



ORACLE STREAM ANALYTICS

ORACLE STREAM
 ANALYTICS
 PLATFORM
 EMPOWERING FAST
 DATA AND THE
 INTERNET OF
 THINGS

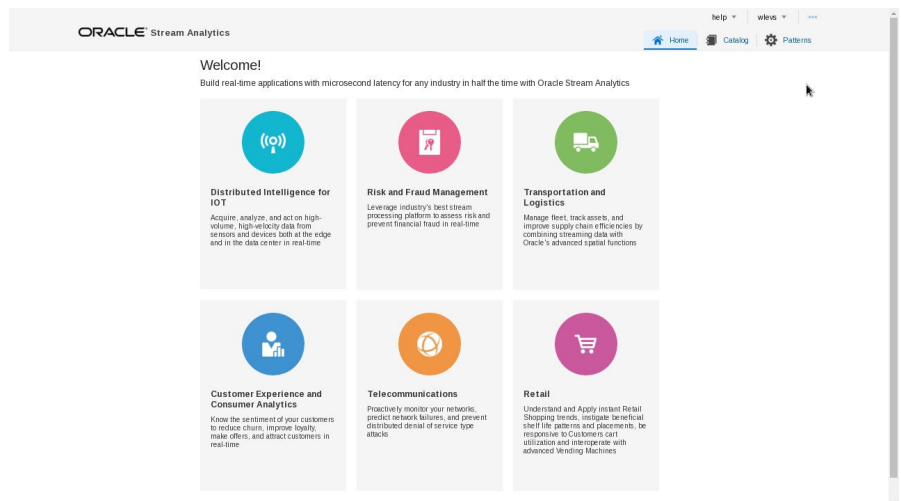
KEY FEATURES

VISUAL FAÇADE

- Catalog perspectives for major industries so users can focus on their own specific business domain
- Simplistic definition of Event Streams and References so users can reuse as desired without duplication
- Traditional Event Stream sources such as the streaming of CSV files, JMS, EDN, HTTP Publish and Subscribe, REST, Kafka, MQTT are all directly supported with ease with Connections and Targets
- Reusable Business Solution Patterns available for users to select a familiar solution analysis and simply apply the relevant stream or streams
- Abstracted visual user interface to interrogate live real time streaming data shapes, gain instant insight and perform immediate Analytics
- Graphical representations in various styles of the tabular real time streaming information is instantly available
- Drafting and Publishing of Explorations enables rapid prototyping of solutions
- Exploration chaining provides a simplistic approach to complex solution solving by enabling a streaming flow of resultant live output data between different distinct artifacts
- For the more elaborate Java developer audience, the EXPORT feature provides the mechanism to transition Exploration artifacts, for use by the powerful Oracle JDeveloper development environment
- Available on all major Internet Browsers

The Oracle Stream Analytics platform provides a compelling combination of an easy-to-use visual façade to rapidly create and modify Real Time Event Stream Processing applications, advanced streaming analytical capabilities together with a comprehensive, flexible and diverse runtime platform to manage and execute these solutions.

Completely abstracting the entire development and deployment processes Oracle Stream Analytics simplifies the sophistication and rapid creation of event-driven applications for any type of Real Time Streaming Analytics business solution, enabling the Enterprise to immerse itself in next generation real time applications, with times to market of minutes rather than days or months.



