

# BE services & infrastructure — validation map

From 20260608\_BE\_SERVICES\_and\_infra.md

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*Source: 20260608\_BE\_SERVICES\_and\_infra.md — section links work in PDF viewers that support internal anchors.*

Topology

```
flowchart LR
    subgraph Internet
        MOB["■ Android app"]
        OPS["■ Operator browser"]
    end

    subgraph Router["f0xx.org router"]
        RDNAT["UDP 45340 DNAT"]
    end

    subgraph FE["FE f0xx-monstro · apps.f0xx.org"]
        TLS["TLS :443"]
        FEDNAT["UDP 45340 DNAT"]
        NGXFE["nginx reverse proxy"]
    end

    subgraph BE["BE Alpine artc0 · :80"]
        NGXBE["nginx apps.conf"]
        FPM["PHP-FPM"]
        DB["MariaDB / SQLite"]
        WG["wg0 :45340"]
        SSH["sshd bastion :443"]
    end

    MOB -->| "HTTPS crashes/graphs/heartbeat" | TLS
    OPS --> TLS
    TLS --> NGXFE
    NGXFE --> NGXBE
    NGXBE --> FPM
    FPM --> DB
    MOB -->| "UDP WG lab" | RDNAT
    RDNAT --> FEDNAT
    FEDNAT --> WG
    MOB -->| "RSSH outbound" | SSH
    FPM --> WG
```

| Hop        | Host                            | Role                                                |
|------------|---------------------------------|-----------------------------------------------------|
| Public DNS | apps.f0xx.org, ra.apps.f0xx.org | CNAME → FE                                          |
| Router     | f0xx.org (134.17.26.161 WAN)    | UDP 45340 → FE 10.7.0.10                            |
| FE         | Gentoo HVM                      | TLS, HTTP proxy → BE :80, UDP DNAT → BE 10.7.16.128 |
| BE         | Alpine 10.7.16.128              | PHP consoles, device APIs, wg0, RSSH bastion        |

Service inventory (mobile + console)

| Service                       | Public URL / port                              | Mobile uses      | Console uses     | Status                                                                    |
|-------------------------------|------------------------------------------------|------------------|------------------|---------------------------------------------------------------------------|
| Hub                           | https://apps.f0xx.org/app/androidcast_project/ | Indirect (links) | Landing          | ■ OK                                                                      |
| Crashes console               | .../crashes/                                   | —                | Reports, home    | ■ OK                                                                      |
| Crash upload                  | .../crashes/api/upload.php                     | ■ gzip JSON      | —                | ■ OK                                                                      |
| Heartbeat / RA                | .../crashes/api/heartbeat.php                  | ■ RA poll        | —                | ■ OK                                                                      |
| Session stats / graphs ingest | .../graphs/api/graph_upload.php                | ■ (when enabled) | —                | ■ OK                                                                      |
| Graphs dashboard              | .../graphs/                                    | —                | Analytics UI     | ■ OK                                                                      |
| Tickets                       | .../crashes/?view=tickets                      | —                | Issue tracking   | ■ OK                                                                      |
| Remote access                 | .../crashes/?view=remote_access                | —                | WG/RSSH ops      | ■ OK                                                                      |
| RBAC admin                    | .../crashes/?view=rbac                         | —                | Roles / lockouts | ■ OK                                                                      |
| APK builder                   | .../build/                                     | —                | Internal builds  | ■ OK                                                                      |
| OTA channel                   | .../v0/ota/channel/stable.json                 | ■ settings.json  | —                | <span style="color:#dc2626">PENDING</span> HTTP 400 — not on apps vhost   |
| OTA manifest/APK              | TBD host/path                                  | ■                | —                | <span style="color:#dc2626">PENDING</span> align with device ota.base_url |
| Diag API                      | .../crashes/api/diag.php                       | Optional         | —                | ■■ 403 at edge (use upload/heartbeat)                                     |
| WireGuard data                | ra.apps.f0xx.org:45340/udp                     | ■ lab mode       | —                | ■ DNAT chain + BE listen                                                  |

|              |                           |              |              |                       |
|--------------|---------------------------|--------------|--------------|-----------------------|
| RSSH bastion | ra.apps.f0xx.org:443 /tcp | ■ alpha mode | Operator SSH | ■ API connect payload |
|--------------|---------------------------|--------------|--------------|-----------------------|

## Data paths

### Cast session (LAN — alpha scope)

Sender UDP/TCP :41235 ↔ Receiver :41235  
Discovery UDP :41234 (+ NSD)

No BE required for LAN alpha.

