VECTOR

vMDM

Product Information

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1. Overview

1.1 From Measurement Data to Insight

Test benches, road tests and vehicle fleets generate terabytes of measurement data every day. Too often, this data ends up scattered across local hard drives. It is hard to find and only partially evaluated, so valuable test results go to waste.

vMDM (Vector Measurement Data Management) brings all measurement data together in one secure, central place. It makes the data available to every team member within seconds and evaluates it automatically. Engineers spend their time on analysis rather than on searching for files. Project leads get up-to-date insights without waiting for manual evaluations, and every test drive contributes its full value to development.

1.2 Why vMDM

- **Finding instead of searching** – every file is indexed automatically, so the right data turns up in seconds, even among millions of recordings.
- **Access from anywhere** – a web browser is all it takes to search, preview and share measurement data, with no installation.
- **The cloud does the work** – custom Python analyses run automatically on every new measurement, and workstations stay free for daily work.
- **Insights for everyone** – automated reports and live dashboards turn raw data into a basis for decisions, for engineers and management alike.
- **A perfect fit for existing tool landscapes** – vMDM integrates seamlessly with Vector Loggers, CANape and vSignalyzer and offers open interfaces to BI tools, AI assistants and in-house IT.
- **Secure and scalable** – fine-grained permissions, protection against data loss and certified cloud operation, ready to grow with every project.

1.3 SaaS or On-Premise

As **SaaS on Vector Team Services**, vMDM is ready to use within minutes. A Team Area can be created free of charge in self-service, and a vMDM trial can be started right away. Vector runs the infrastructure, backups and updates. New features are therefore available immediately, without any investment in hardware or IT resources. Costs remain fully transparent, and ISO 27001 certified operation keeps the data protected. Data centers in Europe, North America and Asia, plus a dedicated instance for China, ensure fast access worldwide.

vMDM Enterprise is designed for organizations that keep their data in their own data center or private cloud, even entirely within the company network without internet access. Users sign in with their existing Windows account, and measurement data can be stored on network shares, Amazon S3 or Hadoop HDFS. vMDM Enterprise offers capabilities similar to vMDM pro.

1.4 Product Variants

vMDM grows with the requirements, from a free entry-level tool to a complete data platform:

- **vMDM local** (free) – the search engine for measurement files on the local PC, included in the vMDM Client
- **vMDM basic** (free) – data management for Vector Loggers, including Web-UI access with signal preview, included with vLoggerCloud and SmartLogger Cloud
- **vMDM fun** – adds measurement data from any source, cloud conversion and automated data exchange
- **vMDM pro** – the complete platform, including automated processing, reports, dashboards, multiple collections and interfaces for BI tools and AI agents
- **vMDM Enterprise** – the pro feature set in the company's own IT environment

1.5 System Requirements

vMDM SaaS: a vMDM fun or pro subscription, ingest packages for data upload, internet access and a web browser. vMDM basic is free of charge, and every Team Area includes 100 GB of storage.

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vMDM Enterprise:

> Operating system: Windows Server 2022 or 2025 (English). The database and search index can optionally run on a separate Ubuntu 20.04 server.
> Recommended dual-VM setup, which is easy to extend later: 16-core CPU and 32 GB RAM for the vMDM processes, plus 8-core CPU and 32 GB RAM for the database and search index
> Alternative single-VM setup: 16-core CPU and 64 GB RAM
> Storage for measurement data on a network share, Amazon S3 or Hadoop HDFS
> Integration into a Windows Active Directory domain

