configuration

Permanent CORS fix delivered in Round 12.8 (PR #110, MC #100297):

CORS_ORIGINS env var is permanently set in `cloudbuild-stage.yaml` and `cloudbuild-demo-api.yaml`:

```
- name: 'gcr.io/cloud-builders/gcloud'
  args:
    - 'run'
    - 'services'
    - 'update'
    - 'bilko-api-demo'
```

```
- '--region=europe-north1'  
- '--update-env-vars=CORS_ORIGINS=https://bilko-demo.alai.no,http://localhost:3000'
```

CORS Preflight Verification

```
# Test CORS preflight from demo domain  
curl -X OPTIONS https://bilko-demo-api.alai.no/auth/login \  
-H "Origin: https://bilko-demo.alai.no" \  
-H "Access-Control-Request-Method: POST" \  
-H "Access-Control-Request-Headers: Content-Type" \  
-v  
  
# Expected headers in response:  
# Access-Control-Allow-Origin: https://bilko-demo.alai.no  
# Access-Control-Allow-Methods: GET, POST, PUT, DELETE, OPTIONS  
# Access-Control-Allow-Headers: Content-Type, Authorization  
# Access-Control-Allow-Credentials: true
```

5. Rollback Procedure

Cloud Run Rollback

Cloud Run keeps all previous revisions for 60 days. Rollback shifts traffic to a previous stable revision.

```
# List recent revisions  
gcloud run revisions list \  
--service=bilko-api-demo \  
--region=europe-north1 \  
--project=tribal-sign-487920-k0 \  
--limit=10  
  
# Identify previous stable revision (e.g., bilko-api-demo-00185-fay)  
PREV_REV="bilko-api-demo-00185-fay"  
  
# Rollback to previous revision  
bash ~/system/tools/gcloud-write.sh --mc 100424 run services update-traffic bilko-api-demo \  
--revision=$PREV_REV
```

```
--region=europe-north1 \  
--project=tribal-sign-487920-k0 \  
--to-revisions=${PREV_REV}=100
```

Database Rollback

CRITICAL: Flyway migrations are forward-only. There is NO automatic rollback for schema changes.

If V17+ RLS Policies Cause Issues:

```
-- Disable RLS policies manually (Cloud SQL console or psql)  
DROP POLICY IF EXISTS org_isolation ON invoices;  
DROP POLICY IF EXISTS org_isolation ON expenses;  
DROP POLICY IF EXISTS org_isolation ON contacts;  
DROP POLICY IF EXISTS org_isolation ON transactions;  
DROP POLICY IF EXISTS org_isolation ON bank_accounts;  
DROP POLICY IF EXISTS org_isolation ON recurring_invoices;  
  
-- Or disable RLS entirely (NOT recommended for prod)  
ALTER TABLE invoices DISABLE ROW LEVEL SECURITY;
```

Database Point-in-Time Recovery (PITR):

```
# Clone database to a specific point in time (last known good state)  
gcloud sql instances clone bilko-demo-db bilko-demo-db-rollback \  
  --point-in-time="2026-05-10T10:00:00.000Z" \  
  --project=tribal-sign-487920-k0  
  
# Swap Cloud Run to rollback instance (update DATABASE_URL secret)  
# This is a LAST RESORT – requires DNS cutover + application restart
```

6. Post-Deploy Smoke Tests

Run immediately after cutover to verify core functionality.

Manual Smoke Tests

Test	Command/Action	Expected Result	Status
1. Login	<pre>curl -X POST https://bilko-demo- api.alai.no/auth/login -H "Content-Type: application/json" -d '{"email":"demo@bilko.rs", password:"Demo2026!"}'</pre>	HTTP 200 + JWT token in <code>accessToken</code> field	<input type="checkbox"/>
2. User Info	<pre>curl https://bilko-demo- api.alai.no/auth/me -H "Authorization: Bearer <JWT>"</pre>	HTTP 200 + user object with org name "Bilko Demo Firma"	<input type="checkbox"/>
3. Invoice PDF	<pre>curl https://bilko-demo- api.alai.no/invoices/<demo- invoice-id>/pdf -H "Authorization: Bearer <JWT>" > /tmp/invoice.pdf</pre>	HTTP 200 + PDF bytes + PDF contains "Bilko Demo Firma" (V20 regression gate)	<input type="checkbox"/>
4. Health Check	<pre>curl https://bilko-demo- api.alai.no/api/v1/health</pre>	HTTP 200 + <code>{"status":"healthy"}</code>	<input type="checkbox"/>
5. RBAC Enforcement	Login as viewer role, attempt DELETE <code>/invoices/:id</code>	HTTP 403 Forbidden (Round 19 RBAC enforcement)	<input type="checkbox"/>

Automated E2E Tests (Playwright)

```
# Run Playwright tests against demo environment
cd apps/web
PLAYWRIGHT_BASE_URL=https://bilko-demo.alai.no npm run test:e2e

# Expected: 13/15 PASS
# Known failures (Round 12):
# - session persistence (3 specs)
# - navigation edge cases
# - logout redirect
```

Coverage Verification

```
# Verify backend coverage threshold is maintained
cd apps/api
./gradlew koverVerify

# Expected: EXIT 0 (threshold ≥60% per Round 20)
```

7. Rounds 11-27 Deliverables Manifest

This section provides traceability for all changes delivered in Rounds 11-27.

