

Vianova Platform Hub | • THE OPERATIONS HUB FOR PUBLIC TRANSIT

SEE EVERY BUS. EVERY RIDER. EVERY SIGNAL.

Vianova Platform Hub turns your live data into one decision surface - vehicle positions, passenger load, crowding, on-time performance, and on-board device health, all on a single map.

15s

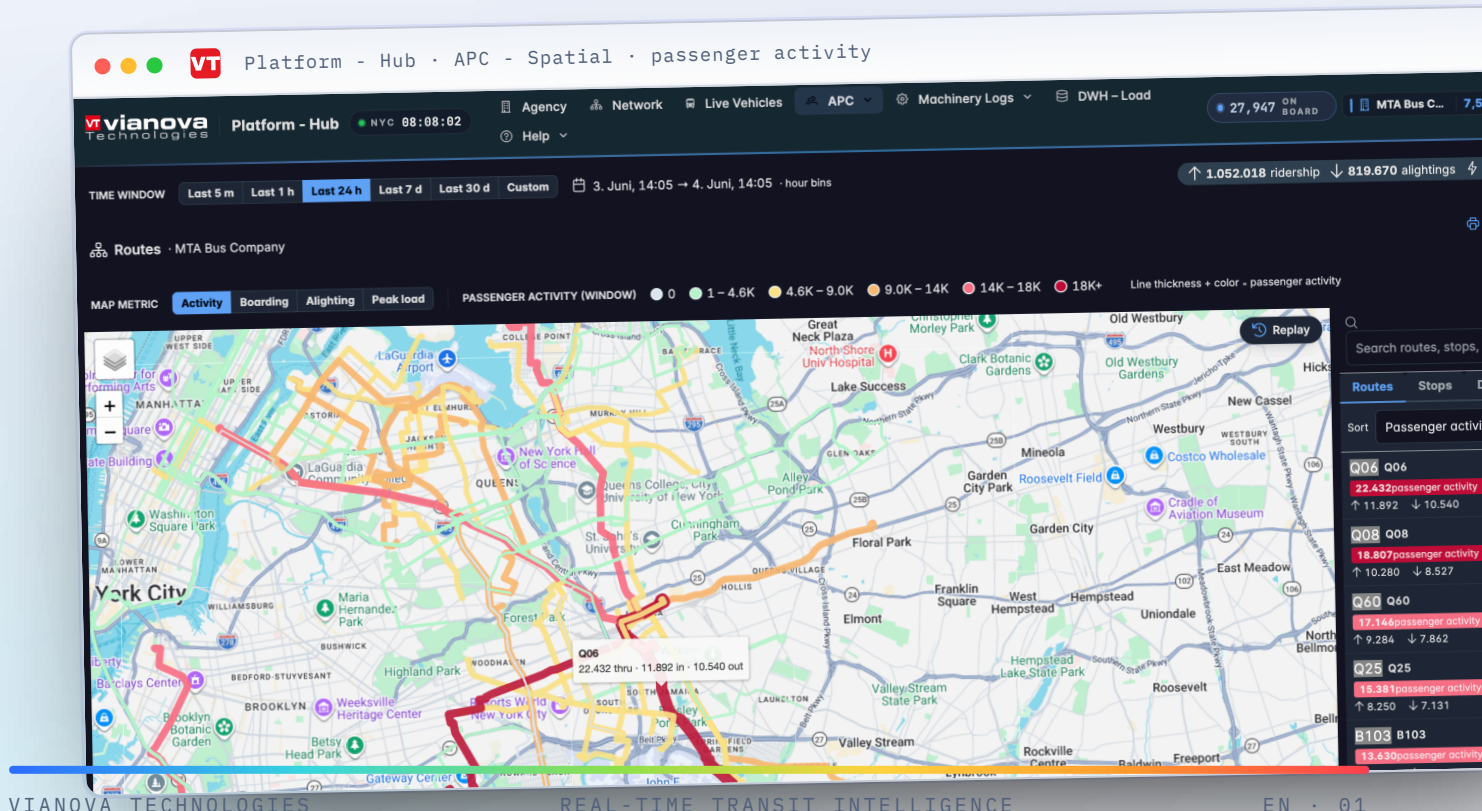
POSITION REFRESH

60s

PASSENGER REFRESH

10m

DEMAND RESOLUTION



01 - WHAT IT IS

One Hub. One Version of the Truth. **Live.**

Three live data streams converge into a unified operational data warehouse and are instantly transformed into maps, dashboards, rankings, and board-ready reports-ensuring dispatchers, planners, and engineers work from the same real-time information.

Aggregate and harmonize data from virtually any source and format, providing a single source of truth across your operation. Native support includes GTFS, GTFS-Realtime, SIRI feeds, and a wide range of proprietary and third-party data sources, enabling seamless integration without disrupting existing systems.

DATA PIPELINE

STATIC GTFS

Network Foundation

Agencies, routes, trips, stops, shapes & service calendars - The operational framework behind every map and analysis.

GTFS-REALTIME

Live Vehicle Operations

Vehicle locations, trip updates & service alerts - Refreshed every **15 seconds**.

SIRI

Passenger Intelligence

Real-time onboard passenger counts & occupancy levels - Refreshed every **60 seconds**.



VIANOVA HUB

Unified Decision Surface

Maps · Charts · Rankings · Demand Peaks · Reports · Exports · API · Device Health. - One data warehouse. One UI.

No guesswork - Passenger metrics are derived directly from live observations. Unsampled stops remain unreported rather than estimated, ensuring transparency and confidence in every operational decision.

WHY OPERATORS RUN ON IT

**Act on What's Happening Now**

See every vehicle, its passenger load, and schedule adherence in real time. Detect crowding, bunching, and service disruptions as they happen-not hours later in a report.

**Numbers You Can Defend**

Every KPI is traceable to a documented metric and an observed event. Export the same trusted figures to branded PDF reports, Excel workbooks, or integrate them directly through the API.