### Telemetry path

Phone → HTTPS → FE → BE PHP  
upload.php crash JSON  
heartbeat.php session + RA  
graph\_upload.php session metrics

### Remote access control plane

Phone poll → heartbeat.php (type:ra)  
Operator → remote\_access.php (whitelist, open\_session, dashboard)  
BE → wg set / rssh session row → connect JSON on next poll

## Validation status

Run: examples/crash\_reporter/backend/scripts/validate\_be\_services.sh

| Check                                  | 2026-06-08 result                           |
|----------------------------------------|---------------------------------------------|
| Hub / crashes / graphs / build HTTP    | ■                                           |
| JS syntax (app, graphs, tickets, i18n) | ■                                           |
| RBAC API smoke (on BE localhost)       | ■                                           |
| RA API smoke                           | ■ (BE)                                      |
| RSSH API smoke                         | ■ test_rssh_api.sh                          |
| OTA public URL                         | <span style="color:#dc2626">FAIL 400</span> |
| Browser SyntaxError (historical)       | ■ cleared — deployed JS passes node --check |

## DNAT chain (WireGuard lab)

```
sequenceDiagram
    participant M as Mobile / laptop
    participant R as Router f0xx.org
    participant F as FE monstro
    participant B as BE wg0
```

M->>R: UDP 45340 (public)  
R->>F: DNAT → 10.7.0.10:45340  
F->>B: DNAT → 10.7.16.128:45340  
B->>B: wg0 decrypt

| Script                      | Host                    | Persist hook                        |
|-----------------------------|-------------------------|-------------------------------------|
| wireguard_router_dnat.sh    | f0xx.org /home/scripts/ | iodine_warmup_helper.sh apply_rules |
| wireguard_fe_dnat.sh        | f0xx-monstro            | xen_firewall.sh start/stop          |
| install_be_remote_access.sh | alpine-be               | wg0 + sudoers                       |

## RSSH / RBAC

| Component     | Path                                 | Tune on BE                        |
|---------------|--------------------------------------|-----------------------------------|
| RSSH sessions | sql/migrations/009_rssh_sessions.sql | MariaDB migrate                   |
| Provisioner   | src/RsshSessionProvisioner.php       | config.php → remote_access.rssh   |
| Bastion       | sshd / stream on :443                | host keys, port range 18000-18999 |
| RBAC API      | api/rbac.php                         | privilege_sets, lockout clear     |
| Cron purge    | scripts/purge_remote_access.php      | hourly crontab                    |

**Smoke:** test\_rssh\_api.sh, test\_rbac\_api.sh, ra\_e2e\_cli.sh

## Planned: SFU relay (Janus-class)

> **Not in alpha.** Gray = future design surface; implementation on branch feature/sfu-relay, hidden from users until spec lands.

```
flowchart TB
    classDef future fill:#e5e7eb,stroke:#9ca3af,color:#374151

    subgraph Future["SFU path (planned)"]
        SFU["Janus / mediasoup SFU<br/>BE :8089 or dedicated"]
        SIG["Signaling API<br/>PHP or sidecar"]
        TURN["TURN optional"]
    end

    end

    subgraph Today["Alpha today"]
        LAN["LAN UDP/TCP cast"]
        RA["RSSH debug"]
    end

    end

    MOB2["■ Android"] --> LAN
    MOB2 -->|"post-alpha"| SIG
    SIG --> SFU
    SFU --> TURN
    OPS2["Operator"] --> SIG

    class SFU,SIG,TURN future
```

| Piece                        | Status                                                            | Branch / flag     |
|------------------------------|-------------------------------------------------------------------|-------------------|
| CastConfig.SFU_RELAY_PREVIEW | Stub false                                                        | feature/sfu-relay |
| config.php → sfu.enabled     | Stub false                                                        | BE                |
| api/sfu_health.php           | Returns disabled                                                  | BE                |
| Android SfuRelayGate         | Hidden dev compile gate                                           | App               |
| FE nginx location /janus/    | Exists for other stack — <b>do not mix</b> with androidcast vhost | INFRA §8089       |
| Nginx + UDP ports for WebRTC | <span style="color:#6b7280">Design TBD with owner spec</span>     | —                 |
| Mobile TRANSPORT_WEBRTC UI   | Frozen (ALPHA_FEATURE_FREEZE)                                     | —                 |

When the owner spec arrives: wire signaling auth to existing session/RBAC, add SFU room lifecycle beside (not replacing) LAN cast, and extend this doc § with concrete ports and URLs.

Agent scripts

| Script                       | Purpose                         |
|------------------------------|---------------------------------|
| validate_be_services.sh      | Public reachability + JS syntax |
| verify_remote_access_prod.sh | BE WG/RSSH preflight            |
| test_rssh_api.sh             | RSSH connect payload            |
| test_rbac_api.sh             | RBAC panel API                  |
| ra_e2e_cli.sh                | Full RA operator+device flow    |
| test_graphs_api.sh           | Graph ingest + dashboard        |

Open findings → tickets

| ID       | Severity | Topic                                                               | Track in                              |
|----------|----------|---------------------------------------------------------------------|---------------------------------------|
| SVC-OTA  | High     | OTA v0/ota returns 400 on apps.f0xx.org — wire nginx + staging path | <b>Tickets</b> dashboard              |
| SVC-DIAG | Low      | diag.php 403 at public edge                                         | <b>Issues</b> (documented workaround) |
| SVC-URL  | Medium   | Legacy f0xx.org crash URL 404 — devices should use apps.f0xx.org    | <b>Tickets</b> + device settings.json |
| SFU-SPEC | Planning | Owner SFU spec integration                                          | <b>Issues</b> (gray / post-alpha)     |

File via crashes console → **Tickets** for service/URL/nginx work; **Issues** for infra validation notes and SFU planning.