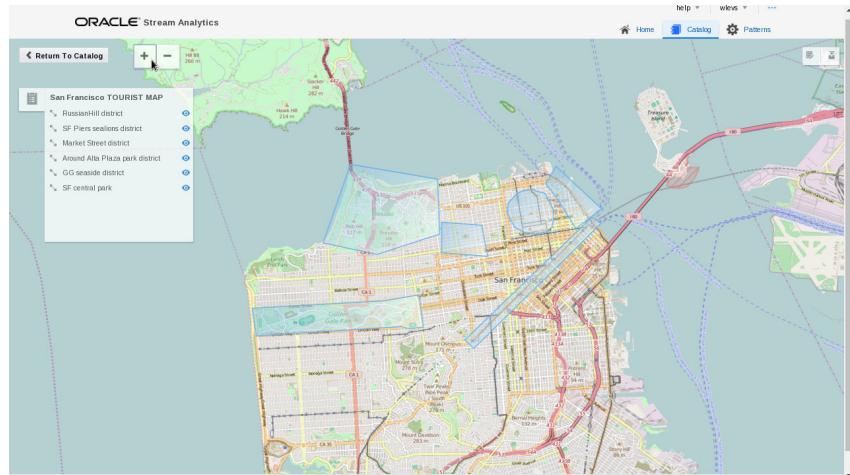
Oracle Stream Analytics Landing Page

Oracle Stream Analytics embraces an industry focus approach with features to leverage a pre-existing library of Spatial, Statistical, Machine Learning and General patterns of well known event processing implementations, the abstraction and definition of Streams and Targets that represent the connection to the most popular protocols and methodologies, References which allow immediate joining of streaming data to relational databases, Explorations that provide a stunning visual representation of real time disparate event data flows empowering

RUNTIME PLATFORM

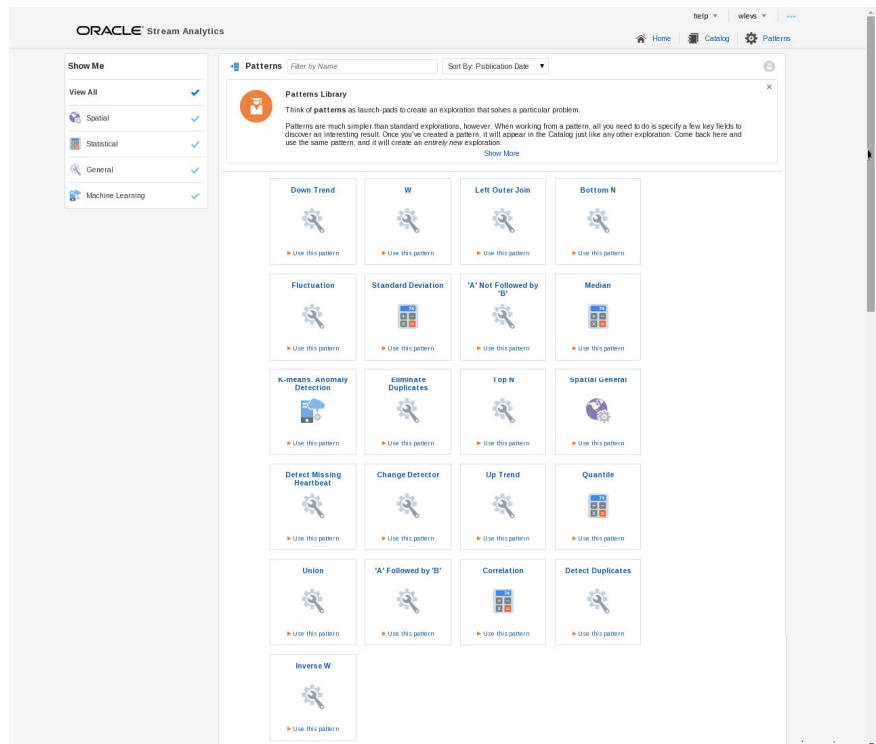
- Deployable stand-alone, runtime integrated with the SOA stack or lightweight on Embedded Java
- Comprehensive event processing query language (CQL) supports both in-memory and persistent query execution based on standard SQL syntax
- Language constructs for Fast Data integration with Hadoop and Oracle NoSQL
- Runtime environment includes a lightweight, Java-based container that scales to high-end event processing use cases with optimized application thread and memory management
- Integrated Spark Streaming infrastructure support for use in distributed cluster node environments
- Both visual and Java-based development tooling for defining event processing applications and networks
- Fully supports tight integration with the recommended SOA connectivity methodologies such as the Oracle Event Delivery Network
- Dynamic manipulation of the application model and any/all query analysis in real time without any system restart
- Enterprise class High Availability, Scalability, Performance and Reliability with an integrated in-memory grid and connectivity with Big Data tools
- Advanced Web 2.0 management and performance monitoring console
- Oracle Edge Analytics provides a uniquely small disk and memory footprint enabling Distributed intelligence with departmental and Internet-of-Things infrastructures

customers for insightful data interrogation and to quickly apply sophisticated business intelligence, and MAP's which enables the creation of Geographical areas for Streaming Spatial Analytics .



