**TECHPRO VISION**

AI Video Intelligence Platform · Software & Operations Guide

COMPLETE SOFTWARE USER MANUAL

# TechPro Vision User Manual

Installation, camera onboarding, live monitoring, archive playback, zones & static fixtures, AI-reviewed alarms, plain-English search, Iris AI assistant, site maps, case files, and Vision Connect administration.

### Hardware-Agnostic Coverage

Applies to all TechPro Vision AI Recorders (16, 32, and 64-camera Standard and Max series, plus custom enterprise builds).

### Guided Setup & Fail-Safe Design

Journaled camera onboarding with automatic rollback, fail-open AI alarm review, and human-approved static fixtures.

### Investigation & Evidence Workflow

Plain-English video search, Iris assistant, LPR & face libraries, geographic pursuit maps, and tamper-evident exports.

### Ownership, Not Rental

Complete local recording, live view, playback, export, and on-box detection—paired with optional Vision Connect cloud services.

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NAVIGATION GUIDE

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CHAPTER 01

# Getting Started & Interface Overview

TechPro Vision is an AI-powered network video recorder platform that works with the ONVIF and RTSP IP cameras you already own. This manual covers the TechPro Vision software, user interface, initial setup, daily operation, investigation tools, and cloud services across every recorder tier and deployment size.

> **HARDWARE-AGNOSTIC SOFTWARE GUIDE**
> Every TechPro Vision recorder—whether a 16-, 32-, or 64-camera Standard or Max appliance or a custom-built enterprise server—runs the same software interface documented in this manual. For physical dimensions, drive bays, RAID 6 configurations, network interfaces, and power ratings, refer to your model's **Product Specification Sheet**.

## 1.1 Signing In & Connecting to Your Recorder

Open a modern desktop or mobile browser (Chrome, Edge, or Safari recommended for full H.265/HEVC archive playback) and navigate to your recorder's local HTTPS address or launch the recorder directly from the TechPro Vision Customer Portal at `portal.techprovision.ai`.

1. **Local HTTPS Certificate Notice:** When connecting directly to a recorder on your local network by IP address or `.local` hostname, your browser may show a self-signed certificate warning. This is expected for direct local connections—your sign-in and video streams remain encrypted end-to-end. Accept the prompt to continue; the sign-in screen displays a dismissible reassurance banner for local connections.
2. **Enter Credentials:** Enter your **Username** and **Password**. Use the eye icon to verify your entry if needed. Leave **Remember me** checked on dedicated operator workstations.
3. **Automatic Cloud Handoff:** When you sign in with your TechPro Vision Cloud email address (or launch a recorder from `portal.techprovision.ai`), the recorder establishes your cloud session automatically for multi-site views and the Iris AI assistant. If your internet connection is temporarily down, local sign-in still succeeds normally so you are never locked out.
4. **24/7 Monitoring Keepalive:** While the browser remains open on a monitoring desk or wall display, TechPro Vision refreshes your session automatically every 60 minutes so continuous displays stay signed in.

## 1.2 Interface Layout & Navigation

The desktop interface is organized into three regions: the **Left Navigation Rail**, the main workspace, and the persistent **Bottom Status Bar**.




Figure 1.1: TechPro Vision navigation layout across Main operator surfaces, the collapsible System group, Settings Hub, and floating tools.

### Left Navigation Rail

- **Main Section (always expanded): Live** ( `/` ), **Events** (with pulsing open-alarm badge), **Search**, **Sites** (multi-site recorders and views), **Maps**, and **Exports** (with active-job count badge).
- **System Section (collapsible):** Collapsed by default to keep daily monitoring uncluttered, and expands automatically when a System page is open. Contains **Server** (system health), **Storage**, **Cases** (incident files), **Logs**, **Audit** (Administrator/Owner only), **Watchlist**, and **Faces**.
- **Bottom of Rail: Settings** (displays an amber dot whenever any camera is offline) and your **User Avatar** menu (signed-in username, **Submit Feedback**, **View Feedback**, and **Sign Out**).

### Bottom Status Bar & Quick Tools

- **Live Vitals:** Displays the recorder name and health dot (click for a live CPU/RAM popover), CPU and Memory percentages, online/total cameras, offline camera count, actively recording count, open alerts, and a live 24-hour clock. On federated multi-recorder sites, a **Federation Recorders** chip displays linked recorder status and clock-sync warnings.
- **Command Bar ( `Ctrl+K` / `⌘K` or `/` ):** Available on the Live view. Hover the top edge of the screen or press `⌘K` to fuzzy-search cameras by name, ID, IP, or comment, jump to Favorites and Recent cameras, or switch saved layouts. Click **Pin** to keep the bar visible.
- **Floating Iris Button:** Appears in the bottom-right corner across pages whenever your cloud session is active, giving one-click access to the Iris AI assistant without leaving your current screen.
- **Keyboard Shortcuts Overlay:** Press `?` anywhere outside a text input to open the shortcut reference; press `Esc` to close modals or exit Display mode.

## 1.3 Mobile & Tablet Experience (Installable App)

TechPro Vision is an installable Progressive Web App (PWA). On iOS Safari (**Share → Add to Home Screen**) or Android Chrome (**Menu → Install app**), adding the recorder creates a standalone full-screen mobile app that supports Web Push notifications.

- **Bottom Tab Bar:** Phones switch automatically to a five-slot bottom bar: **Live**, **Events**, **Search**, **Sites**, and **More** (which opens a slide-out drawer containing all System, Settings, and Sign Out items).
- **Touch-Native Viewer:** Both phones and touch tablets use gesture-driven playback—swipe left/right to switch cameras, swipe down to close, pinch or double-tap to zoom up to 8×, and long-press any camera tile for quick actions and disarm presets.

CHAPTER 02

# Initial Installation & Camera Onboarding

Before adding cameras, connect your TechPro Vision recorder to the same local network (or dedicated camera VLAN) as your IP cameras and connect an uplink to the internet if you plan to use Vision Connect remote access, health alerts, or AI alarm review.

## 2.1 Network & Camera Prerequisites

- **Supported Cameras:** Standard IP cameras supporting **ONVIF** and/or **RTSP** streams from Hikvision, Dahua, Axis, Hanwha, Uniview, Amcrest, Sibell Vision, and other standards-compliant brands—mixed freely on the same recorder. Analog (coax) cameras are not supported directly.
- **Recommended Camera Settings:** Enable both a **Mainstream** (full resolution for 24/7 recording, exports, and single-camera HD viewing) and a lower-bitrate **Substream** (typically 640×480 to 1280×720 at 10–15 fps for multi-camera grid views and on-box object detection). Enable ONVIF in each camera's network settings if disabled by default.
- **Direct Network Reachability:** The Camera Setup Wizard scans IP ranges directly attached to the recorder's network interfaces. Ensure the recorder can reach the camera subnet without NAT in between.
- **Channel Capacity:** Check your license entitlement banner at the top of **Add Devices** (Licensed for N cameras — M configured now) to verify available camera seats before scanning.

## 2.2 Adding Cameras With the Setup Wizard

Open **Settings** → **Add Devices** (or click **Add device** → **Open Add Devices** from **Settings** → **Configure Devices**). The wizard uses a seven-step journaled workflow designed so a bad change can never leave your recorder down.

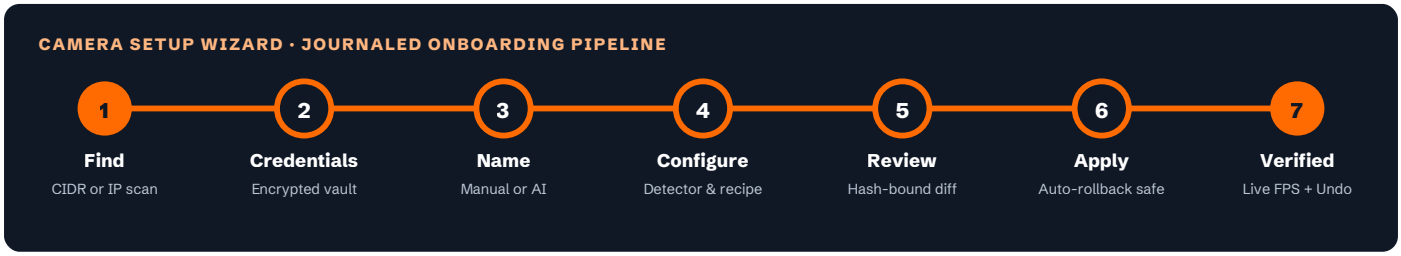


Figure 2.1: The seven-step Camera Setup Wizard validates streams, stores encrypted credentials, binds changes to a configuration hash, and rolls back automatically if a restart check fails.

