

2002: Tomorrow Belongs to Network-Enabled Components

Robert Batchelder

Internet-connected components will take business relationships to a new level of integration. Global-class computing and Web services architectures are driving this trend.

ANALYSIS

- Through 2005, the number and size of e-mail messages will continue to rise at a compound annual growth rate of 40 percent per year (0.8 probability).
- By 2004, Web services will represent the dominant mode of deployment for new application solutions for Fortune 2000 companies (0.8 probability).
- True interoperability standards won't exist in the portal product market until 2004, forcing users to build "uberportals" to integrate multiple portals within their enterprises (0.7 probability).
- By 2005, instant messaging will be integrated into 50 percent of the applications that businesses use to directly interact with their customers (0.7 probability).
- Commerce syndication will account for more than 50 percent of all sales through interactive channels by the second half of 2005 (0.7 probability).

Twelve months ago, few would have anticipated that the general sentiment of IT professionals toward the Internet would be so firmly mired in the "Trough of Disillusionment" on the Gartner Hype Cycle. The "triple whammy" of the dot-com meltdown, the mini-recession and the Sept. 11 tragedy have made the roller-coaster ride from the "Peak of Inflated Expectations" to this low point a uniquely hair-raising experience for IT professionals.

At the heart of this disillusionment is the gap between expectations and reality. Many of us have failed to remember that we are only five years into what will be a 20-year process of redefining IT infrastructures around the Internet paradigm. Despite the economic standstill, Internet technology continues its steady advance. We see several fundamental changes already under way that have set the stage for the next phase of the Internet's evolution.

At the core of these changes is the Internet's gradual shift from client/server to more of a global-class computing model. In global-class computing, less of a distinction is made between a client and a server, because a majority of computing platforms will have sufficient power, Internet connectivity and storage capacity to function as both. In this environment, servers at the core of the network will increasingly act as "facilitators" by guiding procedure calls to the locations where they can be most efficiently executed. Given such capabilities, the emphasis of software development shifts to re-architecting business functions into modular, network-enabled components spread across a highly-distributed computing infrastructure. This evolution, more than anything else, is the fundamental driving force behind the Web services architecture.

Viewed in this light, the technologies discussed in this Spotlight will provide an important evolutionary link from today's server-centered world to tomorrow's world of networked-components enabled by global-class computing.

Edge Migration: As the Internet became commercialized, servers and bandwidth became concentrated in data centers — to facilitate legacy system integration and maximize operating economies. This concentration of resources resulted in bandwidth "choke points" and single points of failure, which are antithetical to the distributed architecture of the Internet. Compensating architectures have emerged that migrate content, application logic and database functions closer to the points where users need to access them — at the "edge" of the Internet. This fundamental shift is driving the development of peer-to-peer and other important "edge" technologies (see "Internet Infrastructure 2002: Living on the Edge," T-15-0650).

Lingua Franca: The ideal of distributed, interoperable components has yet to be realized because of competing operating system and primitive network architectures. XML has evolved to provide a common framework for describing component interfaces across operating systems. The Simple Object Access Protocol (SOAP) and HTTP enable the Internet to transport XML-formatted procedure calls between network-connected devices. Increasingly, mechanisms exist to issue remote procedure calls that can execute as easily on a device halfway around the world, as they do on the local desktop (see "Web Services: 2002 and Beyond," COM-15-0588).

Dueling Dialects: As Web services architectures evolve, enterprises will be confronted with the dual dilemmas of describing their organization and redefining their value propositions so that they can reveal their core competencies as interoperable software components. Before an enterprise can begin to wrestle with those issues, it must make the transition to an Internet-centered application development environment. Doing so will require careful analyses of Microsoft's .NET architecture and the Java-based architectures of Sun Microsystems, IBM and others; ultimately, most large enterprises will use both (see "The Internet Will Dominate Application Development in 2002," COM-15-0900).

Dynamic Transaction Networks: The core value of e-commerce platforms has been their ability to weave discrete transactional elements into end-to-end processes that interface to legacy order-entry and fulfillment systems. Although primitive from a Web services perspective, e-commerce platforms have employed a variety of proprietary component approaches to create integrated transaction flows. The challenge e-commerce platform enterprises face is to adapt their proprietary architectures to a more-open Web services model. As this occurs, transaction participants will be able to offer unique value to their customers or channel partners. Ultimately, dynamic commerce networks, where channel participants enter or exit transaction flows based on continuously monitored performance criteria, will be the e-commerce operating paradigm (see "E-Commerce 2002: The Search for Real ROI," SPA-14-9744).

