The 2002 Application Data Routing Study:
The Evolution of Content Networking

HTRC
Group, LLC

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About The HTRC Group, LLC
The High-Tech Resource Consulting Group focuses on advanced IP services and service provider networking, providing consulting, custom market research, and market research studies to service providers and product manufacturers.

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Abstract

The Applications Data Routing (ADR) market has its roots in the content networking market where edge devices and smart proxy technology are evolving into ADRs. Content networking vendors will continue to advance products in response to market demands, producing products that perform application layer data routing and switching functions. The deployment of applications and growth information is staggering. Web-based applications are rapidly being deployed using standards-based technology such as XML as a means to distribute information and more effectively communicate to customers, partners, and employees. New edge devices will act as Web service gateways, becoming the interface to applications and perform application layer Network Address Translation-like functions in application layer smart proxies. The adoption of Web services and XML are key drivers for the ADR market. This study examines the opportunity for emerging products and services that utilize application layer routing and switching to direct content in proper format to and from applications and data sources.

The Application Data Routing Market

Growth of Information and Applications

The growth of information and applications is staggering. Enterprises across all industries are rapidly deploying Web-based applications as a means to more effectively communicate and distribute information to their customers, partners, and employees. Today's applications are extremely varied. Application types often range from CRM, to ERP, to Enterprise Information Portals, to B2B Exchanges, to Partner/Supplier Extranets, to E-Commerce sites, and to numerous custom applications. Web services are being deployed within enterprise networks (behind the firewall) at a staggering pace. Moreover, Web-based applications have grown dramatically over the past few years—from largely static Web sites to complex distributed applications that are deployed across multiple data centers, and offer highly personalized and dynamically driven content. The increase in applications and data exchanges is driving the need to manage the communication between systems at the application layer.

The Evolution of Content Networking

The Applications Data Routing (ADR) market has its roots in the content networking market where edge devices and smart proxy technology are evolving into ADRs. The first generation of content networking products and services moved content to the edge of networks. Vendors in the content networking market continue to evolve in response to market demands and produce products that perform application layer data routing and switching functions. Systems that just moved content to the edge will play a major role in automating business processes as well as dramatically ease the pains of application integration. New edge devices will act as Web service gateways, becoming the interface to applications and perform application layer Network Address Translation-like functions in application layer smart proxies. For example, organizations may use a .Net or WebSphere interface to applications, but use ADRs as gateways to translate transactions between applications and data sources. Enterprises are also looking at how content is relevant to systems based on context, for example, the format data is requested and the authorization of systems to request data. Policies, such as security and performance, can be applied within the ADR and content routed or switched in proper form to the intended system.

Packet routing has given us a world where any IP-enabled computing device can become part of the network of networks. However, packet routing deals primarily with moving bits, or "1s and 0s," around the network. The next step is to enable the movement of data with meaning. For example, common items such as <shipping order>, <product id>, or <billing address> should move

freely and securely between applications and systems. By providing a foundation for the movement of semantic information, application data routing has the potential to become the next major wave in computing. Content networking vendors are well positioned to evolve existing products to perform ADR functions. Application data routing will enable new levels of data interoperability and business process automation.

Current content networking technology is based in a market where standards, such as protocols, are consistent. The standardization process is now beginning to reach the application layer. In parallel, increased standardization of business data representation is fuelling proliferation of inter-operable Web-applications. Today, XML is rapidly becoming the *lingua franca* for business data, and penetration of data semantic standards such as RosettaNet and ebXML is increasing quickly. With the standardization of semantic data representation it becomes possible to also standardize on data services. Web services, based on open-standards like WSDL and UDDI for service definition and discovery, are developing as the dominant trend in enterprise computing in this decade. We are beginning to see various types of ADR solutions that perform distinct application level functions, for example, an edge centric application layer firewall or XML-based Web services gateway.

Application software developers are also evolving products to the ADR market, however they are developing ADR solutions from a different prospective. Many enterprise application integration (EAI) vendors are working their way down the stack in efforts to develop an ADR product.

The increasing need for interoperable applications coupled with the growing adoption of open data standards has created a need for ADRs. ADRs provide the opportunity to create a standardized set of solutions that use Web services technology to reliably and securely share data between systems. Application layer data routing is fundamental to supporting business processes within an organization - whether it is moving unstructured document files between file systems in order to support interdepartmental processes, populating new Web databases to support a new portal initiative or providing new Web services to offer request-based transaction log access to trading partners.

Applications will increasingly require data flows from internal and external Web services. The need to automate the process of moving data between multiple sources and destinations will increase with time, and will need to support a growing number of protocols and standards that are fundamental to this process, is very analogous to the industry evolution of packet-level routing/networking.

The Real-time Enterprise

The real-time enterprise is a business strategy of having real-time (to the minute) information by automating the processes between business systems used by customers, suppliers, partners, and employees. The result is a more competitive organization that can make decisions with the most up to date information. However, making the real-time enterprise a reality is challenging. Only 9% of respondents said they have no problems making real-time data available, confirming our belief that enabling the real-time enterprise is a daunting task.

The concept of the real-time enterprise continues to gain momentum, fueled by advancements in technology such as ADRs. To this end, many organizations are looking to automate business processes, which require application integration or interconnectivity. ADRs will play a critical role in automating business processes. The case for creating the real-time enterprise is compelling where potentially huge returns on investments (ROIs) are associated with the automation business processes.

Increased Data Sharing Between Systems

Complicating matters more, Web-based applications often use data from several existing enterprise applications within and outside the corporation. Nearly all of these applications require new and dedicated systems (e.g. databases, application servers, Web servers, etc.) that must be uniquely deployed, managed, and maintained. As a result, new processes are required to transfer data/information from these existing enterprise systems to the new Web-application infrastructure.

