



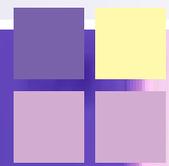
## Events matter.

Delivering a package sounds simple enough.



The shipper orders pickup by phone or through a Web site. Dispatchers dispatch trucks, arrange transfers and schedule deliveries. Transfer centers sort and organize the packages. With global positioning system (GPS), radio frequency identification (RFID), bar code readers and handheld devices, virtually every step in the process can be monitored, managed, analyzed and optimized.





**Every business, from delivering packages to processing complicated financial trades to manufacturing widgets, can be understood as sequences of events, planned and unplanned.**

Yet pickups are missed, deliveries are late and packages get lost. Events big or trivial happen and can disrupt the best designed and managed business processes, which then have an impact on the business itself.

Events matter. Every business, from delivering packages to processing complicated financial trades to manufacturing widgets, can be understood as sequences of events, planned and unplanned. To be more responsive, businesses must be able to detect events as they happen and take appropriate action. Increasingly, these actions are based on business rules and directly benefit from the use of integrated, automated systems.

The management of events has become thoroughly ingrained in the business process. Often it is addressed under various labels: business activity monitoring (BAM), complex event processing (CEP), event stream processing (ESP), event-driven architecture (EDA) and more. Although companies already do business event processing every day, the effort is often disjointed, fragmented and improvised.

According to the July 16, 2007 Gartner publication *Hype Cycle for Application Infrastructure Middleware, Platforms and Architecture*, "Event processing is moving through the Hype Cycle now, because its concepts are being applied more broadly and on a higher level. Business events—such as purchase orders, address changes, payments, credit card transactions or Web clicks—are being used as a focus in application design." In the same report, Gartner predicts that mainstream adoption of event-driven architecture will take place over the next 5-10 years.

The challenges that events pose revolve around information visibility. Events happen, and the organization must detect these events and act on them. This requires information—getting the right information to the right people where and when it is needed.

### **The value of optimizing business event processing**

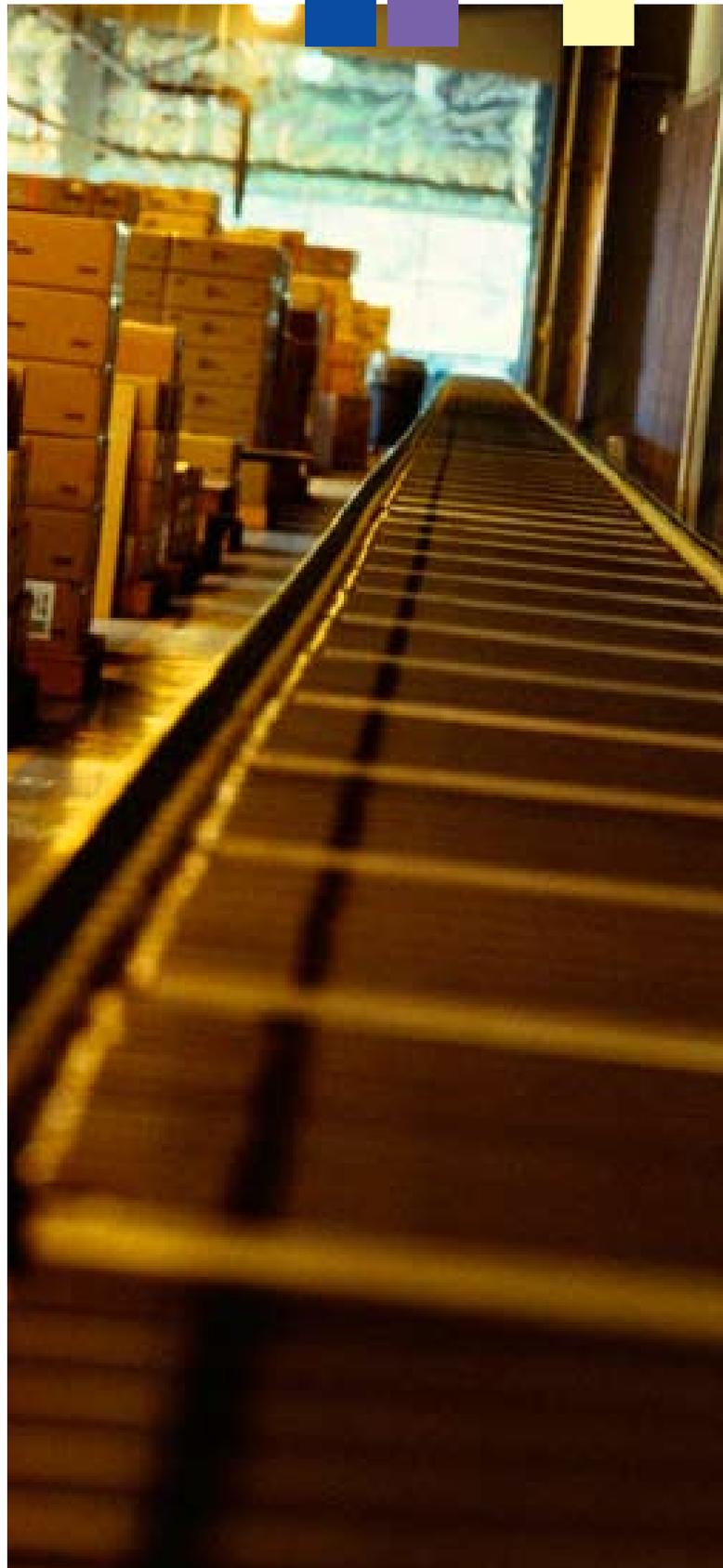
With the pace of business accelerating, there are bottom-line gains to be made from optimizing how the organization handles events. Improved customer responsiveness, increased usage of physical assets and better management of complex value chains all benefit from improvements in event processing.

