

Repository and microservice reorganization — design review (DR)

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Pre-requisite to	Gitea org ac repo creation; post-alpha full MS split (alpha may stay on monolith until Step 8+)

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Source: 20260618_repos_reorganizing.md — section links work in PDF viewers that support internal anchors.

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PDF: 20260618_repos_reorganizing.pdf · Regenerate: bash scripts/build-all-docs-pdf.sh

Status: PO-approved (2026-06-18) — **implementation phased**; monolith remains deployable until each step completes

Scope: Split `git://f0xx.org/android_cast` monolith into Gitea org `ac` — full microservice end-state, VM-first cloud path

Related: INFRA.md · BUILD_DEPLOY.md · specs/20100612_1_scaling.md · orchestration/sim/cluster0/ARCHITECTURE.md · examples/crash_reporter/backend/scripts/gitea/README.md

1. Executive summary

Question: How should the androidcast monolith (`git://f0xx.org/android_cast`) be split into independent repos and deployable microservices?

Short answer: Create Gitea org `ac` with **platform libraries**, **microservice APIs**, **thin backend UIs**, **client repos**, and `ac-deploy` (submodules `ac-scripts`). End-state is **full microservice** architecture. Delivery is **strictly ordered** — [§9 Monolith conversion steps](#) — with `ac-ms-identity` **as the gate** before any domain service split.

DR decision (R0):

Item	Decision
Gitea org	<code>ac</code> — <code>git://f0xx.org/ac/<repo></code>
Architecture	Full microservice end-state; phased migration from monolith
URL prefix	<code>/app/androidcast_project/</code> (full path, locked)
Path-per-service	<code>/issues/</code> , <code>/tickets/</code> , <code>/access/</code> , etc. — replace <code>/crashes/?view=</code>
Scripts	<code>ac-scripts</code> separate; <code>ac-deploy</code> consumes it (submodule or PATH)
Workspace	Optional <code>ac-workspace</code> — selective clone only; not build-all-in-one
Identity gate	Step 6 (<code>ac-ms-identity</code>) before domain MS extraction
Cloud	VM lift-and-shift first; K8s optional later
Alpha	Monolith may run in prod until Step 8+; no forced big-bang

2. Problem statement

The monolith bundles Android app, PHP backend (crashes, tickets, graphs, RBAC, remote access), builder, hub, orchestration, docs, and one submodule (`url-shortener`). This blocks:

- Independent CI/CD and rollback per service
- Clear ownership and OpenAPI contracts
- Mapping repos to VM roles (scaling SPEC §6.3)
- Product URLs such as issues vs tickets under distinct paths

Today's coupling: **one MariaDB**, **one session cookie** (`ac_crash_sess`, path `/app/androidcast_project`), **shared Auth.php** across consoles (`BUILD_DEPLOY.md`).

3. PO decisions (locked)

#	Topic	Decision
1	Gitea org	<code>ac</code>
2	Architecture	Full microservice (phased delivery)
3	<code>ac-scripts</code>	Separate repo; ac-deploy utilizes ac-scripts
4	Public URLs	Path-per-service under <code>/app/androidcast_project/</code>
5	<code>ac-workspace</code>	Optional manifest; not unified build; supports multi-repo OTA
6	Cloud	VM lift-and-shift; no K8s requirement at R0
7	Identity gate	Approved — identity MS before other MS splits

4. Current state

4.1 Monolith map

Monolith path	Future repo(s)	Notes
<code>app/</code> , <code>ndk/</code> , <code>gradle/</code>	<code>ac-mobile-android</code>	third-party submodules
<code>desktop/session-studio/</code>	<code>ac-session-studio</code>	Low coupling
<code>docs/</code>	<code>ac-docs</code>	
<code>scripts/</code>	<code>ac-scripts</code>	

orchestration/	ac-deploy	cluster0, docker
examples/crash_reporter/backend/	ac-ms-* + ac-be-*	32 PHP classes, 24 APIs
examples/build_console/	ac-ms-build, ac-be-builder	Same DB users
examples/app_hub/	ac-be-hub	Loads /crashes/assets/ today
backend/url-shortener/	ac-ms-url-shortener	Existing submodule