For example, a Web-based application that delivers product descriptions will likely use the same information as an enterprise sales application. Changes and updates to the enterprise data system will need to be reflected in the Web-based application data system. Managing the process of updating Web-based applications from a distributed set of data sources (especially as the number of both Web-applications and data sources continue to grow) can be extremely inefficient and costly. To this end, respondents were asked if their Web-based applications run on infrastructure separate from enterprise applications. The majority of respondents (66%) run their Web-based applications on separate infrastructure. Only 29% use the same database and application infrastructure. Most Web-based applications used the same or similar data that enterprise applications use (non Web-based).

Chart 1-1: Web-based Application Separation (n=100) Q8

Web-based Infrustructure Deployment

No Web-based apps 1%

Don't know 4%

Same infrastructure for Web-based apps 29%

Separate infrastructure for Web-based apps 66%
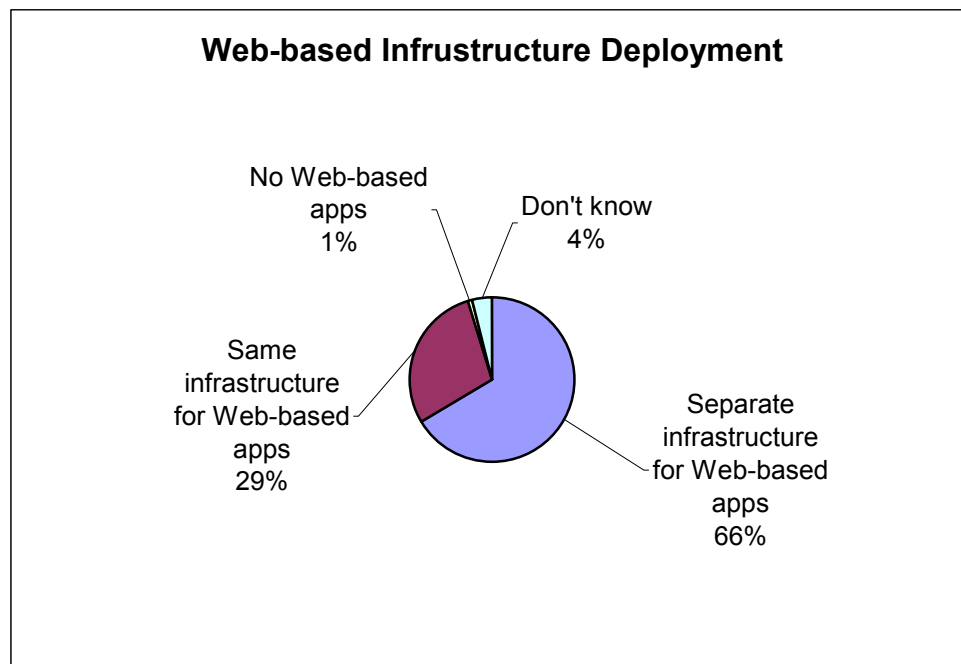
The practice of deploying Web-based applications on separate systems and infrastructure, however, is very likely to continue. One of the primary reasons for this trend is the heavy reliance Web-applications have on databases. Separate databases are developed for new Web-based applications for several reasons:

- Separate groups developed the application, and used different database solutions.

- New business process requirements with specific data requirements are each implemented with their own software and database solution.

- Larger companies tend to have multiple geographic locations, and many of them run corporate-wide enterprise applications by aggregating data from a variety of local data stores.

The HTRC Group, LLC © 2002

Figure 1-1: Current Application and Database Environment
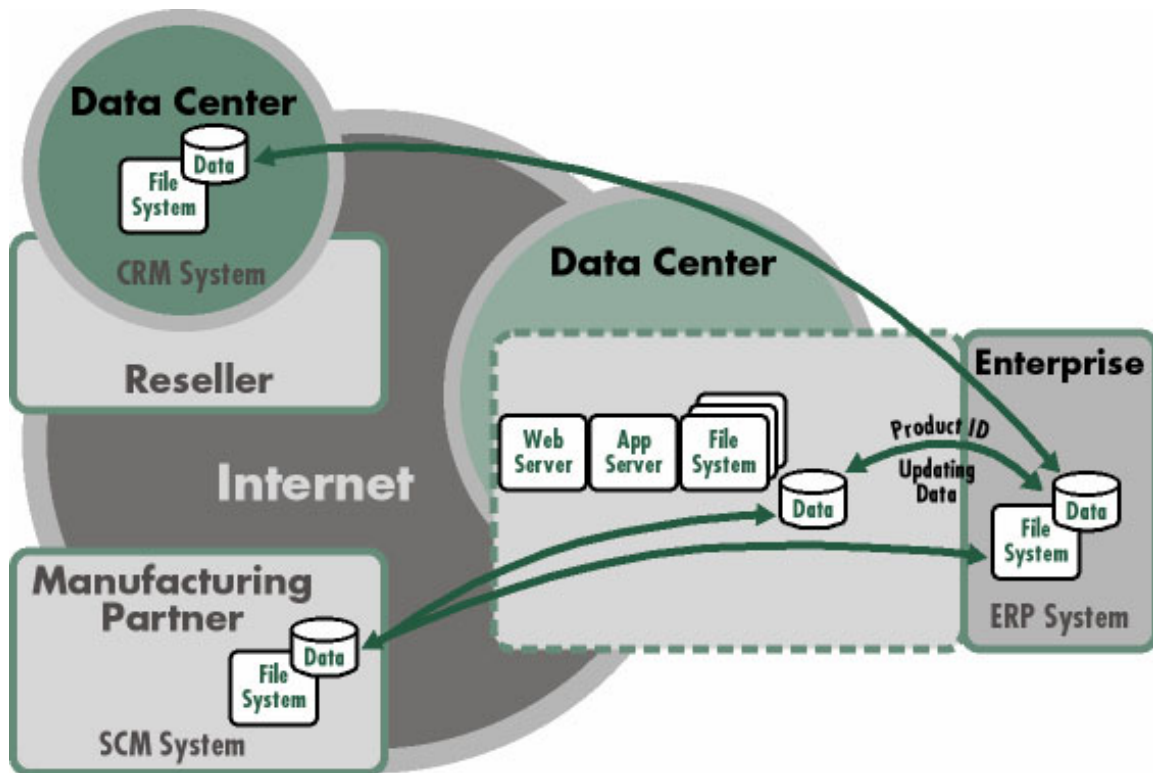
The examples mentioned above have only discussed the process of new Web-based applications using data from internal enterprise systems. However, today's Web-based applications, commonly require/use data that is aggregated not only from internal systems, but also from many external organizations and systems.

