

US

Kapsch CVE Solutions: Commercial Vehicle Enforcement.



Kapsch CVE Solutions: End2End Commercial Vehicle Operations Solutions.

The nation's infrastructure continues to decline at alarming rates while cities and states with shrinking budgets struggle to fund basic repairs. A contributing factor to roadway damage is commercial vehicle traffic. Many states are unable to adequately monitor or enforce safety and non-safety violations due to dwindling resources for staff and monitoring stations. Thus statistics show weigh station open hours decreasing while freight volume increases.

Kapsch's CVE offers an end-2-end solution to maximize state resources, facilitate violation processing and increase roadway safety.

CVE is built using robust and modular system modules to support the dynamic needs of state enforcement agencies. Whether for mainline or installation, virtual or mobile, Kapsch CVE delivers high performing solutions for state needs.

Kapsch's CVE addresses the needs for credential enforcement, as well as safety enforcement in order to ensure carrier compliance with laws and regulations. CVE comprises a set of roadside sensors and back-end systems that capture commercial vehicle information, such as license plate numbers, US DOT numbers, overheight and weight, and checks the associated data against third party databases, such as permitting systems and federal carrier registration systems. Discrepancies are then routed to the responsible enforcement agency, or processed through Kapsch's commercial back office. Kapsch CVE offers a convenient web-based back office for carriers to register online in order to review violations and make online payments. The CVE process flow is custom tailored to the agency's needs, from providing subsystem data to a complete end-2-end system and service for customer billing and relationship management





Components of a full end2end system may include:





1

Weigh Station Bypass.

Pre-trip, subscription-based systems enable commercial vehicle operators to electronically register weight, safety, and credential information for fleets and drivers. Trucks in compliance bypass weigh stations so that enforcement can concentrate on violators, thereby reducing station congestion. Small, lightweight transponders are compatible with PrePass®, NORPASS, BESTPASS, Green Light, CVISN (Alaska), 407 ETR, and MnPass.



2

Truck Parking.

Kapsch interior 5.9 GHz DRSC (Dedicated Short Range Communications) on-board units (OBUs), in conjunction with a Kapsch V2X roadside and parking system, provide drivers with real-time availability of parking facilities and services.



3

Mainline and In-Station Screening.

Kapsch Electronic Screening services provide fixed and mobile roadside technology which accurately identifies, weighs, and measures commercial vehicles for efficient screening, inspection, and enforcement operations in mainline or in-station scenarios. Supporting software allows site personnel to quickly identify violators while allowing efficient throughput for compliant vehicles.



5

Virtual Enforcement.

Kapsch high speed, virtual enforcement is made possible through reliable software solutions and high performance technology that meets or exceeds requirements. Leveraging the same ALPR, USDOT Reader, WIM, and other weigh station screening technology, Kapsch virtual enforcement increases commercial vehicle enforcement in areas a state may not have resource availability for full monitoring services.



6

Wireless Inspection.

Connected vehicle solutions offered by Kapsch enable compliance and mobility applications for both enforcement and carrier efficiency. Bi-directional communications with roadside infrastructure transfers driver, vehicle, and carrier data to the roadside for assessment while guidance information is passed back to the driver. These transponder-based services provide higher data clarity of driver, truck operating condition, fleet credentials, hours of service, permitting, and cargo. Other use cases are available.



7

Unique Deployment Options.

Kapsch technology opens up new opportunities with any type of deployment scheme, whether in response to a specific RFP, for public-private partnerships (P3), or as the designated operator for performance-based contracting. Kapsch TrafficCom can capitalize roadside and back office under a performance type contract.



Mobile Enforcement.

A Portable Vehicle Inspection Station (PVIS) is a complete hitch-towable trailer enforcement system designed to bolster compliance in areas without inspection facilities. The trailer system provides functionality for front ALPR image with OCR result, overview image, and USDOT image with OCR result, and is capable of being connected locally to a weigh-in-motion (WIM) subsystem. Mobile enforcement offers the same functions as the mainline screening system. It is suitable for operations in areas of known violations and weigh station circumnavigation routes.