4.2 What is not a git repo

- **Gitea** (infra on BE; scripts in ac-deploy)
- **MariaDB, Janus** (:8089)
- examples/gentoo-portage-experimental/ (exclude or separate lab repo)

5. Target architecture

Platform (Composer / static – not runtime MS)
ac-platform-php, ac-platform-db, ac-platform-web, ac-scripts, ac-docs

Infrastructure
ac-deploy submodules ac-scripts; docker, cluster0, nginx
ac-platform-edge nginx BFF: routes + session cookie domain
ac-workspace optional clone manifest (no unified build)

Clients
ac-mobile-android, ac-mobile-ios (future), ac-session-studio

Microservices (OpenAPI)
ac-ms-identity → ac-ms-rbac → ac-ms-devices
ac-ms-issues, ac-ms-tickets, ac-ms-graphs, ac-ms-remote-access
ac-ms-url-shortener, ac-ms-build, ac-ms-ota, ac-ms-notifications (later)

Backend UI (thin → MS APIs)
ac-be-hub, ac-be-issues, ac-be-tickets, ac-be-graphs,
ac-be-remote-access, ac-be-access, ac-be-builder, ac-be-auth

Consolidations vs initial PO sketch:

Initial name	R0 decision
ac-be-console (monolith)	Dissolved into ac-be-issues ... ac-be-access
ac-ms-tracker	ac-ms-issues + ac-ms-tickets
ac-ms-vpn-rssh + ac-ms-vpn-wireguard	ac-ms-remote-access (single control plane)
ac-ms-analytics	ac-ms-graphs (+ BI later)
ac-ms-orchestration	ac-ms-build + ac-deploy
ac-ms-vcs	Not a repo — Gitea infra

6. Gitea repo catalog

Canonical: git://f0xx.org/ac/<repo>

HTTPS (Gitea UI): https://apps.f0xx.org/app/androidcast_project/git/ac/<repo>.git

Legacy: git://f0xx.org/android_cast → read-only mirror until retired.

ID	Repo	Git URL	Role
W0	ac-workspace	git://f0xx.org/ac/ac-workspace	Optional submodule manifest
P0	ac-platform-php	git://f0xx.org/ac/ac-platform-php	Composer: auth client, PDO, HTTP
P1	ac-platform-db	git://f0xx.org/ac/ac-platform-db	SQL migrations
P2	ac-platform-web	git://f0xx.org/ac/ac-platform-web	Shared CSS/JS/theme
P3	ac-platform-edge	git://f0xx.org/ac/ac-platform-edge	nginx routes + proxy
P4	ac-scripts	git://f0xx.org/ac/ac-scripts	CI, OTA, native codecs, PDF
P5	ac-docs	git://f0xx.org/ac/ac-docs	Documentation
D0	ac-deploy	git://f0xx.org/ac/ac-deploy	docker, cluster0; uses P4
C0	ac-mobile-android	git://f0xx.org/ac/ac-mobile-android	Android + ndk + third-party
C1	ac-mobile-ios	git://f0xx.org/ac/ac-mobile-ios	Future iOS
C2	ac-session-studio	git://f0xx.org/ac/ac-session-studio	Desktop analyzer

