

TRUCK PARKING OCCUPANCY & DETECTION

Kingfisher

Real-Time Truck Parking Analytics by LiDAR

Improve truck parking efficiency while delivering accurate, real-time space availability to drivers and transportation agencies.

Kingfisher monitors truck parking facilities in real time — detecting and classifying vehicles as they enter and exit, maintaining facility occupancy status, and publishing available-space information to roadside signs, 511 systems, and agency dashboards. Kingfisher scales from a single rest area to statewide truck parking networks.

24/7

REAL-TIME
MONITORING

Multi

SENSOR
CONFIGS

H × L

VEHICLE
DIMENSION
CLASSIFICATION

API

OPEN API &
DATA
INTEGRATION

KEY CAPABILITIES

Occupancy Tracking

Real-time space counts and facility status updates for travelers and operations staff.

Entry / Exit Detection

Sensor placement tuned to ingress and egress points for accurate in/out counting.

Vehicle Classification & Analytics

Classifies vehicles as commercial or non-commercial based on measured height and length, with timestamped entry/exit records.

Real-Time Alerts

Threshold and status alerts for full lots, unusual activity, and system health.

Edge Processing

On-site analytics minimize bandwidth — only occupancy data and events are transmitted.

Open API & Data Integration

Secure API / JSON feeds publish events and occupancy to 511, ATIS, and agency dashboards.

IDEAL APPLICATIONS

Truck Parking Availability

Real-time space counts published to 511 & traveler info systems

System Performance & Utilization Analytics

Utilization trends for planning & expansion decisions

Facility Operations

Entry/exit analytics & status dashboards for operators

TYPICAL CUSTOMERS State DOTs · Truck Parking Operators · Freight Corridor Programs

HOW IT WORKS

STEP 1**1**

Detect

LiDAR captures each vehicle as it enters the facility.

STEP 2**2**

Classify

Classifies commercial and non-commercial vehicles using measured vehicle height and length.

STEP 3**3**

Support Occupancy Status

Configured entry and exit activity supports facility occupancy status and availability updates.

STEP 4**4**

Publish

Availability is published to 511, ATIS & traveler information systems.



The Kingfisher sensor. A compact solid-state LiDAR unit in a weatherproof housing with an integrated sun shroud — fully electronic, no moving parts.



Typical field installation. A Kingfisher sensor pole-mounted at a facility entrance with its roadside control cabinet.

SENSING TECHNOLOGY

Why LiDAR for Truck Parking Monitoring?

Unlike camera, radar, and pavement-mounted sensors, Kingfisher utilizes LiDAR technology to provide accurate vehicle detection regardless of lighting conditions while remaining completely non-intrusive to existing pavement infrastructure.

BENEFITS

- ✓ Operates day and night without dependence on ambient lighting
- ✓ Reliable in rain, snow, fog, and varying weather conditions
- ✓ Detects vehicles even when parked directly beneath the sensor
- ✓ No pavement cuts or intrusive roadway work required
- ✓ High detection accuracy with minimal maintenance requirements

SENSING TECHNOLOGY COMPARISON

Feature	LiDAR (Kingfisher)	Camera	Radar	Magnet
Light Independence	✓	✗	✓	✓
Works with vehicle parked under sensor	✓	✗	✗	✓
Weather Resistance	✓	✗	✓	✓
Intrusiveness	Non-contact	Non-contact	Non-contact	Pavement cuts
Vehicle Detection Accuracy	High	Medium	Medium	High

Kingfisher combines the all-conditions reliability of LiDAR with non-intrusive installation — the only approach in this comparison that detects vehicles parked directly beneath the sensor while requiring no pavement work.

VEHICLE CLASSIFICATION & ANALYTICS

Kingfisher classifies vehicles as commercial or non-commercial based on measured height and length, with timestamped entry/exit records for operational analytics. Data can be used for:

- Occupancy monitoring
- Truck parking analytics
- Utilization reporting
- Operational performance dashboards
- Historical occupancy trends
- Freight planning studies

ANALYTICS & REPORTING

Facility Analytics Snapshot

Illustrative example — representative of the metrics available through Kingfisher's analytics feed, not an actual dashboard screenshot.