**A Fleet You Can Trust**

Monitor onboard systems across the entire fleet. Track alarms, firmware versions, reboots, offline devices, and hardware health from a single operational view.

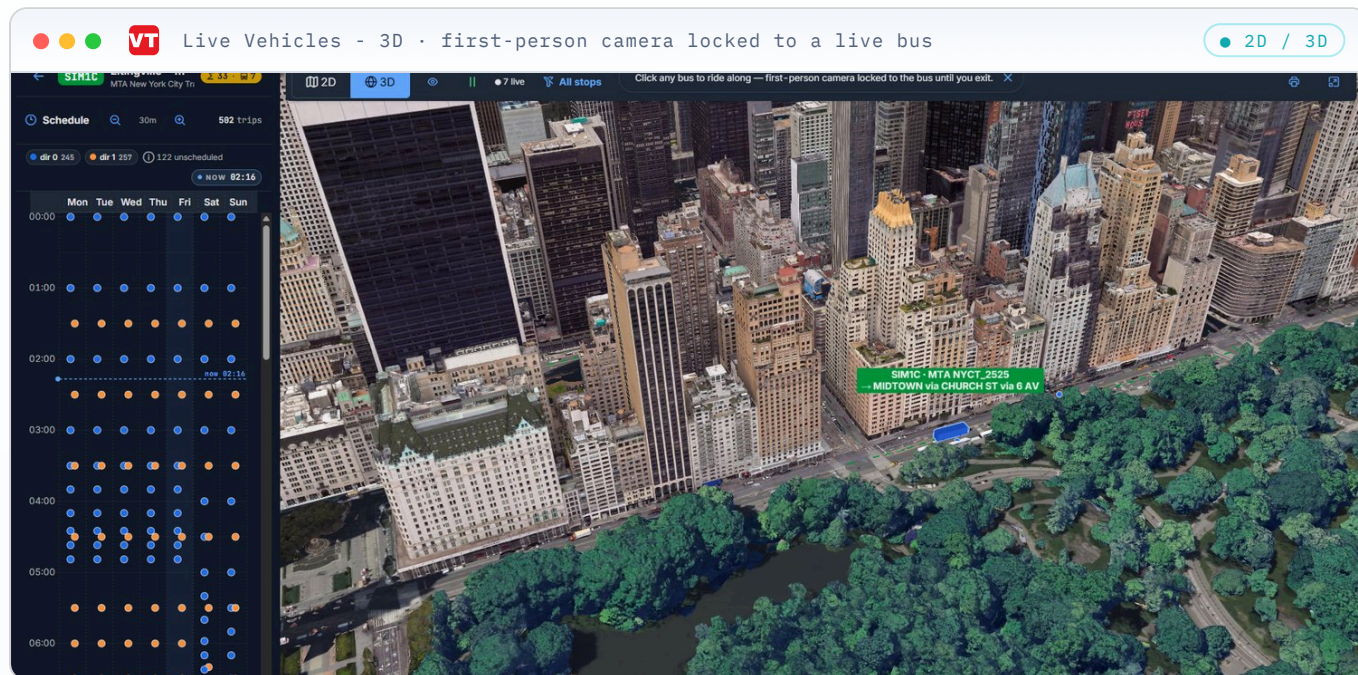
**Confidence in Your Data**

Auto-refreshing dashboards, pipeline health monitoring, and feed freshness indicators ensure you always know your data is current, complete, and flowing.

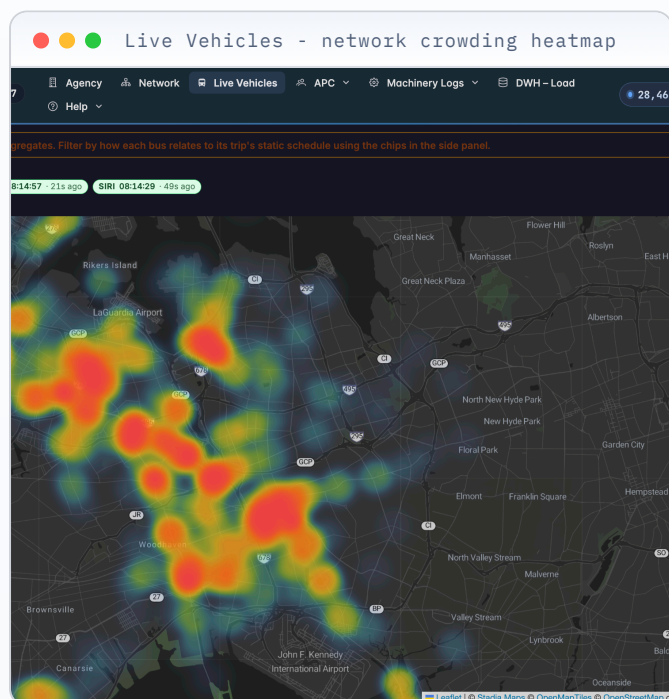
02 - REAL-TIME FLEET VISIBILITY

Where is every vehicle - and how full is it **right now?**

3D NETWORK VIEW · LIVE-VEHICLE TRACKING · PHOTOREALISTIC MAPS



LIVE VEHICLES · CROWDING HEATMAP



Built for operational decision-making. See service performance, passenger demand, and fleet status on a single live map. Detect crowding, bunching, delays, and emerging service issues before they impact riders. Zoom out to view a live crowding heatmap across the network; zoom in to inspect individual occupancy-colored vehicles.

Load-aware vehicles

Color-coded occupancy reveals crowding at a glance. Vehicle halos scale with passenger throughput.

Vehicle status

On time · Early · Late · Off route · Not in service. Derived live from each trip's schedule.

