

ORACLE COMPLEX EVENT PROCESSING (CEP)

KEY FEATURES AND BENEFITS

ENTERPRISE STRENGTH COMPLEX EVENT PROCESSING SOLUTION

KEY PRODUCT FEATURES

- Comprehensive event processing query language supports both in-memory and persistent query execution based on standard SQL syntax
- Runtime environment includes a lightweight, java-based container that scales to high-end event processing use cases with optimized application thread and memory management
- Both visual and Java-based development tooling for defining event processing applications and networks
- Enterprise class High Availability, Scalability, Performance and Reliability with an integrated in-memory grid and the world's fastest JVM
- Advanced Web 2.0 management and performance monitoring console

Oracle Complex Event Processing (CEP) is a complete solution for building applications to filter, correlate and process events in real-time so that downstream applications, service oriented architectures and event-driven architectures are driven by true, real-time intelligence. Oracle CEP provides organizations with a complete “top-down” solution for designing, defining, development and implementing complex event processing applications that not only meet business requirements but perform to the highest levels of enterprise expectation. Built on industry-standards including ANSI SQL, Java, Spring DM and OSGI, Oracle CEP provides an open architecture for sourcing, processing, and publishing complex events throughout the enterprise. And with both a visual development environment as well as standard Java-based tooling, Oracle CEP ensures that your IT team can be developing event-driven applications without the hurdle of specialized training or unique skill-set investment.

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. At the same time, demand for business process agility and execution has only 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 complex 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, complex event processing applications must often detect complex patterns in the flow of these events.

Sample Use Cases

Oracle CEP targets a wealth of industries and functional areas. Following are some use cases:

Financial services: Ability to capitalize on arbitrage opportunities that exist in millisecond or microsecond windows

Transportation: Ability to detect baggage location for passengers in case of flight discrepancies due to local or destination-city weather, ground crew operations, airport

BENEFITS

- Enables real-time situational awareness, faster decisions and immediate actions ensuring better customer satisfaction and retention, driving higher revenues
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- Decrease costs and improve compliance with the real time analysis of event patterns, indentifying and proactively responding to business threats such as fraudulent activities, arbitrage, unscheduled resource movements
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- Improve operational efficiency with immediate insight into supply chain, Enterprise systems and processes, facilitate dynamic optimization of resource utilizations
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- Provide low TCO and increase productivity with a complete rapid development and deployment platform for all Enterprise Event-driven Architecture based solutions requiring Complex Event processing

security, etc.

Military: Ability to detect dispersed geographical enemy information, abstract it, and decipher high probability of enemy attack

Insurance: Ability to detect calamities in various locales and adjust issuance of policies accordingly, in real time

IT systems: Ability to detect events from various systems and decipher downstream systems failure affecting many users.

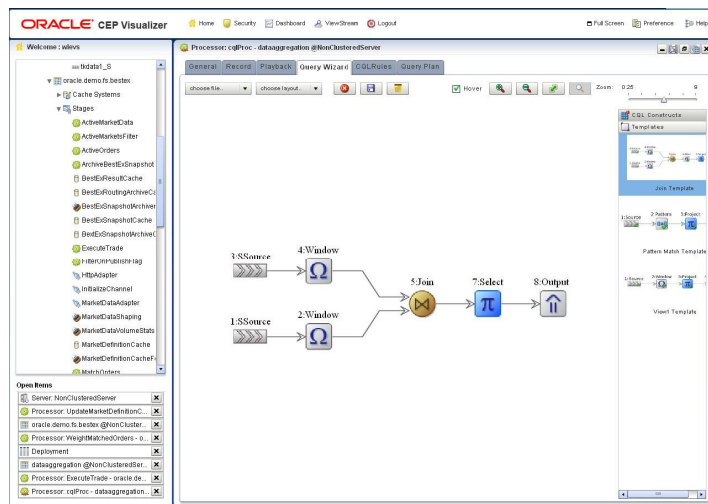
Supply chain and logistics: Ability to offer one day-delivery guarantee from order date (new service) and garner higher revenues.

Streaming Event Processing

Oracle CEP provides ability to join incoming streaming events with persisted data, thereby delivering contextually aware filtering, correlation, aggregation and pattern matching. The Oracle CEP solution delivers lightweight, out of the box adapters for common event sources like sockets and JMS messages, while also providing an easy to use adapter framework for custom adapter development. .