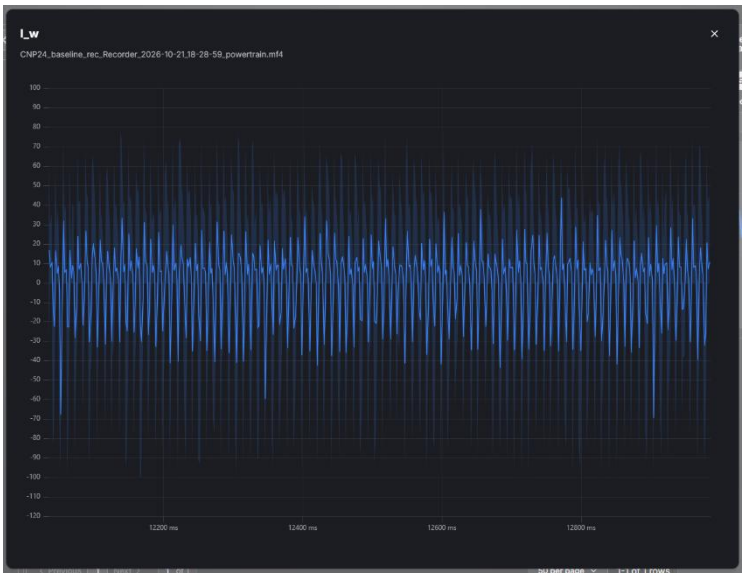
2. Key Functions at a Glance

> Web-UI with search, signal preview, download, reports and dashboards
> Automatic upload from Vector Loggers, CANape, vMeasure, test benches and scripts
> Automatic indexing and flexible search based on freely definable metadata
> Automated processing of every new measurement with Python or CASL
> Enrichment with data from external systems such as vehicle or test databases
> Scheduled reports and live dashboards
> Conversion to MDF, BLF, MATLAB, Excel/CSV and ASCII
> Interfaces for Power BI, Tableau, AI assistants and automation
> Integration in CANape, vSignalyzer, vMeasure and Vector Logger Suite

3. Measurement Data in the Browser

The vMDM Web-UI gives everyone involved in a project access to the measurement data, regardless of location, operating system or installed software. It opens with one click from the Team Area and covers the entire data pool. Filters, file details and attachments are always at hand, and PDF documents and images can be previewed directly. Files are downloaded individually or in batches. A shared link passes a complete filter configuration to colleagues, so everyone looks at exactly the same data.

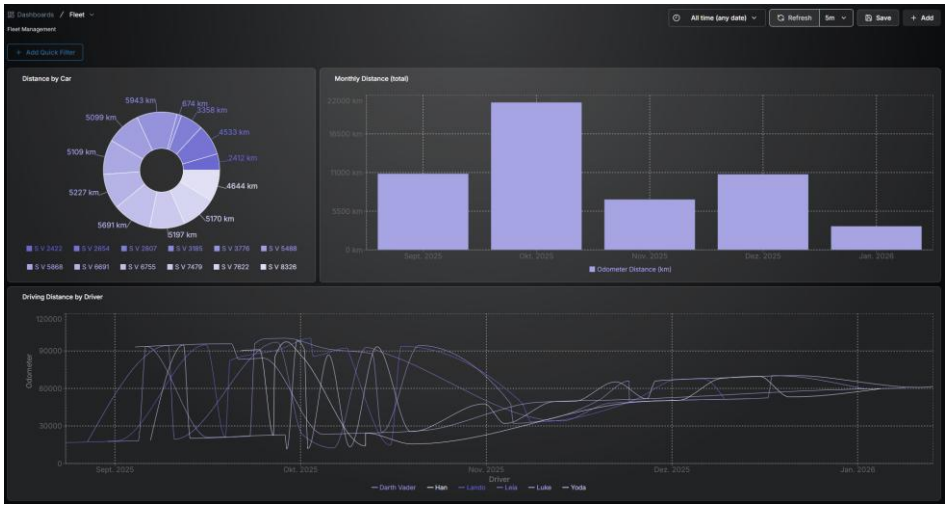
The **signal preview** plots any signal of a recording directly in the browser, without downloading the file or opening an analysis tool. A searchable signal tree quickly leads to the right signal, even in complex structures and arrays. Zooming into details takes a single mouse movement. In the overview, an envelope curve keeps short peaks and dips visible, so no anomaly goes unnoticed. Whether a measurement contains the expected data can thus be checked in seconds, before gigabytes are transferred. The signal preview is available in every vMDM variant.