Find any vehicle in seconds

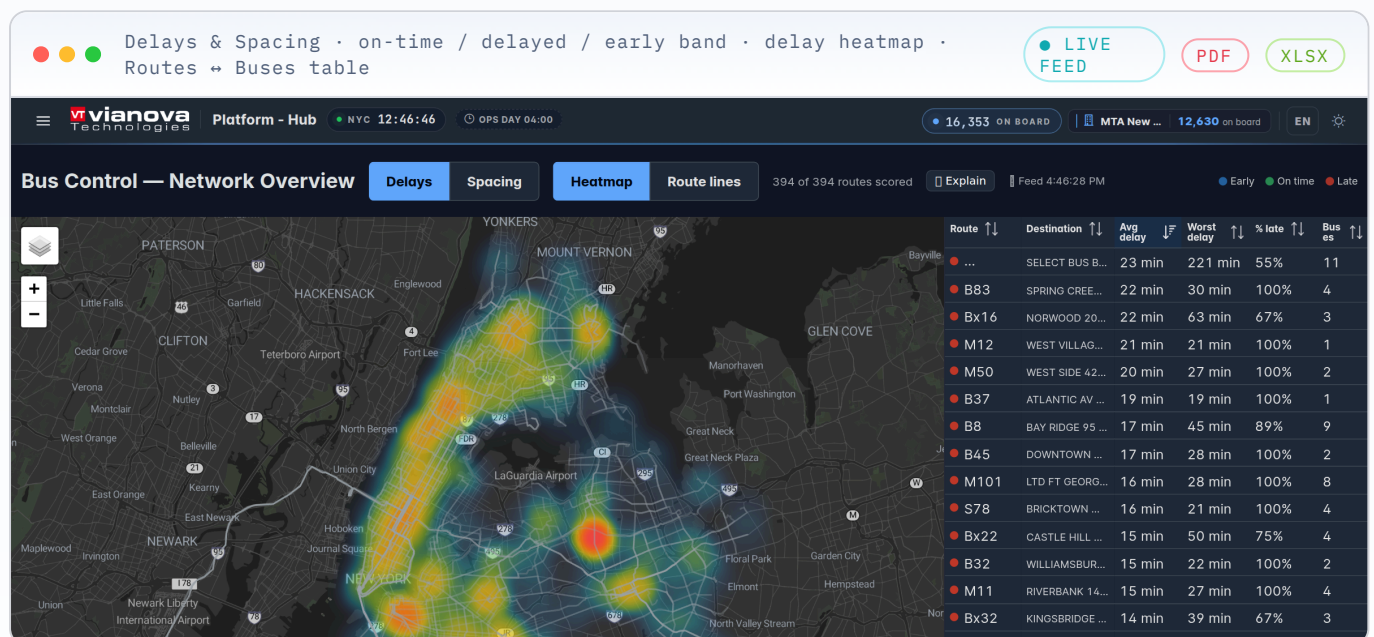
Search by fleet number and jump directly to the vehicle in 2D or 3D.

03 - BUS CONTROL · DELAYS & SPACING

Spot late routes and bunching - live, across the network.

A live control-room view over the whole network. One lens grades lateness against the timetable; the other shows whether buses are evenly spaced. A summary band counts the on-time, delayed and early routes at a glance, and a click on any route focuses its live buses with a predicted delay at every stop - straight from the GTFS-realtime feed.

BUS CONTROL · NETWORK OVERVIEW · GTFS-REALTIME



- Two lenses, two questions - Delays grades every bus, stop, and route by lateness (green ≤ 5 min $\rightarrow$ red > 15 min); Spacing flags bunching and the long gaps it leaves behind.
- The whole network at a glance - A summary band counts the on-time, delayed and early routes right now, and a heatmap shows where lateness clusters. The table flips from Routes to Buses to rank the live vehicles themselves, most-late first.
- Catch bunching early - "% off-even" and "worst gap" surface the clumping a controller can fix by holding or spacing buses - a problem plain lateness hides.
- Focus a route, stop by stop - Click a route and its live buses glide the line, colored by lateness or spacing health. In Delays each stop shows its own predicted lateness (next arrival vs schedule); toggle Stops $\leftrightarrow$ delay heatmap to see exactly where the delay builds.
- Live feed, ready to share - Every figure comes straight from the GTFS-realtime feed and is timestamped in the header. One click exports exactly what's on screen - a branded PDF with a map snapshot and the data table, or an Excel workbook.

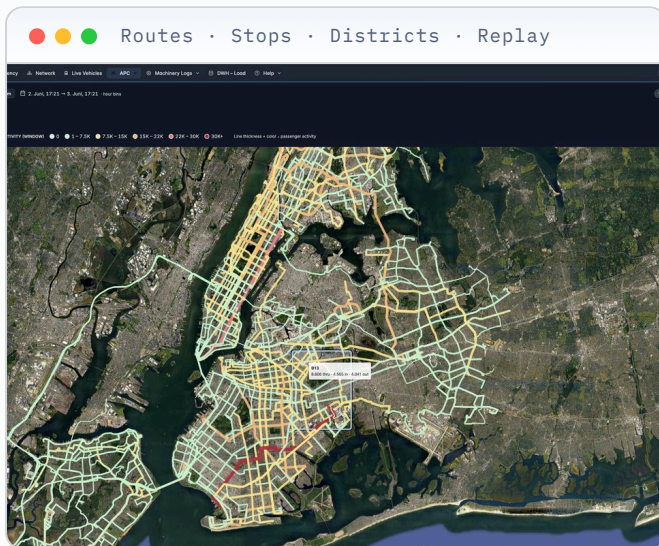
04 - PASSENGER INTELLIGENCE (APC)

Understand demand across space and time.

Transform Automatic Passenger Counting (APC) data into a live picture of how passengers move through your network. See where riders board, where they alight, and how vehicle occupancy changes throughout the day—visualized through maps, trends, rankings, and operational analytics.

Analyze demand at 10-minute, hourly, daily, or custom time intervals to uncover patterns that drive service planning and operational decisions.

