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Inside Service-Oriented Enterprise Integration

Conventional techniques for integrating legacy systems, packaged applications, B2B transaction systems and Web services are being replaced by a new class of comprehensive integration server solutions based on service-oriented architectures and end-to-end Web services support.



Ever since the second computer program went into production, exasperated IT managers have struggled to integrate each new wave of applications and to consolidate the information they produced. In many enterprise environments today, custom-coded point-to-point links and best-of-breed integration tools—one for the mainframe financial apps, another for ERP, one for each major database platform, more for the B2B systems—form a complex, poorly documented middleware maze that consumes an outsized share of maintenance resources and stubbornly resists change.

But change is unquestionably underway. The promise of service-oriented application architectures in general, and Web services in particular, to simplify integration, reduce costs, accelerate development, and automate business process execution is leading many organizations to implement these technologies for business integration purposes. This trend has accelerated with the recent emergence of commercial integration server solutions that combine the core elements of conventional EAI products—messaging, event management, security, data transformation, pre-built application connector libraries, and extensible XML schema support—on a service-oriented application platform with native Web services support.

These integration server solutions provide everything necessary to wrap legacy applications and expose them as services, synchronize and standardize data across heterogeneous systems, automate data exchange in event-driven business processes, and manage those processes in real time for efficiency, performance and security.

View from the Enterprise

But while industry analysts and media have thoroughly reported the convergence of integration server technologies, they've paid less attention to the actual pace of enterprise adoption, to the business and technology objectives driving implementation, to customer criteria for vendor selection, or to end-user attitudes about existing integration products.

To better illuminate these topics, Ziff Davis Media recently completed an extensive survey of over 500 senior IT managers, CIOs and CTOs at medium and large enterprises in a broad cross-section of vertical industries. Conducted in March 2005, the survey was designed to assess the current state and emerging trends in integration server utilization. Participant responses form the first part of this paper, followed by an analysis of how the features and functionality of current product offerings map to end-

user expectations as revealed in the survey data.

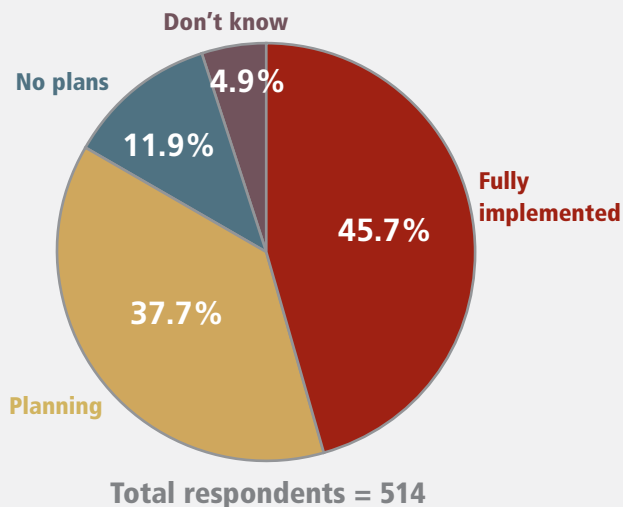
Integration Server Usage

Survey results confirmed that integration server solutions are already in wide use among respondent organizations. Almost half (46 percent) reported having a solution currently in place, and 19 percent of this group plans a major upgrade within the coming year. Of a total of 38 percent currently planning or in the process of planning an integration server solutions, 21 percent are planning a deployment within 12 months. Of the organizations surveyed, only 12 percent have no plans to implement an integration server solution.