12 / 40

SPACES AVAILABLE

70%

CURRENT OCCUPANCY

14:00–16:00

PEAK HOUR

187

ENTRIES TODAY

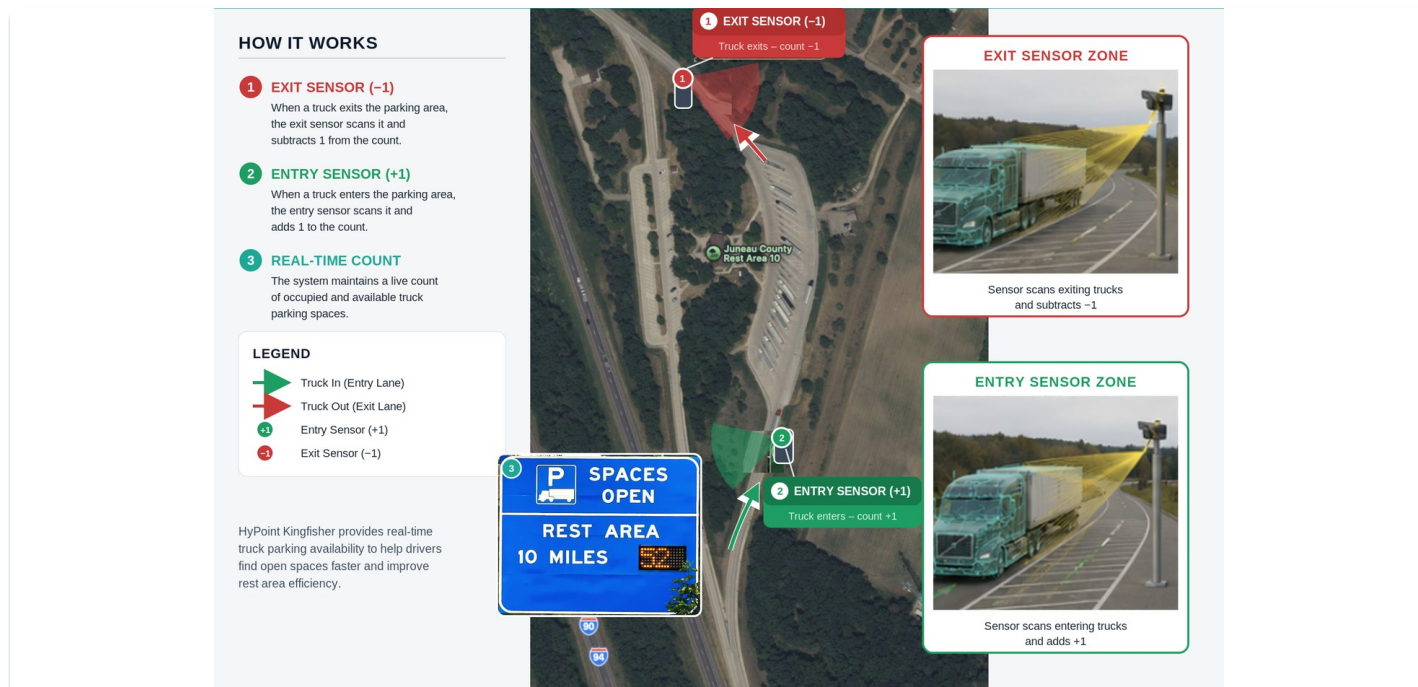


Hourly occupancy trend (illustrative) — Kingfisher feeds this data into dashboards and monitoring software: spaces available, occupancy trends, commercial vs. passenger counts, peak periods, and entry/exit totals.

REAL-WORLD DEPLOYMENT

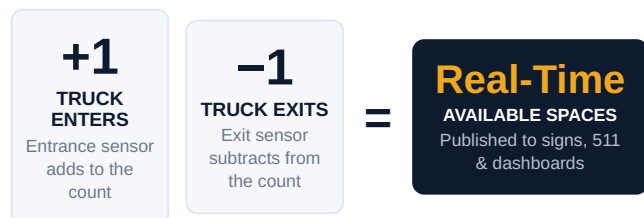
Rest Area Truck Parking Monitoring

How a Kingfisher deployment works at a highway rest area: a single LiDAR sensor at the entrance adds each arriving truck to the count (+1), a single LiDAR sensor at the exit subtracts each departing truck (-1), and the system maintains a live count of occupied and available truck parking spaces — published to the dynamic roadside sign drivers see on approach, and to 511 / traveler information systems. Additional entrances and exits can be supported by synchronizing multiple sensors across larger facilities.



Entrance-and-exit counting in the field. Entry and exit sensors maintain the facility-wide occupancy count in real time; the dynamic roadside sign shows drivers the number of open truck parking spaces before they commit to the ramp.