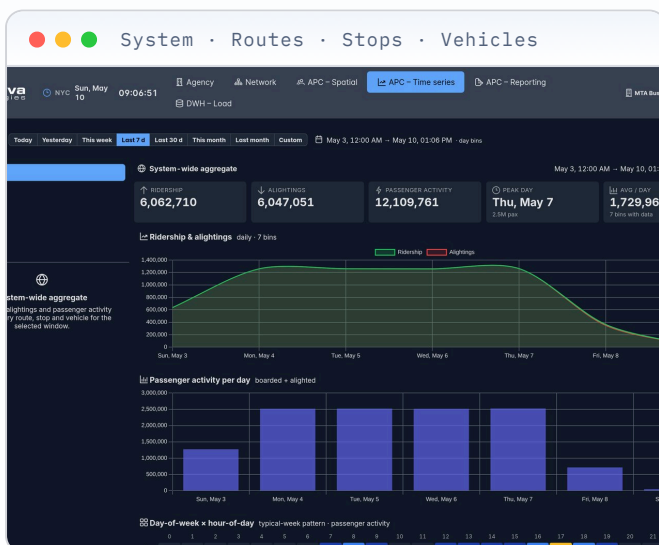
APC - SPATIAL · DEMAND ANALYSIS



Where riders board and alight

- Pick a window** - Today, the last hour, or any custom time window. The map aggregates boardings, alightings, occupancy, or overall passenger activity across the network.
- Replay demand over time** - Step through the selected period in 10-minute intervals to watch demand peaks emerge, shift, and dissipate across the city.
- Ranked side panel** - Fully synchronized with the map. Sort stops, routes, or service areas by activity, boardings, alightings, or occupancy, and the map instantly re-styles to match.
- Spot hotspots instantly** - Identify the busiest stops, corridors, and service areas, revealing crowding patterns, overloaded services, and emerging demand trends.

APC - TIME SERIES · ANALYTICS AND TRENDS



How demand changes over time

- 10-minute, hourly, or daily bins** - Analyze ridership and occupancy for any route, stop, trip, or service area, with KPI tiles highlighting total ridership and peak demand periods.
- Zoom & pan** - Charts stay synchronized as you drill from network-wide trends into hourly detail, making it easy to investigate peaks, anomalies, and capacity constraints.
- Day-of-week x hour heatmap** - Instantly reveal recurring demand patterns, peak travel periods, and weekly ridership cycles at a glance.
- Compare periods with confidence** - Contrast days, weeks, seasons, or service changes using metrics derived from observed passenger activity, not modeled estimates.

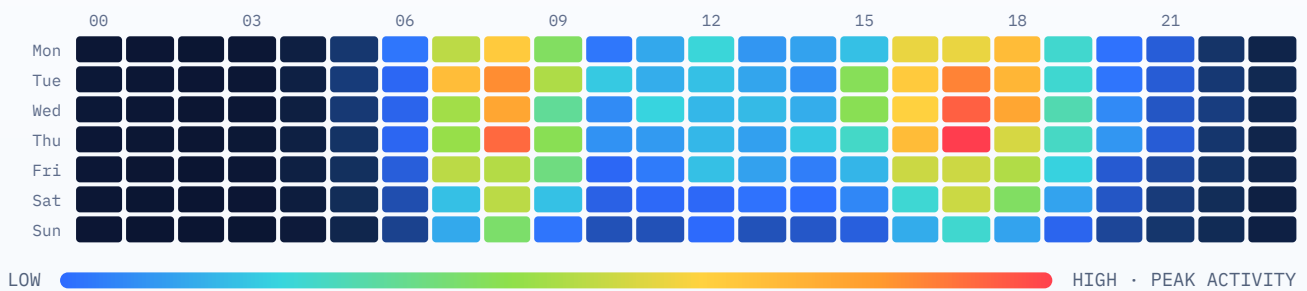
05 - DEMAND HEATMAPS & DRILL-DOWN

Passenger activity, down to 10 minutes. Everywhere.

The day-of-week × hour heatmap turns an entire week of ridership into a single, easy-to-read picture of demand. Instantly identify peak periods, recurring travel patterns, and shifts in passenger activity across the network. Then view the same demand through different lenses-by route, stop, district, or vehicle-to pinpoint where and when activity is concentrated.

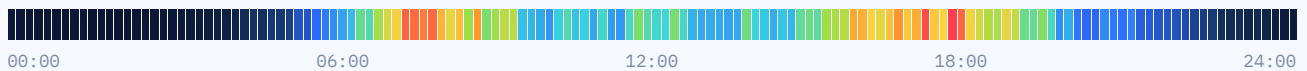
Day-of-Week × Hour Passenger Activity Heatmap

SYSTEM-WIDE · LAST 7 DAYS · 168 TIME BUCKETS



Same demand, 10-min resolution

144 BINS PER DAY · PER STOP



144 bins per day, per stop - pinpoint the exact minutes a stop spikes.

PIVOT THE ENTIRE VIEW BY ANY DIMENSION

Routes



Demand, ridership, and peak load by line.

Stops



Boardings & alightings for every stop.

Districts



Understand where passenger demand concentrates geographically.

Vehicles



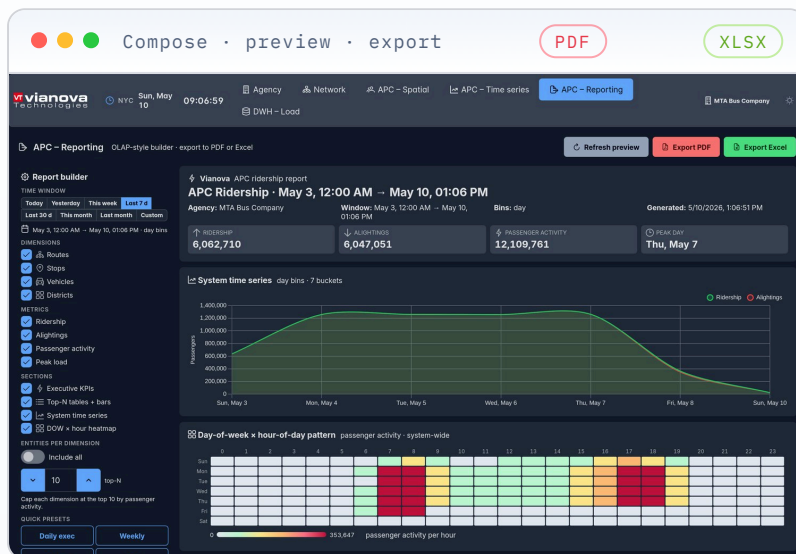
Occupancy, passenger load, and capacity utilization by vehicle.