1. **Step 1 — Find Cameras:** Enter an IP range in CIDR notation (for example, `192.168.1.0/24`) or a single camera IP address on the recorder's camera network, then click **Scan**. Discovered cameras appear with their IP address and detected vendor/model, pre-checked for onboarding. Uncheck any devices you do not want to add and click **Continue with N camera(s)**.
2. **Step 2 — Credentials:** Enter the camera **Username** (defaults to `admin`) and **Password** for the selected cameras and click **Test & continue**. Credentials are stored inside the recorder's encrypted credential vault, bound strictly to those camera IPs, never displayed again, and never visible to the Iris AI assistant. The recorder probes every candidate RTSP stream on each camera, reports detected codec and resolution, and captures a preview snapshot for every camera that authenticates. (If cameras use different passwords, onboard one group at a time.)
3. **Step 3 — Name:** Review each camera's preview thumbnail and assign a clear display name (such as Front Gate or Loading Dock East). If Vision Connect AI is active, click **Auto-name with AI** to analyze all preview snapshots in one batch and suggest descriptive names for blank fields (manually typed names are never overwritten). Every authenticated camera requires a name before continuing.

4. **Step 4 — Configure:** Choose the **Detector** and **Recipe** for each camera. On systems with both standard color and thermal detectors, assign thermal cameras to the heat-sensing thermal detector. Select the recipe that matches the camera's role:
   - **Entry / Door** — close-range entry monitoring for people and visitors.
   - **Driveway** — vehicle and pedestrian approaches.
   - **Indoor** — interior rooms, lobbies, and corridors.
   - **Overview / Wide Area** (default) — general site coverage and yards.
   - **LPR / Gate** — license plate capture lanes (available when the selected detector supports plate recognition).
5. **Step 5 — Review & Approve:** Inspect the plain-English summary, channel seat count, video decode session count, and the expandable **Technical diff (credentials redacted)**. Each plan is locked to a cryptographic change-set hash tied to the current recorder configuration. Click **Approve & apply**.
6. **Step 6 — Apply (Journaled & Fail-Safe):** The recorder stages the configuration, writes it, performs one brief recording restart, and runs automated health checks ( `staged → written → restarting → verifying → done` ). If you refresh or navigate away mid-apply, returning to **Add Devices** automatically resumes tracking the in-flight operation. If any health check fails, the recorder **rolls back automatically** to the prior working configuration.
7. **Step 7 — Verify & Optional Undo:** Confirm live frame rates and active detection status for every newly added camera (click **Refresh status** if a camera is still negotiating its stream). If anything looks wrong, click **Undo this change** to cleanly revert the entire batch through the same verified pipeline.

> **RECOVERING INTERRUPTED CHANGES (ADMINISTRATORS)**
>
> If power or network loss interrupts an apply mid-flight, an amber **Interrupted changes need a decision** banner appears at the top of **Add Devices** for Administrators and Owners. Choose **Complete change** to finish applying, **Roll back** to restore the pre-change snapshot, or **Dismiss (no changes)** if you have already resolved the configuration.

## 2.3 Managing Devices, Camera Health & Groups

Open **Settings** → **Configure Devices** to manage your camera inventory across three unified tabs: **Devices**, **Groups**, and **AI Detection**.

- **Devices Tab:** Filter by status (**All**, **Online**, **Offline**), search by name, IP, vendor, model, or comment, filter by server or group, and sort by Name, Status, IP, or Vendor. Hovering a desktop row previews a live snapshot.
- **Camera Detail Page:** Click any camera row to open its read-only health and configuration dashboard. Review live FPS, AI analysis rate, dropped frames, CPU/RAM usage, mainstream recording codec/bitrate/GB-per-day ingest, substream details, tracked object classes, and a toggleable **ZONES ON / ZONES OFF** overlay over a 3-second refreshing snapshot.
- **Groups Tab:** View camera groups organized by area or function (such as Perimeter, Gates, or Warehouse). Groups appear automatically in the Live Wall ViewBar so operators can switch to any group with one click.

CHAPTER 03

# Live Monitoring, Layouts & Archive Playback

The Live Camera Wall is built for fast situational awareness—streaming lightweight substreams across multi-camera grids and switching instantly to full-resolution mainstreams when you zoom in or expand a camera.

## 3.1 Live Camera Wall & Layouts

Use the top **ViewBar** on the **Live** page ( `/` ) to choose how cameras are arranged:

- **Grid Presets:** Switch between **2×2** (4 cameras, default), **3×3** (9 cameras), **4×4** (16 cameras per page), and **1+5 Spotlight** (one featured camera spanning a 2×2 area beside five smaller tiles; click any small tile to promote it into the spotlight, or click the spotlight tile to expand it).
- **Ultrawide Auto-Span:** Panoramic and dual-lens ultrawide cameras automatically span two columns in multi-column grids so wide scenes are never cropped away.
- **Camera Groups & Saved Views:** Click any Camera Group chip ( ▦ ) or shared Saved View ( ★ ) to filter the wall. Group views also offer a **Spotlight** toggle.
- **Pagination & Auto-Tour:** When a view spans multiple pages, use `‹` / `›` or click ▶ **Tour** to cycle pages automatically every 8 seconds. Tour pauses automatically whenever you expand a camera.
- **Display (Kiosk) Mode:** Click the monitor icon in the ViewBar (or Compact menu) to hide navigation chrome for a dedicated wall display, revealing a live **System Vitals Statbar** (online cameras, AI inference speed, detections today, storage usage, and a 24-hour activity sparkline). Press `Esc` or click **Exit Display mode** to return.
- **Compact Controls & Monitor Brightness:** Collapse the ViewBar into a minimal corner widget, or adjust the local **Display brightness** slider (100%–250%) for dim security desks without altering camera settings or recordings.
- **Live AI Events Rail:** The collapsible right-hand rail updates every 5 seconds with live detection crops, object labels, confidence scores, zones, and camera names. Hover an event to highlight its camera tile on the wall; click it to open the camera.

### Creating & Editing Custom Views

Click + **New view** (or ✎ **Edit** while viewing a saved layout) to open the **Layout Editor**. Choose a grid preset ( `1×1` , `2×2` , `3×3` , `4×3` , `4×4` , or `5×4` ), drag and drop cameras from the searchable sidebar onto any cell, right-click a cell to clear it, and save. Saved layouts live on the recorder and are shared across operators. Current view, page, and spotlight state also sync to the URL so you can bookmark specific monitor layouts.

## 3.2 Camera Tile Badges & Quick Controls

Each tile displays real-time status badges: pulsing green **LIVE** (switches to amber **SIGNAL LOST** if frames freeze), red **REC** (switches to amber **NOT RECORDING** if segments stop writing), **DISARMED** countdown badge (click to re-arm immediately), and red alert count badge.

Hover any desktop tile (or long-press on mobile) to access quick controls:

- **Instant Replay ( ⟲ ):** Jumps straight to Expanded View playing the last 60 seconds.
- **Snapshot:** Downloads a crisp JPEG still with camera name and timestamp.
- **Audio (Mute / Unmute):** Plays live camera audio (only one tile plays audio at a time).
- **Digital Zoom (1×–8×):** Scroll-wheel zoom anchored at your cursor (or `Ctrl/Cmd+Scroll` at any time); drag to pan, double-click to reset. Zooming past 1.5× automatically upgrades the tile from substream to full-resolution mainstream.

- **Quick Disarm:** Temporarily silence alarms for that camera ( `15m` , `30m` , `1h` , `4h` , `8h` , or `∞` until re-armed).
- **Context Menu ( ⋮ or Right-Click):** Jump to **View Archive**, **Camera Settings**, or **Show on Map**; override **Tile Fit** per camera (Auto, Fill, Fit full frame, Stretch); or copy camera name and ID.

## 3.3 Expanded Camera View, PTZ & Archive Playback

Click any tile to open the **Expanded Camera View**. The header provides an event-first mode switcher so you can investigate without scrubbing blindly:

| MODE | WHAT IT SHOWS & WHEN TO USE IT |
|---|---|
| ● **LIVE** | Real-time stream with **HD / SD** toggle (defaults to full-resolution HD mainstream). Supports 1×–8× bare scroll-wheel zoom and pan. |
| ▶ **CLIP** | Plays an instant MP4 event clip selected from the bottom **Event Browser Strip**, with one-click **Export Clip**, **Snapshot**, **Share**, and copyable Event ID. |
| **AI BOXES** | ~1 fps live analysis stream showing exact detection bounding boxes and confidence percentages—ideal for verifying zones and detector behavior. |
| ⟲ **REPLAY** | One-click instant replay of the last 60 seconds of recorded video. |
| ▶ **ARCHIVE** | Full-resolution 24/7 continuous recording playback with the interactive timeline scrubber. |

### PTZ & Optical Zoom Controls

On cameras that support Pan/Tilt/Zoom or motorized optical zoom, a hold-to-move **PTZ / ZOOM** pad appears in the bottom-right corner in Live mode while the camera is online. Releasing a button stops movement immediately (movement also auto-stops if you switch tabs or close the view). A single-operator lock prevents conflicting commands and notifies you if another operator is currently moving the camera.

