



Using BPEL4WS

What IT managers need to know



Web services technology is rapidly evolving to meet the complex needs of the enterprise customer. The ability to integrate and assemble individual Web services into standards-based business processes is an important element of the service-oriented enterprise and the overall Web service technology "stack."

These loosely coupled business processes, commonly referred to as orchestrated Web services, will be designed, integrated, executed, and managed similar to how proprietary enterprise application integration (EAI) and Business Process Management (BPM) tools operate today. However, business process execution standards and Web services will greatly reduce vendor lock-in to dramatically reduce costs and provide broader interoperability benefits.

The Role of Business Process Execution Language

To address these needs, the Business Process Execution Language for Web services (BPEL4WS or BPEL) has quickly become the dominant specification to standardize integration logic and process automation between Web services. BPEL was jointly created by IBM, BEA, and Microsoft in August 2002. This inception by a coalition of the

most influential vendors in the industry practically assured its widespread adoption from the beginning. In April 2003, BPEL was submitted to OASIS to obtain even broader industry acceptance and open standardization. Today, many industry analysts have proclaimed that BPEL is the undisputed standard.

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The BPEL specification defines the syntax and semantics of the BPEL language, which contains a variety of process flow constructs. You can perform conditional branching, parallel process flows, nested sub-processes, process joins, and other related features. In fact, BPEL represents a convergence of language features from

IBM's Web Service Flow Language (WSFL) and Microsoft's XLANG, which is the orchestration language used by Microsoft's BizTalk server. Both WSFL and XLANG have been superseded by the BPEL specification.

Like all the other languages in the Web services arena, BPEL is defined in an XML format. It also leverages other Web service standards such as WSDL to describe available interfaces. BPEL describes the inbound and outbound process interfaces in WSDL so that they can be easily integrated into other processes or applications. This allows consumers of a process to inspect and invoke a BPEL process just like any other Web service.

Just as today's software development tools include Web services into their development capabilities, easy-to-use tools are arriving to design business processes and produce BPEL scripts. If your organization has the capability to integrate Web services, then you will also be able to create and invoke BPEL processes by leveraging existing Web services infrastructure and know-how. This will ultimately enable a broader group of developers to perform business integration and process automation tasks that previously required highly specialized skills.

Why Do I Need BPEL?

Traditional methods for integration and process automation typically involve embedded logic inside of functionally oriented IT applications, such as ERP, supply

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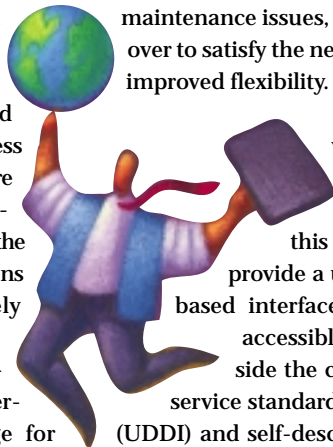
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chain, or CRM. The development, testing, and deployment efforts required to change these applications make integration and process changes both costly and complex. These limitations still inhibit organizational flexibility today.

To address these issues, proprietary EAI and BPM products emerged to abstract integration and process automation into a new layer of software tools. These software products liberated integration and process tasks from the underlying functional IT applications so they could be more effectively changed, managed, and optimized.

BPEL and Web services now provide a standardized integration interface and a standardized language for integration and process automation. BPEL, in effect, has the potential to commoditize the capabilities provided by proprietary EAI and BPM solutions. As often occurs in a commodity market, the resulting prices for products and services are certain to fall.



proprietary solutions often create their own cost and availability concerns. The frequent result is that constrained IT budgets end up shifting the majority of their funds toward maintenance issues, with precious little left over to satisfy the needs for innovation and improved flexibility.

BPEL and Web services are technologies with the potential to finally break through this impasse. Web services provide a ubiquitous, standards-based interface that can be readily accessible from inside or outside the corporate firewall. Web service standards for service discovery (UDDI) and self-description (WSDL, WSIL) actively promote and encourage rapid integration and service reuse. With the advent of next generation BPEL-compliant development tools, the expensive development cycles of the past are replaced with low cost integration and process changes, enabling a new level of organizational agility through orchestrated Web services. As long as Web service interfaces are available for the target applications and systems, BPEL will provide benefits that proprietary integration solutions will be hard-pressed to beat.

empowered to select best-of-breed processes and services to incorporate into their operations. This provides flexibility to replace or upgrade certain aspects of a business process without impacting the systems that are working well. For instance, a company can change their warehouse service provider without impacting their order management system, even though both may be participants in several business processes.

When Should I Begin Deploying BPEL?

BPEL remains an emerging technology, with challenges awaiting those interested in near-term deployment. Fortunately, the initial vacuum of BPEL-based development tools has been filled. Many software vendors have recognized the considerable market opportunity and responded quickly with solutions. Vendors like IBM, Collaxa, and OpenStorm offer BPEL-compliant orchestration engines, and a variety of design and development tools have been announced by industry leaders such as Microsoft and BEA.

Regarding specific deployments, BPEL makes sense for environments that already have many exposed Web service interfaces. The greater the number of Web services available, the more valuable BPEL will become. Fortunately, Web service pilot programs and integration efforts are one of the few areas of IT spending that have actually increased during the economic downturn, and the number of publicly accessible Web services continues to grow rapidly.

Finally, BPEL has the potential to significantly disrupt established EAI and BPM vendors and their markets. As a result, established vendors are moving to incorporate BPEL compliance into their proprietary products, and new vendors are leveraging a window of opportunity to create new products and new product categories. If your organization is a current or future customer of EAI or BPM solutions, the time is right to begin BPEL pilot projects and become familiar with the technology. This knowledge will be valuable in evaluating future products, while also exploring ways to leverage BPEL to obtain competitive advantage within your industry. ©



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What Will Drive Adoption?

The most important case for BPEL is that proprietary EAI and BPM solutions are just too expensive. They are expensive to develop, maintain, and extend across a diverse, heterogeneous environment. Proprietary integration links are often brittle, and the cost to maintain them as organizations continually evolve is a significant burden. The specialized skills required to support these

How Will BPEL Be Used?

Within the corporate firewall, BPEL has the potential to standardize application-to-application integration and extend integration to previously isolated systems. As a result of years of proprietary integration efforts, a variety of integration tools and solutions exist in the enterprise today. This remains true in organizations that adopt high-end EAI products, as the cost-benefit analysis of some integration needs cannot justify the use of custom EAI adapters. In contrast, BPEL holds promise as a “lowest common denominator” integration technology that delivers a ubiquitous, platform neutral solution for lower cost.

Outside the firewall, BPEL can enable a whole new level of corporate agility as it relates to integrating and switching external vendors and services. By using BPEL to define business processes, companies are