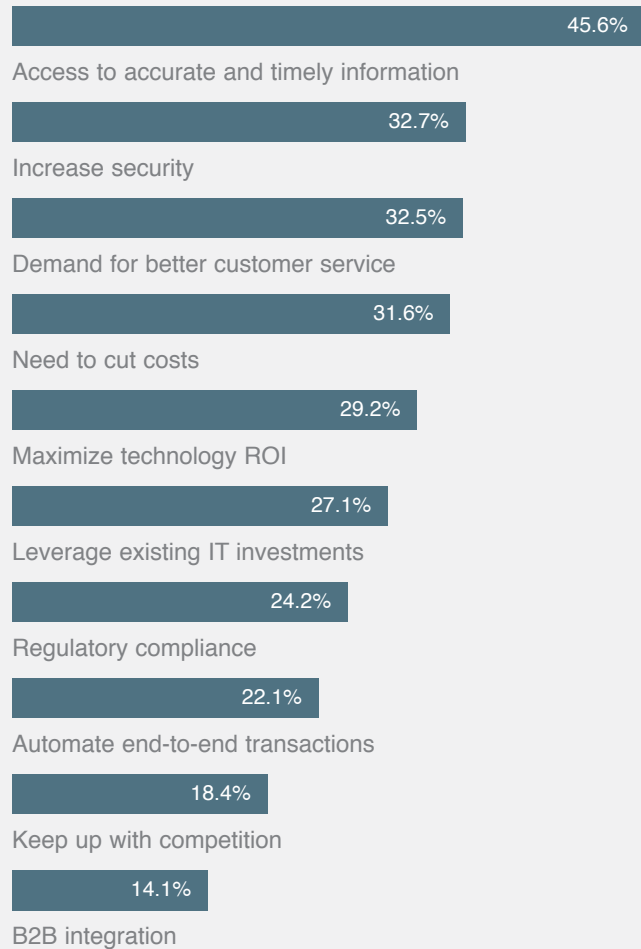
Business drivers for integration server adoption include:

- **More timely and accurate information.** Survey responses clearly reflected the difficulty many IT managers experience in supporting prompt, proactive decision making. The fragmentation of operating data in isolated systems and databases is a persistent drag on many organizations' responsiveness, competitive posture and ability to inno-

INTEGRATION SERVER SOLUTION IMPLEMENTATION



FACTORS DRIVING INTEGRATION SERVER INITIATIVES

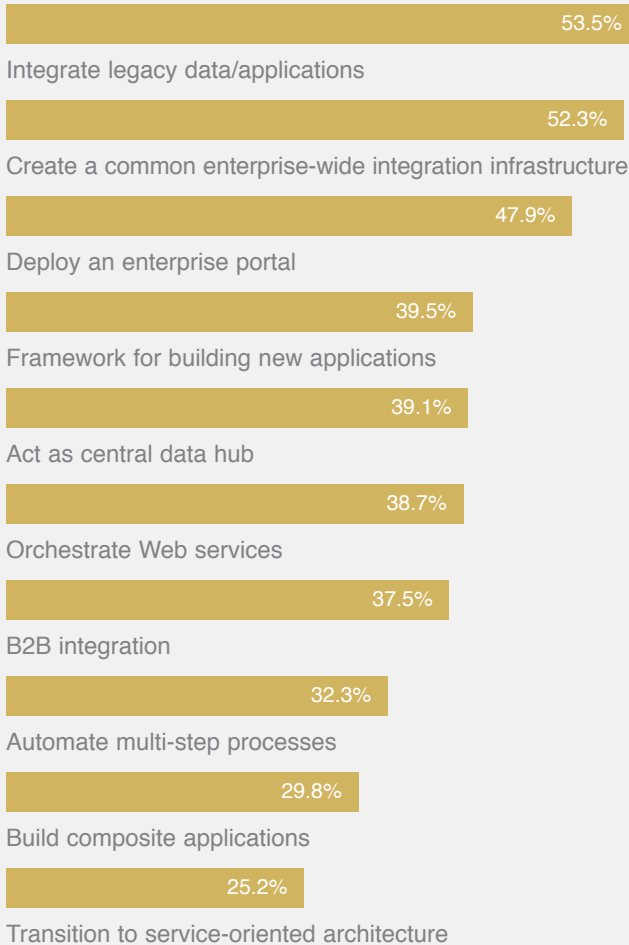


Factors rated "extremely important."
Total respondents = 458

vate. When asked to prioritize the most urgent business drivers for integration server deployment, 46 percent of all respondents rated the need for more timely and accurate information access as extremely important.