Respondents were asked if they have applications that connect to systems controlled by other organizations in 2002 and 2003. The majority of respondents (57%) connect to systems outside of their network. Few respondents have different plans for 2003. The lack of change is likely due to the difficulty of integrating applications with outside systems. The standardization on XML and planned deployments of Web services will likely enable system interconnectivity in the future.

Chart 1-2: Applications Connected to Outside Systems (n=98) Q40, 41
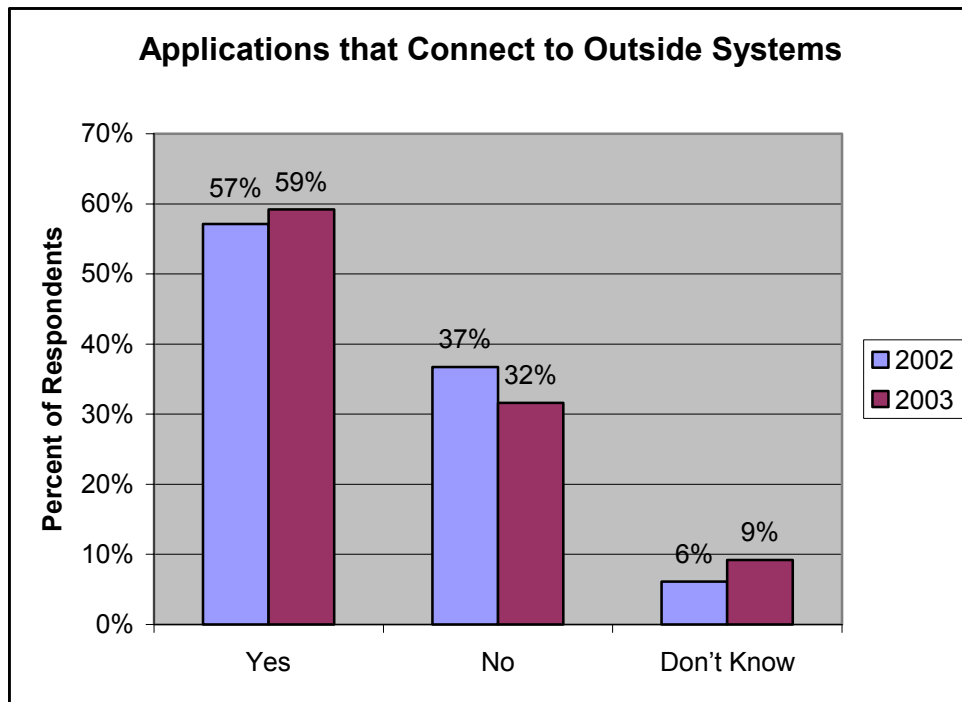
In fact, the overall vision of collaborative computing/commerce is based on the premise that applications should be able to share information freely across all boundaries whether organizational, geographical, or technical. Over time, as corporations continue to deploy Web-based applications that rely on a composite of data/information aggregated from both internal and external systems, the complexity and costs associated with the sharing of data between these coordinating applications is destined to increase exponentially without standardization.

Security

The deployment of Web services and standardization of XML is opening up potential security threats. For most IT Groups, maintaining security in a Web environment is challenging. Security is the top concern of 55% of respondents for rolling out Web services. IT groups need a solution that sits in the network and serve as the first line of defense for XML traffic. ADRs can perform this critical security function by figuring out what traffic is real and authenticated verses malicious. ADRs can apply on the fly security schemes, effectively accelerating security. For Web services, organizations should be able to identify the requesting system, authenticate, and authorize transactions. Organizations must also be able to ensure the integrity of data

to make sure it has not been compromised. Finally, organizations need to be able to audit transactions for reporting and more effective management.

Rapid-Build Out of Web-based Applications

Unfortunately, the vast majority of today's Web-based applications were designed, built, and deployed at break-neck speed. Fierce competition, coupled with the Internet economy's incredible rate of change, forced companies to make very quick technology decisions. As enterprises focused on simply getting the application up and running, ad-hoc processes for moving data in and out of these new systems were developed quickly. Further complicating enterprise network services are the astonishing number of custom application developments that continue to shape the way enterprise networks function. Many past present and future custom applications will need to exchange data with new systems creating significant integration challenges.

Looking back, there is no wonder why many companies, both dot.coms and brick and mortar, have engaged in aggressive build-outs of stove-pipe applications, each with a separate function. However, this pressure to remain competitive has engulfed many companies and consumed those that made fatal technology decisions. Homegrown processes and tools are now proving to be extremely rigid and brittle.