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Reports are available to the whole team in the browser. Results are browsed and filtered, and PDF reports and charts are previewed directly. Existing report templates can be executed ad hoc with one click, and important results can be pinned so they are kept permanently.

Dashboards provide engineers and management with a live overview of all test activities. Examples include recordings per vehicle, kilometers driven per week or software versions across the fleet. Line, bar and pie charts and tables are configured in a few steps with a live preview and arranged freely by drag and drop. Time range and quick filters focus the entire dashboard on a specific period, vehicle or project. Automatic refresh keeps the figures up to date without any manual effort.



4. Data in the Cloud – Automatically

Measurement data reaches the central data pool reliably and right after the test, without any manual steps:

- **Vector Loggers** upload their recordings over the mobile network, and the data is available in vMDM immediately.
- **CANape and vMeasure** transfer the results automatically at the end of each measurement.
- **Upload jobs** in the vMDM Client monitor a local directory and upload every new file automatically, which makes them ideal for test benches and measurement PCs. Local copies are removed only after a verified, complete upload, so disk space is freed up without any risk of data loss.
- **A single right-click** in Windows Explorer with the Vector Shell Extension is enough for manual uploads.

Interrupted transfers resume automatically, and integrity checks guarantee that every file arrives complete. Recurring attachments such as network databases are stored only once, which saves transfer time and storage.

Central ingestion channels define where incoming data is stored. When a project changes, administrators redirect all future uploads of a team to a new collection in a single step, without touching any individual measurement configuration.

5. The Right Data in Seconds

Hunting through folders and cryptic file names is a thing of the past. vMDM indexes every measurement on upload and describes it with the properties that matter for the project, such as vehicle, test route, software version, ambient temperature or distance driven. Searching is as intuitive as using an internet search engine or filtering in an online store.

Frequently used searches can be saved and shared, so the whole team works on the same, consistent data basis. Collections per project, vehicle program or team, each with its own access rights, keep the data pool well organized.

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6. The Cloud Does the Work

Every measurement is evaluated automatically and consistently, without tying up workstations or engineering time. Analyses defined per collection run on every new file. They extract key values such as maximum temperature, distance driven or the number of gear shifts, and detect events such as diagnostic trouble codes. All results become searchable immediately.

- **Python:** analyses are written in Python in Visual Studio Code with the *Vector Cloud Scripts* extension, with ready-made templates and the full Python ecosystem at hand. Activating a script for a collection takes a single click.
- **CANape and vSignalyzer:** existing Data Mining configurations and CASL scripts can be reused in the cloud.
- **External data:** information from vehicle databases, configuration management or a digital twin is added to the measurements automatically. This creates a complete picture without manual copying.

7. Insights for Everyone

Up-to-date results are available to the whole team, and nobody has to evaluate data by hand. Data for a report is selected exactly like a search, for example by time range, vehicle variant or software version, and vMDM creates the report in the cloud. Excel evaluations, PDF reports from CANape or vSignalyzer and freely programmable Python reports are all supported.

Because reports are based on pre-calculated results, they are ready within minutes, even for very large data volumes. Reports run on demand, at a set time or on a recurring schedule, and deliver the latest status by email automatically, for example the weekly summary of an endurance test.

Report groups have their own access rights, independent of the measurement data. Results can therefore be shared with management, customers or partners without granting access to the underlying raw data.

