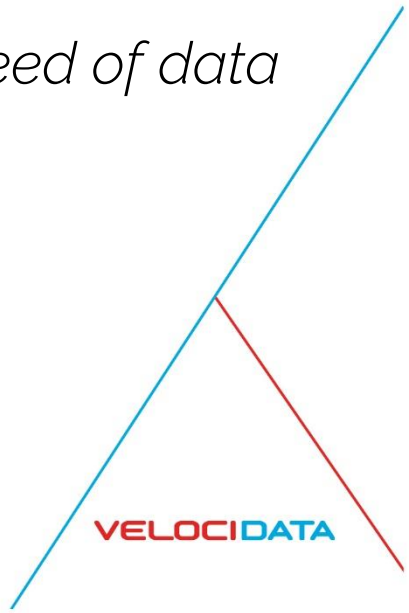
CAPTURE | CURATE | CORRELATE | COMMAND

VELOCIDATA

Optimized Data Integration for the MSO Market

Actions at the speed of data



For Real-time Decisioning and Big Data Problems

VelociData for FinTech and the Enterprise

VelociData's technology has been providing enterprise class solutions to FinTech and core IT environments managing data flows in the world's most demanding environments. The technology is used to extract and normalize financial market data to execute high frequency trading algorithms in all the major financial markets worldwide. In the enterprise we have performed complex data transformation and integration functions that have dramatically accelerated existing workflows as well as allowed data of record and transactional data to actively become part of Big Data analytics environments. And for compliance and security, we mask precious data for development and storage at line rates.

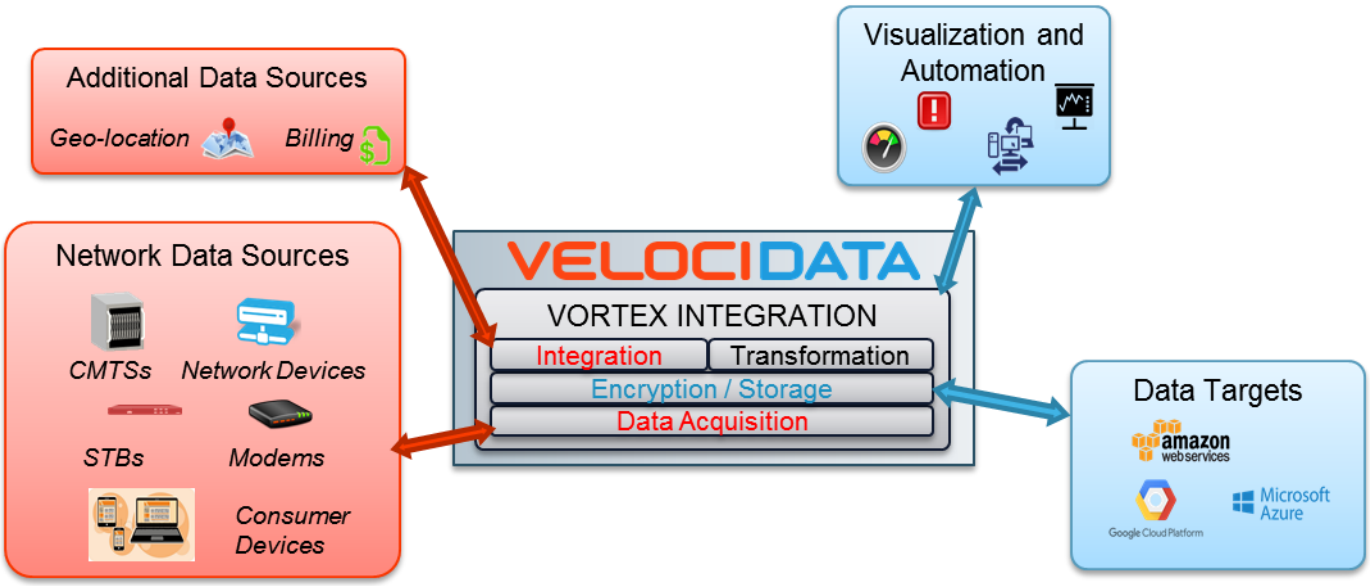
The Shifting landscape for the MSO's

In much the same manner that the financial markets exploded with new data and a desire to take advantage of the insights it could provide, the MSO market is seeing exponential growth in network size, and complexity. This is forcing new innovation in the management systems used to deliver services and maintain, and improve the customer quality of service. Gartner has indicated that there are over 5 million new devices attaching to the internet each day and estimate that this will grow exponentially reaching more than 25 billion devices attached by 2020. Many of these devices are attaching wirelessly and a large number will be attached via the networks provided by the MSO industry. This kind of hyper growth requires new innovation to be able to keep from drowning in data. Dealing with data in real time and being able to apply big data techniques to more directly measure customer experience, analyze and diagnose issues and automate actions will not be "nice to haves", they will become mandatory.