### Event Browser Strip & Full Recording Timeline

- **Event Browser Strip (default bottom bar):** Toggle **Today** or **Yesterday** (in recorder-local time), click any of the 24 hourly blocks showing amber event-count badges, and click any event thumbnail card to play its clip immediately.
- **Full Recording Timeline:** Click **Browse full timeline ▸** or **▶ ARCHIVE** to open the continuous timeline scrubber (zoomable from **30 seconds to 30 days**). Blue bars mark recorded video, amber bars mark AI detections, and red bars mark alerts. Hover anywhere on the bar for a timestamped video thumbnail preview.
- **Playback Transport & Speed:** Skip back/forward 5s ( `J` / `L` ) or 30s, play/pause ( `Space` / `K` ), step playback speed from `0.25×` to `8×` ( `,` / `.` ), and zoom the timeline ( `+` / `−` ). Archive streams automatically chain across hour boundaries until reaching the live edge.
- **Exporting Straight From the Timeline:** Hold `Shift` and drag across any time span—or click **Range** and click start then end—to reveal **Quick clip** (immediately queues an MP4 export) or **Export…** (opens the full export options modal).

CHAPTER 04

# Detection, Zones, Masks & Static Fixtures

On-recorder AI detects people, vehicles, license plates, faces, and thermal perimeter targets locally on the recorder's graphics hardware. Zones, masks, and human-approved static fixtures let you define exactly where detections matter and eliminate nuisance triggers at the source.

## 4.1 Viewing & Reassigning AI Detectors

Open **Settings** → **Configure Devices** → **AI Detection** to inspect the recorder's active detection workers and per-camera assignments.

- **Detector Summary Banner:** Shows each detector's name (editable inline by Administrators/Owners), input resolution, average inference time ( `ms` ), worker count, assigned camera count, and detectable object classes.
- **Per-Camera Status Cards:** Color-coded borders distinguish **Active** (green—streaming and analyzing), **Idle** (amber—streaming with no current analysis load), **No signal** (red—camera offline), and **Disabled** (gray).
- **Reassigning a Camera's Detector:** Click any camera card to open **Zones & Detection**, select a different detector from the **Detector** dropdown (such as moving a thermal camera to the heat-sensing detector), review the automatic **What will change** preview, and click **Apply to recorder**. The recorder restarts detection once and **automatically rolls back** if post-restart health checks fail.

## 4.2 Drawing Zones & Exclusion Masks

On a camera's **Zones & Detection** page, use the floating toolbar over the camera snapshot to draw polygon zones and masks:

1. **Review Existing Recorder Zones:** Zones and masks already active on the recorder appear as dashed outlines beneath your draft layer. Click **Import N as editable** to pull them into the editor. If none exist, the recorder watches the entire frame.
2. **Draw a Polygon:** Click **Zone** (or **New zone** in the right panel), click points around the target area, and double-click, press `Enter` , or click the starting point to close the shape (minimum 3 vertices).
3. **Reshape or Clean Up:** Switch to **Select** to drag vertices, click edge midpoints to add a vertex, or right-click/double-click a vertex to remove it. Clicking overlapping polygons cycles through the stack so buried zones are always selectable. Use `Ctrl/Cmd+Z` to undo or `Delete` to remove the selected shape.
4. **Assign Name, Color & Type:** Expand the zone in the right panel to name it, pick from 8 colors, and choose its type: **Detection**, **Restricted**, **Entry / Exit**, **Perimeter**, or **Mask**.
5. **Configure Mask Targets (Mask type only):** Choose what a mask ignores:
   - **Motion:** Pixels inside never trigger a detection scan (saves compute on swaying trees, flags, or busy background roads; does not hide an object if motion started outside).
   - **All objects** (or individually **Person**, **Vehicle**, **Animal**): Drops any detection whose **bottom-center point** (such as a person's feet or a vehicle's tires) lands inside the polygon. Draw tightly near horizon lines and vanishing points. For a complete dead zone, check both **Motion** and **All objects**.
6. **Save & Apply to Recorder:**
   - Click **Save Zones** first—saved zones are immediately available to notification and alarm rules in the app.
   - Click **Apply to recorder** to push saved zones and masks into the recorder's core engine. The apply runs with automated health verification and **rolls back automatically** if the recorder comes back unhealthy.

- Need a backup or manual inspection? Click **Recorder YAML** to copy or download the generated zone/mask block.

## 4.3 Static Fixtures (Human-Approved False-Alarm Suppression)

Stationary objects—such as fire hydrants, mailbox posts, yard sculptures, or parked equipment—can occasionally resemble a person or vehicle at night or in thermal views. TechPro Vision handles these with a strict **human-in-the-loop** safeguard under **Settings → Static Fixtures**.

- **How Candidates Appear:** After the AI alarm reviewer issues **3 confirmed static verdicts** at the same spot, that spot is automatically nominated to the **Review Queue**. Operators can also nominate any local open alarm manually from the event card's `···` menu (**Promote to static fixture…**).
- **Nothing Suppresses Automatically:** A candidate never suppresses an alarm until an authorized user opens **Settings → Static Fixtures**, inspects the live camera snapshot with the bounding box and the AI's written reasoning, and clicks **Approve**.
- **Review Queue Actions:**
  - **Approve:** Begins filtering matching static detections before AI review. Anything real that moves through that area still alerts normally.
  - **Reject:** Permanently remembers the decision so the spot never re-queues automatically (still viewable under the **Rejected** tab if you later reconsider).
  - **Disable / Enable / Delete:** On the **Approved** tab, pause suppression temporarily without deleting, or delete the entry completely.
- **Built-In Spot Checking:** Every approved fixture displays a **7-day Suppression Strip** of recent suppressed frames right on its card—click any thumbnail to enlarge it or play the event clip so you can verify with 100% confidence that no real activity was missed.

CHAPTER 05

# Events, AI-Reviewed Alarms & Notification Rules

Traditional NVRs flood phones and monitoring desks with motion alerts caused by headlights, rain, shadows, and landscaping crews. TechPro Vision separates routine events from actionable alarms—and lets optional AI review verify every alarm with a written explanation before anyone is woken up.

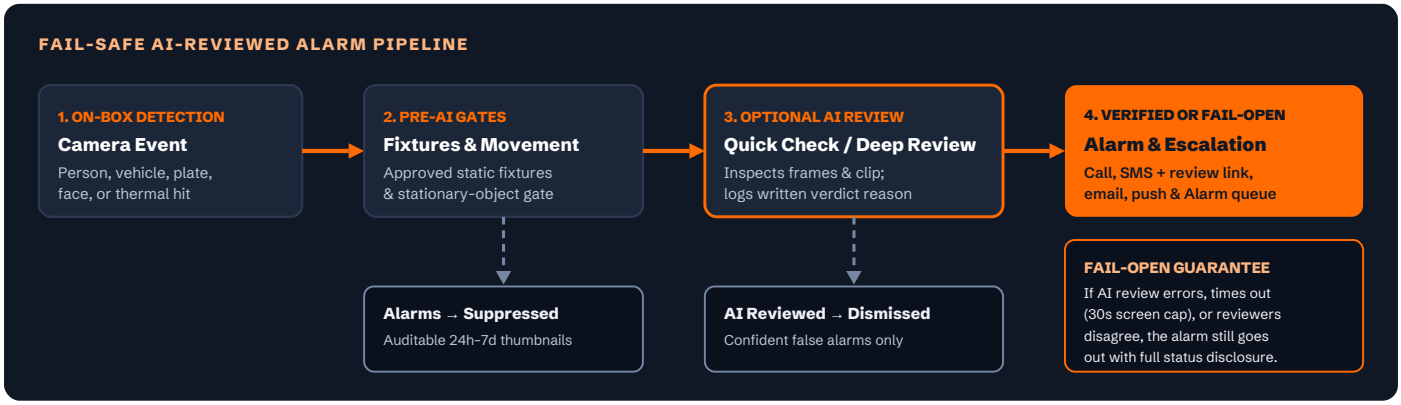


Figure 5.1: How detections move through pre-AI static gates, optional AI alarm review, and fail-open escalation without silently dropping real events.