Oracle Stream Analytics MAP creation

All general purpose aspects of the real time event processing platform, its complexities, semantics, application model and powerful continuous query language, are now isolated away from the business perspective which dramatically increases the solution delivery learning curve and productivity.

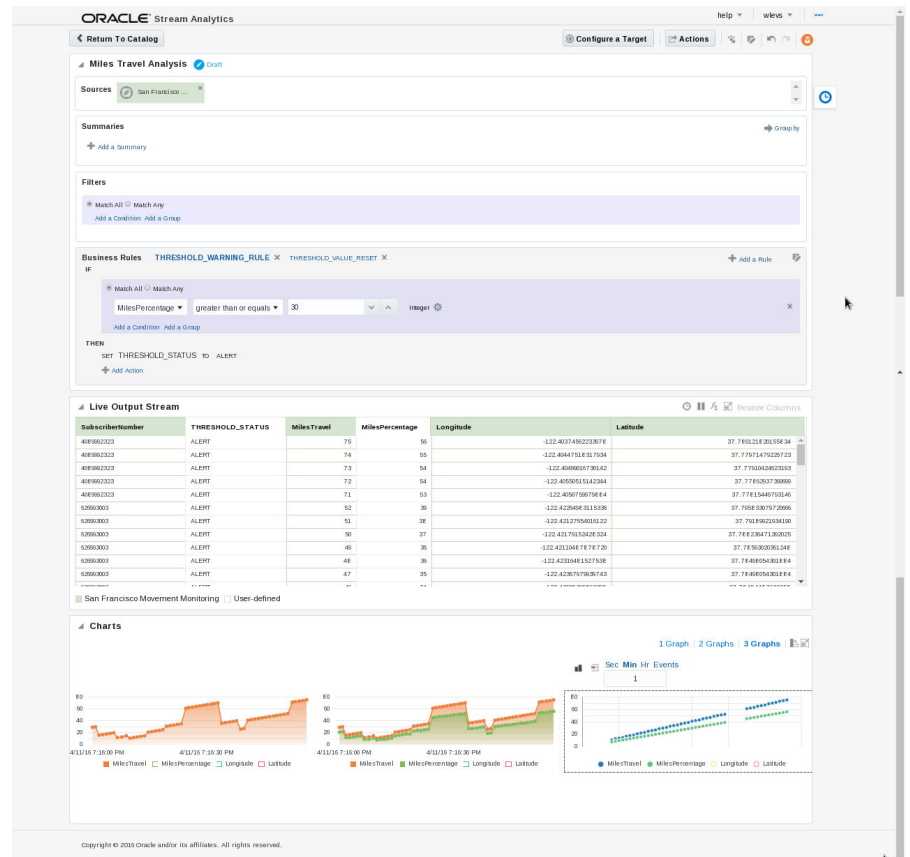


Oracle Stream Analytics Patterns Library

BENEFITS

- Create innovative new Fast Data applications in Minutes rather than days or weeks
- Enable users of any skill level to rapidly master the art of Event Stream Processing solution delivery
- Provide actionable insight on Fast Data: large volumes of high velocity data from varied sources, including mobile devices in real-time
- Push event processing to the network edge with Oracle Edge Analytics to providing actionable insight on data that loses value very quickly
- Enables real-time situational awareness, faster decisions and immediate actions ensuring better customer satisfaction and retention, driving higher revenues
- Decrease costs and improve compliance with the real-time analysis of event patterns, identifying and proactively responding to business threats such as fraudulent activities, arbitrage, unscheduled resource movements
- Improve operational efficiency with immediate insight into supply chain, Enterprise systems and processes, facilitate dynamic optimization of resource utilizations
- Provide low TCO and increase productivity with a complete rapid development and Enterprise-grade deployment platform
- Architect solutions requiring incremental complex event processing algorithms to process large data volumes as effectively as possible
- Inherent extreme performance provided in both an scaling up architecture using the OEP runtime server clustering (also available on Engineered systems) or in Scale out, distributed architecture leveraging Spark Streaming

The Patterns library provides a wealth of packaged intelligence, with many years of implementation experience, which at the click of a button, and with a few parameters immediately executes on the associated stream, or streams, to provide instant insight.



Oracle Stream Analytics Data Discovery Canvas

The Oracle Stream Analytics runtime component is a complete solution platform for building applications to filter, correlate and process events in real-time. With flexible deployment options – stand-alone, integrated in the SOA stack or lightweight on Java SE Embedded, it proves to be a versatile, high performance event-processing engine. It enables Fast Data and Internet of Things – delivering actionable insight and maximizing value on large volumes of high velocity data from varied data sources in real-time. It enables distributed intelligence and low latency responsiveness by pushing business logic to the network edge.

Built on industry-standards including ANSI SQL, Java, Spring DMTM and OSGiTM, The Oracle Stream Analytics platform provides an open architecture for sourcing, processing, and publishing complex events throughout the enterprise. With both a visual development environment as well as standard Java-based tooling, The Oracle Stream Analytics platform ensures that your IT team can develop event-driven applications without the hurdle of specialized training or unique skill-set investment.