Many organizations have developed integration and application development expertise out of the need to tailor business systems to unique requirements. The need to integrate custom applications into new internal and often external systems has sparked a surprising number (39%) of respondents to develop their own custom ADR. Given our definition of the functions an ADR performs, in-house ADR solutions are very difficult to develop, maintain and support internally. While it appears a number of respondents already have software that functions as an ADR, we believe most will pursue a product solution from an ADR vendor.

Chart 1-3: In-house ADR Developments (n=92) Q29

In-house ADR Developments

In-house ADR
39%

No In-house
ADR
61%
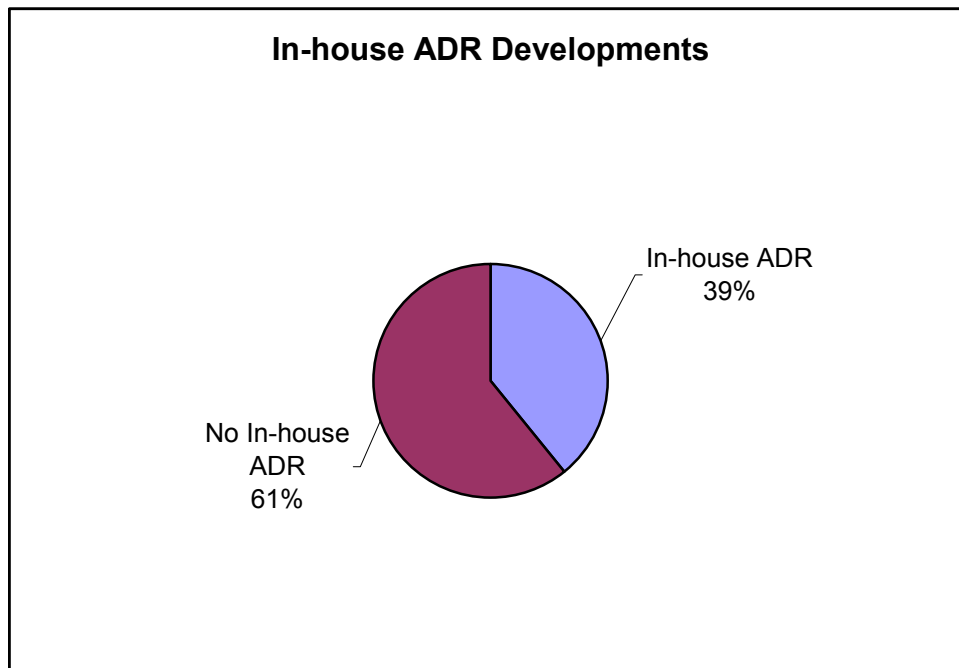
Emerging Technology Trends

Several important technologies and standards have emerged and are driving the growth of the ADR market. These technologies build on the hard lessons learned over the past several years and have been specifically designed to facilitate new levels of interoperability, and to catalyze the next wave of distributed computing.

XML

According to The World Wide Web Consortium (W3C), "The Extensible Markup Language (XML) is the universal format for structured documents and data on the Web." According to The HTRC Group's "The 2000 Content Delivery Service Study," the fastest growing Internet content type is content created with XML with 27% in 2000 growing to 67% in 2001. XML enables the flexible transmission and interpretation of data between applications. As enterprises increase their exchange of data/information to create new Web-based applications and services, XML offers a new level of data interoperability.

The use of XML with database driven applications is increasing significantly over the next year. Respondents were asked if they use XML with database driven applications in 2002 and 2003. Enterprise XML use with database driven applications grows from 62% in 2002 to 88% in 2003, an increase of 18

percentage points. XML is rapidly becoming the protocol of choice for enterprise application integration.

Chart 1-4: XML Use With Databases (n=104) Q6, 7
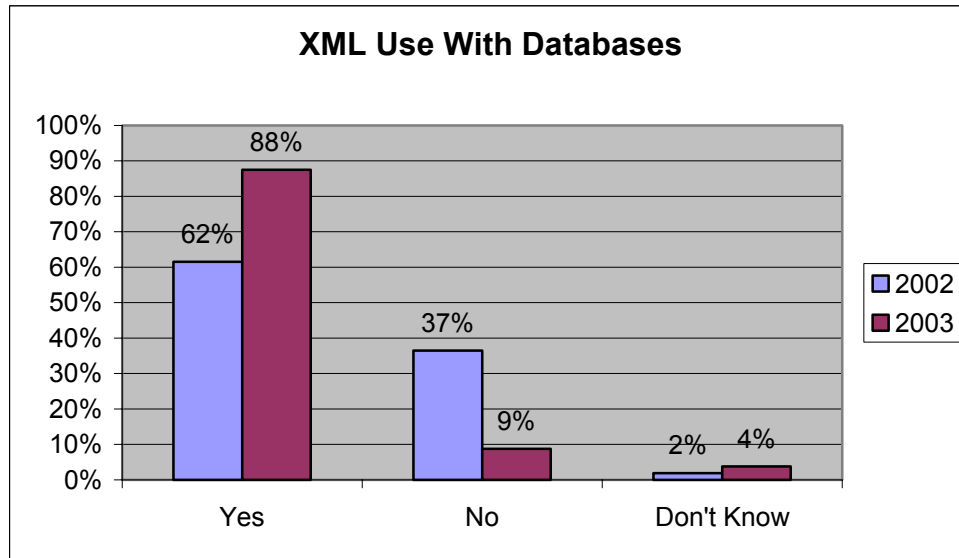
XML Use With Databases

Web Services

Web services represent a significant class of technologies that have emerged to provide greater means to integrate disparate applications and services together. Web services provide a common framework for finding, invoking, and integrating distributed components/services over the Internet. What makes Web services particularly unique is that its framework utilizes the Internet's current open data standards and protocols, such as HTTP and XML, unlike earlier component models such as DCOM and CORBA that relied on proprietary object models and protocols. With Web services, components that are implemented in a multitude of different languages and platforms, and that reside in different locations in the network, can now be loosely coupled together to form distributed applications. To this end, Web services provide a standards-based mechanism for applications to programmatically request information from other applications over the Internet. Respondents were read a definition of Web services and asked if they deployed or plan to deploy Web services in 2002 and 2003. Respondent plans for Web services are surprisingly high, increasing from 56% in 2002 to 78% in 2003.