06 - REPORTING & PEAK ANALYSIS

Board-ready in a click. Down to the **single trip**.

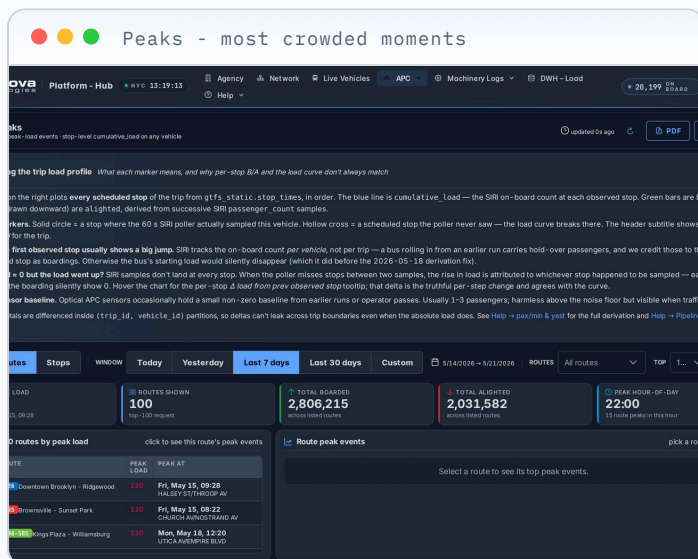
Create operational reports in minutes with a flexible, OLAP-style reporting interface that lets you explore demand from any angle and export results in presentation-ready formats.

APC - REPORTING • CUSTOM REPORT BUILDER



PEAKS ANALYSIS • TRIP-LEVEL CROWDING

Identify the busiest moment of the day on every route, stop, or service area and rank results by onboard passenger load. Drill directly into the trip profile to understand how crowding develops throughout the journey.



01 Build Your Analysis

Select dimensions such as route, stop, vehicle, district, direction, or service day, then choose the metrics that matter. The report preview updates instantly as you refine the view.

02 One-Click Report Templates

Start with prebuilt report packages for daily executive summaries, weekly reviews, monthly performance reports, or full-system analysis.

03 Branded Exports

Generate multi-page PDF reports with cover pages, KPIs, charts, and tables—or export to Excel with dedicated worksheets for each selected dimension.

- **Trip load profiles** - Boardings in green, alightings in red, and cumulative onboard load shown as a single continuous line.
- **Transparent data coverage** - Sampled stops are clearly marked, with coverage indicators such as "14 of 22 stops sampled" so analysts always understand the underlying data quality.
- **Separate patterns from incidents** - Determine whether a peak reflects a recurring hotspot or an isolated operational event before taking action.
- **Export with one click** - Save rankings, tables, and individual trip profiles to PDF or Excel for planning, reporting, or stakeholder reviews.

07 - APC FORECAST · DEMAND, DAYS AHEAD

Forecast demand — before it arrives.

The newest APC view turns your accumulated counts into a forward look: a per-route demand forecast for the days ahead, with an honest confidence band and the weather that shapes it. Predict ridership, alightings, or passenger activity for any route, district, or the whole agency - out to 14 days.

APC - FORECAST · PER-ROUTE DEMAND, DAYS AHEAD

XLSX

Ridership · history & forecast · P10-P90 band



21,033
NEXT DAY

110,620
7-DAY TOTAL

Tue
BUSIEST DAY

15,803
AVG / DAY

07:00
BUSIEST HOUR

- A band, not a false-precise line** - Each day shows a P50 median inside an 80% (P10-P90) interval, so planners read best-case, likely, and worst-case at a glance.
- Weather-aware & seasonal** - A per-day weather strip sits under the chart; the model learns each weekday's rhythm and how temperature and rain move demand.

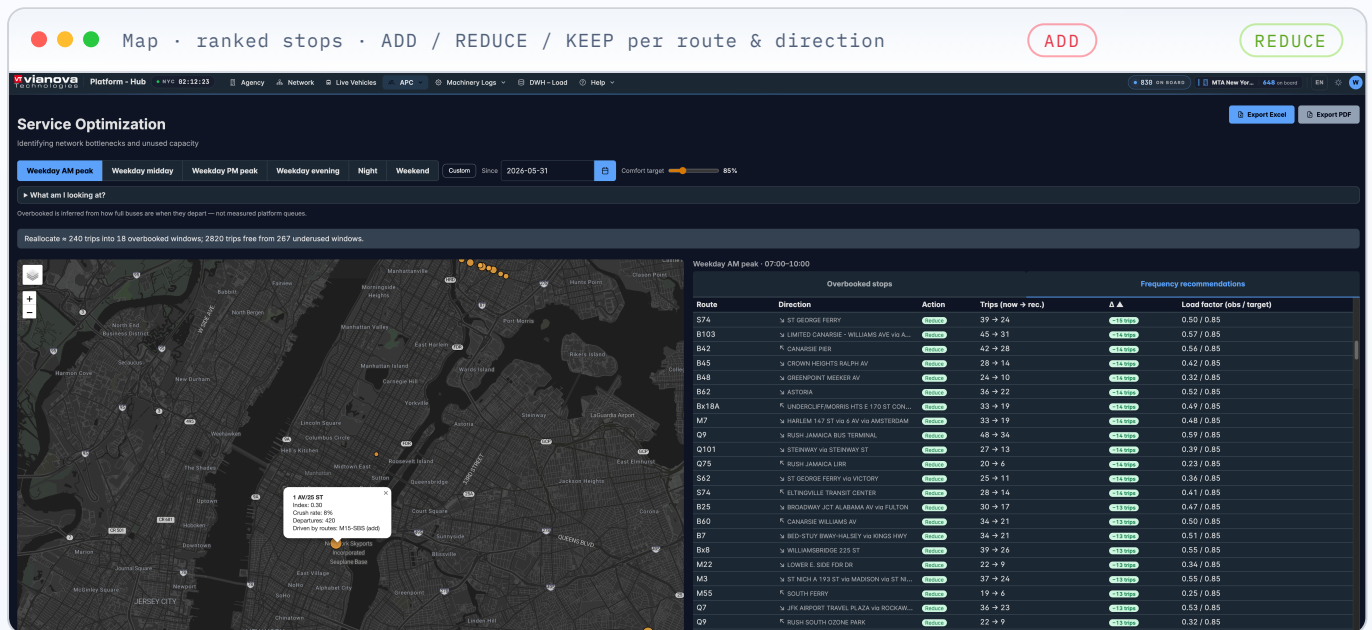
- Daily or hourly** - Switch the daily forecast to an hourly curve that spreads each day's total across 24h by that weekday's historical shape - and see the busiest hour.
- Honest about itself** - A banner names the live model, its backtest accuracy (MASE) and interval coverage, and when it trained. Forecasts sharpen as history grows - export the full series to Excel in one click.

