XIBER NETOS DOCUMENTATION

Data & Import Guide

Downloadable reference generated from the NetOS Markdown documentation.

Xiber NetOS — Data & Import Guide

> Data model, system-of-record boundaries, CSV/XLSX import workflow, and validation rules.

System of Record Boundaries

What NetOS Owns

DOMAIN	DETAILS
Carriers	Provider names, portal URLs, NOC contacts, account managers
Endpoints	Location names, addresses, coordinates, facility types
Circuits	Technical attributes, bandwidth, status, purpose, handoff
Financials	MRC, NRC, PO numbers, GL codes
Contracts	Terms, renewal windows, ETF formulas, escalators, governing law
Renewals	Renewal state machine, decision history
Lifecycle	Event timeline (orders, installs, upgrades, outages, decomms)
Invoices	Carrier invoices and variance detection (future)
Infrastructure	Towers, rooftops, data centers, POPs, carrier hotels, offices, aggregation sites, facility costs, rack/power commitments, and tower leases
Customers	Commercial and MFC customer sites used as customer endpoints for circuits, RF Links, and attribution
RF Links	Wireless backhaul and customer endlinks with RF system, capacity, CAPEX, MRC/rent, frequency, FCC license, and depreciation fields
Electrical Services	Utility accounts attached to infrastructure or customer sites, including provider, meter, service details, average monthly cost, monitoring link, and documents
Infrastructure Attribution	Explicit subtended relationships between parent sites, downstream structures, customer endpoints, circuits, and RF Links

What NetOS Does NOT Own

DOMAIN	SOURCE SYSTEM
End-customer billing	Sonar
Device telemetry & monitoring	LibreNMS / Prometheus / Loki
Physical network design	Wisdm
Document signatures	DocuSeal
Project task management	Monday.com

NetOS will **pull from** these systems (Sonar revenue, LibreNMS monitoring links, Wisdm geometry) and **push to** them (Monday.com renewal tasks, DocuSeal termination notices) — but those systems remain the source of truth for their respective domains.

Data Model

Core Entities

```
Carrier ── Circuit ── Contract
                │
                ├── Endpoint snapshots copied from selected sites
                ├── LifecycleEvent
                ├── Invoice ── InvoiceLineItem
                └── RenewalDecision

InfrastructureAsset ── SubtendedLink ── Customer
        │                    │
        │                    ├── Circuit cost source
        │                    └── RFLink cost source
        ├── ElectricalService
        └── InfrastructureDocument

Customer ── ElectricalService
RFSystemCatalog ── RFLink ── RFLinkDocument
```

Circuit Natural Key

```
(carrier_id, carrier_circuit_id)
```

This composite key prevents duplicate circuits when importing the same carrier inventory multiple times. If a row matches an existing natural key, the circuit is **updated** rather than duplicated.

Manual circuit entry should use Infrastructure and Customer site selectors. Imported endpoint fields remain supported for bulk onboarding, carrier inventory loads, and legacy records, but the preferred operating workflow is to create or correct the Infrastructure/Customer site first and then select that site on the circuit.

Key Enums

ENUM	VALUES
Service Type	`wave`, `epl`, `evpl`, `dia`, `ip_transit`, `dark_fiber`, `mpls`, `cross_connect`, `cellular_backup`, `broadband`
Status	`quoted`, `ordered`, `installing`, `active`, `suspended`, `decommissioned`
Purpose	`backhaul`, `backup`, `customer_dedicated`, `internet`, `dr`, `management`
Redundancy	`primary`, `secondary`, `standalone`
Endpoint Type	`mdu`, `tower`, `data_center`, `colo`, `pop`, `customer_premise`, `carrier_hotel`
Renewal State	`stable`, `watch`, `active`, `critical`, `overdue`, `decided`

CSV/XLSX Import

Import Templates

The import page now has separate downloadable templates:

TEMPLATE	USE FOR	IMPORT ENDPOINT
`/templates/netos-circuit-import-template.csv`	Wholesale circuits, A/Z endpoints, provider details, agreement terms	`/api/v1/imports/circuits/*`
`/templates/netos-infrastructure-import-template.csv`	Data centers, towers, rooftops, colocation, POPs, offices, and aggregation facilities	`/api/v1/imports/infrastructure/*`

Use separate files when the records have different lifecycles. Circuits are matched by provider plus carrier circuit ID; infrastructure is matched by Xiber infrastructure label.

Circuit Required Fields

FIELD	DESCRIPTION
`carrier_name`	Upstream provider (e.g., "Lumen", "Zayo")
`carrier_circuit_id`	The carrier's reference number

These two fields form the circuit natural key. All other fields are optional but recommended.

If `xiber_circuit_label` is omitted, NetOS generates it using `Provider Short Name Service Type A Loc -> Z Loc` when the provider has a short name, otherwise `Carrier Service Type A Loc -> Z Loc`. DIA and broadband use the same pattern without a Z location because they are single-site services. Generated labels are truncated to fit the circuit label field and receive a numeric suffix only when needed for uniqueness.