Chart 1-5: Plans for Web Services (n=103) Q12-13
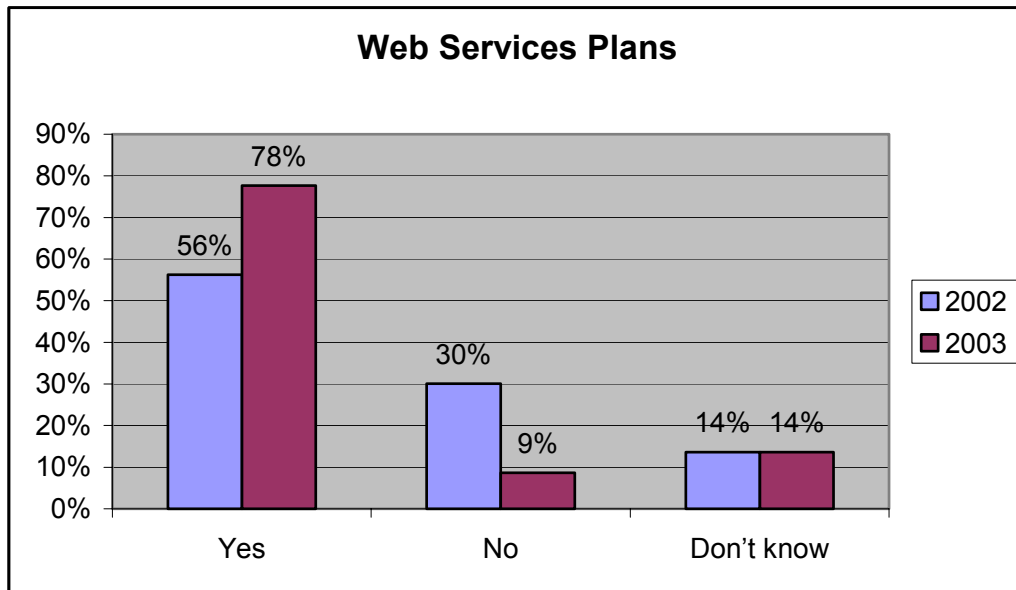
Web Services Plans

Of the respondents that are deploying Web services, the majority is doing so this year (2002), most of the security and integration issues with initial Web service applications will likely be identified by year-end. However, resolving differing issues may take some time. When respondent organizations get a little more experience under their belt, many more applications (most legacy) will migrate to Web services in 2003, creating the bulk of issues that need to be addressed. Therefore, there will likely be many more issues in 2003. ADR solutions can solve many of the Web service security issues through application layer proxy security policies.

XML and Web services are focused on enabling the next wave of Internet computing often referred to as "the semantic Web" where applications are able to easily share information and work together. These technologies, however, are not solutions in and of themselves.

The disconnection of Web services is an application level trend: Web services are being driven through because of ease of interconnectivity and the transference of data in a seamless manor across the Internet. For example, the need to link data to applications to offices and partners around the world. Using HTTP to transfer the data—the disconnect—the data is flowing through port 80, used to send business critical data across the Internet, makes the network guys afraid. Distributed computing brings together network and application level thinking—two groups that are quite different.

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Web services hold strategic value to many enterprises by providing a standard way to access information. Web services are planned for internal (behind the firewall) and external (over the Internet). Based on open-ended responses of current and future Web services, we categorized applications into "Internal," "External," "Both Internal and External," "Don't know," and "None." Understanding where Web services operate gives us insight into how these applications will need to securely exchange data across networks.

Chart 1-6: Internal and External Web Services (n=103) Q12-13
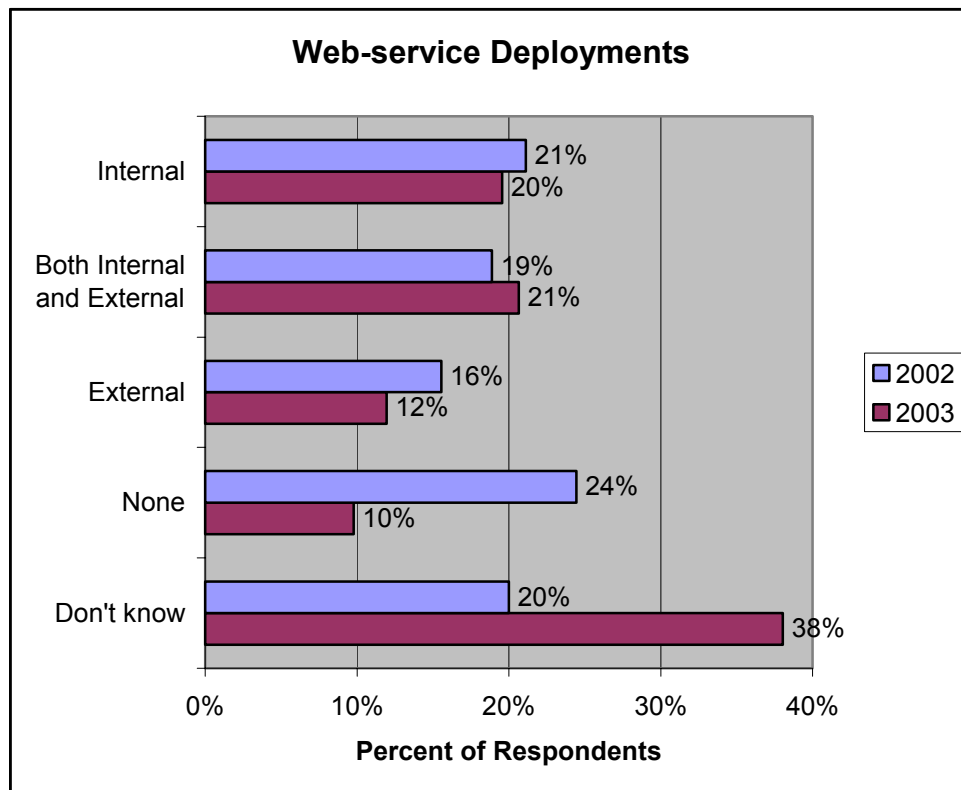
The Migration to Application Data Routing

