The Private Investigator’s Assistant

Executive Summary

• Labor-saving strategic weapon automates unmanned video surveillance, enabling you to undercut your competition to get more jobs and improve your margins
• Cuts expenses, speeds response times and enables you to do jobs you could not do before
• Much faster and more efficient determination of subject activity, no need to monitor live video or bring video recorder back to office and spend hours reviewing video
• Enables viewing 48 hours’ internally recorded video over the air in only 24 minutes, and 30 day’s recorded video at low data cost with less than 2 GB of cellular data, using optional internal Rapid Review / Integrated Timelapse software
• No need to move camera to adjust the view, or be close to paranoid subjects, new design of true PTZ camera is very low power, has tiny window for ease of concealment in outer housings, can be aimed remotely and enables seeing a face or reading a license plate at 450 ft
• Stranger Detector™ Smartphone WiFi Monitoring System provides minute-by-minute report of subject presence, integrates with video for confirmation and sends e-mail alert when subject’s smartphone appears
• Proper operation and view can be monitored and controlled remotely, with remote access via cellular network and Internet, providing live and internally recorded HD video, PTZ camera control, tampering alerts, and optional Rapid Review timelapse video
• Continuous sharp 1920x1080 video recording on 256GB internal high reliability storage avoids high cellular data usage and problematic passive infrared (PIR) triggering
• Avoid short range and missed events of PIR-triggering
• 3-D accelerometer provides real time tampering alerts
• Small size and light weight, including external battery, for ease of transport and placement in outer housings
• Usable in wide range of locales requiring different appearance, small removable Smart uPTZ Camera can be exposed to elements or placed horizontally or vertically in yours or our, rectangular or cylindrical housings

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The Private Investigator’s Assistant

Rapid Deployment, High Definition, Ultra Low Bandwidth, Low Power, Cellular Covert PTZ Video Surveillance System in Traffic Channelizer Cone with removable Smart Camera System

Overview

Benefits

- Combat theft, vandalism, illegal dumping, liability, disability insurance fraud and workers’ comp.
- Quickly move from job to job, avoiding need for a pole or tree, lift, AC power, and IT dept.
- Set up wireless outdoor covert high definition digital video surveillance via Internet and cell network with live and recorded video, timelapse (opt) and remote PTZ camera control in minutes
- Complete cellular 1920x1080 HD PTZ system with long range zoom lens (license plate at 450 feet at max. optical zoom) in 42” traffic cone
- Ultra low bandwidth slashes cellular data costs
- Very low power, battery-powered, approx. 6 or 12 days’ continuous run time on a battery charge
- 2+ weeks’ continuous internal high definition (960x540 and 1920x1080) video storage
- Opt. Rapid Review / Integrated Timelapse enables viewing 48 hours in 24 minutes over the air for a much more efficient monitoring paradigm
- Anti-impact and anti-theft: rubber base with earth screws, 3D accelerometer detects cone movement and sends alert, rugged Cylindrical Covert Smart uPTZ Camera runs during transport
- “Smart” power monitoring with estimated run time remaining and low-power alert
- One-piece plus rubber base, replaceable cone
- Light-weight, only 17# or 23# plus rubber base
- Custom built and configured, just install batteries (batteries, charger, and cell service not included)
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Rapid Deployment, High Definition, Ultra Low Bandwidth, Low Power, Cellular Covert PTZ Video Surveillance System with Stranger Detector™ in Traffic Channelizer Cone

Specifications

**Benefits**

- Much more efficient outdoor video surveillance
- Complete cellular 1920x1080 HD PTZ system with long range zoom lens in 42” traffic cone
- Easily set up ultra low bandwidth, covert outdoor high def digital video surveillance via Internet with live and recorded video, and remote control, or via concealed WiFi when no cell service
- Internal Boundless’ Cylindrical Covert Smart uPTZ Camera can be removed and used in other external enclosures for wide application
- Very low power dissipation, approx. 2 watts³ in Super Power Saver Mode (video active, modem on a schedule), for long battery run time
- Stranger Detector™ Smartphone WiFi Monitoring Locating System (see Appendix)
- Opt. Rapid Review / Integrated Timelapse speeds reviewing recorded video over the air 120X
- 5 MP, ¼” CMOS color image sensor with back-side illumination for better low light performance
- Records video internally, avoiding distant network video recorder and constant network traffic, recording better video than could be sent to it, reducing cellular traffic by 250+ GB/month
- Unique concealed Forward Pivot II™ micro-PTZ camera is unusually small yet provides remotely controlled motorized pan, digital tilt at full resolution, and motorized optical zoom, with tiny window just 9/16” dia.
- 12-33 mm motorized optical zoom at 1920x1080, +/-22.5º mechanical pan, with focal lengths for long range use (license plate at 450 feet⁵)
- Dual-stream optimization: monitoring stream is live and int. recorded 24/7 at 960x540 @ 5 fps with high compression, plus evidentiary stream 1920x1080 @ 5 fps is also int. recorded 24/7
- Rapid access video file system greatly reduces time to access and view desired video segments