08 - SERVICE OPTIMIZATION

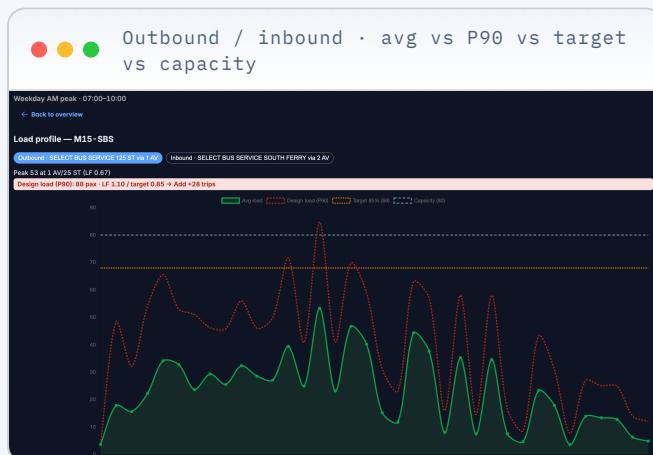
From crowding to a plan. Right-size every line.

Service Optimization turns observed SIRI passenger demand into a concrete service plan. For each time window it finds the stops running over capacity, then recommends exactly where to **add** trips - and where service can be **reduced** - measured against a comfort target you control.

SERVICE OPTIMIZATION · OVERBOOKED STOPS & RECOMMENDATIONS



DESIGN LOAD · P90 LOAD PROFILE



Design to the P90, not the average

- Overbooked Index & crush rate** - Every stop ranked by how far, and how often, onboard load runs past comfortable capacity.
- Time-window model** - Weekday AM/PM peak, midday, evening, or weekend - each window judged on its own demand pattern.
- P90 design load** - Recommendations size service to the busy-day load profile, with comfort-target and capacity lines drawn in.
- A plan you can defend** - A comfort-target slider drives every ADD / REDUCE / KEEP, and the whole plan exports to Excel or PDF in one click.

Take the numbers with you - or let your **systems** do it.

Nothing is locked inside the platform. Export reports, tables, and visualizations for the next meeting, or connect directly through the API to feed the same trusted data into your BI, GIS, or data warehouse.

EXPORTS · NUMBERS & VISUALS

INTEGRATION · REST API



Branded PDF Reports

Cover page, executive KPI summaries, print-ready charts, detailed tables, and demand heatmaps-ready to share with management and stakeholders.



Excel Workbooks

One worksheet per dimension, totals and subtotals, conditional formatting, and a built-in metric glossary for complete transparency.

One-Click Export Everywhere - Every chart and analysis view across Demand, Reporting, Peak Analysis, and Spatial Analytics can be exported directly to PDF or Excel.

```
GET · API/V1/APC/STATS/HEATMAP

# authenticate by API key + tenant (or Keycloak bearer)
GET /api/v1/apc/stats/heatmap?window=7d&bin=hour&route=M14
X-API-Key: .....
X-Tenant-ID: 1

# → 200 OK · application/json
{
  "window": "2026-05-15 → 2026-05-22",
  "bin": "hour", "source": "siri",
  "cells": [
    { "dow": 2, "hour": 8, "activity": 4187 },
    { "dow": 2, "hour": 17, "activity": 5024 }
  ]
}
```

[/apc/stats/timeseries](#)[/apc/stats/peaks](#)[/realtime/vehicles-occupancy](#)[/routes/polylines](#)[/apc/stats/districts/geojson](#)[/dwh/overview](#)

JSON & GeoJSON

Deliver tabular metrics as JSON and geographic boundaries as GeoJSON for seamless integration with dashboards, maps, and analytics platforms.



Secure, Agency-Scoped Access

API key authentication or Keycloak bearer tokens, with every request scoped to your agency's data.