Application Data Routing represents a new class of solutions that leverage XML and Web services to help automate the process of sharing data/information between systems. While XML and Web services provide the standards-based technology necessary to more easily exchange data, ADRs ensure that the flow of data between systems is handled in a reliable, secure, timely, and scalable fashion.

ADRs are systems that automate delivery of data from multiple sources to multiple destinations. They facilitate the movement of multiple data types whether they reside in databases, file systems, or enterprise applications.

Data routers allow companies to index relevant data, facilitate data transfer over open standards-based protocols, and programmatically access the router via Web services.

Figure 1-2: Application Data Routing Example
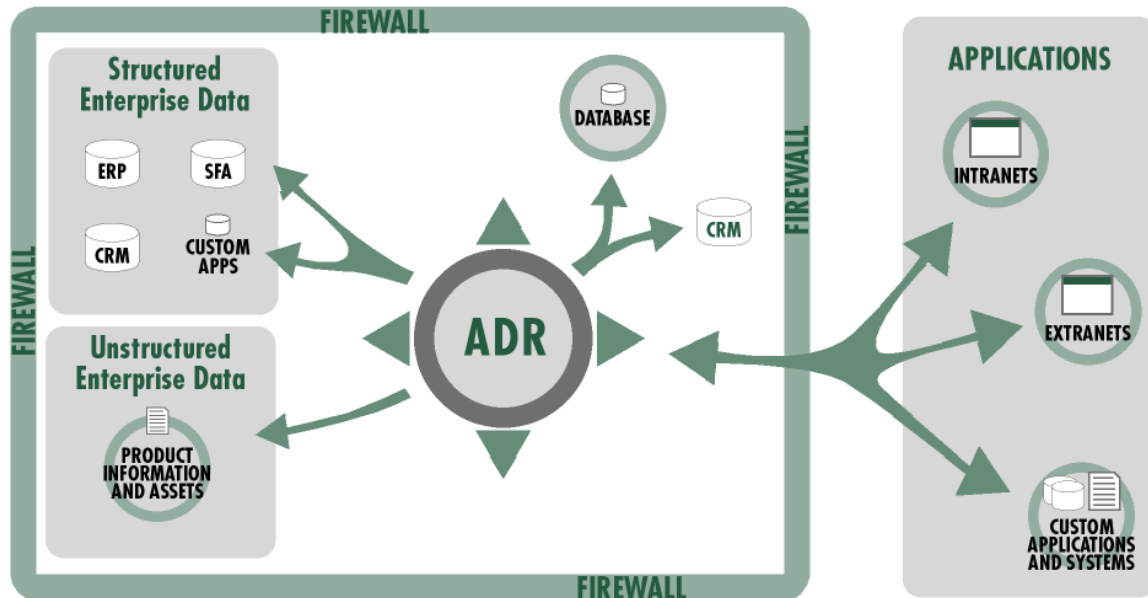
Over the last few years the proliferation of Web-applications to support networked business processes has led to the vast need for integration between applications and data systems. Data integration solutions evolved from one-off in-house implementations to ETL, replication, and federated database solutions.

ADRs will be as fundamental to enterprise business processes as packet routing is to networking. ADRs are the equivalent of packet routers for semantic data. ADRs enable the secure, scalable, and optimized routing of semantic data at the right place and time, not only for immediate cost optimization but also for the long term robust build-out of new interoperable business processes in today's and tomorrow's real-time enterprise.

Reaching the Market

IT professionals are in a constantly changing industry, where the churn of technology frequently has a direct impact. The people responsible for maintaining enterprise networks are continually struggling to stay abreast of technology changes that affect their business. Currently, most IT decision makers are not familiar with ADR technology.

We believe the best way to reach decision makers of ADR solution purchases is through education. Education and awareness marketing campaigns can be costly, especially in the IT market, but are necessary to move the market forward. Educational campaigns should target both business and technical decision makers. Business decision makers will understand the benefits of the real-time enterprise and automating business processes. Vendors should continue to develop technical as well as business-oriented information on their Web sites. Technical decision makers are generally in reactive mode, busy with the daily emergencies that arise when maintaining an enterprise network. In most organizations, managers are in tune to the applications an organization uses, frequently submitting requests for changes in functionality and performance. Consequently, managers lean on the IT people responsible for maintaining business applications in order to push changes. When application and database environments change, the network people are usually the last to know. Web services are a place where the network folks and the application folks come together to deploy applications. The more application infrastructure is standardized on formats such as XML, the further products will migrate into the network realm, and the greater the adoption rate will be.