![Image of traffic cone with camera](image.png)

- USB jack for opt. internal concealed WiFi hotspot, video backup, or ethernet
- Conceived high gain directional Stranger Detector™ WiFi antenna views subject zone
- Internal concealed batteries (not incl.) sit on base plate
- 42” Traffic Channelizer Cone (two models)
- 9/16” dia. window for concealed, removable, Cylindrical Cellular Covert Smart uPTZ Camera
- Internal concealed high gain cell antenna and ground plane
- Rubber base with earth screws
- Light weight: cone + camera = 5#, 6+ day battery pack = 12#, large base = 16#

![Image of traffic cone with camera](image.png)

Place with other like traffic channelizer cones, splash with muddy water, and make them look like they have a purpose

- 256GB internal high reliability video storage
- Anti-tip, anti-impact and anti-theft: base with earth screws, 3D accelerometer detects cone movement and sends alert, rugged Smart uPTZ Camera runs during transport
- “Smart” battery monitoring with estimated run time remaining
- Remote power management – run when needed
- Approx. 6+ or 12 days³ continuous run time on 3 or 5 int. 12V 12AH LiFePO4 batteries (not incl.)
- Industrial grade 3G cell modem¹,² (svc. not incl.)
- Custom built and configured, just install batteries

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Vehicle license plate can be read at a distance of approx. 450 feet in daylight at max. zoom

Vehicles approx. 600 feet from camera at night at maximum optical zoom

(Images made with similar Boundless’ system)
Optional **Rapid Review / Integrated Timelapse** enables reviewing an hour’s or a day’s recorded video over the air in 30 seconds.

Images made with Boundless’ system with wider angle, fixed lens.
More Efficient Paradigm for Determining Subject Activity

Boundless’ Stranger Detector™ locating system and optional Rapid Review provide a new, much more efficient paradigm for private investigators to monitor subjects and determine patterns of activity.

Boundless’ Stranger Detector™ locating system and optional, Rapid Review / Integrated Timelapse software run in Boundless’ Smart uPTZ Cameras along with all the other camera functions. Smart Cameras can automatically create timelapse videos internally enabling long periods of time to be viewed very quickly, at 120X speed over the air for “hour” files. The Cylindrical Covert Smart uPTZ Camera creates a 960x540 timelapse video of the previous hour at the beginning of each hour from one snapshot every 15 seconds. It can be viewed over the air in just 30 seconds. No cellular bandwidth, external equipment, software or effort is required to create the timelapse videos because they are automatically and continuously created within the Smart uPTZ Camera. It is a new kind of analytics.

Viewing of the timelapse video is integrated with Boundless’ normal, high definition video recordings, and Boundless’ rapid access video file system. To search for a subject and drill down for more details, timelapse video is viewed over the air at very high speed, paused, and the 960x540 and then the 1920x1080 normal recorded video quickly and easily viewed over the air starting at the time paused. Once you’ve seen the subject come and go, find his/her smartphone’s WiFi MAC address in the Stranger Detector™ at those times. Then use the Stranger Detector™ data to pin point other times of arrival, departure and activity.

There is no need to: (a) watch live video to determine patterns of subject activity, (b) have a WiFi live video connection and investigator nearby to avoid large cellular expense, or (c) wait to retrieve video recordings from the field to review them to determine subject activity or verify camera function.