Introducing VelociData Raptor and VelociData Vortex for the MSO Market

The capabilities demonstrated in the financial markets are directly applicable to the MSO market. With the number of connected devices growing by millions per day and generating disparate data formats, real-time needs for integration, presentation, and an increased need for a unified view of data for analytic development are increasingly critical. VelociData Raptor can capture and curate massive real-time telemetry from the delivery plant including devices within the smart home. Raptor can also integrate and correlate data from billing systems, geo repositories, structured and unstructured data warehouses, and customer support expert systems. It can cleanse data so that Big Data repositories add value rather than simply occupying space, driving excess capital, expense, and support. Raptor can extract features that will allow efficient use of data for algorithmic development and deployment especially for automating proactive and corrective actions and commands. It can obfuscate the data through masking and encryption including format preserving output. All of this is done at the speed of the data itself, enabling a comprehensive solution for next generation telemetry and Big Data techniques to improve customer experience and reduce expense.

VelociData Vortex, acting as a hub for unification and integration, can help network environments that have evolved over many years, with a myriad of different probes and capture techniques to be unified into a single view. This single view can be invaluable at developing coherent and effective analytic models, predictive analytics, and efficient actions. Systems that attempt to provide this capability but cannot keep up with the relevant data sources will overflow and limit the impact and richness of available data and potential insights.



Data Integration Hub Schematic

Data Transformation, Integration, and Security

VelociData is extending the life of existing corporate infrastructure by deploying engineered systems transparently, and performing line-rate processing. These systems future-proof against scaling due to the impact of ever-increasing data loads.

VelociData, as needed, exploits various means of acceleration including optimized software, hardware co-processors, and general purpose graphics processing devices. By utilizing this heterogeneous computing platform, VelociData customers typically achieve speed improvements 10x to 100x that of a conventional software solution rather than a few percentage points. performance of these systems are typically limited by the speed data can be ingested and enable batch processes to become real-time streaming applications.

Fast and Capable Products

The appliance is capable of processing streams of unstructured, textual, structured, or semi-structured data. As an example, this solution could be used to pre-process and enrich data that is destined for an enterprise's relational database. As with previous solutions, these systems offer extreme throughput (10 Gb/s *sustained*) and ultra-low latency (microseconds). This capability enables a wide variety of different opportunities for effective data processing.

High-value data ingest applications for streaming ETL include:

- Data Conversion
- Encryption / Tokenization / Deidentification
- Lookups / Joins (e.g., MAC address → customer or geo)
- Aggregation (e.g., packets/device/time)
- Sort / Deduplication
- Data Quality / Data Profiling
    - Conform / standardize (e.g., datatype; calendar dates)
    - Anomaly / outlier detection; range checking
    - Missing values
- Real-time Log Processing
- Stream Event Processing

VelociData bundles highly valuable combinations of capabilities together into product modules so that acceleration can be delivered at multiple points throughout an enterprise's architecture. Tight integration of module combinations allows pipelining of multiple tasks within one systems. Multiple appliances can also be connected together to achieve scale-out, if needed.

Palette of Data Transformation Functions	
VelociData Capabilities	Examples
Data Conversion	**RESTRUCTURE**: Data Structure Conversions (XML → relational, Mainframe → CSV, …)
	CONVERT: Element type conversion (EBCDIC → ASCII, binary number → numeric string, …)
	FLATTEN: Parse and flatten complicated data types like SMF mainframe logs or EDI medical records
Accelerated Transforms	**SORT:** Sort data using complex keys from multiple fields within records
	LOOKUP / JOIN: Perform streaming lookup operations on multiple large tables
	ROUTING: Route data to multiple destinations based on validation rules or complex business logic
	VALIDATION: Validate data based on expressions, type, or large domain sets of keywords
	KEY GENERATION: Hash multiple input fields together to form a unique pseudo-key
	AGGREGATION: Create aggregations and sums of similar type records over a data set / time window
Data Protection	**FORMAT-PRESERVING MASKING:** Mask sensitive fields without changing format or uniqueness
	FILTERING: Filter out sensitive data elements based on expressions or keyword lookups

The VelociData ETL / Data Integration product offers a wide range of options to accelerate many different data processes. The flexible systems offer a variety of configurations to address the most critical pain points in data processing for any network. Below are some example installations that highlight a few of the most common uses for this appliance:

- *Capture and Curation as a processor for data ingest*
  - Performing data normalization and cleansing as data are flowing
  - Performing selection and filtering based on business rules

    ⇨Yields cleaner stores and more usable data

- *Correlation and Command as a helping hand for decisioning*
  - Integrating with historic or reference data to assist analytics
  - Providing automated responses in real-time to reduce MTTR

    ⇨Operational efficiency, lower TCO, higher ROI

- *Precision Masking as a secure data pipeline*
  - In-line encryption for data to be obfuscated prior to landing or transfer
  - Deidentify precious fields within streaming data for development or storage – even offsite

    ⇨Helps bridge gaps in compliance

The above simply offer an idea of ways in which VelociData Raptor and Vortex can be utilized. The fundamental engines are flexible enough to offer many additional creative applications.

For more information please contact us at info@velocidata.com