In order to gain a better understanding of the sources that respondents use to learn about new technology, we asked respondents to rate a list of information sources. Of the top sources for information, independent white papers (73%), vendor Web sites (72%), and trade magazines (63%) were rated as top critical sources. These sources should be prioritized as an important medium for marketing to potential customers. Vendors should strive to be included in columns and articles of significant trade publications along with maintaining good relationships with industry press that cover the EAI and ADR markets. Vendors should also consider investing in independent white papers as a marketing tool. Product manufacturer and service provider Web sites should market product and service educational material on their site.

A vendor's Web site is one of the most important mediums for conveying information to potential customers; great emphasis should be put on Web site development. Dollars spent on Web site content differentiation are well spent.

We strongly recommend developing educational material to be made available on the Web site. Business and technical decision makers are two distinct groups. Business readers should be targeted with the business benefits of ADR solutions. Technical readers will likely have a varied level of expertise; vendors should consider creating documents that address high and low levels of expertise. We recommend examining the possibility of developing an interactive Web-based learning application. Web-based applications such as these can be a valuable resource for potential customers, channel partners, sales people, training, and industry partners.

Partnerships

The nature of innovative technology presents a formidable challenge to companies attempting to provide a solution for every need. The capacity to focus remains one of the greatest assets to any company developing and delivering technology solutions. Partnering with companies with synergistic solutions, such as integration, may present a mutually beneficial business scenario. Synergistic partnerships are a way to provide customers with greater overall value. ADR vendors should consider mutually beneficial partnerships that extend the overall solution value for customers.

Market Requirements

In order to better understand the route control market, we have created a process of visually mapping market requirements for product solutions. The market requirements map rates six key areas including security, ease of integration, real-time data, device management and reporting, standards-based, and service and support. All market requirement sections are rated on a scale from 1 to 5, where 1 is the lowest and 5 is the highest. The route control market requirements below are scored based on interviews from this study.

ADR Requirements Map

In this section, we examine the baseline market requirements for the ADR market. Please note that this is only a baseline score of requirements that solutions can be compared against.

Network technology products have been in the enterprise market for some time. The decision for an enterprise to implement an ADR solution may stem from top-down (from management), or from a bottom-up needs analysis based on the drive for cost control for Web service and legacy application integration. In both cases, technical decision makers do product evaluations. The research used to define the market requirements is based on primary market research from this study. The resulting map of market requirements is based on six key areas of ADR solution functionality.

Each entry in the enterprise market category below includes the category name, the possible contents within each category, the market requirements, and the score.

Security

Score: 5

As we mentioned earlier, security is the top concern by 55% of respondents for deploying Web services. We gave this category a 5, the highest rating because of the importance security plays in today's networks. ADR solutions

must be able to identify systems, authenticate, authorize, maintain integrity and privacy, and provide a record of transactions for auditing purposes.

Ease of Integration

Score: 5

Simple and easy integration of standards-based application interfaces is a fundamental requirement for the majority of enterprise organizations. Vendors should assume the person implementing an ADR solution has less than 2 years experience with integrating enterprise applications. We gave this category a 5 because we think many regional, remote, and local enterprise locations may need to install ADR products without the benefit of years of expertise.

Real-time Data

Score: 4

The ability to provide real-time data is key to enabling the real-time enterprise. Seventy-nine percent of respondents rated the ability to provide real-time data to partners as critical. Providing real-time data to customers was a critical feature rated by 72% of respondents. We gave this category a score of 4 because of the real-time requirements expressed by respondents.

Device Management and Reporting

Score: 3

Management among hardware vendors has always been an area of differentiation. ADR solutions must be easy to install and use. Overburdened IT workers must make use of the little time they have. Ease of use is one of the most important differentiations ADR vendors can have. While we believe basic NetFlow stats and policy control mechanisms are required, management and reporting is an area where vendors have a great deal of opportunity to differentiate. Because of the strategic location of ADR products, vendors could also measure system integrity and provide real-time reports on business processes.

Standards-based

Score: 5

Standards initiatives, such as XML and SOAP are critical in reducing integration costs and enabling Web-service interoperability. The majority (93%) of respondents rated the use of standards-based protocols as the most

critical ADR feature. We gave this category a 5, the highest rating because of the importance on application and database infrastructure interface standardization.

Service and Support

Score: 5

Excellent service and support is required from vendors in the ADR market. The emerging ADR market is faced with customers unfamiliar with the technology. Based on the importance of enterprise applications, customers need problems solved fast. Service and support always rate in the top three criteria for selecting a product manufacturer or service provider. We gave the service and support category a score of 5 because of the paramount importance of solving customer problems.