- **Improved customer service.** Another business driver for integration server deployment cited by respondents was the need to improve customer service quality. Despite the surge of CRM investment, many organizations still suffer a fragmented view of customer identity, account status and interaction history caused by the isolation of customer data in many separate business center and channel-specific systems. Thirty-three percent of all survey respondents cited customer service improvement initiatives as an extremely important factor in their acquisition of integration server solutions.
- **Other important factors** cited by survey respondents as extremely important drivers for integration server deployment included security (33 percent), cost reduction (32 percent), and technology ROI optimization (29 percent).

CURRENT OR PLANNED USAGE OF INTEGRATION SERVERS



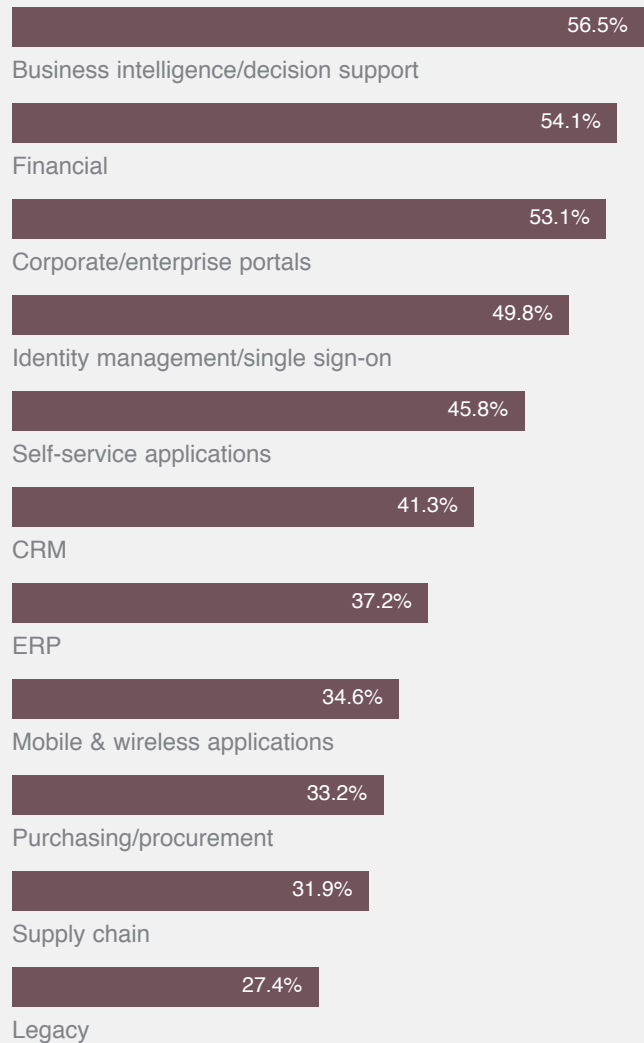
Total respondents = 514

Technology Objectives for Integration Server Deployment

The survey also revealed that many integration server acquisitions reflect IT department initiatives to relieve the effects of complexity in large, distributed, heterogeneous environments. Over time most organizations have acquired several generations of hardware and software technology that now coexist in a multi-layered matrix of systems, applications and networks, creating silos of isolated data and causing persistent latency in business operations.

But a greenfield rip-and-replace “solution” is a fiscal and operational non-starter. What’s needed instead is a standard overlay architecture that leverages the value of existing IT assets, facilitates the flow of data between them, and simplifies the task of repurposing existing assets to support new business objectives.

MOST CRITICAL APPLICATIONS TO INTEGRATE*



Total respondents = 460

*Indicated by respondents as “critical” or “high” priority, next 12 months.