Enforcement – Automatic License Plate Recognition (ALPR).

The Kapsch Automatic License Plate Recognition system is a high-performance and cost-efficient subsystem of Kapsch’s FORCE end-to-end violation enforcement system deployed on the mainline or in-station and employed to accurately identify license plate numbers and jurisdiction, referenced to assess carrier compliance with state and federal laws and regulations.

Key Characteristics:

- The ALPR subsystem leverages Kapsch’s proprietary high-performance commercial vehicle OCR engine deployed across the US and installed at over 17 different sites.
- ALPR reader consistently performs in excess of 95% accuracy on high and low speed roadways.
- Identifies license plate number and jurisdiction.
- Camera and subsystem components are temperature hardened to maintain performance in all weather conditions.
- Camera housing is built out of aluminum alloy and is corrosion resistant.
- Sensor connectors are military-grade quarter-turn connectors.
- LASER trigger is rated eye-safe.
- ALPR reader electronics are housed in a compact and self-containing cabinet on the ALPR pole, which only requires power and data connectivity.
- Sensor bracket angles are adjustable in the vertical and horizontal direction.
- Sensors are installed on quick-release and memory brackets for convenient access.



Credential Enforcement - US DOT Number Reader.

Kapsch’s US DOT Number reader is a subsystem of Kapsch’s FORCE end-to-end violation enforcement system deployed on the mainline or in-station and employed to accurately identify trucks and assess their compliance with state and federal laws and regulations.

Key Characteristics.

- The US DOT number reader subsystem has been deployed across the US at over 17 different sites, leveraging Kapsch’s 20 years of experience in road traffic telematics.
- High performance read accuracy on high and low speed roadways.
- Camera and subsystem components are temperature hardened to maintain performance in all weather conditions.
- Camera housing is built out of aluminum alloy and is corrosion resistant.
- Sensor connectors are military-grade quarter-turn connectors
- Camera illuminator use near infrared illumination that is non-distracting and eye safe.
- LASER trigger provides vehicle height information and is rated eye-safe.
- US DOT Number reader electronics are housed in a compact and self-containing cabinet on the US DOT pole, which only requires power and data connectivity.
- Sensor bracket angles are adjustable in the vertical and horizontal direction.
- Sensors are installed on quick-release and memory brackets for convenient access
- US DOT subsystem result message contains:
 - Unique transaction ID
 - US DOT number
 - Height of vehicle (optional)

Safety and Credential Enforcement – WIM.

Kapsch WIM is a subsystem of Kapsch's FORCE end-to-end violation enforcement system employed to accurately identify trucks and assess their safety and compliance with state and federal laws and regulations.

Key Characteristics:

Kapsch WIM employs a combination of in-pavement sensors to measure weight, weight groups, number of axles, vehicle class, speed and to detect dual tire configurations. The system electronics are typically housed in a roadside cabinet placed on a concrete footing on the unpaved shoulder or on the sideslope of the road.

Applications:

- **Direct enforcement.** Overloaded or unbalanced vehicles can be identified and flagged for enforcement. In addition an evidentiary package is created for each violation containing the vehicle weigh information, overview image and license plate image and number.
- **Pre-selection for vehicle inspection.** Vehicles can be preselected at WIM stations at vehicle inspection checkpoints. Flagged vehicles can then be diverted to the vehicle inspection site for further examination.
- **Statistics/traffic research.** Kapsch WIM enables road operators and researchers to include vehicle weight data in traffic statistics.
- **Access control.** Vehicle weight can be checked when crossing factory premises, ports, military bases or other special interest zones.

Safety Enforcement – Hazardous Material Placard Reader.

The Kapsch HAZMAT reader system is a high-performance and cost-efficient subsystem of Kapsch's FORCE end-to-end violation enforcement system employed to accurately identify HAZMAT placards and assess compliance with state and federal laws and regulations.

Key Characteristics:

- The HAZMAT placard reader subsystem leverages Kapsch's OCR and symbol recognition technology deployed in electronic toll collection across hundreds of installations worldwide.
- Identifies hazardous material warning placards, hazard classes and division posted on side of truck.

