ADVANCED ANALYTICS AND AI

Powering real-time data analytics and artificial intelligence to help dynamic digital businesses to gain competitive advantage.

DELL EMC, KINETICA AND NVIDIA

HARNESSING THE POWER OF PARTNERSHIP

No matter what industry you operate in, and no matter the size of your business, the availability of vast amounts of data from a huge range of sources is presenting organisations with both major opportunities and significant challenges.

For digital businesses, just being able to store and manage large quantities of data is no longer enough. Now, you have to be able to analyse massive volumes of data that is complex and unpredictable - big or small, static or streaming, structured or unstructured, human or machine, and in real time – all of which presents significant hurdles to deriving actionable insights in this new world of 'extreme data'.

Increasingly, traditional CPU-based serial computing is too slow to extract value from data, making it difficult to make operational decisions on-the-go or accurately assess risk. Together, Dell EMC, Kinetica and NVIDIA now deliver a game-changing solution for extreme data, with GPU-powered parallel computing that enables advanced real-time analytics, location-based insights and data-driven machine learning.

IDC PREDICTS:

- A ten-fold rise in the amount of worldwide data by 2025, to 163 Zettabytes

- The number of connected devices will reach 80 billion globally by 2025, up from 11 billion in 2016

- Big data and software revenues will be worth more than $210 billion by 2020, up from $150 billion in 2017

DELIVERING COMPETITIVE ADVANTAGE

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DELLEMC

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NVIDIA.

Kinetica is an insight engine that includes a GPU-accelerated database, visual discovery and machine learning capabilities and accelerated parallel computing. Running on Dell PowerEdge servers and NVIDIA GPUs, Kinetica helps organisations to meet the challenges that come with huge quantities of complex, unpredictable data.

With Kinetica, organisations can use advanced analytics and AI to turn extreme, geospatial and streaming data into critical insights that power business. Being able to analyse data at the precise moment at which it is most useful creates a massive competitive advantage and provides benefits in three key areas.

Advanced analytics

- Ingesting data from any source and receiving instant insights

- Processing and analysing billions of rows of data in microseconds

- Continuous collection, analysis and integration of streaming and historical data

Location-based discovery and insights

- Visualisation of temporal, geospatial and streaming data to instantly reveal new patterns and uncover new monetisation opportunities

- In-memory, distributed image processing and rendering
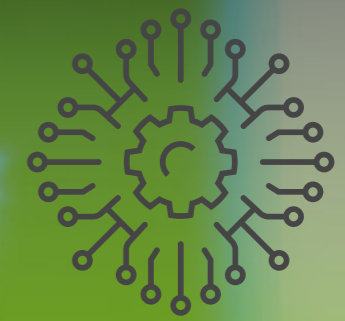
Data-driven streamlined machine learning

- Integration of all phases of machine learning workflow, allowing users to train models faster, predict more accurately and operationalise AI

- Simultaneous processing and management of BI and AI workloads

- Developing models, leveraging GPU acceleration for performance and direct access to CUDA APIs via UDFs

TRANSFORMING TELECOMMUNICATIONS WITH REAL-TIME ANALYTICS

The highly competitive telecommunications industry increasingly depends on fast, accurate data insights to deliver a huge range of business functions from predictive maintenance to network and infrastructure optimisation and subscriber data monetisation.

With a GPU database at its core, Kinetica enables lightning-fast, location-based analytics that deliver insights across the business and operational spectrum, including:

Network and infrastructure optimisation

- Tracking and visualisation of real-time usage and network status enables performance monitoring to identify bandwidth or maintenance issues within milliseconds, not hours.

Network usage and capacity monitoring

- By identifying periods of heaviest network usage, telecoms companies can forecast capacity and plan for potential outages or short-term demand with a real-time, dynamic view of their operations.

Call detail records analysis

- In analysing call-data records, GPU acceleration ensures low latency between ingest and time to query, allowing for analytics on live data to quickly identify network problems and gain a better understanding of usage patterns.

Smart cities, cars and homes

- Making sense of the staggering amount of IoT data is at the heart of any smart city initiative. As telecoms companies support an ever-growing network of communicating devices, Kinetica can process large quantities of streaming data in real-time to provide business-critical insight.

Customer churn reduction

- By combining social media feeds, call detail records, network performance data and call centre interactions to identify declining usage and pinpoint at-risk customers, customer churn issues can be addressed quickly.

Fraud detection and prevention

- Collection and analysis of real-time data detects anomalous behaviour and powers predictive models that can flag and prevent fraudulent activity.