Specific technology objectives identified in the survey included:

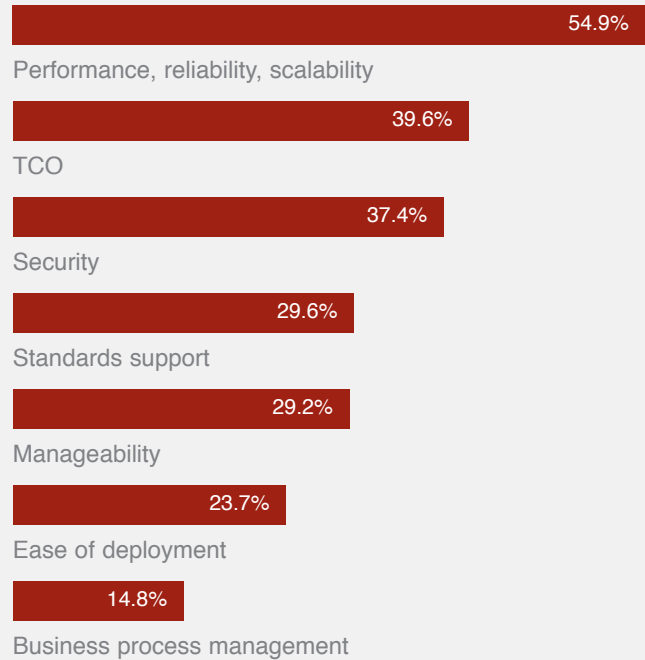
- **Business intelligence/decision support.** Integrating business intelligence and decision-support applications within the next 12 months was cited as a critical or high priority by 57 percent of all respondents.
- **Other application integration priorities** cited by survey respondents as a critical or high priority included financial systems (54 percent), corporate portals (53 percent), identity management systems (50 percent), customer-facing self-service applications (46 percent), and CRM systems (41 percent). Many cited specific enterprise software packages as key integration targets, including PeopleSoft (39 percent), SAP (29 percent), Oracle E-Business Suite (24 percent), IBM CICS (24 percent), and Siebel (15 percent).
- **Creating a common, enterprise-wide infrastructure** was an objective for 53 percent of respondents.
- **Enterprise portal deployment** was an important factor driving integration server acquisition for 48 percent of all survey participants.
- **B2B system integration** was cited by 38 percent of survey respondents as an important objective. Of those needing B2B integration, EDI (55 percent) led the list of most widely required protocols, followed by ebXML (26 percent), EDI/AS2 (22 percent), UCCnet (14 percent), and RosettaNet (13 percent).
- **Other IT objectives** that figure prominently in integration server deployment include new application development (40 percent), incorporating Web services (39 percent), and implementing central data hubs (also 39 percent).

Integration Solution Selection Criteria

The survey also queried respondents about their selection criteria for an integration server solution. Their list of critical attributes included:

1. **Performance, reliability, scalability.** As should be expected in any consideration of new enterprise infrastructure components, 55 percent of survey respondents were concerned that any integration platform candidate would deliver an optimum level of processing performance, and include provisions to ensure extremely high availability, such as clustering services with automatic failover, or the ability to deploy to a grid. An almost equally important consideration was the ability to scale rapidly and efficiently—the ideal response would be automatic—to variable traffic and processing loads.
2. **Total cost of ownership.** Predictably, 40 percent of all respondents cited cost as their highest priority—not just initial capital expense, but all significant lifecycle cost components including the ability to reuse existing hardware and software assets, the ability to leverage existing skill sets, and the ability to scale the solution incrementally (and affordably) with demand.
3. **Security.** Making information more widely and rapidly accessible is all well and good, so long as rigorous author-

TOP CRITERIA USED TO EVALUATE INTEGRATION SERVER SOLUTIONS



Total respondents = 452

ization, authentication and access management controls are maintained. Information security features were a primary consideration for 37 percent of respondents.