- Reads numbered HAZMAT placards
- High OCR read rates
- Camera and subsystem components are temperature hardened to maintain performance in all weather conditions.
- Camera housing is built out of aluminum alloy and is corrosion resistant.
- Sensor connectors are military-grade quarter-turn connectors
- LASER trigger provides vehicle height information and is rated eye-safe.
- HAZMAT placard reader electronics are housed in a compact and self-containing cabinet on the HAZMAT pole, which only requires power and data connectivity.
- Sensor bracket angles are adjustable in the vertical and horizontal direction.
- Sensors are installed on quick-release and memory brackets for convenient access

CVE Enforcement Back Office.

The Enforcement Back Office (EBO) provides a web-based system to automatically identify carriers based on vehicle license plate number and US DOT number, and validate this information against third party databases according to pre-configured business rules. Violations can then be routed to the corresponding agency for further processing or to Kapsch's commercial back office for enforcement.

CVE Commercial Back Office.

The Commercial Back Office (CBO) offers all customer relationship management functionality, as well as invoicing, online account management and payments, printing, customer support, citation issuance, collections and reporting.

Unique Deployment Options.

Kapsch technology opens up new opportunities with any type of deployment scheme, whether in response to a specific RFP, for public-private partnerships (P3), or as the designated operator for performance-based contracting. Kapsch TrafficCom can capitalize roadside and back office under a performance type contract.



Kapsch WIM Weigh-in-Motion

Info | Live View | Filter | Statistics

non violators & violators | all vehicle classes | all locations

from: to: get filtered records

1 2 3 4 5 6 7 8 9 10 11 1 / 100 max.

time	location	vehicle class	length	velocity	total weight
2013-07-30 15:11:07	MV-CE-W0		178	56	12603
2013-07-30 15:11:01	MV-CE-W9		167	129	41333
2013-07-30 15:10:56	MV-CE-W8		114	86	11364
2013-07-30 15:10:51	MV-CE-W8		103	124	11614
2013-07-30 15:10:46	MV-CE-W9		59	130	25846
2013-07-30 15:10:41	MV-CE-W7		121	133	28145

Kapsch Commercial Vehicle Enforcement expertise worldwide.

- **PrePass | Pre-clearance:** Components supplier to HELP Inc. PrePass weigh station bypass system. 31 states, 350+ stations, 430.000+ transponders/registered trucks.
- **NorPass | Pre-clearance:** Components supplier to NorPass weigh station bypass system. 9+ states and Canadian provinces and 50,000+ transponders.
- **Michigan DOT | Clearance:** 5.9 Truck Parking Connected Vehicle System.
- **NYSDOT/NYSERDA | Clearance:** 5.9 wireless assessment weigh station pilot.
- **Indiana, Illinois, and Ohio | Clearance:** 5.9 HELP Inc 5.9 wireless assessment pilot project.
- **Utah Department of Transportation | Screening:** Mainline and in-station screening.
- **Indiana Department of Transportation | Screening:** Indiana weigh station system.
- **Montana Department of Transportation | Screening:** Montana automated weigh station screening system.
- **Switzerland | WIM:** 13 MLFF WIM stations, Highway fees for trucks to be paid depending on weight and travelled distance. First installation in 2009.
- **Czech Republic, Brno | WIM:** First direct enforcement WIM station based on Czech jurisdiction. Direct weight enforcement with classification, ALPR, toll and mobile enforcement. Weight and toll violator identification to improve enforcement resources utilization.
- **Russia, Kazan | WIM:** Two ORT WIM solutions for pre selection, including categorization of vehicles and automated license plate recognition.
- **Kazakhstan | WIM:** Five ORT WIM solutions for pre selection, including categorization of vehicles and automated front and rear license plate recognition.
- **Georgia Department of Transportation | Automated Weigh Station Screening:** Next generation of enforcement mainline video bypass.

Kapsch Group.

Kapsch is one of Austria's most successful technology corporations to specialize in the future-oriented market segments of Intelligent Transportation Systems (ITS), Public Operator Telecommunications as well as Information and Communications Technology (ICT). Kapsch. Always one step ahead.

www.kapsch.net