A U.S. railway official explained, “If we could increase our average speed by just one mile per hour, it would mean an additional [US]\$140 million to our budget.” Does this sound like an event processing opportunity? By identifying and addressing the various events along the route that slowed, even halted, the train during its journey, railroad officials were able to increase the average speed of the trip, end to end, by more than one mile per hour and capture that additional money.

The use of assets and resources frequently benefits from better event processing. Where event processing, for example, is able to monitor the progress and delays of trucks delivering key materials, it can alert managers in a timely way. They can then take more effective, proactive steps to optimize production and reduce costly slowdowns.

Similarly, event processing can help ensure better customer service and higher customer satisfaction. The package-delivery company must meet specific customer-service levels or suffer penalties. Likewise, an investment firm that failed to complete several key trades for a high-net-worth customer found that the angry customer reduced trading with the firm. Had the company recognized the criticality of those trading events, it could have better prioritized its trade processing to ensure the satisfaction of a valued customer.

Events like these occur countless times in enterprises every day. Through event processing that identifies such events and delivers the right information to the right place at the right time, managers can mitigate or avoid such problems.



## Events as part of your SOA

Business event processing describes a wide range of ways that enterprises approach events, simple or complex. But in all cases, information about the event needs to be quickly disseminated to others affected by the event for both awareness and to take appropriate action.

Businesses tend to define events and their responses through the IT perspective of processing applications and services. However, it can be faster and simpler for the business to reference and detect actual business actions and events through real-time event processing.

Opening an account, making a withdrawal, buying something or sending an invoice, all constitute some of the events common to most businesses. Changes in sensor and meter readings also signify events, especially when outside normal parameters. Even a program reading or writing to a database can be seen as a business event, depending on context.

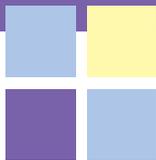
Whether events are as simple as a door opening or as complex as a multiparty package pickup, transfer and delivery, organizations need to recognize new and changing events fast. Then they want to leverage their IT systems and business processes to speed response and reduce the need for manual processing.

Some describe a business capable of processing events as an EDA. An EDA is an integrated set of systems and infrastructure that monitors events, recognizes significant occurrences as they take place, triggers alerts, disseminates information about the event and initiates rules-based responses. Seen in this light, the EDA looks much like a services-based infrastructure.

To IBM, the EDA, which incorporates the definition and deployment of various event identification and event processing services, already is an integral part of a service oriented architecture (SOA). As such, an EDA is a use case and an example of the IBM SOA, which already incorporates extensive EDA capabilities and event-processing infrastructure services into its SOA offerings.

At IBM, these technologies and capabilities exist today and might already be in place in your organization. All that is required to increase their value to your business is to recognize their potential to advance your event detection and processing capabilities and understand how your business can benefit from this enhancement.

The EDA is an integral part of a service oriented architecture.





### Components of a business event processing infrastructure

A business event processing infrastructure needs the following components. Each component described is identified by its corresponding number in Figure 1.

1. Event listeners – *identify or consume events, or both. Event listeners can be sensors and actuators, triggers in application adapters, message queues, timers and more.*
2. Enterprise service bus (ESB) – *acts as the central nervous system. It connects everything, delivering event information where it is needed across the enterprise.*
3. Event processors – *identify patterns of real-time events from multiple points or over different time frames, or both.*
4. Common event infrastructure – *captures event information in a common (standard) format so that it can be more readily used elsewhere.*
5. Event dashboards – *serve as a type of event consumer that presents event information in a way that is meaningful and accessible to users.*

IBM delivers all these components today.