S0	ac-ms-template	git://f0xx.org/ac/ac-ms-template	New MS cookiecutter
S1	ac-ms-identity	git://f0xx.org/ac/ac-ms-identity	Users, login, 2FA, sessions
S2	ac-ms-rbac	git://f0xx.org/ac/ac-ms-rbac	Companies, privileges
S3	ac-ms-devices	git://f0xx.org/ac/ac-ms-devices	Device registry
S4	ac-ms-issues	git://f0xx.org/ac/ac-ms-issues	Crash/report ingest
S5	ac-ms-tickets	git://f0xx.org/ac/ac-ms-tickets	Ticket workflow
S6	ac-ms-graphs	git://f0xx.org/ac/ac-ms-graphs	Graph ingest/query
S7	ac-ms-remote-access	git://f0xx.org/ac/ac-ms-remote-access	WG + RSSH API
S8	ac-ms-url-shortener	git://f0xx.org/ac/ac-ms-url-shortener	Short links API
S9	ac-ms-build	git://f0xx.org/ac/ac-ms-build	Build worker API
S10	ac-ms-ota	git://f0xx.org/ac/ac-ms-ota	Channel manifests
S11	ac-ms-notifications	git://f0xx.org/ac/ac-ms-notifications	SMTP (post-alpha)
B0	ac-be-hub	git://f0xx.org/ac/ac-be-hub	Landing
B1	ac-be-issues	git://f0xx.org/ac/ac-be-issues	Issues UI
B2	ac-be-tickets	git://f0xx.org/ac/ac-be-tickets	Tickets UI
B3	ac-be-graphs	git://f0xx.org/ac/ac-be-graphs	Graphs UI
B4	ac-be-remote-access	git://f0xx.org/ac/ac-be-remote-access	RA admin UI
B5	ac-be-access	git://f0xx.org/ac/ac-be-access	RBAC admin UI
B6	ac-be-builder	git://f0xx.org/ac/ac-be-builder	Builder UI
B7	ac-be-auth	git://f0xx.org/ac/ac-be-auth	Login/register shell
F1	ac-ms-sfu-signaling	git://f0xx.org/ac/ac-ms-sfu-signaling	Future F1
F2	ac-ms-media-transcode	git://f0xx.org/ac/ac-ms-media-transcode	Future VOD

Third-party codecs remain **submodules of C0** (upstream URLs); Gitea mirrors under ac/.

7. Public URL map

Base prefix (locked): https://apps.f0xx.org/app/androidcast_project

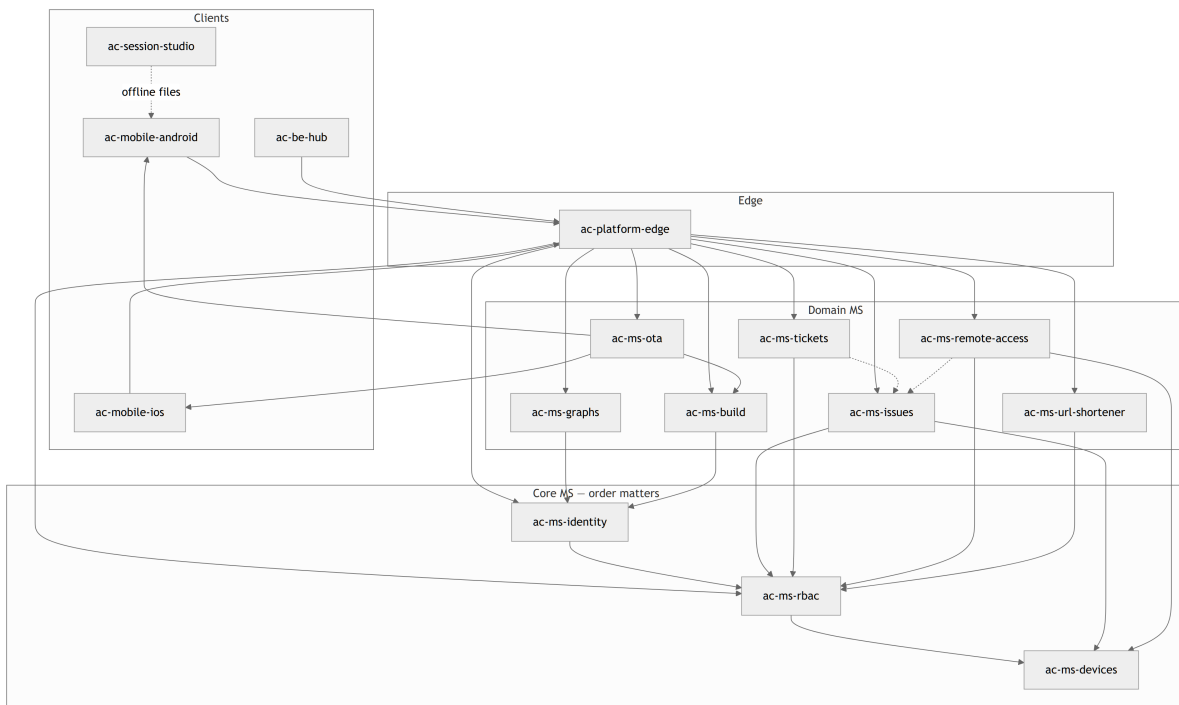
Today	Target URL
.../crashes/?view=reports	.../issues/
.../crashes/?view=report&id=N	.../issues/N
.../crashes/?view=tickets	.../tickets/
.../crashes/?view=ticket&id=N	.../tickets/N
.../crashes/?view=rbac	.../access/
.../crashes/?view=remote_access	.../remote-access/
.../crashes/?view=short_links	.../short-links/
.../crashes/api/upload.php	.../issues/api/upload
.../graphs/	.../graphs/ (unchanged)
.../build/	.../build/ (unchanged)
.../ (hub)	.../ (unchanged)
.../git/	.../git/ (Gitea)
/v0/ota/	/v0/ota/ (unchanged)