Coverage Progression

Round	MC ID	Coverage Delta	Final Threshold	Test Count
Round 16	#100336	Baseline established	7%	~50 HTTP integration tests
Round 17	#100336	+4%	11%	+110 service tests (Invoice, Expense, Contact, Report)
Round 18	#100336	+39%	50%	+90 tests (4 streams: Banking, Auth, Stripe, Routes)
Round 19	#100338	+7%	57%	+20 RBAC edge case tests (403 assertions)
Round 20	#100353	+3%	60%	+81 tests (3 streams: RecurringInvoice, Compliance, Archive/Settings/Account)
Round 21	#100359	Threshold held	60%	+75 edge case tests across 17 HttpIntegrationTest files
Round 22	#100382	Threshold held	60%	+33 billing/webhook integration tests
Round 23	—	Threshold held	60%	Auth package coverage push (~30 tests, 4 streams)
Round 24	#100396	Regression suite	60%	Failing-by-design specs for CEO Round 12 bugs
Round 27	#100420	Deep edge coverage	60%	+113 deep edge tests across 8 HttpIntegrationTest files

Production Bug Fixes (Rounds 12-26)

Fix	MC ID	Commit SHA	Description
-----	-------	------------	-------------

CORS Permanent	#100297	3943837	Permanent CORS_ORIGINS + EMAIL_FROM in cloudbuild-stage.yaml (PR #110)
Double Login	#100367	ef1ed07	Eliminate double /auth/login call on registration (PR #111)
RLS Column Widening	#100406	660795d	V16 column widening + V17 line 50 ALTER DATABASE removal
bilko_app Role	Round 25	30d2de4	V17 idempotent CREATE ROLE IF NOT EXISTS bilko_app before RLS policies (PR #113)
Demo Org Name	Round 25	dbbd80d	V20 migration ensures demo org name is "Bilko Demo Firma"
Wizard Save Draft	Round 25	9319d02	Step 5 "Save kao nactr" shows localized toast + redirect
Refresh Token	Round 26	b55c8dd	Eliminate refresh token consumption on login
HR L10n Critical	#100355	e3ede8e	OIB 11 digits, VAT 25/13/5%, locale routing, register language dynamic (Lexicon audit)
Demo API Rebuild	#100400	9ffe3c4	Add cloudbuild-demo-api.yaml to rebuild bilko-api-demo (PR #116)

Feature Deliveries

Feature	MC ID	Commit SHA	Description
RBAC HTTP Layer	#100338	2a933d8	Enforce role-check at HTTP layer on all CRUD route handlers (Round 19)
RLS Permissive	#100387	6712fcd	Phase 2A PERMISSIVE RLS migrations + OrgScope middleware
Trial Mechanic	#100326	d20cb13, e0d200b	D1+D2+D4 backend + D3 frontend trial countdown banner

Feature	MC ID	Commit SHA	Description
TaxJurisdiction Expansion	#100386	e346e9b	Expand TaxJurisdiction {BA_FED, BA_RS} + CountryPlugin interface (ADR-015)
ADRs 015-019	#100362	d17f0ce	Write ADR-015/016/017/019 per Plan v3 Phase 0

Infrastructure Changes

Change	MC ID	Commit SHA	Description
GCP Deploy Dormant Fix	#100110	b1ddecf	gcp-deploy.yml service name targets bilko-{web,api}-demo (ADR-023 gap closure)
V14-V20 Migrations	Various	—	7 Flyway migrations (demo seed, trial, RLS, enums, org name fix)

8. Escalation Contacts

Issue Type	Contact	Channel
Cloud Run Outage	Kelsey Hightower (FlowForge)	MC task assignment via John
Database Corruption	Bruce Momjian (CodeCraft)	MC task assignment via John
RBAC/Auth Issues	Parisa Tabriz (Securion)	MC task assignment via John
Frontend Errors	Lee Robinson (CodeCraft)	MC task assignment via John
CEO Approval	Alem Basic	Email: alem@alai.no, Slack: @alem

9. Appendix: Key File Locations

File	Path
Stage Cloud Build	<code>cloudbuild-stage.yaml</code>
Demo API Cloud Build	<code>cloudbuild-demo-api.yaml</code>
Flyway Migrations	<code>apps/api/src/main/resources/db/migration/</code>
Application Config	<code>apps/api/src/main/kotlin/no/alai/bilko/Application.kt</code>

File	Path
CORS Config	apps/api/src/main/kotlin/no/alai/bilko/plugins/CorsPlugin.kt
Playwright Tests	apps/web/tests/
Kover Config	apps/api/build.gradle.kts

Document Revision History:

- **v1.0 (2026-05-10):** Initial runbook creation covering Rounds 11-27 deliverables (MC #100424)