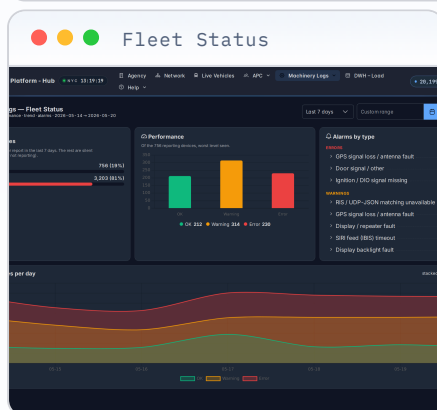
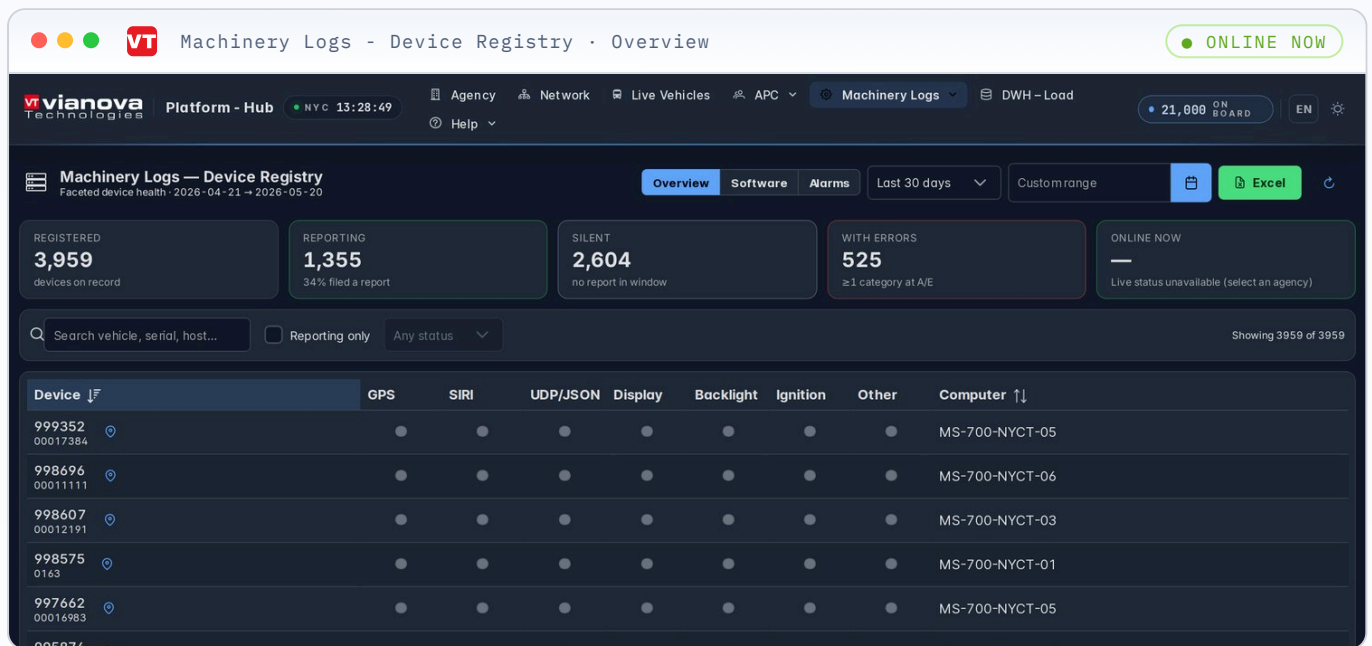
One Source of Truth

The API delivers the exact same figures shown on screen and in exported reports, ensuring consistency across operations, reporting, and downstream systems.

10 - MACHINERY LOGS - FLEET OPERATIONS CONSOLE

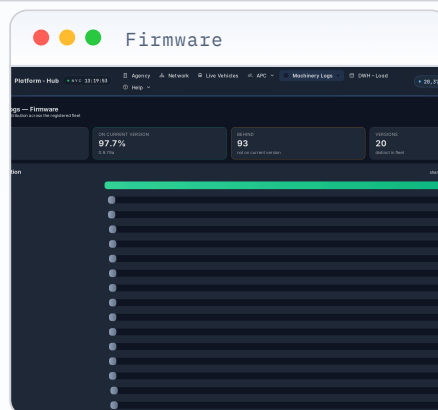
Know which devices are healthy - and which aren't.

A dedicated operational console built on the onboard PIDS device-log warehouse. Monitor connectivity, alarms, firmware versions, and device health across the entire fleet, with a live registry showing which devices are reporting, connected, and operational right now.



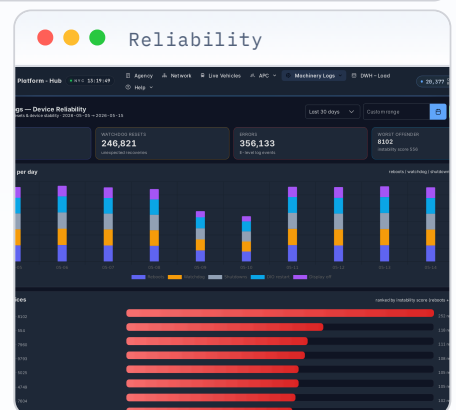
Health Status Indicators

Green, amber, and red status lights for GPS, SIRI, UDP-JSON, displays, ignition systems, and other monitored services.



Firmware Compliance

Compare fleet-wide firmware versions against the approved baseline and instantly identify devices that are behind a rollout.

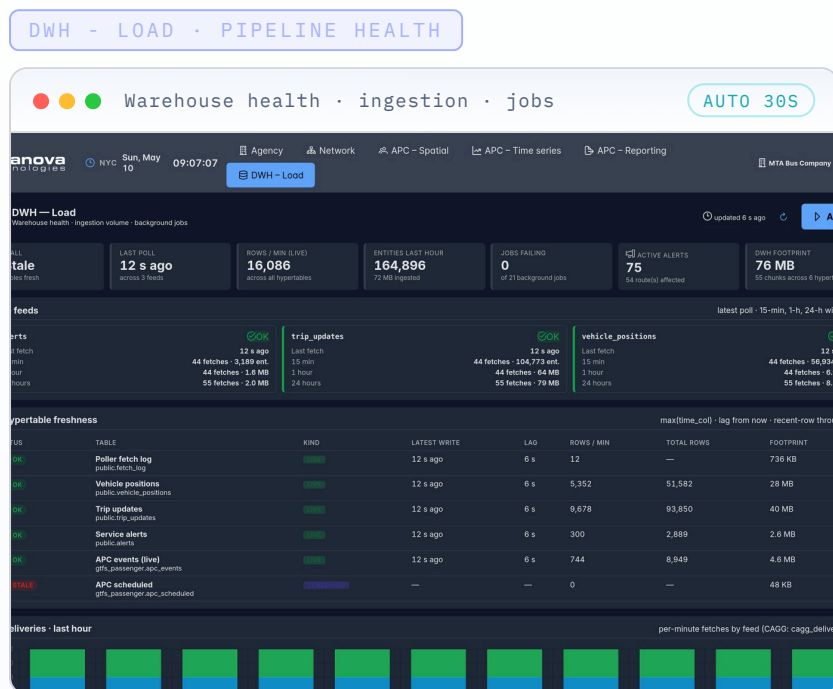


Reboots & Alarms

Track watchdog resets, reboot counts, and active alarms by device. Locate any unit on the live map with a single click.