Cookie path: remain /app/androidcast_project at **ac-platform-edge** until SSO tokens replace shared PHP session.

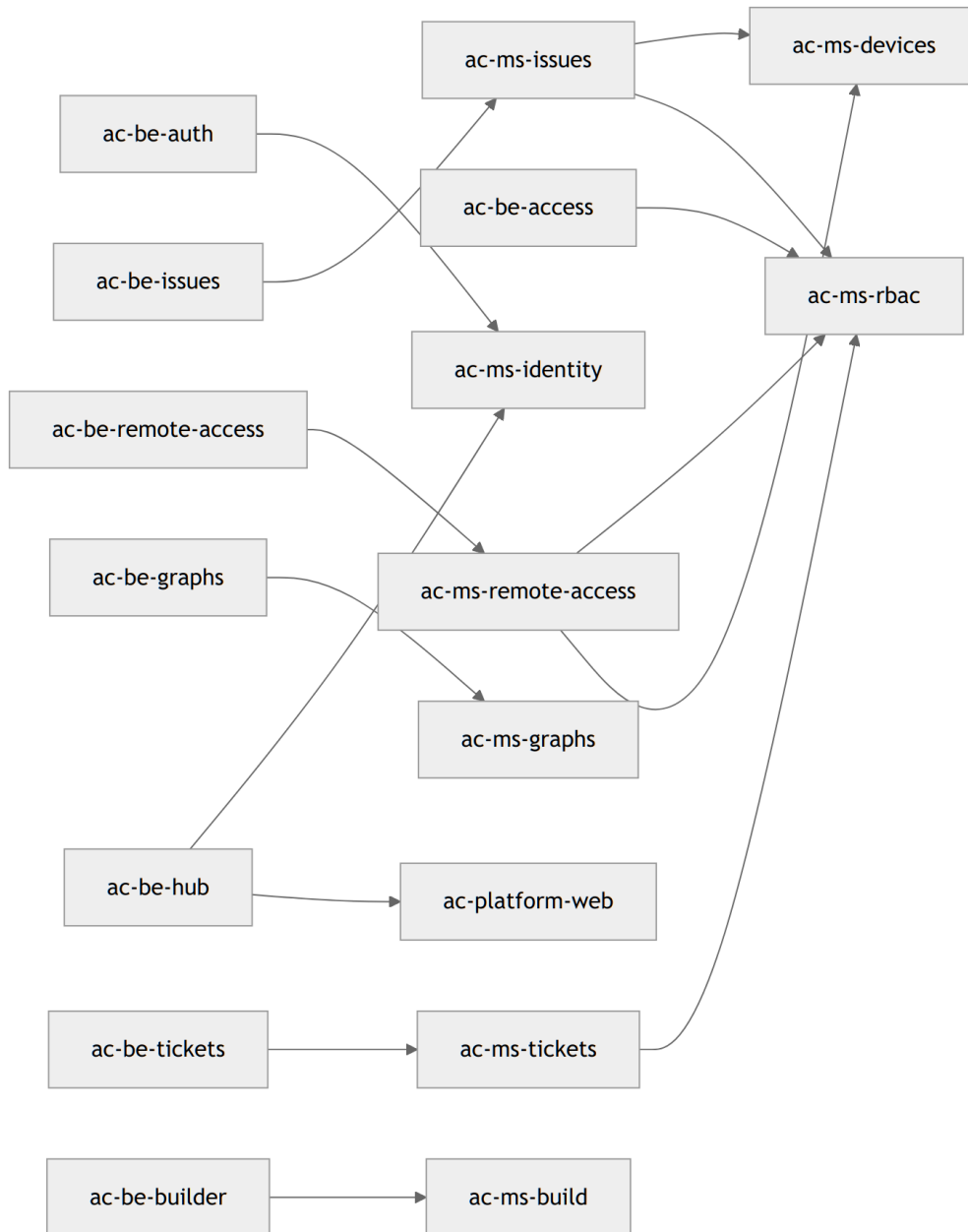
Migration: 301 redirects from old ?view= URLs for ≥ one release; update BackendEndpoints.java, CrashSettings.java.