Transaction Lubricant: As transactions of all sorts become massively distributed, the messaging flow that accompanies and facilitates them will grow proportionally. The ultimate goal of Web services is to enable the "real-time enterprise" by reducing transactional latency. However, an increase in "transactional friction" will occur as the velocity and volume of Web services transactions increase. Thus, considerable work will be done to put the human "back into the loop" of what are presumed to be self-guided Web services processes. Even before that occurs, e-mail will continue to have a substantial integrative effect on online business processes (see "E-Mail and IM as Essential Platform Components in 2002," SPA-15-0931). Instant messaging (IM) is rapidly growing to complement e-mail as a spontaneous communication and notification medium. Combined, they are the essential lubricant for all manner of online interactions. In particular, IM will be the key enabler of an emerging generation of collaborative applications (see "Instant Messaging 2002: From Fun to Profit," SPA-15-0872).

Portal Dilemma: Portals have succeeded at applying an Internet veneer to enterprises by providing time-saving shortcuts to the tasks of personalization, taxonomy, search and integration to legacy systems. Like e-commerce platforms, the challenge for portals is to adapt their component architectures to the Web services operating model. As portals make this transition, they will overcome their limited ability to interoperate with other portal systems. Although portal technologies have dramatically improved enterprises' ability to move data from place to place, they have yet to unlock the substantial productivity gains available from weaving data into online collaborative processes. In this regard, portals must address how to facilitate collaborative, peer-to-peer-type interactions among people. This will become necessary as those technologies enable business processes to become controlled from the bottom, rather than from the top of organizations (see "Portals in 2002: A Year of Major Change," SPA-15-0306).

Content Pain: Just as Web services technologies will enable enterprises to employ component technologies across the Internet, "edge" technologies are enabling enterprises to massively distribute content throughout the Internet. Content delivery networks (CDNs) have begun to transform the Internet into a persistent storage medium capable of delivering static and dynamic content from locations very close to those of end users. Peer-to-peer networks exhibit similar behavior by linking content stored on individual computers into communities that multiple users can access. Both distribution structures pose a challenge to traditional content management systems, which are optimized to aggregate content from multiple sources, but deliver and administrate it from centralized repositories. As content becomes increasingly fragmentary, and variations of it are stored and delivered from the edge of the Internet, providers and users of this technology will revisit the fundamental notion of "content management" (see "Content Trends Continue in 2002," SPA-15-0899).

Bottom Line: More than a buzzword or the "next big thing," global-class computing and Web services architectures are the next logical (and inevitable) step in the evolution of a remarkably vibrant and resilient technology ecosystem. The impact of both will be wide, deep and long-lasting. Armed with a new and appropriate sense of urgency, enterprises should recognize and adapt their infrastructures to the realities of this more distributed and loosely connected world. 2002 is the year to begin that process. Gartner recommends that you start now.

Features:

"E-Commerce 2002: The Search for Real ROI" (SPA-14-9744). Slash your per-sales costs in 2002 through tactical sell-side e-commerce strategies that enhance structure, predictability and customer needs visibility. **By Whit Andrews**

"Internet Infrastructure 2002: Living on the Edge" (T-15-0650). The benefits of creatively using "edge" computing technology in 2002 far outweigh any complications they can introduce into your IT architecture. **By Robert Batchelder**

"The Internet Will Dominate Application Development in 2002" (COM-15-0900). The Internet application model triumphs over traditional AD approaches in the IT solutions of 2002. **By Mark Driver**

"E-Mail and IM as Essential Platform Components in 2002" (SPA-15-0931). The more that people depend on e-mail, the more dependable it must be. Enterprises take a hard look at their e-mail systems in 2002. **By Joyce Graff and Maurene Caplan Grey**

"Instant Messaging 2002: From Fun to Profit" (SPA-15-0872). Instant messaging will give a more "human touch" to communication in 2002, thawing impersonal online transactions. **By Maurene Caplan Grey**

"Content Trends Continue in 2002" (SPA-15-0899). Enterprises that want a serious Web presence in 2002 will turn to Web content management to hold down costs and safeguard value. **By Lou Latham**

"Portals in 2002: A Year of Major Change" (SPA-15-0306). Portal users should keep an eye on the volatile portal market in 2002 to avoid seeing their valuable investments "stranded." **By Gene Phifer**

"Web Services: 2002 and Beyond" (COM-15-0588). 2002 is the year to leverage low-risk Web services in internal development projects, picking up experience for the bigger, high-risk projects down the road. **By David Smith**

This research is part of a set of related research pieces. See "Gartner Predicts 2002: Internet Platforms and Web Services" for an overview.

REGIONAL HEADQUARTERS

Corporate Headquarters
56 Top Gallant Road
Stamford, CT 06902-7700
U.S.A.
+1 203 964 0096

European Headquarters
Tamesis
The Glanty
Egham
Surrey, TW20 9AW
UNITED KINGDOM
+44 1784 431611

Asia/Pacific Headquarters
Level 7, 40 Miller Street
North Sydney
New South Wales 2060
AUSTRALIA
+61 2 9459 4600

Latin America Headquarters
Av. das Nações Unidas 12.551
9 andar—WTC
04578-903 São Paulo SP
BRAZIL
+55 11 3443 1509