RELATED PRODUCTS AND SOLUTIONS

- Oracle Edge Analytics
- Coherence
- Business Activity Monitoring
- Service Bus
- WebLogic Application Grid
- WebLogic Suite
- Real Time Decisions

We also introduce a new versatile runtime approach offering the availability to deploy, execute and manage applications using the Spark Streaming infrastructure with the bonus of leveraging Kafka as a messaging layer.

**Introduction**

The quantity and speed of both raw infrastructure and business events is exponentially growing in IT environments. Whether it is streaming stock data for financial services, streaming satellite data for the military or real-time vehicle-location data for transportation and logistics businesses, companies in multiple industries must handle large volumes of complex data in real-time. In addition, the explosion of mobile devices and the ubiquity of high-speed connectivity add to the explosion of mobile data. At the same time, demand for business process agility and execution has also grown. These two trends have put pressure on organizations to increase their capability to support event-driven architecture patterns of implementation. Real-time event processing requires both the infrastructure and the application development environment to execute on event processing requirements. These requirements often include the need to scale from everyday use cases to extremely high velocities of data and event throughput, potentially with latencies measured in microseconds rather than seconds of response time. In addition, event processing applications must often detect complex patterns in the flow of these events.

Sample Use Cases

The Oracle Stream Analytics platform targets a wealth of industries and functional areas. The following are some use cases:

- **Telecommunications:** Ability to perform real-time call detail (CDR) record monitoring and distributed denial of service attack detection.
- **Financial Services:** Ability to capitalize on arbitrage opportunities that exist in millisecond or microsecond windows. Ability to perform real-time risk analysis, monitoring and reporting of financial securities trading and calculate foreign exchange prices.
- **Transportation:** Ability to create passenger alerts and detect baggage location in case of flight discrepancies due to local or destination-city weather, ground crew operations, airport security, etc.
- **Public Sector/Military:** Ability to detect dispersed geographical enemy information, abstract it, and decipher high probability of enemy attack. Ability to alert the most appropriate resources to respond to an emergency.
- **Insurance:** Ability to learn and to detect potentially fraudulent claims.
- **IT Systems:** Ability to detect failed applications or servers in real-time and trigger corrective measures.
- **Supply Chain and Logistics:** Ability to track shipments in real-time and detect and report on potential delays in arrival.