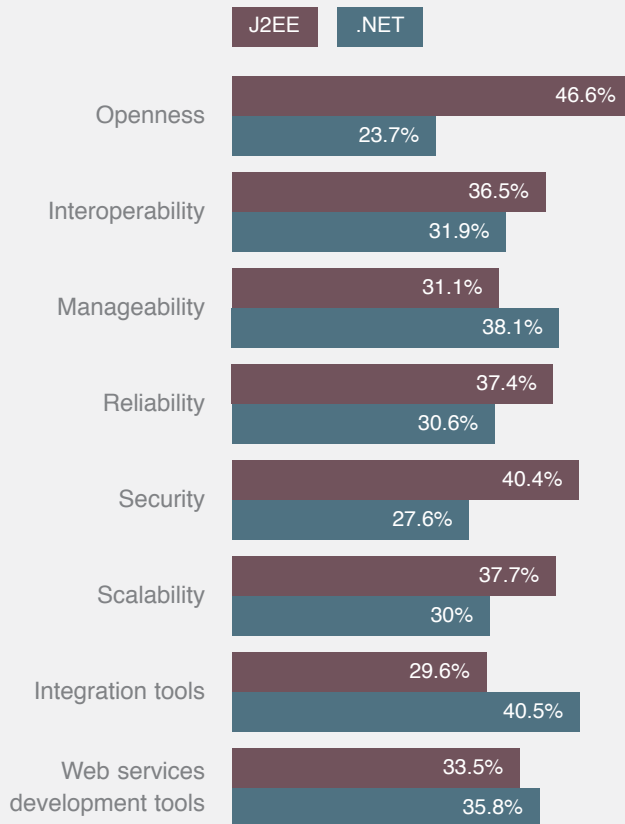
4. **Standards support.** Not surprisingly for an integration solution, 30 percent of survey participants rated breadth of standards support as their most important selection criteria.
5. **Manageability.** Of respondents, 29 percent cited management and monitoring functionality as important aspects of an integration server solution.
6. **Ease of deployment.** The ability to rapidly deploy an integration solution and quickly connect a large number of systems and applications with the minimum impact on IT manpower resources was rated a critical selection attribute by 24 percent of respondents.

Choosing Sides: Architectures & Products

Participants were asked about their preferences with regard to the two leading service-oriented application architectures, in eight specific attribute categories. Among those indicating a preference, J2EE was moderately to significantly preferred over .NET in five categories: openness (47/24 percent), security (40/28 percent), scalability (38/30 percent), interoperability (37/32 percent), and reliability (37/31 percent). .NET was preferred in just three categories: integration tools (41/30 percent), manageability (38/31 percent), and Web services development tools (36/34 percent).

Oracle emerged as the dominant brand in the integration server space, with 50 percent of respondents reporting that they currently use Oracle solutions here, followed by IBM

J2EE VS. .NET: PREFERRED PLATFORM



(44 percent), SAP (25 percent), BEA (16 percent) and WebMethods (12 percent). Among application servers, Microsoft is the most widely used by respondents (60 percent), followed by Oracle Application Server (40 percent), IBM WebSphere (37 percent), Sun and open source (25 percent each), and BEA WebLogic (21 percent).

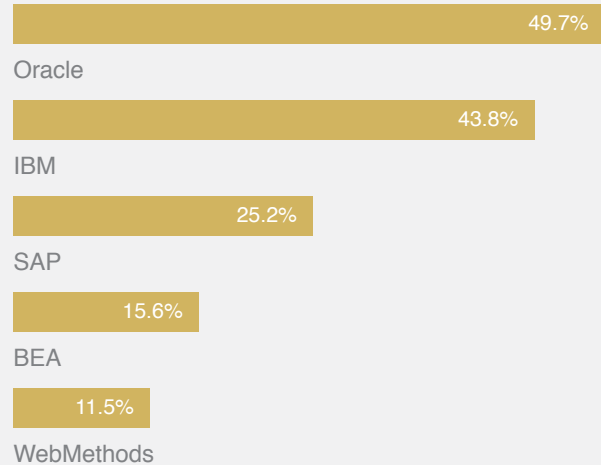
Having reviewed the survey findings with regard to the business and technical objectives driving integration server deployment, as well as management's criteria for solution selection, let's look at how existing solutions meet these requirements by examining one leading integration server: Oracle Business Integration Solution.