## 5.1 Navigating the Events & Alarms Workspace

Open **Events** from the left navigation rail. Four color-coded top sections organize every stage of triage:

1. **Alarms (Red — default):** Contains three sub-tabs:
   - **Open:** Every unacknowledged alarm requiring operator attention.
   - **Suppressed:** Dedicated audit lane ( `1h` / `24h` / `48h` / `7d` ) for detections held back before AI review by an approved **Static Fixture** or the **Static — never moved** movement gate. Click any thumbnail to inspect full-size frames or play clips, or jump straight to Settings to disable a fixture.
   - **History:** Permanent audit log of acknowledged alarms ( `24h` / `48h` / `7d` / `30d` / `All` ) with search, **Timeline** inspection, and one-click **Un-ack** to reopen any alarm.
2. **AI Reviewed (Purple):** Focuses on alarms evaluated by AI review across three sub-tabs: **Needs action** (verified, unsure, conflicted, and failed reviews), **All**, and **Dismissed** (confident false alarms held quiet). Important: AI dismissal is a triage filter, never an acknowledgment substitute—dismissed alarms stay auditable until a human acknowledges them.
3. **Events (Blue):** Full camera detection feed across **Active** (live right now), **All**, and **Closed**, with optional **Alarmed**, **AI Reviewed**, **Collapse plate repeats**, and **Static** filters.
4. **Disarmed (Amber):** Lists all currently disarmed cameras with live countdown timers (turning red under 5 minutes), single or batch **Re-arm**, and a drag-and-drop **Disarm Camera** modal supporting `10m` , `30m` , `1h` , `3h` , custom minutes, or `No Timer` (manual).

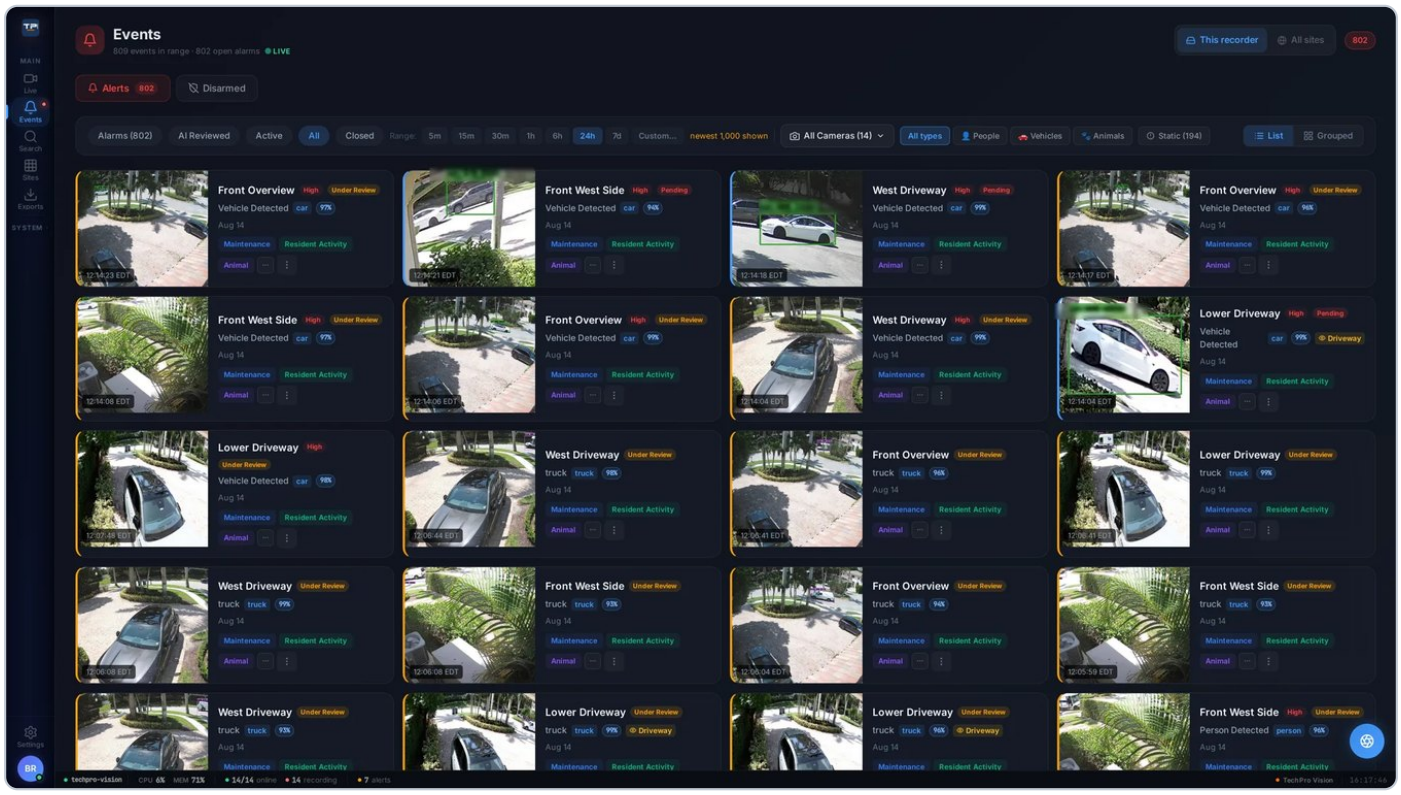


Figure 5.2: The Events & Alarms workspace showing List and Grouped modes, time/camera/object filters, open alarm cards, and quick classification actions.

### Understanding AI Verdict Pills & Fail-Safe Disclosures

| VERDICT PILL | MEANING & OPERATOR BEHAVIOR |
|---|---|
| **AI verified** (Green) | AI confirmed a genuine event matching the rule criteria and logged its written explanation. |
| **AI ruled false** (Purple) | AI confidently identified a false trigger (such as shadow, insect, headlight, or exempted routine activity). Routed to **AI Reviewed** → **Dismissed**. |
| **AI unsure** (Amber) | Evidence was ambiguous. Remains visible in **Needs action** and follows the rule's If unsure escalation policy. |
| **AI conflict — review** (Orange) | Multiple AI review stages disagreed. Conflicts **never demote** an alarm; it remains actionable for human review. |
| **AI review failed** (Red) | Review timed out, encountered an error, or lacked AI credit. Fails **open**—the alarm posts unreviewed and is clearly labeled rather than hidden. |

To prevent silent blind spots, the Events workspace always discloses when a query hits the 1,000-event display cap, when a linked federated recorder is unreachable, or when open alarms exist outside your active time/camera filter (with a one-click **Show all** button). If ≥3 and >2% of AI reviews fail over 24 hours, a health warning banner appears on the **AI Reviewed** tab.

## 5.2 Reviewing, Classifying & Auditing Alarms

- **List vs. Grouped View:** Switch to **Grouped** mode to cluster related detections on the same camera within 5-minute windows so you can review a filmstrip and classify an entire burst in one click.

- **Quick Acknowledge & Classify:** Click **Acknowledge** on any open alarm card (with an **8-second Undo toast**), or open the split `▾` menu to classify using benign templates (Maintenance, Resident Activity, Animal, Weather), threat templates (Suspicious Activity, Trespassing, Security Breach), or a custom comment. Classifying automatically acknowledges the alarm and records feedback to improve future accuracy.
- **Bulk Clear:** Click **Clear all** twice within 5 seconds (two-step safety confirm) to acknowledge all open alarms in batches. Alarms are moved to **History**, never deleted.
- **Alert Review Modal:** Click any card to switch between **▶ Clip**, **Detection frame**, and **Full timeline**, zoom/pan with the scroll wheel, toggle detection overlays, read the post-event AI description, disarm the camera after classifying, download MP4/JPEG, preserve to the Cloud Vault, add to a Case, or track on the Site Map.
- **Event Lifecycle Timeline:** Click **History** inside the modal (or **Timeline** in Alarm History) to inspect the complete 7-stage chronological audit trail—**DETECTION**, **AI PIPELINE**, **ALARM**, **OPERATOR**, **NOTIFY**, **AI**, and **CASE**—complete with final AI reasoning and metered review cost.
- **Aged-Out Evidence Fallback:** If you open an older alarm or SMS link whose event clip has already rolled off short-term event storage, TechPro Vision automatically opens the **Escalation Evidence** viewer—playing 60 seconds of surrounding continuous archive footage (10s before to 50s after) and explicitly labeling the origin of any preserved snapshot.
- **Login-Free SMS Review Links:** Escalation text messages include secure 72-hour quick-review links. Page-load link previews never trigger an action; tapping **Confirm** or selecting a category acknowledges the alarm and trains the reviewer in one tap from your phone.

## 5.3 Configuring Notification & AI Alarm Rules

Open **Settings** → **Alerts & Notifications** → **Manage Notification Rules** ( `/settings/notifications` ) and click **New Rule**. Each rule defines what triggers it, when it is active, whether AI reviews it, and how alerts are delivered.