Enabling Fast Data and the Internet of Things

With exploding data from increased number of connected devices, there is an increase in large volumes of dynamically changing data; not only the data moving within organizations, but also outside the firewall. High-velocity data brings high value, especially to volatile business processes. However, some of this data loses its operational value in a short time frame. Big Data allows the luxury of time in processing for actionable insight. Fast Data, on the other hand, requires extracting the maximum value from highly dynamic and strategic data. It requires processing much faster and facilitates taking timely action as close to the generated data as possible. The Oracle Stream Analytics platform delivers on Fast Data with responsiveness. Oracle Edge Analytics pushes processing to the network edge correlating, filtering and analyzing data for actionable insight in real-time.

Real Time Streaming Event Processing Analytics

The Oracle Stream Analytics platform provides ability to join the incoming streaming events with persisted data, thereby delivering contextually aware filtering, correlation, aggregation and pattern matching. It delivers lightweight, out of the box adapters for common event sources. It also provides an easy-to-use adapter framework for custom adapter development. With this platform, organizations can identify and anticipate opportunities, and threats represented by seemingly unrelated events. Its incremental processing paradigm can process events using a minimum amount of resources providing extreme low latency processing. It also allows it to create extremely timely alerts, and detect missing or delayed events immediately, such as the following:

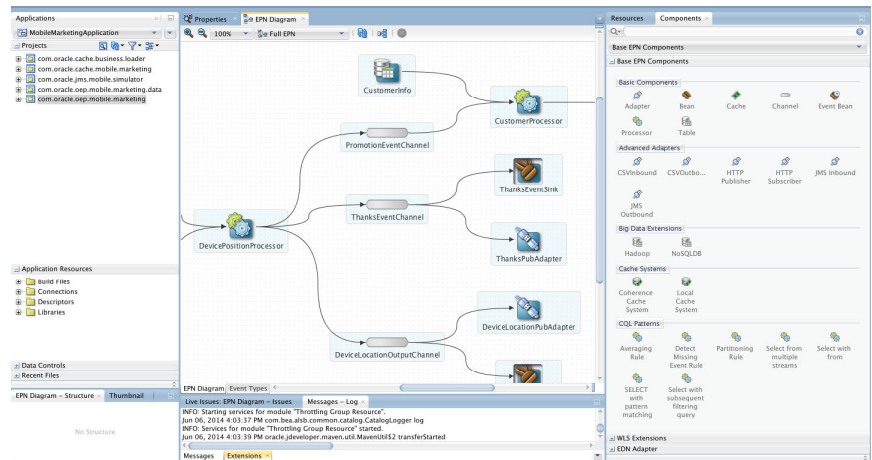
- Correlated events: If event A happens, event B almost always follows within 2 seconds of it.
- Missing or Out-of-Sequence events: Events A, B, C should occur in order. C is seen immediately after A, without B.
- Causal events: Weight of manufactured items is slowly trending lower or the reading falls outside acceptable norms. This signals a potential problem or future maintenance need.

Standards-Based Continuous Query Language

In addition to real-time event sourcing, the Oracle Stream Analytics platform design environment and runtime execution supports standards-based, continuous query execution across both event streams and persisted data stores like databases and high performance data grids. This enables the platform to act as the heart of intelligence for systems needing answers in microseconds or minutes to discern patterns and trends that would otherwise go unnoticed. Event Processing use cases require the speed of in-memory processing with the mathematical accuracy and reliability of standard database SQL. This platform queries listen to incoming event streams and execute registered queries continuously, in-memory on each event, utilizing advanced, automated algorithms for query optimization. While based on an in-memory execution model, however, this platform leverages standard ANSI SQL syntax for query development, thus ensuring accuracy and extensibility of query construction. This platform is fully compliant with the ANSI SQL '99 standard and was one of the first products available in the industry to support ANSI SQL reviewed extensions to standard SQL for real-time, continuous query pattern matching. The CQL engine optimizes the execution of queries within a processor leaving the developer to focus more on business logic rather than optimization.

