



MLS & SYNDICATION SERVER TECHNICAL GUIDE

Architecture, canonical property records, exchange control, syndication, synchronization and platform administration.

Document purpose

Technical reference for the TPX central server and its role as the authoritative exchange and distribution layer for private real-estate networks.

Contents

The guide describes the central TPX platform independently of any single website connector.

Section	Title	Coverage
01	Platform Overview	Purpose, responsibilities and architectural boundaries
02	System Architecture	Core components and data flow
03	Organizations & Access	Agencies, users and API clients
04	Canonical Property Model	Ownership, property sources and identity
05	Private Exchange	Network availability and inventory control
06	Syndication Engine	Target copies, lifecycle and revocation
07	Synchronization	Change propagation, reconciliation and reliability
08	Media & Location	Images, coordinates and location data
09	Administration	Operational controls and server workflows
10	Security & Integrity	Isolation, authorization and loop prevention
11	Operations & Future Architecture	Queues, monitoring and planned extensions

01 - Platform Overview

TPX MLS & Syndication Server is the central exchange and distribution layer for a controlled private property network.

TPX allows independent agencies, offices, franchise members or approved sales partners to share selected property inventory without surrendering control of their own websites or local publishing workflow.

The originating organization remains the canonical source of a property. TPX records that source relationship, controls whether the property is available to the network and maintains syndication relationships for participating members.

CORE MODEL

```
graph TD; A[SOURCE AGENCY] --> B[CANONICAL TPX PROPERTY]; B --> C[PRIVATE EXCHANGE]; C --> D[SYNDICATION RECORDS]; D --> E[PARTICIPATING WEBSITES];
```

Primary Responsibilities

- Maintain a canonical TPX record for each source property.
- Associate the canonical property with its originating organization and external source identifier.
- Control whether selected inventory is available to the private network.
- Maintain syndication relationships between source properties and receiving agencies.
- Protect source ownership and prevent cross-agency overwrite.
- Provide authenticated integration endpoints for connected systems.
- Support synchronization and future event-driven distribution.

Architectural principle

TPX is not intended to replace an agency's local property website. It provides the network layer between participating property systems.

02 - System Architecture

The platform separates local property publishing from central exchange management.

HIGH-LEVEL ARCHITECTURE

```
OWNER WEBSITE / PROPERTY SYSTEM
|
TPX CONNECTOR / API
|
TPX MLS & SYNDICATION SERVER
|
PRIVATE EXCHANGE
|
SYNDICATION ENGINE
|
RECEIVING WEBSITES
```

Core Server Components

Component	Responsibility
Agencies	Network organizations and their operational status.
Properties	Canonical property records.
Property Sources	Relationship between an external property, source type and TPX property.
Property Media	Images and related property media metadata.
Syndications	Distribution relationships between a TPX property and receiving organization.
API Clients	Authenticated machine-to-machine access associated with an agency.
Administration	Exchange and syndication oversight for the network operator.

Current Application Stack

The current TPX server is implemented as a Laravel application with MySQL persistence. API middleware authenticates connected clients before protected operations reach the property synchronization layer.

03 - Organizations & Access

TPX is designed for a closed network of authorized organizations rather than unrestricted public aggregation.

Agencies

Each participating organization is represented by an agency record. Agency status is important because an otherwise valid integration must not be able to operate if its associated organization is inactive.

API Clients

Machine-to-machine integrations use API clients associated with an agency. Protected requests identify the client and authenticate its secret before server-side property operations are permitted.

AUTHENTICATION HEADERS

```
X-TPX-Client-ID: YOUR_CLIENT_ID  
X-TPX-Secret: YOUR_CLIENT_SECRET
```

Authorization Flow

ACCESS CONTROL

```
REQUEST  
|  
VALID API CLIENT?  
|  
CLIENT ACTIVE / NOT EXPIRED?  
|  
ASSOCIATED AGENCY ACTIVE?  
|  
AUTHORIZED SERVER OPERATION
```

Security boundary

A valid secret alone is not sufficient if the client or its associated organization has been disabled.