1. **Trigger & Scope:** Choose **Camera event** (select All or specific local cameras, Anywhere or specific zones, All or specific object labels, and Severity: Any / Alert / Detection) or **Watchlist match** (trigger when a recognized license plate or face hits a chosen watchlist). Optionally match keywords in **Description mentions** (matched against post-event AI descriptions; uses Push, Alarm, SMS, Call, or Email).
2. **Delivery Actions (pick one or more):**
   - **In-App & Browser: Play sound** (8 previewable tones: Chime, Pulse, Alert, Radar, Knock, Gentle, Siren, Glass), **Show in-app banner**, **Desktop notification** (background tab), and **Push notification** (works with the app closed on installed phones/desktops).
   - **Alarm Queue: Alarm — requires acknowledgment** posts to **Events** → **Alarms** and is never suppressed by rule cooldown.
   - **Vision Connect Escalation: Text message (SMS)** with snapshot and review link, **Phone call** (automated spoken announcement), and **Email** with inline snapshot and AI verdict. Send to everyone in your portal recipient list or pick specific recipients (deleted portal recipients are automatically flagged for cleanup).
3. **Active Hours:** Add up to 9 schedule windows using day-of-week chips ( `Mo–Su` ) and start/end times in the recorder's timezone (overnight schedules such as `20:00–06:00` are supported). Leave empty for 24/7 monitoring.
4. **Optional AI Verification (Metered via Vision Connect):**
   - **Off:** Alerts fire immediately on camera detection.
   - **Quick check:** Fast AI check of event snapshots (and a short clip if inconclusive); alerts only when noteworthy.
   - **Deep review:** Multi-frame/clip investigation against a selected protocol (**Intrusion**, **Loitering**, or **Custom instruction**) with configurable **Wait time (dwell)** ( `0–120 min` ; use `0` for quick deliveries, raise for loitering),

custom plain-English **AI instruction** (up to 2,000 chars), and **If unsure** policy (Escalate anyway [default], Push only, or Dismiss).

- **Screen alarms before posting:** Routes confident false detections straight to **AI Reviewed → Dismissed** before hitting the Alarms queue (typically 1-2s, hard 30s fail-open cap so timeouts or errors still alert).
- **Routine Activity Exemptions (Intrusion rules):** Optionally enable **Ignore grounds crews at Stage 1** (with optional **Region pause** for 5-60 minutes across custom camera groups once a crew is confirmed) and **Ignore people walking dogs at Stage 1** on scheduled hours or whenever the rule is active. Anyone at a perimeter wall or any doubtful case still escalates.

5. **Advanced Options:** Toggle **One-time** (auto-pauses after first alert), **Stationary subjects** (skips the movement gate for far-field cameras past 700 ft where people move only a few pixels), and **Cooldown** ( `0–3600s` ; default 30s; does not suppress the Alarm queue).
6. **Test & Snooze:** Use **Test** on any rule card to verify delivery immediately, or click **Snooze…** ( `5m` , `15m` , `30m` , `1h` ) to silence a rule temporarily during maintenance.

> **CUSTOMIZING TRIAGE TEMPLATES, SOUNDS & PRE/POST-ROLL**
>
> Under **Settings → Alerts & Notifications**, administrators can customize quick-classification **Comment Templates** (name, severity, color, Benign vs. Threat feedback), master browser sound muting and cooldown ( `3–30s` ), and alert clip playback **Pre-Roll** ( `0–120s` , default 10s) and **Post-Roll** ( `0–120s` , default 15s).

CHAPTER 06

# Forensic Search & Iris AI Assistant

Finding an incident across dozens of cameras shouldn't take hours of scrubbing. TechPro Vision combines plain-English AI Search, dedicated License Plate and Face search tabs, and Iris—an interactive AI investigator built right into the recorder interface.

## 6.1 Forensic Search (AI Search, Plates & Faces)

Open **Search** ( `/search` ) from the left rail. A header scope toggle switches between single-site search and cross-site search ( `/search-all` ), and your recent successful queries appear as clickable chips (up to 8 shown per tab).

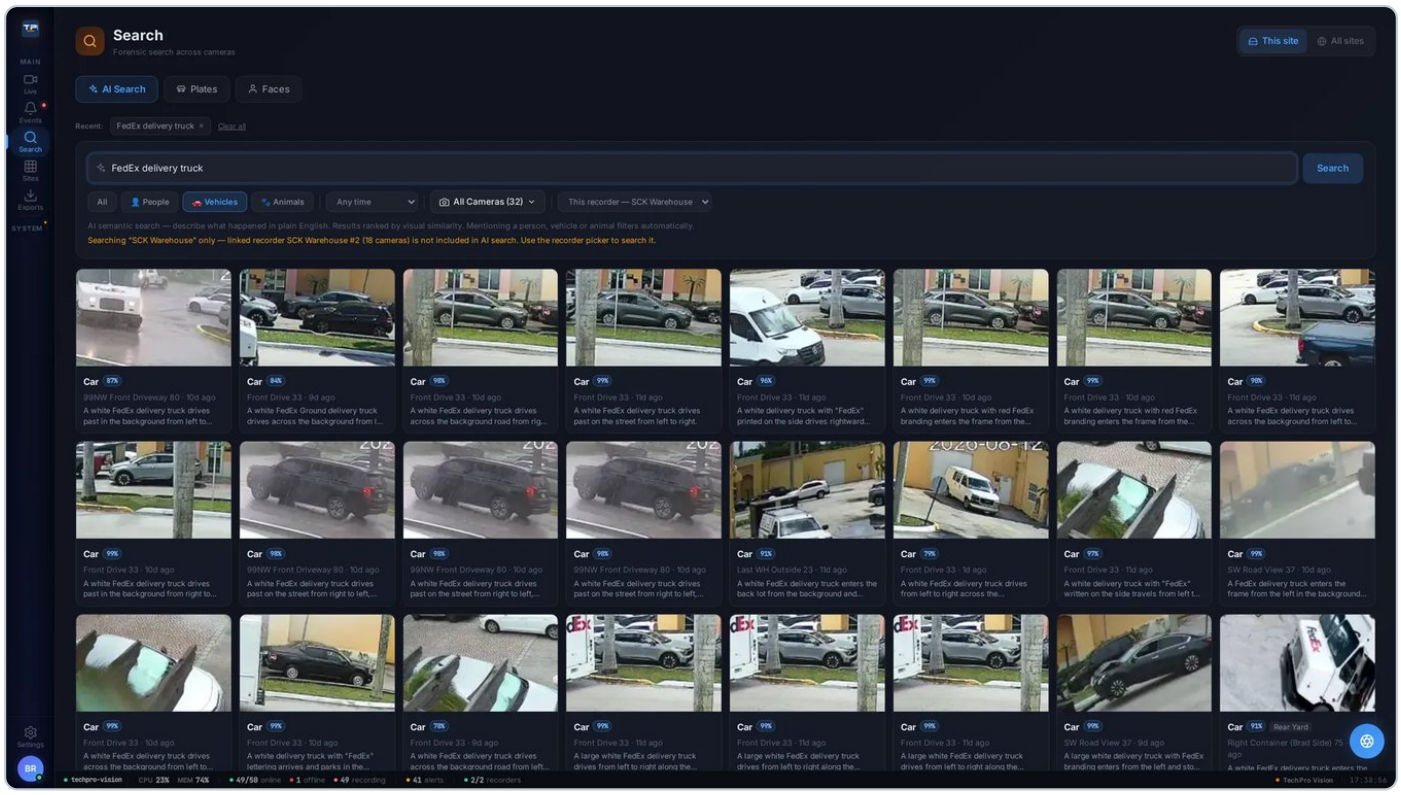


Figure 6.1: Plain-English AI Search showing query filters, object chips, camera/recorder scope, and ranked matching clips with AI descriptions.

### Tab 1: AI Search (Plain-English Footage Search)

- **Describe What Happened:** Type naturally—for example, "white delivery truck at the front gate", "person walking near the pool at night", or "red pickup"—and press `Enter` .
- **Smart Category Chips:** Filter by **All**, **People**, **Vehicles**, or **Animals**. Queries mentioning a person, vehicle, or animal automatically select the matching chip; click any chip to override.
- **Time & Camera Scope:** Filter by **Any time**, **Today**, **Yesterday**, **Last 7 days**, or **Custom range...** (recorder local time), and scope to **All Cameras** or specific cameras. On federated sites, search **All recorders** or pick an individual linked recorder.
- **Ranked Results:** Returns up to 24 matching clips. Events whose AI description contains your exact search words rank first (badged **word match** with highlighted excerpts), followed by visually similar events. Click any card to play the clip, export, share, or classify in the Alert Review Modal.

### Tab 2: License Plate Search (Plates)

Available on cameras licensed for License Plate Recognition (LPR), working locally even without an active Vision Connect subscription.

- **Search & Filters:** Search a full or partial plate number (or leave blank to browse every plate captured in the window). Filter by camera, time range ( `1h` , `6h` , `24h` , `7d` , or **Custom**), sort order (**Last Seen**, **First Seen**, **Most Sightings**, **Alphabetical**), and collapsible filters for **Min Confidence**, **Direction** (Incoming/Outgoing), **Min Sightings**, **Multiple Visits**, and **State** (when reported).
- **Smart Deduplication & Fuzzy OCR Merge:** Rapid consecutive reads on the same camera are grouped automatically. TechPro Vision also flags OCR-confusable character pairs ( `I/1` , `O/0/D/Q` , `B/8` , `S/5` , `Z/2` , `G/6` ) with a **Possible match** banner—click **Merge** to unify captures under the true plate number, and browse **Similar Plates** below exact matches.
- **Sightings, Watchlist & Batch Export:** Expand any plate card to inspect every sighting with camera, timestamp, confidence, and clip playback; click **+** to add the plate to a Watchlist; or click **Export clip** to batch-export footage from every camera that saw the plate (automatically padded ±30 seconds).




