

Roadmap & Known Gaps

Downloadable reference generated from the NetOS Markdown documentation.

Xiber NetOS — Roadmap & Known Gaps

What's built, what's missing, and the recommended path forward.

Current Phase: Foundation Prototype

The current build delivers a working UI and API for circuit lifecycle visibility. Core CRUD, bulk edit/delete, mapping, dashboards, import, audit activity, and the admin feedback queue are functional. Authentication hardening, financial accuracy, renewal automation, and document ingestion remain the primary gaps before production use.

Feature Inventory

What's Built

AREA	DETAILS
Monorepo scaffold	apps/api , apps/web , apps/mcp , packages/shared , infra/docker
Database schema	13+ tables, PostGIS geometry, pgvector embeddings, materialized financial view
Migrations	Alembic baseline + infrastructure + agreements migrations
API	FastAPI with OpenAPI 3.1, circuit CRUD, bulk actions, map, dashboard, import, providers, infrastructure
Circuit table	Search, filter by carrier/status/type, bulk edit/delete, click-through to detail
Circuit detail	Full attributes, endpoints, carrier info, NOC contacts, contract terms, lifecycle history
Map	A → Z circuit lines, endpoint dots, infrastructure markers, colored by provider, thickness by bandwidth
Dashboard	17 KPI cards/panels including spend by carrier, service mix, renewal pipeline, at-risk circuits
Timeline	Contract-term Gantt with install markers, renewal deadlines, today line, state colors
Topology	Endpoint graph with logical/geographic layouts, SPOF detection, carrier-colored edges
Service providers	Portal links, NOC phones, account managers, circuit/infra counts, ETF exposure

AREA	DETAILS
Infrastructure	Data centers, towers, colos, rooftops, carrier hotels, POPs, offices, and aggregation facilities with costs, terms, and bulk edit/delete
Electrical	Utility service accounts attached to infrastructure or customer sites, with provider, meter, service details, average monthly cost, monitoring link, and documents
Financial / P&L	Per-circuit modeled revenue, margin, ETF exposure, carrier spend rollups, and infrastructure attribution foundation
Address lookup	Search circuits by address, endpoint, city, state, carrier, or circuit ID
Mobile field view	Phone-friendly circuit lookup with NOC call, copy ID, and map links
Admin / audit	Recent activity trail plus bug/feature queue with priority, status, and progress comments
CSV/XLSX import	Heuristic column mapping, staging, upsert by natural key, auto-stub carriers/endpoints
Sample data	4 carriers, 10 endpoints, 8 circuits with contracts and lifecycle events
MCP skeleton	<code>list_circuits</code> , <code>get_circuit</code> working; <code>get_renewals_due</code> , <code>get_etf_exposure</code> as placeholders
RBAC	8 roles defined, dev shim accepts <code>x-user-role</code> header
Docker dev stack	PostgreSQL 16, Redis 7, API, Web with hot reload

Gap Analysis

1. Authentication & Authorization

	DETAIL
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Current	Header-based dev shim (<code>x-user-role: exec</code>) plus support for common SSO email headers when present. Direct/demo mode falls back to <code>dev@xiber.com</code> .
Impact	Cannot deploy to production. No audit trail of who did what.
Needed	Microsoft Entra OIDC JWT validation on API. Role assignment from Entra groups/claims. Session handling in Next.js (cookie-based, server-side). Token refresh flow.
Depends on	Entra app registration (see Public Hostname & SSO)

2. Audit Logging

	DETAIL
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Current	Activity logging exists for request/write activity, feedback, and bulk actions. <code>created_by</code> / <code>updated_by</code> are populated on newer write paths.

	DETAIL
Impact	Basic accountability exists, but sensitive read tracking and field-level redaction are incomplete.
Needed	Complete field-level before/after coverage for all write paths. Field-level read audit for sensitive data (ETF formulas, banking, MD5 keys). Sensitive field redaction on read by role.

3. CSV/XLSX Import Enhancements

	DETAIL
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Current	Heuristic column mapping. Staging rows. Commit valid rows. Upsert by natural key.
Impact	Column mapping is fragile for non-standard headers. No way to fix staging errors in-app.
Needed	Claude Opus 4.7 mapping (send headers + 5 sample rows, get canonical mapping). Saved mappings by (user, source_signature). Inline staging row editor. Diff preview before updating existing circuits. Explicit confirmation dialog before overwriting financial fields.

4. PDF Contract Ingestion

	DETAIL
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Current	Contract and AgreementExtraction schemas exist. No upload or extraction pipeline.
Impact	Contract data must be entered manually or via CSV.
Needed	PDF upload endpoint with S3/MinIO object storage. pdfplumber text extraction with pytesseract OCR fallback. Claude Opus 4.7 structured extraction (carrier, term, MRC, ETF formula, renewal terms). Confidence scoring with source quotes and page numbers. Side-by-side approval UI (PDF viewer left, extracted fields right). Mandatory human approval for MRC, ETF, and term fields before commit.