04 - Canonical Property Model

Every shared listing is anchored to one authoritative TPX property record.

Canonical Ownership

The organization that introduces a property to TPX remains its source. Syndicating that property to another agency does not transfer canonical ownership.

CANONICAL RELATIONSHIP

```
SOURCE AGENCY
+
SOURCE TYPE
+
EXTERNAL PROPERTY ID
|
PROPERTY SOURCE
|
CANONICAL TPX PROPERTY
```

Property Sources

PropertySource records provide the stable bridge between an external system and a canonical TPX property. The server can therefore recognize the same external property during later synchronization requests and update the existing record rather than creating a duplicate.

Source Protection

The property synchronization layer prevents one authenticated agency from overwriting a canonical property belonging to another source agency.

Representative Property Data

Area	Examples
Identification	TPX property ID, external ID, source agency, source type
Listing	Title, description, transaction/listing status, property type
Financial	Sale price, rental price, rental period, fees and tenure information
Physical	Bedrooms, bathrooms, sizes, furnishing, parking and year built
Location	Province/district, latitude and longitude
Exchange	Availability, available timestamp and withdrawal timestamp
Media	Original images, featured status and sort order

05 - Private Exchange

The exchange contains only properties deliberately made available by their source organization.

Network Availability

A property can be synchronized with TPX without being shared. Exchange availability is a separate control that determines whether authorized network members can syndicate the listing.

AVAILABILITY STATE

```
LOCAL / CANONICAL PROPERTY
|
exchange_available = false
|
NOT AVAILABLE TO NETWORK

exchange_available = true
|
AVAILABLE TO TPX NETWORK
```

Immediate Network Model

Within an approved private network, an authorized member can select an available property and create a syndication relationship without requiring per-listing approval from the source agency. The source's decision to make the property available is the authorization to syndicate it within that network.

Withdrawal

When the source changes an available property to unavailable, TPX records the withdrawal and revokes active non-revoked syndication relationships for that property.

Non-destructive lifecycle

Withdrawal should end distribution without destroying the canonical source record. This preserves history, identity and future auditability.

06 - Syndication Engine

A syndication is a controlled relationship between a canonical source property and a receiving network member.

SYNDICATION FLOW

```
CANONICAL TPX PROPERTY
|
AVAILABLE TO NETWORK
|
TARGET AGENCY SELECTS PROPERTY
|
SYNDICATION RECORD CREATED
|
LOCAL MANAGED PROPERTY COPY
```

Receiving Website

The target website should receive a genuine local property record so it can participate in that website's normal search, maps, favorites, SEO and other local functionality. The local record remains managed by TPX and retains its source and syndication identity.

Local Identity Requirements

Metadata	Purpose
_tpx_property_id	Links the local post to the canonical TPX property.
_tpx_syndication_id	Links the local post to the syndication relationship.
_tpx_source_agency_id	Preserves the originating agency identity.
_tpx_local_agency_id	Identifies the receiving agency.
_tpx_managed=1	Marks the local property as TPX-managed.
_tpx_role=syndicated	Prevents the receiving copy being treated as an owner source.

Revocation

If the source withdraws a property, active syndications should be revoked and receiving connectors should unpublish, draft or otherwise disable the local managed copy rather than destructively deleting it.

07 - Synchronization

TPX is designed to keep canonical data and managed syndicated copies aligned while preserving source authority.

Source Updates

UPDATE FLOW

```
SOURCE PROPERTY EDITED
|
SOURCE SYNCHRONIZES TO TPX
|
CANONICAL RECORD UPDATED
|
ACTIVE SYNDICATIONS IDENTIFIED
|
RECEIVING COPIES UPDATED
```

Reliability Model

The initial connector architecture should use direct synchronization after property changes plus a scheduled reconciliation process as a safety net. Failed operations should be queued, logged and retried rather than silently discarded.