8. Dependency graphs

8.1 End-to-end — clients, edge, services

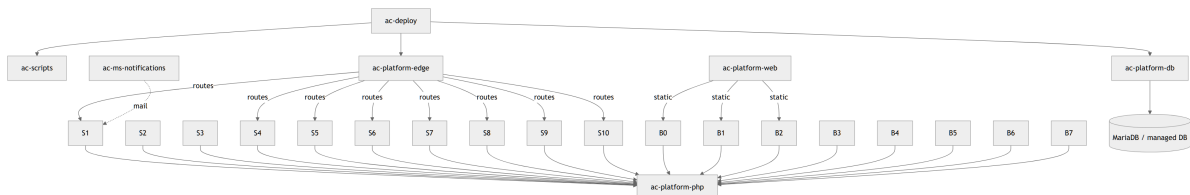


8.2 Backend UI → microservice (requires)



Every **B*** and **S*** also requires **P0** (ac-platform-php) and **P1** (ac-platform-db) via Composer — omitted from diagram for clarity.

8.3 Platform and deploy layer



8.4 Service dependency matrix

Service	Requires (hard)	Requires (soft)	Required by
ac-platform-db	—	—	All MS, migration jobs
ac-platform-php	ac-platform-db	—	All MS, all BE UI
ac-platform-web	—	—	ac-be-hub, all BE UI
ac-platform-edge	ac-deploy nginx templates	all MS upstream addrs	All public HTTP
ac-ms-identity	platform-db, platform-php	ac-ms-notifications	All MS, all BE UI, ac-ms-build
ac-ms-rbac	ac-ms-identity	—	devices, issues, tickets, RA, url-shortener
ac-ms-devices	ac-ms-rbac	ac-ms-identity	ac-ms-issues, ac-ms-remote-access

ac-ms-issues	ac-ms-rbac, ac-ms-devices	—	ac-be-issues, mobile upload
ac-ms-tickets	ac-ms-rbac	ac-ms-issues	ac-be-tickets
ac-ms-graphs	ac-ms-identity	—	ac-be-graphs, mobile
ac-ms-remote-access	ac-ms-rbac, ac-ms-devices	ac-ms-issues	ac-be-remote-access, mobile
ac-ms-url-shortener	ac-ms-rbac	—	hub/admin UI
ac-ms-build	ac-ms-identity	Gitea infra	ac-be-builder, ac-ms-ota
ac-ms-ota	ac-ms-build	C0, C1 SHAs	mobile OTA clients
ac-mobile-android	ac-ms-issues, ac-ms-graphs, ac-ms-remote-access APIs	ac-ms-ota	—

8.5 Repo creation waves (Gitea)



9. Monolith conversion steps

Ordered steps for converting the monolith. **Do not skip gates.** Each step lists repos created/moved, monolith paths affected, and verification.

Step 1 — Gitea org and mirrors (no code move)

Goal: Org ac exists; legacy mirror preserved.

Action	Detail
Create org	ac on f0xx.org Gitea
Mirror	android_cast → read-only; plan ac-workspace or retire later
Update docs	Pointer in INFRA.md, AGENTS.md

Verify: `git ls-remote git://f0xx.org/ac/ac-docs` (after Step 2) ; legacy push still works.

Requires: nothing

Enables: all following steps

Step 2 — Extract zero-coupling repos

Goal: Repos with no runtime dependency on PHP monolith.

Repo	From monolith	CI
ac-docs	docs/	PDF build
ac-scripts	scripts/	lint/smoke
ac-session-studio	desktop/session-studio/	unit tests
ac-ms-url-shortener	backend/url-shortener/	PHPUnit (change remote URL only if already split)
ac-deploy	orchestration/ + nginx seeds	docker compose smoke

ac-deploy submodules **ac-scripts** at pinned SHA.