11 - BUILT FOR TRUST & OPERATIONS

Numbers you can defend. A pipeline you can trust.



A live operational dashboard for the data itself. Monitor feed freshness, ingestion status, row lag, and pipeline health in real time. If a feed falls behind or stops reporting, you'll know before the numbers reach a report.

One Clock. One Truth.

Every dashboard, chart, report, and time filter operates in the agency's configured timezone-eliminating ambiguity and ensuring everyone works from the same operational timeline.

Provenance, Not Estimates.

Passenger metrics are derived from observed data, not modeled assumptions. Unsampled stops remain unsampled, providing transparent reporting and defensible operational decisions. Documentation remains versioned alongside the platform, ensuring every metric can be traced back to its source.

Secure by Default

- Single Sign-On** - Keycloak integration with bearer-token authentication and role-based access control.
- Multi-Tenant Architecture** - Every query and dataset is securely scoped to your agency.
- Built-In Account Security** - Session management, expiration policies, and user administration included.

Engineered to Scale

- Optimized Time-Series Storage** - Built for high-volume operational and passenger data.
- Fast Analytics** - Pre-computed aggregates keep dashboards and reports responsive, even during peak demand.
- Flexible Deployment** - Containerized architecture running on your infrastructure or private cloud.

12 - SPEAKS YOUR TEAM'S LANGUAGE

One platform. Every language.

Multilingual support is built in-not bolted on. Change the language from the header and the entire platform adapts instantly, including navigation, labels, dashboards, tooltips, reports, and exports. **Available today: English and German;** additional languages available on request.

● EN ·
ENGLISH

● DE ·
DEUTSCH

+ YOUR LANGUAGE ON
REQUEST

RUNTIME SWITCH · AUTO-DETECTED ·
REMEMBERED

THE SAME NAVIGATION, IN TWO LANGUAGES

ENGLISH (EN)	DEUTSCH (DE)
Network	Liniennetz
Live Vehicles	Live-Fahrzeuge
APC - Spatial	APC - Räumlich
APC - Time series	APC - Zeitreihe
APC - Reporting	APC - Berichte
Peaks	Spitzenwerte
Machinery Logs	Maschinen-Logs
Fleet Status	Flottenstatus

DESIGNED FOR EVERY TEAM



Light & Dark Themes

Switch the entire interface with a single click. Your preference is remembered automatically.



Role-Based Access

Permissions are managed through Keycloak, ensuring each user sees only the functions and data appropriate to their role.



Consistent Terminology

Localized labels remain aligned with the platform's metric definitions, ensuring reports and dashboards communicate the same meaning across languages.

● 13 - EVERYTHING IN ONE HUB

The whole platform, at a glance.

> Agency & Network

Live route directory with onboard passenger counts, demand sparklines, and a route-colored network overview.

> Live Vehicles · 2D & 3D

Occupancy-colored vehicles, crowding heatmaps, schedule-adherence monitoring, and photorealistic 3D visualization.

> APC - Spatial

Map-based ridership analysis by route, stop, or district, with 10-minute demand replay.

> APC - Time Series

Demand trends by 10-minute interval, hour, or day, with KPI summaries, synchronized zooming, and weekly demand heatmaps.

> Demand Heatmaps & Drill-Down

Day-of-week × hour heatmaps with 10-minute resolution and analysis by route, stop, district, or vehicle.

> Service Optimization

Overbooked-stop ranking and ADD / REDUCE / KEEP frequency recommendations sized to the P90 design load.

> Reporting & Peak Analysis

Flexible analytics, trip-level crowding profiles, and one-click PDF and Excel exports.

> Exports & REST API

Reports, charts, and datasets via PDF, Excel, JSON, and GeoJSON.

> Machinery Logs

Fleet-wide device health, alarms, firmware compliance, connectivity status, and map-based device tracking.

> Pipeline Health

Feed freshness, ingestion monitoring, warehouse health, and operational data quality dashboards.

> Multilingual & Secure

English and German interfaces, light and dark themes, Keycloak SSO, and multi-tenant security.

3

LIVE DATA
STREAMS

10_{min}

DEMAND
RESOLUTION

**2D /
3D**

MAP MODES

**PDF · XLSX ·
API**

TAKE THE DATA WITH YOU

EN · DE

LANGUAGES TODAY · MORE ON
REQUEST

• SEE YOUR NETWORK. LIVE ON THE VIANOVA PLATFORM HUB.

Ready when your data is.

Bring your GTFS, GTFS-Realtime, and SIRI feeds, and we'll stand up a live Vianova Platform Hub instance tailored to your agency. From day one, you'll have access to live maps, passenger analytics, reporting, exports, APIs, and fleet device monitoring-all in English or German.

Request a Live Demo.

We'll walk your team through the Hub using your own network data, answer operational and technical questions, and provide API access so your systems can start working with the data immediately.

► [Book a walkthrough](#)

info@vianova-tn.com

www.vianova-tn.com

EN · DE

VIANOVA TECHNOLOGIES · OFFICES

New York

VIANOVA Technologies, Inc
526 Cherry Lane
Floral Park, NY 11001 · U.S.A.
Tel. +1 (516) 761-2889
info@vianova-tn.com

Kaufbeuren

VIANOVA Technologies GmbH
Sudetenstraße 9
87600 Kaufbeuren · Germany
Tel. +49 (0)8341 / 9 95 95 0
info@vianova-tn.de