Figure 6.2: On-recorder vehicle and license plate capture (plate characters blurred for privacy in documentation).

### Tab 3: Face Search (Faces)

Available on cameras licensed for Face Recognition, working locally without an active subscription.

- **Recognized Mode:** Browse all sightings matched to people enrolled in your Face Library, filter by name, inspect match confidence % (color-coded green ≥90%, amber ≥70%, red <70%), play clips, or click **+** to add a person to a Face Watchlist.
- **Unrecognized Mode:** Review unmatched visitor captures from face-recognition cameras. Administrators and Operators can click **Name** right on a card to enroll or file the visitor under an existing person in the Face Library.

## 6.2 Iris AI Assistant

**Iris** is TechPro Vision's conversational assistant, available both as a full page ( `/assistant` ) and as a persistent **floating panel** from the bottom-right launcher on any screen. Iris requires an active Vision Connect cloud session and an available prepaid AI balance.

### What You Can Ask Iris

- **Summaries & Investigations:** Ask "What happened overnight?", "When was the mail delivered today?", or "Summarize vehicle activity at the north gate since 6 PM."
- **Visual Reference Matching:** Attach, paste, or drag-and-drop up to **4 images per message** (such as a photo of a package, vehicle, or uniform) to help Iris search across your cameras.
- **Cross-Camera Tracking & Route Maps:** Ask Iris to follow a person or vehicle from camera to camera. Replies include clickable inline **event clip chips**, **camera jumps**, and interactive **Route Map cards** that open directly on your site map in Pursuit mode.
- **Guided Diagnostics:** Clicking **Diagnose** from an offline camera or high-storage warning on the Server Health page opens Iris in **Diagnosis mode** with a credential-redacted diagnostic snapshot to help pinpoint issues or file a TechPro support ticket.
- **Background Continuity & History:** Closing the floating panel does not stop an active investigation—the launcher shows an amber indicator while working and a green dot when the answer is ready, and long investigations survive page reloads. Click **History** on the full page to reopen or continue past conversations.

### Human-in-the-Loop Action Cards (Strict Confirm Before Change)

Iris can prepare operational tasks for you, but **never modifies your recorder or sends alerts without your explicit approval**. Whenever Iris proposes an action, it renders an interactive **Action Card** showing any text verbatim before you click **Confirm** or **Cancel** (enforcing your logged-in role permissions):

| PROPOSED ACTION | WHAT HAPPENS WHEN YOU CLICK CONFIRM |
|---|---|
| **Notification Rule** | Creates the rule on the recorder with the exact AI criteria shown verbatim and links to **Notification Rules**. |
| **Draft Zone** | Displays a shaded preview over the camera scene first; Confirm saves it as a **draft only**—no alarm uses it until you click **Save** or **Apply to recorder** in the Zone Editor. |
| **Scheduled Check (Standing Order)** | Activates an automated scheduled or follow-up AI check that alerts only when an exception occurs. |
| **Clip Export / Evidence Bundle** | Queues single or multi-clip MP4 exports, tracks progress, and optionally mints a combined public share link. |
| **Case File / Map Setup** | Saves sightings and narrative to a Case File, or creates/updates site map markers. |
| **Configuration Change** | Applies the approved setting with health verification and automatic rollback if unhealthy. |

CHAPTER 07

# Site Maps, Pursuit Tracking, Case Files & Exports

Turn isolated camera clips into a geographic timeline and a court-ready evidence package. TechPro Vision links interactive site maps, cross-camera pursuit trails, incident case files, and tamper-evident shareable exports into one workflow.

## 7.1 Interactive Floor Plans & Geographic Site Maps

Open **Maps** ( `/maps` ) to build visual maps of your property:

- **Two Map Types:** Create a **Floor Plan** by uploading a PNG, JPEG, or WebP architectural drawing (up to 8 MB), or create a **Geographic Map** by entering site latitude/longitude (or panning to your property and clicking **Use current view** in the editor).
- **Placing & Configuring Markers (Map Editor):** Click anywhere on the map to drop a marker, drag to adjust position, and configure its **Type** (Camera, Pole, Gate / entrance, or Point of interest), optional label, and up to **8 attached local cameras** per marker. For each camera, set **Facing °** (0 = North), **FOV °** (field of view angle), and **Range ft** so the map renders accurate geodesic coverage cones.
- **Live Monitoring on the Map Viewer:**
  - Switch between **Satellite** and **Streets** layers on geographic maps, or zoom `1×–6×` on floor plans.
  - Toggle **Coverage** to desaturate the basemap and clearly highlight blind spots across camera FOV cones.
  - Toggle **Alarm Follow** (on by default) so the map automatically pans and zooms to any marker whose camera raises an open alarm (pulsing red halo and red cone).
  - Hover any marker for live camera snapshots; click a single-camera marker to open live video directly over the map, or click a multi-camera pole to choose which camera to view.

### Pursuit Mode (Geographic Maps)

Launch **Track on map** from any event card's `⋯` menu (or click **Open on site map** on an Iris Route Map). Pursuit mode draws a dashed amber trail across numbered camera sightings, animates direction of travel oldest-to-newest, highlights the **Predicted next** camera marker with compass bearing, distance in feet, and estimated walking time, and live-tails new sightings every 15 seconds. Click **Save pursuit to case** in the side panel to preserve the trail directly into an incident case file.

## 7.2 Incident Case Files (Cases)

Open **System** → **Cases** ( `/incidents` ) to assemble and preserve multi-camera investigations:

1. **Create or Open a Case:** Click **New Case**, enter a descriptive title, and write your incident **Narrative** (both auto-save when you leave the field).
2. **Collect Evidence:** Attach alarms and events from the Events workspace ( `⋯ → Add to case` ), attach geographic trails via **Save pursuit to case**, and type inline timestamped investigator notes directly into the timeline.
3. **Print Report:** Click **Print Report** to generate a clean, white-background printable handout containing the case metadata, narrative, evidence thumbnails, and plotted route maps.
4. **Export Evidence Package (Operators & Admins):** Once at least one event or alarm is attached, click **Export Evidence Package** to bundle every attached clip plus your incident narrative into one combined **Evidence PDF** and shareable download link (with individual clip MP4 downloads and SHA-256 verification digests).

5. **Close or Reopen:** Toggle case status between **open** and **closed** as investigations progress.

## 7.3 Clip Exports & Public Share Links

Open **Exports** ( `/exports` ) to create, download, and share video clips. Administrators and Operators can create, share, and delete exports; Viewers can download completed clips and open existing share links.

- **Creating an Export:** Select any local or federated camera, set **Start** and **End** in recorder wall time, choose **Realtime** or **Timelapse (25×)** speed, add an optional name, and click **Create Export**. (You can also trigger exports directly from the Archive Timeline range selector or from Plate Search.)
- **Tracking & Downloading:** Monitor live status (**Queued** → **Exporting** → **Complete**) and click **MP4** to download the video directly to your device. Administrators can set the concurrent export limit ( `1–10` , default `2` ) under **Settings** → **Export Settings**.
- **Sharing Secure Public Links:** Click **Share** on any completed local export (or click **Copy link** on a completed Evidence Bundle) to generate a login-free public link ( `/share/<token>` ) with selectable expiration: **24 hours**, **7 days** (default), **30 days**, or **Never**. Track download counts, **Revoke** links at any time, or email the link directly to up to 10 recipients with an optional note (when email delivery is configured).
- **Tamper-Evident Evidence Packages:** Every public share page provides the MP4 download, a downloadable **PDF Evidence Package** containing SHA-256 cryptographic clip digests for chain-of-custody verification, and recorder-timezone timestamps. Expired, revoked, or invalid links display a uniform unavailable message without exposing link history.

CHAPTER 08

# License Plate Watchlists & Face Recognition

Turn license plate and face recognition cameras into proactive security tools—alerting staff automatically when a flagged vehicle arrives, a VIP enters, or a restricted individual appears on site.

## 8.1 Creating & Managing Watchlists

Open **System** → **Watchlist** ( `/watchlist` ) and choose either the **Plates** or **Faces** tab. Watchlists require LPR or Face Recognition licensing on the respective cameras and continue matching locally even without an active cloud subscription.