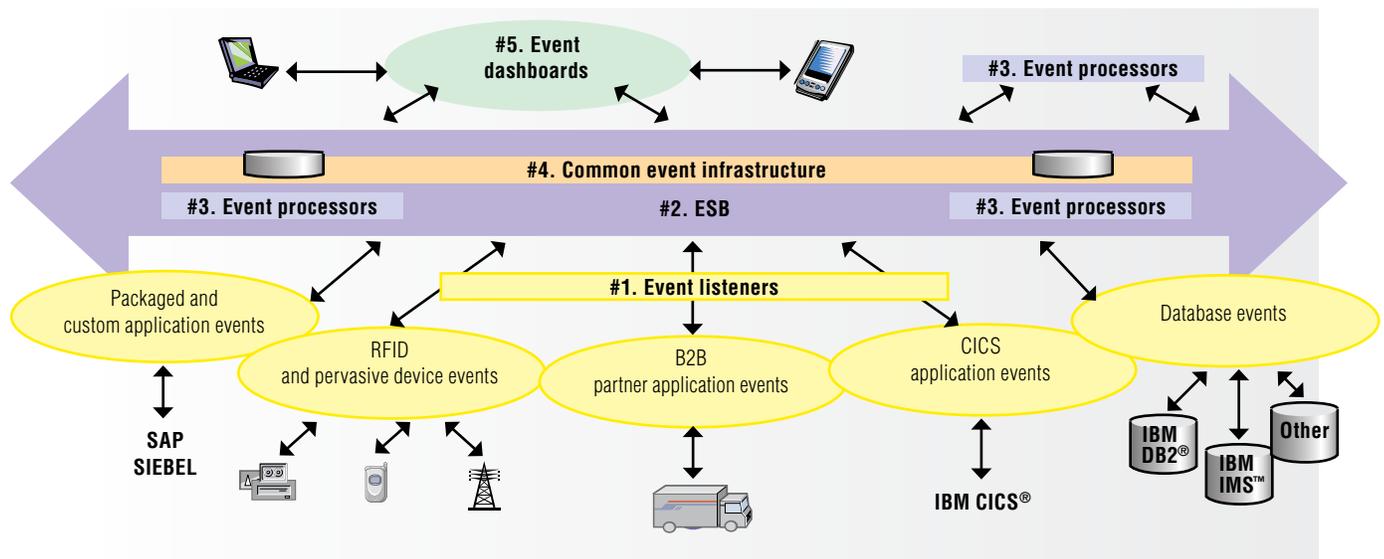


Figure 1. The business event processing infrastructure

## Enterprise event readiness with WebSphere

So what can companies, such as the package-delivery company described previously, do to minimize delays and boost service-level compliance? To begin, they can recognize the potential of the IBM technology already in use to better detect and manage the events that have an ongoing impact on operations. Business event processing and EDA are not new to IBM, and the SOA infrastructure delivered through IBM software helps roll out EDA as a deployment model. Through IBM WebSphere® and SOA offerings, IBM already delivers the components necessary for an effective enterprise event-processing infrastructure.

IBM provides business event processing capabilities to the package-delivery company in the following manner:

- *GPS devices in its vehicles keep everyone aware of the location of each vehicle. The micro broker component of IBM Lotus® Expeditor supports the MQ Telemetry Transport (MQTT) protocol.*
- *Handheld devices capture recipient signature and delivery attempts. Through MQTT, the micro broker component is also used here to update customer records.*
- *RFID tags pass data to IBM WebSphere RFID Premises Server, using the micro broker component, to identify missing items and other process anomalies.*
- *IBM WebSphere Message Broker, acting as an ESB improving enterprise-wide visibility to information, continuously analyzes delivery and location events to monitor service level agreement (SLA) compliance. It initiates corrective measures when needed through a routing service hosted by IBM WebSphere Application Server or a business process adjustment initiated by an MQ message to IBM WebSphere Process Server.*
- *Timely short message service (SMS) notifications are delivered through an SMS gateway and the MQTT protocol.*
- *IBM WebSphere Business Monitor enables business managers to view summary data across deliveries, including performance against SLAs.*

Many enterprises already have the business event processing capabilities they need in IBM WebSphere MQ, IBM WebSphere Enterprise Service Bus, WebSphere Message Broker, MQTT, WebSphere Process Server, WebSphere Business Monitor, WebSphere RFID Premises Server, Lotus Expeditor and more. The capabilities are here and ready to use. All companies need is the recognition that events have an impact on their business and the willingness to apply IBM event capabilities to achieve success. With IBM, SOA and WebSphere business event capabilities, event processing is accessible and ready for use.



**IBM delivers the components necessary for an effective enterprise event-processing infrastructure.**



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