5. Renewal Engine

	DETAIL
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Current	Renewal states computed on-the-fly in API/frontend. No persistent tracking or notifications.
Impact	No proactive alerts. Renewal deadlines can be missed.
Needed	Nightly Celery job to compute and persist renewal states (stable → watch → active → critical → overdue → decided). Materialized view or state table refresh. Email, Slack, and Monday.com notifications on state transitions. Decision workflow UI (renew / negotiate / terminate / port). DocuSeal termination notice generation. Test-mode fast-forward for QA.
State machine	stable (>180d) → watch (90–180d) → active (30–90d) → critical (<30d) → overdue (past deadline) → decided

6. Dashboard & Financial Accuracy

	DETAIL
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Current	Circuit-level modeled MRR uses <code>MRC * 1.35</code> placeholder multiplier. Infrastructure detail now has subtended links, direct/downstream revenue and cost rollups, relationship effective dates, and circuit-linked attribution records.
Impact	Circuit margin remains illustrative until Sonar revenue is connected. Infrastructure economics can be modeled manually now, but allocation methods, period reporting, and actual invoice/revenue integrations are still needed for production financial reporting.
Needed	Sonar integration to pull actual customer revenue attribution. Real margin calculation using customer MRR, carrier MRC, facility MRC, transport allocation, and invoice actuals. Full infrastructure waterfall view by asset, parent/child relationship, market, provider, service type, and accounting period. ETF exposure formulas and renewal projection forecasts using contract escalators.

7. Map Enhancements

	DETAIL
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Current	A → Z lines with provider coloring and bandwidth thickness. Provider/type/status filters.
Impact	Map is useful but isolated from table view. No external data overlays.
Needed	Polygon/lasso selection tool. Shared filter state with circuit table. Wisdm tower layer overlay. Sonar property/coverage layer overlay. Tile hosting decision (MapTiler vs. self-hosted). Cluster markers for dense endpoint areas.

8. Topology Enhancements

	DETAIL
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Current	Endpoint graph with logical/geographic layouts, SPOF detection by node degree.
Impact	Layout resets on reload. No true networking detail.
Needed	Drag/drop layout with save per user and shared default. True networking fields: VLANs, BGP sessions, router interfaces, handoff ports, IP blocks. Better redundancy modeling (path diversity, not just node degree).

9. Financial / P&L View

	DETAIL
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Current	Implemented with per-circuit modeled P&L, carrier spend, margin, ETF exposure, and the first infrastructure subtended-link economics model.
Needed	Sonar revenue attribution, invoice actuals, carrier/customer/market/service rollups, infrastructure waterfall reports, renewal projection forecast, allocation calculators, and export to XLSX.

10. Address Lookup

	DETAIL
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Current	Implemented text search across circuit, carrier, endpoint, city, state, and address fields.
Needed	Integration with Xiber Service Address Availability Checker. Nearby endpoint/circuit search by radius. Quote-history cost-to-serve estimate.

11. Mobile Field View

	DETAIL
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Current	Implemented responsive field view with search, one-tap NOC call, copy circuit ID, and map app links.
Needed	Add infrastructure asset support, recent events, paired-circuit context, and offline-friendly behavior.

12. Invoice Ingestion

	DETAIL
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Current	Invoice and InvoiceLineItem schemas exist. No ingestion pipeline.
Needed	Mailbox polling (M365 Graph) or manual upload. PDF invoice parsing with line item extraction. Automatic matching to circuit by carrier circuit ID. Variance detection (invoiced MRC vs. contracted MRC). Auto-create Monday.com task for finance team on variance.

13. Vendor Portal Connectors

	DETAIL
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Current	Not implemented.
Needed	Lumen Control Center API connector. Zayo Tranzact API connector. Cogent portal connector. Vault/Doppler credential storage. Playwright scraping fallback where APIs are unavailable.

14. MCP Full Coverage

	DETAIL
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Current	2 working tools, 2 placeholders.
Needed	<code>get_carrier_summary</code> , <code>get_circuit_pl</code> , <code>find_circuits_at_address</code> , <code>get_outage_history</code> , <code>get_renewal_pipeline</code> . Write tools with explicit agent confirmation flow. Register with XOS MCP gateway for team-wide access.

Recommended Build Phases

PHASE	FOCUS	WHY FIRST
1	Real Entra authentication	Cannot deploy without identity. Blocks audit logging.
2	Audit logging	Required for compliance and accountability.
3	Renewal engine + notifications	Highest business value — prevents missed deadlines and auto-renew traps.
4	Contract CRUD + PDF ingestion	Enables self-service contract management, reduces manual data entry.
5	Financial/P&L + Sonar integration + infrastructure waterfall	Real margin visibility, accurate business intelligence across circuits, structures, child facilities, and customer endpoints.
6	Import enhancements (AI mapping, editor)	Reduces friction for bulk data onboarding.
7	Invoice ingestion + variance detection	Catches billing errors, automates finance workflows.
8	MCP full coverage	Enables XOS agents to query NetOS data for automated reporting and decisions.
9	Map + topology enhancements	Improved operational visualization.
10	Mobile, address lookup, exports	Quality-of-life features for field and sales teams.
11	Vendor portal connectors	Automated circuit status sync from carrier portals.

Technical Debt

ITEM	NOTES
Celery workers	Dependencies installed, workers not yet running. Needed for renewal engine and invoice polling.
Redis	Running but only used for Celery broker. Could also cache dashboard aggregations.
pgvector	Extension installed but no embeddings generated yet. Future use for semantic circuit search.
Error handling	API returns generic 500s in some edge cases. Need structured error responses.
Test coverage	No automated tests. Need unit tests for import logic, API endpoints, and renewal state machine.
CI/CD	No pipeline. Need GitHub Actions or similar for lint, test, build, deploy.