Recommended Fields

FIELD	TYPE	EXAMPLE
`xiber_circuit_label`	string	`Lumen WAVE Site A -> Site Z`
`service_type`	enum	`wave`, `dia`, `dark_fiber`, `broadband`
`bandwidth_mbps`	number	`10000`
`status`	enum	`active`
`mrc_usd`	decimal	`2500.00`
`nrc_usd`	decimal	`5000.00`
`ban_id`	string	`BAN-100245`
`billing_account`	string	`BA-44129`
`protocol_handoff`	string	`10GBase-LR`
`monitoring_url`	URL	`https://librenms.xiber.local/device/123`
`install_date`	date	`2024-01-15`
`a_endpoint_name`	string	`Xiber HQ - 123 Main St`
`a_city`	string	`Columbus`
`a_state`	string	`OH`
`z_endpoint_name`	string	`Cologix COL1`
`z_city`	string	`Columbus`
`z_state`	string	`OH`

Contract Fields (Optional)

FIELD	TYPE	EXAMPLE
`contract_effective_date`	date	`2024-01-15`
`contract_term_end_date`	date	`2027-01-14`
`contract_initial_term_months`	integer	`36`
`contract_renewal_type`	enum	`auto_renew`, `manual`, `month_to_month`, `evergreen`
`contract_renewal_notice_days`	integer	`90`
`contract_msa_terms_text`	text	`36 month initial term...`
`contract_etf_formula_text`	text	`100% of remaining MRC`
`contract_price_escalator_pct`	decimal	`3.0`
`contract_pdf_url`	URL	`/api/v1/circuits/.../agreement/file/...`

Infrastructure Fields

Infrastructure imports cover facilities and structures that have their own cost, agreement, and renewal lifecycle. Electrical utility accounts are tracked separately under Electrical Services after the infrastructure or customer site exists.

FIELD	TYPE	EXAMPLE
`xiber_infrastructure_label`	string	`INF-IND-PWR-0012`
`provider_name`	string	`AES Indiana`
`site_type`	string	`data_center`, `tower`, `rooftop`, `colo`, `pop`, `office`, `other`
`display_name`	string	`Indy MDU 42 Electrical Service`
`facility_account_id`	string	`METER-100245`
`latitude`, `longitude`	decimal	`39.773350`, `-86.158050`
`service_description`	text	`Electrical utility service for network room`
`power_commit`	string	`400A 120/208V 3 phase`
`monitoring_url`	URL	Exact monitoring, graph, or utility-status page
`mrc_usd`, `nrc_usd`	decimal	`1450.00`, `0.00`
`price_escalator_pct`	decimal	`3.0`
`effective_date`, `term_end_date`	date	`2024-01-01`, `2024-12-31`
`msa_terms_text`, `etf_formula_text`	text	Agreement language

Manual Bulk Maintenance

After import, users can make broad operational corrections from the UI.

Circuit Bulk Actions

URL: `/circuits`

Select rows with the checkboxes in the first column. The header checkbox selects all currently visible filtered rows.

BULK FIELD	CANONICAL FIELD
Status	`status`
Provider	`carrier_name`
Type	`service_type`
MRC	`mrc_usd`
NRC	`nrc_usd`
Term End	`contract_term_end_date`

BULK FIELD	CANONICAL FIELD
Notes	`notes`

Infrastructure Bulk Actions

URL: `/infrastructure`

Select rows with the checkboxes in the first column. The header checkbox selects all visible rows.

BULK FIELD	CANONICAL FIELD
Status	`status`
Provider	`provider_name`
Type	`site_type`
MRC	`mrc_usd`
Escalator %	`price_escalator_pct`
Term End	`term_end_date`
Notes	`notes`

Bulk deletes are soft-deletes. They set `deleted_at` and preserve the record for audit/history.

Import Workflow

STEP	WHAT HAPPENS
1. Upload	User uploads a CSV or XLSX file via `/import` or the API
2. Signature	Raw file hash is calculated for deduplication
3. Mapping	Headers are mapped to canonical fields using heuristic matching
4. Staging	All rows are written to `import_staging_rows` with validation results
5. Validation	Each row is checked for required fields, type coercion, enum matching
6. Review	User sees first 5 rows with mapped columns and any validation errors
7. Commit	Valid rows are committed; invalid rows are skipped with error details
8. Carrier stubs	Missing carriers are auto-created with name only (fill in details later)
9. Endpoint stubs	Missing circuit endpoints are auto-created; coordinates are populated when latitude/longitude are present

What Happens on Re-Import

When a row matches an existing circuit by natural key `(carrier, carrier_circuit_id)`, or existing infrastructure by `xiber_infrastructure_label`:

- All provided fields are **updated** to the new values

- Fields not present in the import are **left unchanged**
- This is an **upsert**, not a replace

Validation Rules

FIELD	VALIDATION
`carrier_name`	Required, non-empty
`carrier_circuit_id`	Required, non-empty
`service_type`	Coerced to enum (case-insensitive, underscore-tolerant)
`status`	Coerced to enum
`mrc_usd`	Must be numeric if provided
`nrc_usd`	Must be numeric if provided
`bandwidth_mbps`	Must be numeric if provided
`install_date`, `decom_date`, contract dates, infrastructure term dates	Must be ISO date if provided

Current limitations:

- No inline editing of staged rows (must fix CSV and re-upload)
- No diff preview before updating existing circuits
- No explicit confirmation for financial field overwrites from CSV/XLSX
- Column mapping is heuristic-only (AI-assisted mapping planned)

API Import Examples

Preview (upload and detect mapping):

```
curl -H "x-user-role: exec" \
  -F "file=@examples/sample_circuits.csv" \
  http://localhost:8000/api/v1/imports/circuits/preview
```

Response:

```
{
  "import_job_id": "abc123",
  "detected_mapping": {
    "Carrier": "carrier_name",
    "Circuit ID": "carrier_circuit_id",
    "MRC": "mrc_usd"
  },
  "headers": ["Carrier", "Circuit ID", "Type", "BW", "MRC", ...],
  "sample_rows": [...],
  "total_rows": 45,
```

```
  "valid_rows": 42,
  "invalid_rows": 3
}
```

Commit (import valid rows):

```
curl -H "x-user-role: exec" \
  -X POST \
http://localhost:8000/api/v1/imports/circuits/{import_job_id}/commit
```

Infrastructure imports use the same pattern:

```
curl -H "x-user-role: exec" \
  -F "file=@netos-infrastructure-import-template.csv" \
  http://localhost:8000/api/v1/imports/infrastructure/preview

curl -H "x-user-role: exec" \
  -X POST \
  http://localhost:8000/api/v1/imports/infrastructure/{import_job_id}/commit
```

Response:

```
{
  "inserted": 38,
  "updated": 4,
  "invalid": 3,
  "errors": [
    {"row": 12, "field": "mrc_usd", "error": "not a valid number"},
    {"row": 23, "field": "carrier_name", "error": "required field missing"},
    {"row": 31, "field": "service_type", "error": "unknown value: 'wavelength'"}
  ]
}
```

Sample CSV

Files:

- `/templates/netos-circuit-import-template.csv`
- `/templates/netos-infrastructure-import-template.csv`

```
carrier_name,carrier_circuit_id,xiber_circuit_label,service_type,bandwidth_mbps,status,mrc_usd,nrc_usd,a_endpoint_name,a_city,a_state,z_endpoint_name,z_city,z_state
Lumen,DHEC.123456,XIB-LUM-0001,wave,10000,active,2500.00,5000.00,Xiber HQ,Columbus,OH,Cologix COL1,Columbus,OH
Zayo,ZY-789012,XIB-ZAY-0001,dark_fiber,100000,active,4200.00,15000.00,56 Marietta St NW,Atlanta,GA,Equinix AT1,Atlanta,GA
```

Common circuit purpose values include `backhaul`, `backup`, `customer_dedicated`, `internet`, `dr`, and `management`. Use `backup` for MFC backup circuits, such as broadband service backing up a primary fiber or RF path.

Endpoint Coordinates

Map rendering and geographic topology require endpoint coordinates.

FIELD	TYPE	FORMAT
`endpoints.geom`	PostGIS `POINT`	SRID 4326 (WGS84 lat/lng)

Coordinates are stored as PostGIS geometry. The seed data includes coordinates for all sample endpoints. When importing circuits, endpoints are auto-created as stubs without coordinates — add coordinates later via the API or UI to make them appear on the map.

Contract Data

Contracts are linked to circuits and/or infrastructure assets. Key fields:

FIELD	DESCRIPTION
`carrier`	Provider this contract is with
`contract_type`	Master, circuit-specific, facility
`parent_contract`	Link to master agreement (if applicable)
`effective_date`	When the contract began
`initial_term_months`	Original commitment length
`term_end_date`	Calculated end date
`renewal_type`	`auto`, `manual`, `evergreen`
`renewal_term_months`	Length of auto-renewal period
`renewal_notice_days`	Days before end to provide notice
`renewal_decision_deadline`	Calculated: `term_end - notice_days`
`price_escalator`	Annual price increase formula
`etf_formula`	Early termination fee calculation
`etf_current_value`	Current estimated ETF
`governing_law`	Jurisdiction
`pdf_url`	Link to signed contract PDF

Current state: Sample contracts are created by the seed script. PDF extraction and side-by-side approval are not yet implemented. See Roadmap for the PDF ingestion plan.