One-Stop Integration for the Extended Enterprise

Oracle Business Integration is a complete solution—based on J2EE and open industry standards—for connecting heterogeneous information sources within the enterprise and across the extended value chain of business partners and customers. It provides all the functionality required to:

- Seamlessly exchange, consolidate and synchronize data
- Automate, orchestrate, monitor and manage business processes
- Collaborate with business partners via simple Web services or powerful B2B protocols
- Gain real-time, end-to-end visibility into operations

INTEGRATION SERVER PRODUCTS CURRENTLY USED



Total respondents = 461

Core components of Oracle Business Integration include:

- **An enterprise service bus** that supports enterprise application integration with an advanced messaging infrastructure, event management, and extensive data transformation capabilities.
- **More than 250 pre-built adapters** for out-of-the-box connectivity to a wide range of databases, packaged applications and legacy environments, and for online collaboration with business partners using many different B2B protocols, including EDI, EDI/AS2, RosettaNet, UCCnet, HL7 and SWIFT.
- **Oracle BPEL Process Manager**, a process management tool based on the Business Process Execution Language standard, that provides the ability to integrate systems, applications and Web services into business processes that can be automated, orchestrated and managed. It enables consistent execution of complex, long-running transactions that may require hours, days or even weeks to complete. Included templates cover many horizontal processes such as collaboration, packaging, trading partner management, digital signing, document validation and nonrepudiation. Vertical templates include government, high-tech manufacturing, healthcare and pharmaceuticals, financial services, and retail/consumer packaged goods.
- **Complete support for Web service integration.** Business processes can incorporate internal or external Web services, and internal services can be published to customers and business partners using standard Web services protocols.
- **Business Activity Monitoring** for real-time collection, filtering, distribution and visualization of business process performance data, enabling end-to-end visibility across networks, applications and systems. Integrated business intelligence functions support strategic decision-making.
- **Five data hubs** preconfigured for managing customer,

product, citizen, financial and banking information.

- **Oracle Sensor Edge Server & RFID** for capturing, managing, analyzing, accessing and responding to data from sensors such as RFID, location and temperature.

Integration Built on Oracle Application Server 10g

Oracle Business Integration is built on Oracle Application Server 10g, a comprehensive application platform suite that delivers optimum value by exploiting two important technology trends: service-oriented computing and grid computing.

- Service-oriented computing facilitates the development of enterprise applications as modular business services. Oracle Application Server 10g provides a complete SOA infrastructure that allows users to develop, wrap, orchestrate, provision, manage, secure, federate, discover and access enterprise applications as services.
- Grid computing is a software architecture that coordinates the use of many low-cost, modular servers and storage systems to act as one large computer. It lets users build a hardware platform incrementally, adding capacity as necessary using affordable commodity components. Grid technology incorporates cluster services and failover, providing an extremely high level of service availability and reliability.

Through Oracle Application Server 10g, the Oracle Business Integration Solution inherits an extensive portfolio of support services and tools, including security and identity management, a business policy engine, an application development framework and unified development tool.

A Nearly Perfect Feature-to-Requirement Mapping

If the survey respondents' business requirements, technology objectives, and solution selection are carefully compared with Oracle Business Integration features and capabilities, it is quickly apparent that the current releases of integration server solutions based on service-oriented architectures and Web services provide all the functionality that IT executives are seeking in an enterprise-level solution.

These are high-performance solutions that deliver high levels of reliability and availability, scale efficiently and affordably, leverage and extend the value of existing technology investments, connect a vast number of systems and platforms through encyclopedic standards support, and lighten the user's administrative load through ease of deployment and management. On the evidence, it would not seem too early to call service-oriented solutions the future of enterprise integration—and perhaps its present as well.

Sponsored by Oracle

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