HOW OCCUPANCY STATUS IS SUPPORTED



REAL-TIME DATA OUTPUTS

- ✓ Available Spaces
- ✓ Truck Entries
- ✓ Commercial vs. Passenger Vehicles
- ✓ Occupancy Percentage
- ✓ Occupied Spaces
- ✓ Truck Exits
- ✓ Time Stamp

Every output is time-stamped and published in real time through the open API for 511, ATIS, dynamic signage, and agency dashboards.

REAL-TIME COUNT

ROADSIDE SIGN

511

ATIS

AGENCY DASHBOARD

DEPLOYMENT HIGHLIGHTS

Two Sensors, Whole Facility

One entrance + one exit sensor maintain an accurate count for the entire lot

Dynamic Roadside Signage

Real-time space counts published to the signs drivers see on approach

Zero Pavement Work

Pole-mounted sensors and roadside cabinets — no cuts, loops, or lane closures

TRUCK PARKING OCCUPANCY & DETECTION

System Specifications & Integration

LIDAR SPECIFICATIONS

Sensor Platform	Solid-State Flash LiDAR
Detection Range	Up to 50 m (30 m @ 10%)
Minimum Range / Blind Zone	< 0.10 m
Field of View (H×V)	140° × 100°
Angular Resolution (H×V)	0.55° × 0.52°
Scanning	Fully electronic — no moving parts
Laser Wavelength	940 nm
Laser Safety	Class 1 (IEC 60825-1)
Power Consumption	6 W
Form Factor	Compact (≈ 50 × 46 × 80 mm)

Specifications are presented as HyPoint system specifications for the wide field-of-view occupancy sensor. Sensor count and placement are matched to facility layout, entrance/exit geometry, and project objectives. Occupancy status is derived from configured entrance/exit sensor activity and site logic, rather than direct space-by-space sensing — see Real-World Deployment (page 3) for how entry/exit counting maintains a facility-wide count.

Deployment & Support

The system includes automated calibration capabilities when deployed at a new location, minimizing setup time and reducing field configuration requirements. HyPoint provides remote deployment assistance, calibration verification, software updates, system diagnostics, and ongoing technical support — during installation, relocation, and day-to-day operation.

WHY AGENCIES CHOOSE KINGFISHER

- ✓ No pavement cuts
- ✓ Low maintenance
- ✓ Expandable to multiple entrances
- ✓ Fast installation
- ✓ Highly accurate occupancy counts
- ✓ Open API architecture
- ✓ Supports statewide deployments

OPEN DATA INTEGRATION

Kingfisher publishes real-time vehicle events and occupancy data through secure API and JSON interfaces.

DATA OUTPUTS

- Vehicle classification
- Direction of travel
- Time stamp
- Unique vehicle event ID
- Occupancy status
- Available parking counts

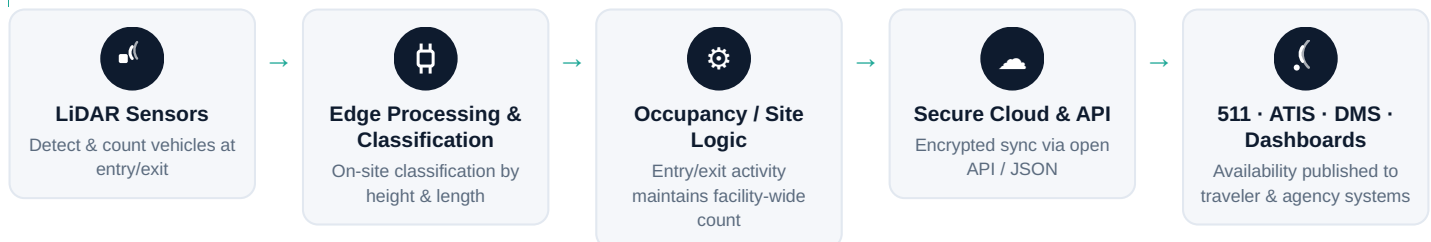
COMPATIBLE WITH

- 511 Systems
- ATIS Platforms
- State DOT Systems
- Commercial Parking Platforms
- Custom Dashboards

KINGFISHER AT A GLANCE

Feature / Capability	Kingfisher
Primary Application	Truck Parking Occupancy
Sensor Configuration	Multi (entrance & exit)
Occupancy / Space Counting	Yes
Entry / Exit Detection	Yes
Commercial vs. Non-Commercial	Yes
Direction of Travel	Yes
Truck Parking Analytics	Yes
Time-Stamped Event Records	Yes
Open API / JSON Integration	Yes
Real-Time Alerts	Yes
Historical Data Review	Optional
Vehicle Overview Images	Optional
LPR / USDOT Integration	Optional
Edge Processing	Yes
Cloud / Remote Access	Yes
Solar Power Integration	Optional
Power Requirements	Low
Typical Deployment Type	Fixed infrastructure

SYSTEM ARCHITECTURE



Let's talk about your facility.