With Oracle CEP organizations can identify and anticipate opportunities, and threats represented by seemingly unrelated events.

- Detects related events that, for example, have the following characteristics:
 - Correlated events: If event A happens, event B almost always follows within 2 seconds of it.
 - Causal events: Event ‘manufacturing process halted’ will result in event ‘delayed shipment.’
- Generates optimal downstream events, based on customer-specific inference queries, in response to a combination of upstream events.



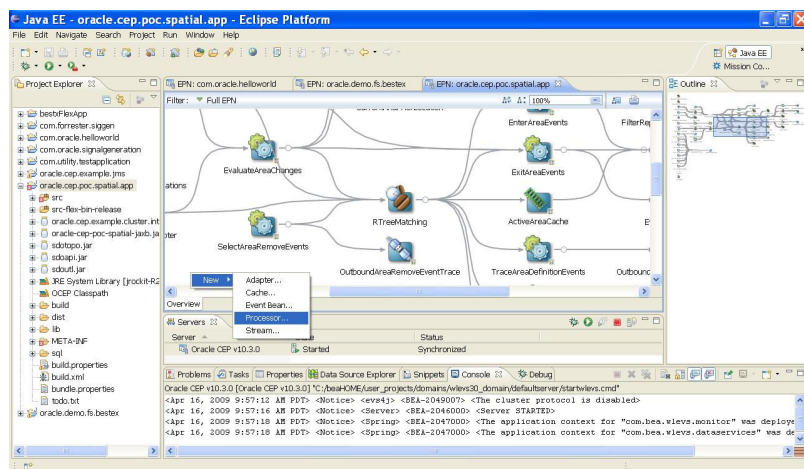
Visual Event Pattern Query creation and implementation

Standards-Based Continuous Query Language

In addition to real-time event sourcing, the Oracle CEP 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 Oracle CEP 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. Complex Event Processing use cases require the speed of in-memory processing with the mathematical accuracy and reliability of standard database SQL. Oracle CEP 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, Oracle CEP leverages standard ANSI SQL syntax for query development, thus ensuring accuracy and extensibility of query construction. Oracle CEP is fully compliant with the ANSI SQL '99 standard and is the first product available in the industry to support ANSI SQL reviewed extensions to standard SQL for real-time, continuous query pattern matching.

Event Processing Programming Model

The Oracle CEP Event Processing Network allows for both SQL and Java code to be combined to deliver robust event processing applications and is at the heart of the Oracle CEP programming model. Leveraging standard industry terminology to describe event sources, processors, and event output or sinks, Oracle CEP provides a meta-data driven approach to defining and manipulating events within an application. Oracle CEP developers use an Eclipse IDE plug-in with 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, 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 Spring DM directly to code their application.



Visual Event Processing Network Application development environment

RELATED PRODUCTS:

- Oracle SOA Suite
- Oracle Business Activity Monitoring
- Oracle Service Bus
- Oracle WebLogic Suite
- Oracle Coherence
- Oracle JRockit

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 Oracle CEP is a lightweight, Java container based on an OSGI™ backplane, that provides mature components from what is found in old traditional JEE containers, such as logging, configuration but also those services optimized for real-time event processing. 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 Oracle CEP's lightweight, but Java-based container, delivers faster time-to-production and lower total cost of ownership (TCO).

Integrated Enterprise-Class Infrastructure

Oracle CEP has the ability to handle millions of events per second with microseconds of processing latencies on standard, commodity hardware. 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. It delivers a production deployment architecture of performance-orientated server clusters focused on reliability, fault tolerance and extreme flexibility with tight integration into the Oracle Coherence technology enabling the enterprise to predictably scale mission-critical Application across a Data Grid, ensuring continuous data availability and transactional integrity. In addition, Oracle CEP is packaged with the deterministic, latency focused, JRockit JVM, the worlds fastest JVM, all in a single, fast installer.

To satisfy the needs of any event-driven solution, the ability to interact with a hot-pluggable SOA infrastructure is crucial and Oracle Complex Event Processing enables a complete end-to-end solution with its interoperability to any other SOA product, such as the Oracle Business Activity Monitoring, providing the insight into the business bottlenecks, threats and opportunities.

Contact Us

For more information about Oracle CEP, please visit oracle.com or call +1.800.ORACLE1 to speak to an Oracle representative.



Oracle is committed to developing practices and products that help protect the environment

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