Verify: Each repo builds independently; monolith submodule paths updated OR mirror dual-push during transition.

Requires: Step 1

Enables: Steps 3–4

Step 3 — Platform libraries (foundation)

Goal: Shared code leaves monolith as Composer packages — **no MS split yet.**

Repo	Extract from
ac-platform-db	sql/, migrations from crash_reporter + url-shortener
ac-platform-php	Auth*, Database, Rbac helpers, bootstrap patterns, shared_session.php
ac-platform-web	crashes/assets/, shared theme referenced by hub

Monolith **requires** packages via Composer; behavior unchanged.

Verify: Monolith tests green; single login still works across hub/crashes/build.

Requires: Step 2

Enables: Step 4 (identity)

Step 4 — Microservice template and OpenAPI baseline

Goal: Cookiecutter + contract layout for all MS.

Repo	Action
ac-ms-template	Copy url-shortener + platform-php wiring
ac-docs	Add openapi/ stubs per service

Verify: Scaffold new empty MS from template; deploy locally via ac-deploy.

Requires: Step 3

Enables: Step 5

Step 5 — Edge proxy (routing shell)

Goal: **ac-platform-edge** nginx config routes paths; still proxies to **monolith** PHP until MS exist.

Action	Detail
Deploy edge config	Map /issues/ → monolith ?view=reports internally (temporary)
Cookie	Single path /app/androidcast_project

Verify: curl -I new paths return 200 via rewrite; old URLs still work.

Requires: Step 2 (ac-deploy)

Enables: Step 10 URL cutover

Step 6 — Identity microservice (GATE)

Goal: **ac-ms-identity** owns users, login, register, 2FA, session issuance.

Repo	From monolith
ac-ms-identity	Auth*, UserRepository, AuthTotp*, AuthRegistration*, ...
ac-be-auth	login/register views (thin)

Monolith/builder **call identity** for auth (HTTP or shared session bridge during transition).

Verify: Login at /app/androidcast_project/ + builder; sessions valid; ./scripts/test_rbac_api.sh still passes against bridged auth.

Requires: Steps 3, 4

Enables: Steps 7, 9, 11 — **nothing else splits before this**

Step 7 — RBAC and devices microservices

Goal: Company scope and device registry are independent APIs.

Repo	From monolith
ac-ms-rbac	Rbac*, RbacAdmin*, companies API
ac-ms-devices	DeviceRepository

Verify: Upload still registers device; RBAC panel works via APIs.

Requires: Step 6

Enables: Steps 8, 9

Step 8 — Issues and tickets (domain core)

Goal: Split PO's primary URL surfaces.

Repo	From monolith
ac-ms-issues	upload, Report*, Tag*, reports API
ac-ms-tickets	Ticket*, attachments
ac-be-issues	reports views + JS
ac-be-tickets	tickets views + JS

Edge routes /issues/ → S4/B1, /tickets/ → S5/B2.

Verify: Mobile upload to new URL; web issue/ticket lists; E2E ticket workflow.

Requires: Step 7

Enables: Step 9 (RA links to issues)

Step 9 — Graphs and remote access

Repo	From monolith
ac-ms-graphs	GraphRepository, graph_* API
ac-ms-remote-access	RemoteAccess*, WireGuard*, Rssh*
ac-be-graphs	graphs UI
ac-be-remote-access	remote_access view

Verify: BackendEndpoints graph URL; RA E2E (ra_e2e_cli.sh); mobile RA API.

Requires: Steps 7, 8 (RA → devices, issue links)

Enables: Step 11

Step 10 — Hub, access UI, URL migration

Repo	Action
ac-be-hub	Extract app_hub; use ac-platform-web assets
ac-be-access	RBAC UI → calls ac-ms-rbac
ac-platform-edge	Enable 301 from /crashes/?view=* to new paths

Verify: Hub cards link to /issues/, /tickets/; no broken CSS.

Requires: Steps 5, 8, 9

Enables: Step 11

Step 11 — Build and OTA pipeline

Repo	From monolith
ac-ms-build	BuildRunner, build APIs
ac-be-builder	build_console UI
ac-ms-ota	OTA manifest assembly
ac-mobile-android	app/, ndk/, gradle (extract from monolith)

Verify: Builder triggers APK; OTA channel publishes; manifest lists android (+ ios when C1 exists).