John Caya · President · john@hypointsolutions.com · 608.695.6024 · www.hypointsolutions.com
Application review, site assessment, and system recommendation at no cost, configured for your facility.

AUTOMATED REPORTING

Your Facility, Summarized Every Morning

A complete 24-hour operations report lands in your inbox at 6:00 AM — before your first shift starts, with no dashboard login required.

Every Kingfisher-monitored facility receives an automated Daily Report: entries and exits by vehicle class, net occupancy change, wrong-way detections, sensor health confirmation, and activity patterns benchmarked against the facility's own history. The sample below is an actual daily report generated for a single rest area.

6:00 AM

DELIVERED DAILY, BEFORE FIRST SHIFT

24 HRS

OF ACTIVITY SUMMARIZED AUTOMATICALLY

107

HEALTH PINGS CONFIRMING SYSTEM UPTIME

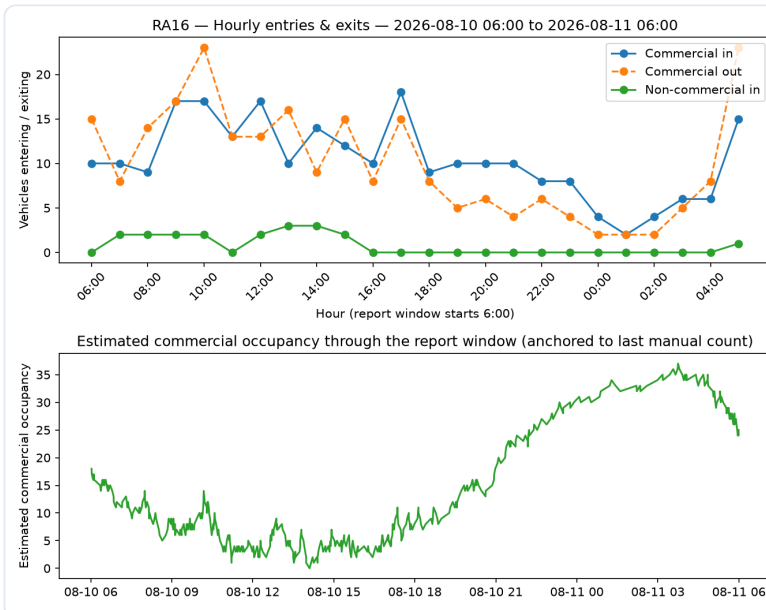
3

PATTERN ANOMALIES FLAGGED FOR REVIEW

SAMPLE DAILY REPORT

RA16 Daily Report

2026-08-10 06:00 → 2026-08-11 06:00



Hourly entries/exits and estimated commercial occupancy for the reporting window — included automatically in every Daily Report.

249 / 241COMMERCIAL
IN / OUT**19 / 15**NON-COMM.
IN / OUT**+8**NET OCCUPANCY
CHANGE**8**WRONG-WAY
DETECTIONS**107**HEALTH-CHECK
PINGS

25 trucks estimated commercial occupancy at 06:00, initialized against a verified facility count and continuously updated by entry/exit activity.

Pattern check: 3 hours this cycle deviated from the facility's own baseline — flagged for review, full detail via API or dashboard.

HOW YOU RECEIVE IT

Email, Every Morning

Sent automatically at 6:00 AM — nothing to configure or check manually.

Open API / JSON Feed

The same report data is available for automated pulls into your own systems.

Agency Dashboard

Report history and live occupancy are also viewable inside your operations dashboard.

WHY IT MATTERS TO YOU

✓ **No Manual Reconciliation**

The report is already built and waiting each morning — no counts or spreadsheets to reconcile.

✓ **Automatic Health Checks**

Sensor and system health are confirmed every day, with no site visit required.

✓ **Early Warning on Activity**

Wrong-way movement and off-baseline traffic are surfaced before they become a bigger problem.

✓ **One Email, Not a Login**

Replaces a daily dashboard check-in for operations and maintenance staff.

See this running on your own facility.

John Caya · President · john@hypointsolutions.com · 608.695.6024 · Ask about a sample Daily Report configured for your facility, at no cost.