1. **Create a List:** Click **New List**, give it a clear name (such as Banned Vehicles, Vendor Fleet, or VIP Visitors), pick **Plates** or **Faces**, choose a color tag, and add an optional description.
2. **Add Entries Individually or in Bulk:** Open a list and click **Add** to enter plates (one per line or comma-separated; automatically normalized to uppercase alphanumeric so `AB-123` matches `AB123` ) or enrolled face names (matching names in your Face Library), with an optional shared label.
3. **CSV / Text Import:** Click **Import** to paste or upload a `.csv` or `.txt` file formatted as `value, label` per line (lines starting with `#` are ignored and duplicates are skipped automatically).
4. **Pause or Edit Entries:** Toggle any entry's **Active** switch to pause matching temporarily without deleting it, or edit its label and notes inline.
5. **Review Recent Matches & Enable Live Alerts:** The **Recent Matches** panel shows hits from the last 7 days (click **Refresh** to update). To receive real-time sounds, push notifications, alarms, SMS, or calls on a hit, click **Get notified** to create a Notification Rule with the **Watchlist match** trigger.

## 8.2 Building & Maintaining the Face Library

Open **System** → **Faces** ( `/faces` ) to enroll known people and name unrecognized visitors captured by face-recognition cameras. Creating, naming, uploading photos, and deleting people require an **Administrator**, **Owner**, or **Operator** account (Viewers have read-only access).

> **FIRST-TIME SETUP: ENROLL YOUR FIRST PERSON FIRST**
>
> The recorder begins saving unrecognized visitor face captures in the **To name** queue only **after at least one person is enrolled** in the Face Library. On a fresh recorder, open the **People** tab, click **Add person**, and upload a clear front-facing photo (or add a team member) to start collecting visitor faces.

### Tab 1: Naming Visitor Captures (To Name)

- Unrecognized captures are grouped by visit (newest first), showing the clearest lead crop alongside additional frames from the same visit.
- Click the crop or **Play clip** to verify the visitor's context in video without losing your place in the queue.
- If the recorder sees a partial resemblance, a clickable **Looks like [Name] XX%** suggestion chip lets you autofill with one click.
- Type a new or existing name (up to 49 characters; letters, numbers, spaces, and apostrophes) and click **Save** to file every capture from that visit under that person, or click **Discard** to delete blurry/unwanted captures.

### Tab 2: Managing Enrolled People (People)

- **Best-Practice Accuracy:** Aim for **3 to 5 clear, front-facing captures** per person under typical lighting. Cards with fewer than 3 photos display an add more for better matches reminder. For best live accuracy, mount face-recognition cameras near eye level at doorways and choke points.
- **Upload Reference Photos:** Click **Add a photo** on any person card to upload a JPEG, PNG, or WebP image (up to 5 MB). The recorder verifies that a clear face is present before saving.
- **Cleanup & Removal:** Remove blurry individual crops with `×`, rename a person inline, or click **Delete person** (deletes stored face templates and stops future recognition while preserving historical event labels).

CHAPTER 09

# Vision Connect, Multi-Site & Cloud Portal

TechPro Vision is designed around ownership, not rental. Every recorder operates completely locally—and Vision Connect adds encrypted remote access, multi-site viewing, health monitoring, cloud clip backups, phone escalation, and optional AI services through `portal.techprovision.ai`.

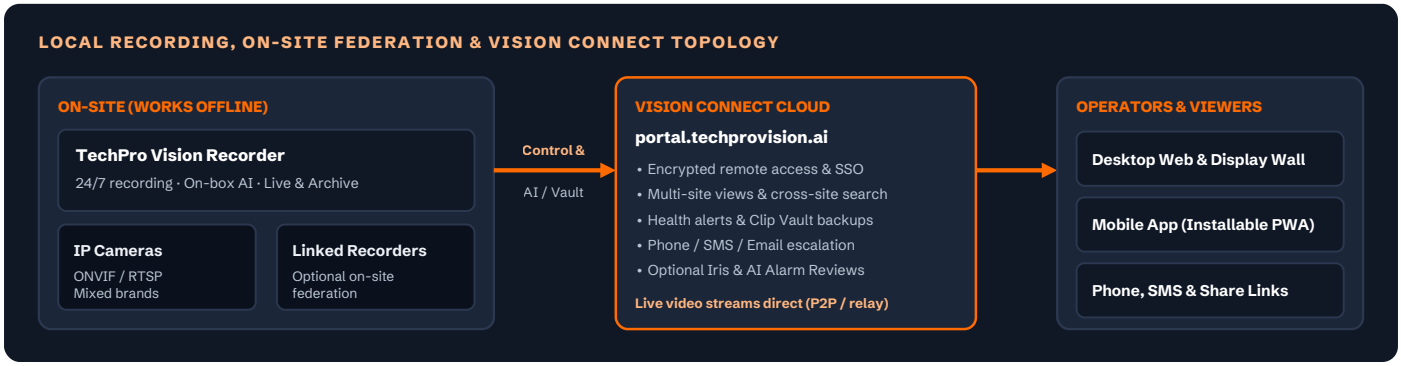


Figure 9.1: Relationship between on-site recording, optional on-site federation, Vision Connect cloud control, and direct peer-to-peer/relay video streaming.

## 9.1 Ownership, Vision Connect & Prepaid AI Credit

- **Software Included:** TechPro Vision software ships pre-installed with the recorder, with no separate activation fee.
- **Vision Connect (Per Camera, Annual):** The first year is included with recorder purchase and covers encrypted remote access, multi-site views, health alerts, off-site Cloud Clip Vault, feature updates, phone/SMS/email alarm escalation, and technical support. Renewal is **optional** from year two onward.
- **Zero Lockout If You Do Not Renew:** If Vision Connect lapses (after a 30-day grace period), only cloud-connected services pause. **Local recording, live view, playback, clip export, on-recorder detection (including licensed LPR and face recognition), and free security patches continue working without interruption.**
- **Prepaid AI Credit:** Optional AI features—AI-Reviewed Alarms, Event Descriptions, Daily Digests, and the Iris AI assistant—are paid only as used from a prepaid balance in the Cloud Portal (a fraction of a cent per AI look), with zero charge when unused and full itemized ledger visibility.

## 9.2 Multi-Site Viewing & On-Site Federation

TechPro Vision supports two complementary ways to span multiple recorders:

### A. Cloud Multi-Site (Sites / My Views — `/sites`)

- **Recorders & Saved Views:** Open **Sites** to launch any recorder in your organization or open cloud-synced **Custom Views** combining cameras from different physical locations on one live wall.
- **Direct Streaming:** Video streams directly from each recorder to your browser or phone (via LAN, peer-to-peer, or encrypted relay)—live video never transits the cloud control plane.
- **Editing Views:** Create and name new cross-site views in `portal.techprovision.ai → My Views`; edit tile selection, ordering, column count (`Auto`, `2`, `3`, `4`), and **FILL / FIT** mode directly inside any recorder app.
- **Cross-Site Search & Alerts:** Toggle **All sites** in the header of **Search** (`/search-all`) or **Events** (`/alerts-all`) to search recent events or monitor a merged 30-second-refresh alert feed across every location.

### B. On-Site Federation (Settings → Federation, Admin Only)

Large single properties running two or more recorders can link them into one unified portal recorder under **Settings → Federation**. Add each member recorder's Cloud Device ID, display name, HTTPS listener address, and portal URL. Cameras, live walls, events, alarms, exports, and AI Search unify on the head recorder while every member recorder remains independently operational. Surfaces that cover only the head recorder (such as System Health and Storage) display a clear amber scope banner.

## 9.3 Remote Access & Direct Streaming Port (Admin Only)

Under **Settings → Remote Access**, Administrators can optionally configure a forwarded public port (default `8555`, UDP and TCP) and choose **Detect automatically** or a **Fixed address** (public IP or hostname) so remote viewers stream directly from the recorder instead of using the cloud relay. If multiple recorders share one internet connection, assign each a unique public port forwarded to its internal port `8555`. Clicking **Save and apply** restarts the recording engine briefly (~1 minute) and rolls back automatically if verification fails.

## 9.4 TechPro Vision Cloud Portal ( `portal.techprovision.ai` )

Sign in at `portal.techprovision.ai` to manage your entire fleet from one browser tab. Portal roles are **Owner**, **Admin** (full org management except editing owners), and **Viewer** (scoped recorder, map, health, views, vault, and personal alert access).

| PORTAL SECTION | KEY CAPABILITIES |
|---|---|
| **Recorders** | Fleet status grid (Online/Offline, license state, AI/Remote pills) with one-click **Open ▸** SSO launch into any recorder. |
| **Site Map** | Interactive Satellite/Streets map with color-coded site health pins, pulsing alarm halos, address/pin placement, and quick recorder launch. |
| **Health** | Fleet storage headroom, disk/SMART indicators, per-camera up/down chips, and configurable email health rules (one alert on open, one on recovery). |
| **My Views** | Visual builder to create, arrange, and preview cross-recorder camera views that sync automatically to every recorder's **Sites** page. |
| **Clip Vault & Reports** | Off-site alarm clip storage (survives a stolen or damaged recorder), encrypted recorder configuration backups, and scheduled daily/weekly/monthly email reports. |
| **Alarm Escalation** | Add SMS, automated voice call, and email alert recipients per site or fleet-wide, set **Rules only** vs. **Every alarm**, and configure timezone-aware **Quiet hours** (voice only or voice + SMS; email never silences). |
| **AI Hub** | Prepaid **AI Credit Wallet** and itemized sub-cent ledger; org-wide & per-recorder AI feature switches; **Daily Report email** schedule; **AI Memory** (teach site context, camera roles, and known false-positive spots); and **Standing Orders** (autonomous Guard Tours, Scheduled Checks, and visual Follow-Up watches). |
| **Billing & Licenses** | View owned camera channels, add channels with aligned renewal dates, manage Vision Connect renewals and Auto-Renew, and inspect order history. |
| **Users & Access** | Invite users by email (12-char min password), assign roles, scope Viewer access to specific recorders/cameras, and set per-user AI permissions ( `none` , `Q&A` , `full` ). |
| **Support** | Open technical or renewal tickets (auto-attaching recorder serial & license state), browse the searchable Knowledge Base, and submit product feedback. |

CHAPTER 10

# Storage, System Health, Security & Troubleshooting

Keep your recorder healthy, your retention predictable, and your user access tightly audited using TechPro Vision's built-in administration dashboards.

