Clarifying the Definition of Business Activity Monitoring

Understanding the architectural pieces required to build a business activity monitoring solution can help enterprises distinguish between building a "good-enough" and "best-in-class" solution.

Gartner introduced the term "business activity monitoring" (BAM) in July 2001 and defined it as "... the concept of providing real-time access to critical business performance indicators to improve the speed and effectiveness of business operations" (see "Business Activity Monitoring: The Promise and Reality"). Since the term was introduced, many vendors have embraced it. The Google search engine service returns more than 4,000 hits for "business activity monitoring," not including those on Gartner's Web site. Although the use of BAM is becoming well-established, enterprise case studies and vendor references are only now appearing. There is still some confusion about which examples should be labeled BAM. Here, we clarify the definition of BAM and provide guidelines that vendors and enterprise buyers can use to evaluate the approaches to building BAM applications. We outline the requirements of a BAM solution that are easy to identify, and separate the primary value functionality from supporting features.

Defining BAM

A BAM solution is an assembly of functionality that business operation managers can use to help them be more effective. BAM solutions deliver alerts based on an analysis of real-time business events that are gathered from multiple independent sources. This is accomplished through three key building blocks: 1) event absorption; 2) event processing and filtering; and 3) event action, delivery and display. BAM solutions can be built on top of a service-oriented architecture, integrated into business applications or run as a stand-alone product. BAM requires an inclusive solution, but it can be assembled with individual components, such as a message broker, a database management system, a rules engine, a notification service and a business intelligence reporting tool.
What Is Real Time?

A key benefit of a BAM solution is that it operates in real time. Here, real time means that a recipient is made aware of a critical business event as soon as it happens; however, achieving immediate reaction time is difficult. The term "right time" is used as a compromise and factors in the cost of producing real-time alerts, the availability of technology and the reaction time of users. When an alert arrives too slowly, its value is decreased, but if it arrives too quickly, it can lead to distraction or overwhelm the user. Although some early BAM solutions are working with day-old information, the acceptable time delay between a business-critical event occurring and an action being taken is shrinking. Competition, along with legislation such as the Sarbanes-Oxley Act of 2002, provides examples of the need for speed. Consider an example where, once a day, an enterprise uses extraction, transformation and loading tools to update a data warehouse with information from more than a dozen business applications. During the transformation phase, a rules engine analyzes the data for customer dissatisfaction events. As they are discovered, an e-mail alert is sent to the appropriate sales manager. Users are happy with one-day turnaround, which is exception reporting, but they wish that they received an alert as the event happened, which is BAM.

Access to Multiple Event Sources

BAM provides value by looking across multiple business applications. Business processes are often supported by logically and physically independent applications. BAM systems accept events from multiple sources, such as those supporting customer relationships, the supply chain and sales, so that effective rules can be written that span an end-to-end business process. The Web, integration brokers and enterprise software suites can be good sources for events.

Business Events vs. Process Events

Enterprises need to monitor business processes and the underlying technology that support them. BAM functionality focuses on business processes, while IT operation support systems, which monitor business services, focus on the underlying technical infrastructure and applications. The solutions are similar, but the data sources, the type of rules and the audience for the results are different. Alerts generated by an IT operation support system can be fed as an event into a BAM system and trigger a business alert (for example, a major stock exchange notifies its traders when its system slowdown will affect trading).
Three Key Building Blocks

The three key building blocks of BAM solutions (event absorption, event processing and filtering, and event delivery and display) are all needed for a BAM application (see “Turning the Theory of BAM Into a Working Reality”). Just as common building materials can be used to build a shack or a mansion, the basic BAM building blocks can be used to build a "good-enough" solution or a "best-in-class" solution. There are many options available when building a BAM system. Enterprises should ensure that their basic BAM needs are met with the key building blocks before evaluating the value of elaborate supporting features, such as dynamic rule generation and notification escalation.

![BAM's Logical Architecture](image)

Source: Gartner Research (June 2003)

Event Absorption

A BAM solution thrives on events that are gathered from multiple business applications. The events may be obtained passively, such as subscribing to messages passing through an application integration broker, or actively, such as polling or screen scraping. Factors to evaluate include how well streams of events can be validated, transformed into a useful data model and augmented with context information. Good-enough BAM applications might use static data models, but flexible BAM infrastructures need flexible data models. Best-in-class products should support a wide range of business application adapters, buffer events to prevent loss, provide distributed collection architectures and support pre-analysis filtering.
Event Processing and Filtering

This layer is the heart of a BAM solution. The flood of validated events, arriving in real time, must be analyzed for significance. There is no time to fall behind, so adequate performance is critical. Rules and context drive the event-processing layer by filtering out all but what is important. Good-enough products include fixed rules or simple rule editors and static context, and discard an event after it has been analyzed. Best-in-class BAM solutions enable users to build complex rules and tie into business process management systems for context and business intelligence tools for historical trends. Events are stored for post-processing analysis, so better rules can be built. There is a lot of room for innovation within this layer, such as discovering correlations and predictive analysis, but also a lot of room for vendor hype. The history of enterprise experiences with real-time event management of an IT infrastructure suggests that accurate business rules will be difficult to build and maintain. A system that cannot be trusted will not be used.

Event Action, Delivery and Display

BAM solutions must have a way to quickly communicate their findings. The value of a BAM solution is determined by the contextual quality of an alert, its detail and the flexibility of delivery. Good-enough solutions simply present the alert on an interactive dashboard or send an e-mail. Beyond that, the sky is the limit. Alerts can be delivered to users through a portal, push technology or instant messenger. Users that get BAM alerts may request the supporting information that caused it, which can be accomplished through integrated dashboards or Web links. In addition to users, BAM alerts may be distributed to other applications directly or through an integration broker. For example, an alert may trigger customer notification actions via a business process manager. Different styles of BAM and a timeline of when they will become popular are described in “Evolving Interaction Styles in Business Activity Monitoring.”

Key Facts: Gartner introduced BAM in July 2001. BAM solutions come from many markets, including enterprise business intelligence suites, enterprise broker suites, IT operations, business process management and pure-play vendors.

Bottom Line: Business activity monitoring solutions can be built in-house, assembled by a systems integrator, purchased as a stand-alone application or be incorporated into enterprise applications. There are many features that can complement a BAM solution, but the solution must process events according to rules and context, and work in real time across multiple business applications to deliver its expected value.