Scheduled Reconciliation

A 10-15 minute scheduled reconciliation interval is appropriate for the initial deployment. This is a reliability mechanism, not a substitute for immediate connector synchronization.

Future Event Delivery

PLANNED EVENTS

```
property.created
property.updated
property.withdrawn
property.sold
syndication.revoked
```

Current status

Webhook/event delivery is a planned extension. It should not be described as live functionality until subscription, signing, delivery, retry and failure behavior are implemented.

08 - Media & Location

Media and coordinates are part of the distributed property record and require explicit handling.

Property Media

TPX stores property media relationships including originals, ordering and featured-image state. Receiving connectors should download required originals into the target WordPress Media Library rather than permanently hotlinking remote images.

MEDIA DISTRIBUTION

```
graph TD
    A[SOURCE ORIGINAL IMAGE] --> B[TPX PROPERTY MEDIA]
    B --> C[TARGET CONNECTOR DOWNLOAD]
    C --> D[LOCAL MEDIA LIBRARY]
    D --> E[LOCAL HOUEZ GALLERY]
```

Location Coordinates

The canonical property model stores latitude and longitude. Preserving coordinates is important for maps, property search, proximity filtering and future TPX location-intelligence functions.

Houzez Location Mapping

TPX	Houzez
latitude	houzez_geolocation_lat
longitude	houzez_geolocation_long

09 - Administration

The TPX operator requires central controls for membership, exchange inventory, syndications and integration access.

Administrative Areas

- Agency management and status control.
- API client creation, activation, expiration and revocation.
- Exchange inventory oversight.
- Syndication oversight and revocation status.
- Property/source diagnostics.
- Synchronization and operational logging as these modules are implemented.

Current Administrative Routes

Route	Purpose
/admin/exchange	View and manage exchange-oriented property information.
/admin/syndications	View syndication records and their state.

Operational Principle

Administrative intervention should generally change state rather than destroy records. Suspension, withdrawal and revocation preserve the history required to understand how inventory moved through the network.

10 - Security & Data Integrity

Private exchange infrastructure depends on strict source isolation, credential control and identity preservation.

Core Controls

- API credentials are associated with a specific authorized organization.
- Inactive or expired clients must not access protected operations.
- Inactive agencies must not operate through otherwise valid clients.
- Cross-agency canonical property overwrite is blocked.
- External identifiers remain stable within their source context.
- Syndicated receiving copies are never reintroduced as new source properties.
- Secrets belong in server-side configuration, not public browser code.

Loop Prevention

CORRECT ROLES

OWNER PROPERTY

Originates locally
Can synchronize to TPX

SYNDICATED PROPERTY

Originates from another member
Must not create a new TPX source record

Integrity rule

The distinction between owner and syndicated roles is one of the most important safeguards in the TPX architecture.

11 - Operations & Future Architecture

Production operation requires observability, reliable background processing and controlled evolution of the server.

Operational Requirements

- Database backup and recovery procedures.
- Application and API error logging.
- Queue monitoring for failed synchronization jobs.
- Scheduled reconciliation monitoring.
- Credential rotation and revocation procedures.
- Deployment/version control and migration discipline.
- Health monitoring using the API health endpoint.
- Auditability for withdrawal and syndication state changes.

Current API Surface

Method	Endpoint	Purpose
GET	/api/health	Application health check.
GET	/api/auth-test	Protected authentication test.
POST	/api/v1/properties/sync	Create or update a canonical source property.

Planned Platform Extensions

- Exchange inventory retrieval endpoints.
- Syndication creation and management endpoints.
- Property media APIs.
- Webhook subscriptions and signed event delivery.
- Property lifecycle events.
- Agency/network management endpoints.
- Connector queues, retries, logs and reconciliation tooling.
- XML feed ingestion and mapping workflows.

Documentation discipline

Planned capabilities should be added to public technical references only after their implementation and behavior have been verified.

TPX - Real Estate Technology for Houzez

Private MLS, property syndication and integration infrastructure for controlled real-estate networks.