Requires: Step 6 (identity for builder users)

Enables: Step 12

Step 12 — Optional workspace and monolith retirement

Action	Detail
ac-workspace	Publish optional .gitmodules manifest
Retire	Stop commits to android_cast monolith; archive mirror
Gitea migrate	Update scripts for org ac (gitea README)

Verify: Fresh clone via ac-workspace or individual repos; prod deploy from ac-deploy only.

Requires: Steps 1–11 complete for services in scope

Enables: cloud VM scaling, future F1/F2 MS

Step 13 — Notifications and cloud hardening (post-alpha)

Repo	Action
ac-ms-notifications	Extract AuthMailer; wire 2.x mail when unblocked
ac-deploy	Managed DB DSN templates; cluster0 → cloud VM roles

Requires: Step 6; mail infra (developer)

Enables: full 2FA mail E2E

Conversion step summary (quick reference)

Step	Name	Gate
1	Gitea org ac	—
2	docs, scripts, deploy, session-studio, url-shortener	—
3	platform-php, platform-db, platform-web	—
4	ms-template, OpenAPI	—
5	platform-edge (shell)	—
6	ms-identity , be-auth	GATE
7	ms-rbac, ms-devices	after 6
8	ms-issues, ms-tickets, be-issues, be-tickets	after 7
9	ms-graphs, ms-remote-access, be UI	after 7–8
10	be-hub, be-access, URL 301	after 8–9
11	ms-build, ms-ota, mobile-android	after 6
12	ac-workspace, retire monolith	after 1–11
13	notifications, cloud	post-alpha

10. Microservice vs monolith comparison

Criterion	Full microservice (PO choice)	Modular monolith
Independent deploy	Yes — per MS/UI repo	Single PHP deploy
Failure isolation	Stronger	Shared FPM pool
Auth complexity	Needs identity MS + edge early	Works today
URL clarity	/issues/, /tickets/	?view= parameters
Ops load	More nginx, repos, logs	One sync path (INFRA.md)
Alpha risk	High if before Step 6	Lower
Cloud mapping	1:1 to VM roles	Lift entire tree
Rollback	Revert one repo SHA	Revert one commit

PO choice is approved with **Step 6 gate** enforced in [§9](#).

11. Infrastructure and cloud

Stage	Pattern
Prod today	FE TLS → BE :80 nginx + PHP-FPM + MariaDB
cluster0 lab	cast01–03; NFS config only; GTID DB (ARCHITECTURE.md)
Cloud phase A	4–6 VMs: be-web, be-data, be-ops, be-build (scaling §6.3)
Cloud phase B	Managed DB; DSN in secrets (not in git)
Cloud phase C	K8s optional — not required at R0

Inter-service calls: HTTP on private VLAN / localhost initially; OpenAPI in ac-docs. No service mesh at R0.

ac-deploy ships Ansible/docker-compose per VM role; submodules **ac-scripts**.

12. ac-workspace and OTA versioning

ac-workspace — optional; lists repo SHAs for a release train. **Not** a unified Gradle/PHP build.

ac-ms-ota manifest (same product version, per-platform SHAs):

```
{
  "channel": "staging",
  "version": "00.02.00.00",
  "artifacts": {
    "android": { "repo": "ac-mobile-android", "git_sha": "abc123" },
    "ios": { "repo": "ac-mobile-ios", "git_sha": "def456" }
  }
}
```

13. Risks and mitigations

Risk	Mitigation
Auth split breaks all consoles	Step 6 gate; session bridge during transition
Hub broken CSS	ac-platform-web before ac-be-hub (Step 3 before 10)
Mobile upload URL change	Parallel endpoints + BackendEndpoints normalization
DB schema drift	ac-platform-db single migration stream
Too many repos to bump	Composer semver for P0; not @common submodule diamond
Alpha blocked	Monolith stays prod until Step 8+ complete per service
PO BE learning curve	ac-ms-template, ac-deploy, OpenAPI, localhost HTTP

14. Changelog

Rev	Date	Change
R0	2026-06-18	Initial DR from draft; PO locked org ac, full MS, URL prefix, identity gate; §9 conversion steps; dependency graphs