## 10.1 Storage & Retention Management

Open **System** → **Storage** ( `/storage` ), which refreshes every 15 seconds:

- **Top Vitals:** Displays total used capacity, aggregate daily ingest rate ( `GB/day` ), actively recording cameras, and **Until FIFO overwrite**—the estimated days before the recorder begins recycling the oldest footage. Note: High disk utilization (85–95%) on a mature recorder is normal by design under circular First-In-First-Out (FIFO) retention.
- **Usage per Camera Table:** Identifies high-bitrate cameras consuming disproportionate storage, showing exact GB on disk, percentage share, daily ingest rate, and estimated days retained per camera.
- **Configurable Retention Buckets (1–3,650 days):** Adjust targets independently for **24/7 Continuous** (default 14 days, with live GB projection), **Motion Recordings** (default 30 days), **Alert Clips** (default 30 days), **Detection Clips** (default 14 days), and **Snapshots** (default 30 days). Click **Save** to store changes on the appliance (applied to the recording engine on next reload).

## 10.2 System Health Dashboard

Open **System** → **Server** ( `/server` ; polls every 5 seconds) to monitor real-time performance:

- **Operational Summary:** Online/total cameras, average **AI inference speed** (under `30 ms` per object is excellent; sustained `>100 ms` indicates heavy load), uptime, and core engine version.
- **Compute & AI Processor Gauges:** Live CPU % and 30-minute sparkline, RAM %, AI processor %, GPU video decode/encode %, and AI processor memory % (blue ≤65%, amber >65%, red >85%).
- **Camera Health Table:** Per-camera live FPS (or red `OFFLINE` ), AI analysis rate ( `/s` ), dropped frames ( `/s` , amber if >1/s), CPU %, and RAM %. Click any row to open its full Camera Detail page, or click **Diagnose** beside an offline camera or high-disk gauge to launch guided Iris diagnostics.
- **Time Zones & Schedules:** Access `/admin/timezones` to manage preset and custom time schedules referenced by the system.

## 10.3 Local Users, Roles & Audit Trail

Open **Settings** → **Users & Roles** ( `/security` ). Full user management requires an **Administrator** or **Owner** account:

| BUILT-IN ROLE | INCLUDED PERMISSIONS |
|---|---|
| **Administrator** | Full control: live view & PTZ, recordings & timeline, exports & sharing, zones & detector config, notification rules, system settings, audit trail, and user management. |
| **Operator** | Day-to-day operation: live view & PTZ, recordings & timeline, exports & sharing, alert triage, cases, and face/watchlist management. No system configuration or user management. |
| **Viewer** | Read-only: live view and recordings playback. Cannot export clips, manage rules, name faces, or change settings. |

- **Managing Users:** Click **+ Add User** (username 3–32 chars; password minimum 8 chars). Changing your own password or another Administrator's password requires step-up verification with your current password (throttled

after 5 failed attempts in 5 minutes) and immediately invalidates prior sessions. Guards prevent disabling, demoting, or deleting the last enabled Administrator.

- **Emergency Break-Glass Notice:** Administrators see a status banner confirming that the appliance's local emergency break-glass account remains available if the user service is unreachable, and reporting if it was used in the last 30 days (red alert if within 7 days). Every emergency login is recorded in the Audit Trail.
- **System Logs ( `/logs` ):** View live-refreshing (15s) color-coded logs across **Recorder**, **Streaming**, and **Web** tabs with real-time text filtering.
- **Audit Trail ( `/audit` , Admin Only):** Filter verified logins, user edits, retention changes, and configuration mutations by User, Action, and Date Range, and click **Export CSV** to download an audit report.

## 10.4 Troubleshooting Quick Reference

| SYMPTOM | WHAT TO CHECK FIRST |
|---|---|
| **Browser certificate warning on local LAN** | Expected when connecting via local IP or `.local` hostname over HTTPS. Proceed safely, or connect through `portal.techprovision.ai` for a CA-signed session. |
| **Camera shows OFFLINE or SIGNAL LOST** | Check PoE switch power and camera network cable; open **System** → **Server** and click **Diagnose** beside the camera; verify camera credentials and RTSP/ONVIF settings did not reset after a camera firmware update. |
| **Archive playback shows codec warning** | Some cameras record H.265/HEVC. Use Chrome, Edge, or Safari on a modern desktop/mobile device with hardware HEVC decoding enabled. |
| **No unrecognized faces in Face Library** | Enroll at least one person under **System** → **Faces** → **People** first—visitor capture collection starts automatically once the first person exists. |
| **AI alarm reviews show "AI review failed"** | Check your prepaid AI Credit balance in `portal.techprovision.ai → AI` and verify internet connectivity. Fail-open protection ensures alarms still deliver unreviewed. |
| **False alarms from a stationary object** | Wait for 3 static AI verdicts (or select `⋯ → Promote to static fixture…` ), then review and click **Approve** under **Settings** → **Static Fixtures**. |
| **Remote viewing feels slow** | Verify whether tiles show `RELAY` vs. `P2P` / `LAN` on hover. Forward UDP/TCP port `8555` on the site router and configure **Settings** → **Remote Access** for direct streaming. |

**TECHPRO VISION TECHNICAL SUPPORT & FEEDBACK**

**Support Portal & Knowledge Base:** `portal.techprovision.ai → Support` · **In-App Feedback:** Click your User Avatar → **Submit Feedback** (automatically captures diagnostics) · **Phone:** 561-288-5258 · **Email:** `info@techprosecurity.com` · **Web:** `techprovision.ai`

APPENDIX A

# Appendix: Keyboard Shortcuts & Quick Reference

Use these verified desktop keyboard shortcuts and mobile touch gestures to move smoothly between live cameras, archive timelines, and triage modals.

### Global & Live Camera Wall

| KEY / GESTURE | ACTION |
|---|---|
| `Ctrl+K` / `⌘K` / `/` | Open & focus Command Bar search |
| `?` | Toggle Keyboard Shortcuts overlay |
| `Esc` | Close modal, exit fullscreen, or exit Display mode |
| `Click tile` | Open Expanded Camera View |
| `Right-click tile` | Open tile context menu (Archive, Fit, Disarm) |
| `Ctrl/⌘ + Scroll` | Digital zoom tile (1×–8×); double-click resets |

### Expanded Camera View

| KEY / GESTURE | ACTION |
|---|---|
| `←` / `→` | Previous / Next camera |
| `L` | Switch to Live mode (when not in Archive) |
| `P` | Enter Archive playback (10 min ago or resume) |
| `M` | Mute / Unmute camera audio |
| `F` | Toggle Fullscreen |
| `Scroll wheel` | Digital zoom (1×–8×); drag pan; double-click reset |

### Archive Playback & Timeline

| KEY / GESTURE | ACTION |
|---|---|
| `Space` or `K` | Play / Pause |
| `J` / `L` | Skip backward 5s / Skip forward 5s |
| `Shift+←` / `Shift+→` | Seek backward 1 min / forward 1 min |
| `,` (`<`) / `.` (`>`) | Step playback speed down / up (0.25×–8×) |
| `+` / `−` | Zoom timeline in / out (30s to 30 days) |
| `Shift + Drag` | Select timeline range for Quick Clip / Export |

### Zone Editor & Mobile Gestures

| KEY / GESTURE | ACTION |
|---|---|
| `Enter` / `Dbl-click` | Close polygon zone in Zone Editor |
| `Ctrl/⌘ + Z` | Undo last zone edit |
| `Del` / `Backspace` | Delete selected polygon zone |
| `Swipe ← / →` | Switch cameras on mobile / touch tablet |
| `Swipe down` | Dismiss mobile expanded camera viewer |
| `Pinch / Dbl-tap` | Touch digital zoom (double-tap toggles 2.5×) |
| `Long-press tile` | Open mobile Camera Action Sheet |