Event Processing Network (EPN) – Advanced Developer Features

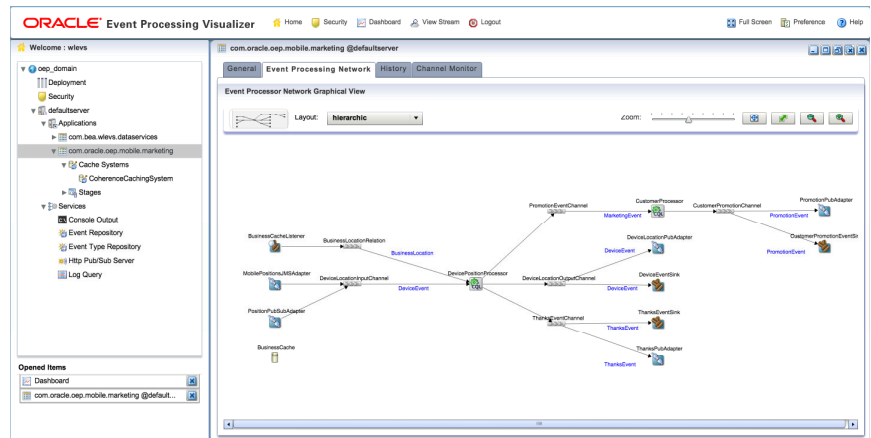
The Oracle Stream Analytics platform allows for both SQL and Java code to be combined to deliver robust event processing applications. Leveraging standard industry terminology to describe event sources, processors, and event output or sinks, This platform provides a meta-data driven approach to defining and manipulating events within an application. Its developers use a visual, directed-graph canvas and palette for application design to quickly outline the flow of events and processing across both event and data sources. Developing the flow through drag and drop modeling and configuration wizards, the developer can then enter the appropriate metadata definitions to connect design to implementation. When necessary or preferred, with one click, developers are then able to drop into custom Java code development or use the Spring™ framework directly to code advanced concepts into their application.



Visual Event Processing Network JDeveloper Development Environment

Lightweight Container

Event driven applications are frequently characterized by the need to provide low and deterministic latencies while handling extremely high rates of streaming input data. The underpinning of The Oracle Stream Analytics platform is a lightweight Java container based on an OSGi™ backplane. It contains mature components from the WebLogic JEE application server, such as security, logging and work management algorithms, but leverages those services in a real-time event-processing environment. An integrated real-time kernel provides unique services to optimize thread and memory management supported by a JMX framework enabling the interaction with the container for performance and configuration. Web 2.0 rich internet applications can communicate with the platform using the HTTP publish and subscribe services, which enables them to subscribe to an application channel and have the events pushed to the client. With a small footprint this platform is a lightweight, Java-based container, that delivers faster time-to-production and lower total cost of ownership.



Oracle Stream Analytics Runtime Administration and Monitoring

Integrated Enterprise Quality Infrastructure

The Oracle Stream Analytics platform has the ability to handle millions of events per second with microseconds of processing latencies on standard, commodity hardware or optimally with Oracle Exalogic and its portfolio of other Engineered Systems. This is achieved through a complete “top-down” layered solution, not only with a design focus on high performance event processing use cases, but also a tight integration with enterprise-class real-time processing infrastructure components. The platform architecture of performance-oriented server clusters focused on reliability, fault tolerance and extreme flexibility with tight integration into the Oracle Coherence technology enables the enterprise to predictably scale mission-critical applications across a data grid, ensuring continuous data availability and transactional integrity.

In addition, this platform allows for deterministic processing, meaning the same events can be fed into multiple servers or the same server at different rates achieving the same results each time. This enables incredible advantages over systems that only rely on the system clock of the running server.

To learn more and try out the Oracle Stream Analytics Platform:

<http://www.oracle.com/technetwork/middleware/complex-event-processing/downloads/index.html>



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Hardware and Software, Engineered to Work Together