8. Open for Every Tool Landscape

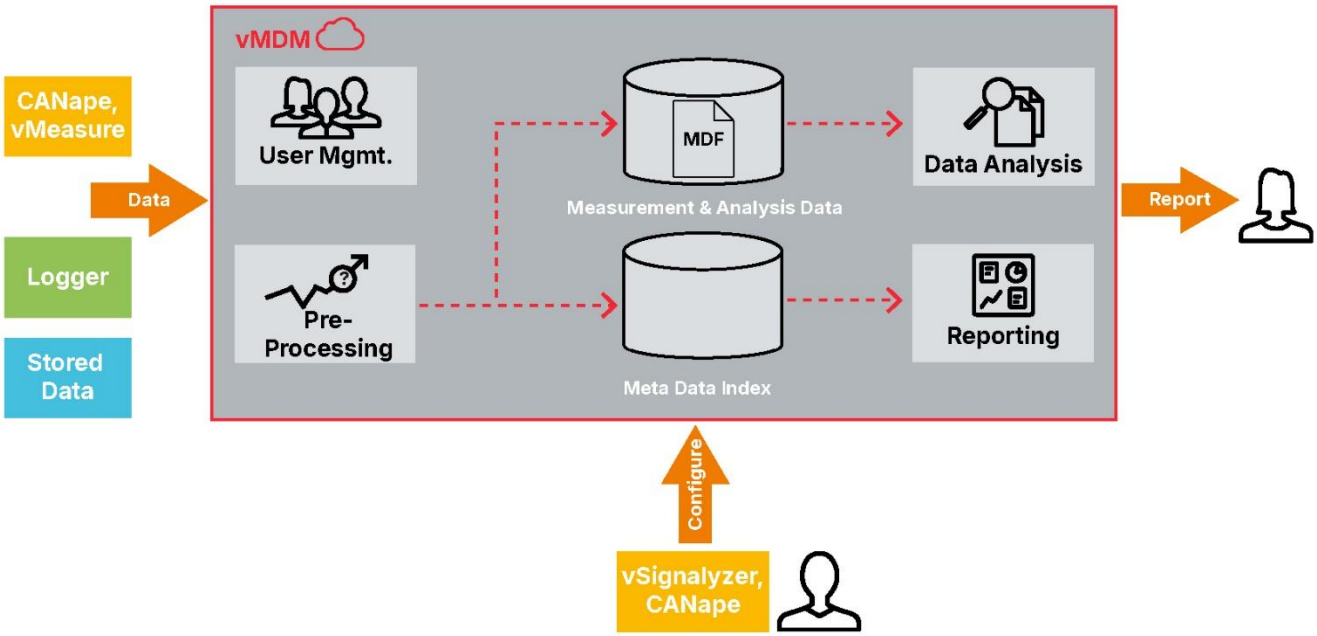
vMDM data flows into the tools an organization already uses, now and in the future:

- **Business intelligence:** measurement metadata can be used directly in Power BI, Tableau or Excel.
- **AI assistants:** AI agents connect directly to vMDM and answer questions in plain language, such as *"How many recordings did each hybrid vehicle contribute last week?"*
- **Automation:** PowerShell, Python and REST interfaces integrate vMDM into test stands, CI pipelines and in-house IT systems. Download jobs regularly provide new measurement data matching defined filters for further processing in third-party tools.

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9. Familiar Vector Tools

CANape, vSignalyzer, vMeasure and Vector Logger Suite users keep working in their familiar environment, with the entire data pool at hand. vMDM is integrated in these tools at no extra cost. Stored measurement data opens with a double click, and even large files load quickly because only the data actually needed is transferred. Data Mining runs directly on vMDM search results. Even without a cloud connection, vMDM local quickly finds measurement files on the local PC.



10. Secure and Scalable

vMDM protects the data and grows with the projects:

> Access rights per collection and report group control who can view, change, download or evaluate data.
> Delegated administration lets departments manage their own collections and reports, without system-wide administrator rights.
> Single sign-on with the company account is supported, and vMDM Enterprise uses the existing Windows login.
> A two-stage recycling bin ensures that no single action can delete data irrevocably.
> Encrypted transfer, tenant separation and ISO 27001 certified operation protect the data in the cloud.
> vMDM scales from a single team to company-wide operation.

11. Engineering Services and Training

Vector provides support from the first step to productive use, with consulting, development of customer-specific analyses, connection of existing systems and on-site support. Training courses for vMDM, CANape and vSignalyzer are available in Vector seminar rooms and on site at the customer's premises: www.vector-academy.com

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