Subscriber data monetisation

- As telecoms businesses explore the potential for packaging and selling anonymised subscriber data to other markets, Kinetica can combine smartphone location data with other subscriber data sources to enable targeted advertising or other retail opportunities.

REAL-TIME ROUTE OPTIMISATION FOR MORE EFFICIENT LOGISTICS

The success of logistics organisations requires the reliable and uninterrupted flow of goods and services, the safe and timely transportation of people and perishable items, and the accurate distribution of business assets.

The Kinetica engine, with a GPU database at its core, enables real-time logistics and fleet analytics by simultaneously ingesting, enriching, exploring and visualising data in milliseconds, making it easier to come to critical decisions, find efficiencies, reduce costs, boost productivity, generate new revenue opportunities and improve the customer experience.

Kinetica delivers:

Geospatial capabilities for real-time route optimisation

- Seamlessly integrating data in motion from various sources including vehicles, location, sensors, personnel and weather and traffic conditions, Kinetica enables real-time route planning, re-routing and supply chain optimisation, increasing efficiency and reducing fuel and overtime costs.
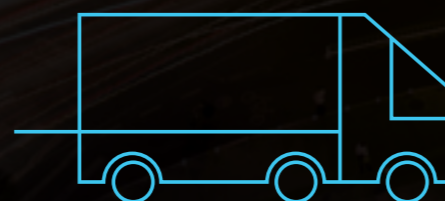
Real-time delivery and pick-up notifications

- Sophisticated package tracking and visualisation in real time enables highly effective logistics monitoring and adjustment and improves customer service.

Just-in-time adjustments based on personnel changes

- Real-time, customised, location-based visibility into personnel, logistics, distribution and transport operations powers reliable just-in-time management of workforce, supply chain and inventory.

Condition-based equipment maintenance

- Kinetica analyses sensor data to provide contextual and predicitive insights on the condition of assets to drive proactive equipment maintenance, improved productivity and reduced downtime.

REAL-TIME UTILITIES MANAGEMENT TO OPTIMISE OPERATIONS AND MINIMISE OUTAGES

In the utility market, operational efficiency is of paramount importance, affecting energy supply management, cost control and quality of service. Kinetica enables analysis and visualisation of both streaming and historical data, helping utilities to avoid downtime, reduce maintenance and repair costs and identify safety issues.

The solution delivers:

Monitoring and assessment of power and gas line infrastructure

- Kinetica enables Smart Grid infrastructure management, monitoring the efficiency and health of power and gas lines and power poles, especially in hazardous environments subject to fire risk, snowfall and corrosion.

- The real-time analytics database brings together fast-moving IoT data from sensors, smart meters, solar panels and grid infrastructure, providing predictive insights that minimise power outages, reduce storm impacts and restore failed services faster.

Ability to identify failed assets and resolve disruptions

- Real-time geospatial analysis features provide insight and visualisation of streaming data in real time, to identify failed assets, power surges and distribution trends.

The solution enables utilties to analyse social media in real-time to gain insights into outages and allocate appropriate repair and maintenance resources.

REAL-TIME RISK ANALYSIS FOR BETTER FINANCIAL DECISIONS

In financial services, signficant sums can be made or lost in seconds. Leading banks require real-time solutions for analytics and machine learning that can give them a distinct competitive advantage.

Kinetica makes it possible for financial services organisations to derive insights from vast volumes of complex and streaming data in milliseconds, incorporating artificial intelligence capabilities and real-time analytics across customer experience, fraud analysis, risk management and algorithmic trading use cases.

- **Risk management**

  Kinetica delivers real-time and intra-day risk management, with rapid visualisation and simulation of multiple scenarios to reveal risk exposures. Perform risk calculations like Monte Carlo on-demand using up-to-the-moment data at sub-second speed and run time-sensitive, compute-intensive risk analysis projections years into the future.

- **Counterparty risk analytics**

  The speed and depth of analysis offered by Kinetica provides greater insight into risk exposures, enabling rapid position adjustments, reliable counterparty risk calculations and real-time alerts when risk thresholds are approached.

- **Regulatory compliance**

  Financial services organisations have to meet growing global compliance demands. Kinetica enables them to leverage a horizontally scalable architecture for real-time risk calculations and reporting at massive scale, resulting in reduced compliance and regulatory costs.

- **Algorithmic trading**

  Run algorithims at scale by loading the data from all sources into Kinetica's in-memory database and leveraging GPU power to run analytics against massive, live, streaming data for maximum portfolio returns.