Determine subject activity using Boundless’ recorded videos from a previous day or days as follows:

1. While Boundless’ Smart uPTZ Camera is online in the field, a distant monitoring person remotely accesses the Smart uPTZ Camera via the Internet and views a subject’s previous day’s or days’ activity. Video is reviewed at very high speed, and low bandwidth per hour of video, using Boundless’ Rapid Review / Integrated Timelapse video hour files. An hour’s video can be viewed over the air in 30 seconds, a 120X speedup, and with typically only 2 to 4 MB of data in daylight, much less at night.

2. When a possible subject is spotted, pause playback of the timelapse video, back up the playback time a few seconds, click over to that point in time in the normal recorded video, and view the normal recorded video. Correlate subject’s presence in recorded video with WiFi MAC addresses in Stranger Detector™ Smartphone WiFi Monitoring Locating System hour files to determine the WiFi MAC address of the subject’s smartphone. See Appendix.

3. To most quickly confirm the presence of the subject, the lesser (960x540) resolution, view the lesser data rate, normal recorded video stream first. When you obtain the time of the best view of the subject, pause playback and click over to the 1920x1080 normal recorded video.

4. Switch back to the timelapse video at the time paused, resume playing, and repeat the above process for the entire time period desired.

5. A 48-hour period, with timelapse video created from snapshots every 15 seconds, can be viewed over the air in as little as 24 minutes, plus time to confirm activity.
Boundless Security Systems, Inc.
the communications bandwidth experts

Stranger Detector™ Sortable Table User Interface

A tool for displaying, sorting and searching WiFi probes and corresponding video from one or more locations containing Stranger Detectors, and setting alerts

Many sorting functions
Choose one or more hours (previous menu selects starting time)
Color-coded groups of MAC addresses help spot patterns of presence

Boundless’ BSSI-8 Stranger Detector™ Sortable Table

Level 1 Sort by Frequency ▼ Ascending Descending
Level 2 Sort by Time ▼ Ascending Descending
Level 3 Sort by None ▼ Ascending Descending

Number of Previous Hours to Display 0 ▼
Number of Future Hours to Display 0 ▼
Hide MAC Addresses in Skip List
Hide MAC Addresses in URL List
Update Table Clear All Selections Save as CSV
Display Skip List View Video Show/Hide Alerts

Show Unique MAC Addresses Restore All Records
Local Search Find Presence Elsewhere Wide Area Search

Select Group Select Found Date/Time Vendor MAC Address Signal
Jan 23 2015 07:42:00.940 Sercomm 00:0e:82:3a:90:e1 -91
Jan 23 2015 07:47:44.065 be:26:7a:06:a1:cc -85
Jan 23 2015 07:42:54.510 16:de:32:e2:8e:ab -75
Jan 23 2015 07:41:15.682 Apple 20c:9d:07:4d:25 -83
Jan 23 2015 07:30:28.438 a6c:00:4f:19:3e:9 -77
Jan 23 2015 07:54:38.421 a6c:00:4f:19:3e:9 -79
Jan 23 2015 07:05:33.970 Apple e8bc:e8:bc:53:6b -37
Jan 23 2015 07:35:33.926 c2:4e:b2:b2:eb:34 -75

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Appendix: *Stranger Detector™* Probes for One WiFi MAC Address for 24 Hours Show User Activity, part 1 of 3

Easily see in detail when a particular smartphone, and by extension, person, is present and when s/he uses their phone. The table below contains actual data and was obtained, uncolored, using the **Sortable Table User Interface**. Probes occur every few minutes throughout the day, with their frequency showing phone and user activity. Many of these times, the phone sat idle on a table, but still sent probes and maintained its Internet connectivity via home WiFi. Alternate hours are bolded to show user activity.

<table>
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<th>wifi MAC Address</th>
<th>Activity</th>
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</table>

Date and time, Linux epoch time., WiFi MAC address, signal strength

Legend: **blue** text for first block of times phone and user are present, **red** text for second block of times phone and user are present, alternate hours are bolded to show phone and user activity.

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User leaves after this probe, view recorded video over the air to confirm

User has returned, view recorded video over the air to confirm

Legend: **blue** text for first block of times phone and user are present, **red** text for second block of times phone and user are present, alternate hours are bolded to show phone and user activity.

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Appendix: *Stranger Detector™* Probes for One WiFi MAC Address for 24 Hours Show User Activity, part 3 of 3

Legend: **blue** text for first block of times phone and user are present, **red** text for second block of times phone and user are present, alternate hours are bolded to show phone and user activity.