- **Fraud and cyber-threat detection**

  Kinetica is uniquely able to perform queries on large streaming datasets to uncover relationships, anomalies and patterns that signal potential fraud or suspicious activity. With Kinetica you can also combine data feeds with anomaly detection, monitor multiple streams of global attack vectors, find security lapses and mine system logs to proactively manage fraud and cyber security.

- **Improving the customer experience**

  The ability to ingest and query data at scale and in real-time gives retail banks, asset managers, credit card issuers and traditional lending institutions a wide range of ways in which to improve customer service, cut costs and boost profitability by spotting customer behavioural patterns and identifying upsell opportunities with personalised products and offers.

ADVANCED ANALYTICS AND AI
POWERING DIGITAL BUSINESS

The joint solution offered by Dell EMC, Kinetica and NVIDIA for advanced analytics and AI delivers a comprehensive answer to the challenges raised by the extreme data environment. Dell delivers world-class compute resources, Kinetica provides the leading insight engine for analysis and NVIDIA supplies the cutting-edge GPUs the solution runs on. GPU-accelerated parallel computing enables informed decisions based on real-time analytics, location-based insights and data-driven machine learning.

Dell PowerEdge servers

Kinetica is certified to run on Dell PowerEdge servers, providing exceptional performance and versatility for dynamic workloads. Featuring greater expandability, increased storage and enhanced compute density, the Dell PowerEdge R940 can handle virtually any workload configuration and run intensive, mission-critical applications for large and small enterprise environments.
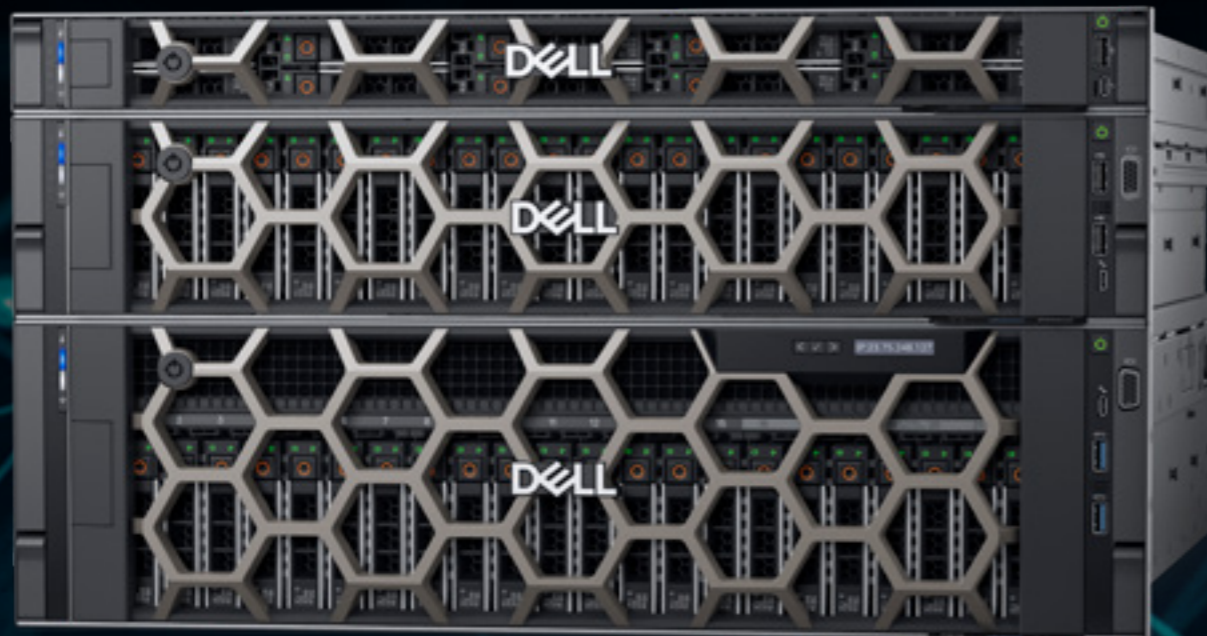
The Kinetica 'instant insight' engine

Developed for the extreme data environment, the Kinetica insight engine includes a GPU-accelerated database and visual discovery and machine learning capabilities. The engine delivers accelerated parallel computing to address the issues that come with huge quantities of complex, unpredictable data.

NVIDIA GPUs

NVIDIA is a leader in AI computing and inventor of the GPU, providing the world's fastest GPU accelerators for HPC and deep learning applications and delivering a significant higher application performance than a CPU.

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