Chart 1-7: ADR Market Requirement Map

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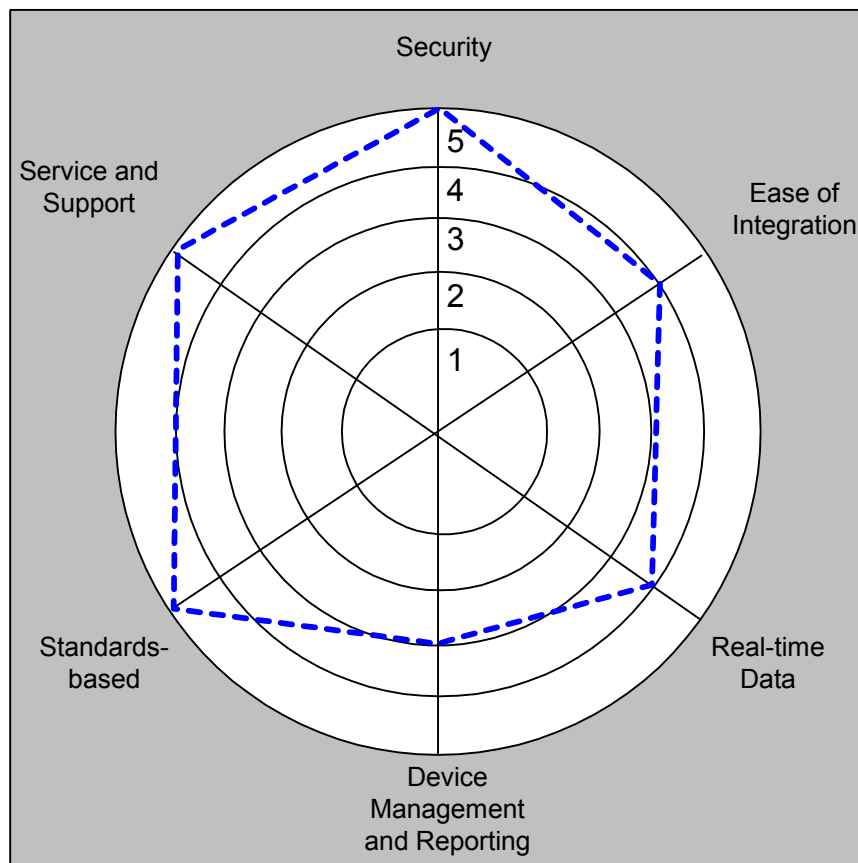
ADR Market Players

A number of vendors are clearly staking a claim in the ADR market. Vendors are creating ADR solutions based on expertise derived from various technology disciplines including EAI tools, XML, application-layer switching, content networking, security, and software development tools. Currently there are three categories of vendors in the ADR market: ADR Software, XML Switches, and Intermediary Services.

The ADR Software category includes ADR vendors that develop software to automate the routing of data between disparate application sources and destinations. ADR Software facilitates the movement of multiple data types whether they reside in databases, file systems, or enterprise applications. The software allows companies to access distributed data sources, support the transformation of data between applications, and automate the transfer of data over open standards protocols such as HTTP, SOAP, and JMS.

The XML Switches category includes ADR vendors that produce infrastructure products that leverage XML to provide deep data intelligence—the ability to go deep inside a document and dynamically understand it from a semantic standpoint—and acceleration in the network to ensure performance, security, and switching for XML-based applications such as Web Services.

Intermediary Services include service providers that offer network services that facilitate the exchange of business transactions between applications using standards-based technology such as XML. Intermediary services generally reduce the cost and complexity of managing integration relationships with partners and customers.

ADR Software, XML Switches, and Intermediary Services are not mutually exclusive products to customers. An Intermediary Services vendor may use products from ADR Software venders and XML Switches in order to offer ADR network services. An enterprise customer could use products from an XML Switch vendor and ADR software to create a solution. Products in these three categories can be used separate or together, category vendors will both compete and partner. However, vendors within each category will most likely remain competitors.

Figure 1-1 below shows the overlap of synergy and competition in a Venn diagram.

Figure 1-3: Market Players

ADR Software
Acopia
Fiorano
Flamenco Networks
Kenamea
KnowNow
Metapa
MultiNet
PolarLake
Vordel

XML Switches
DataPower
Forum Systems
Sarvega

Intermediary Services
Bang Networks
Grand Central
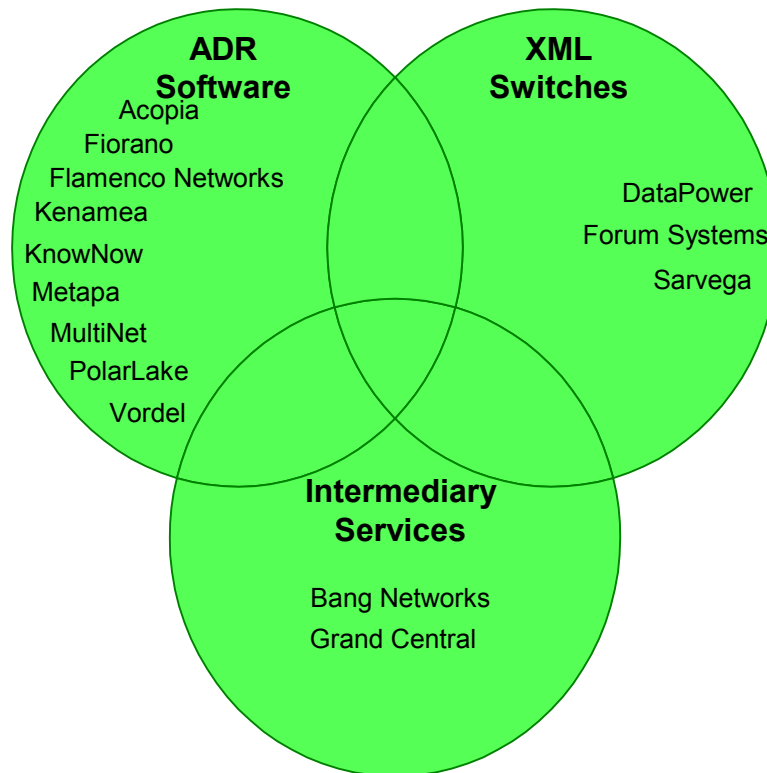
Descriptions of vendors were obtained from publicly available sources, such as their Web site. Vendor self-descriptions were edited.

ADR Software

Primordial

http://www.primordial.com

Blue Titan

Blue Titan was founded to address the unique requirements of Mission-Critical Web services, which enables companies to realize the promises of service-oriented computing architectures while delivering the needed performance, manageability, and security required for enterprise computing environments. Blue Titan delivers its technology to market through a network of partners that include some of the leading enterprise computing companies such as IBM and BEA Systems.

Products

Blue Titan Network Director

Acopia Networks

www.acopia.com

Acopia Networks is a development stage company focused on the market opportunity created by next generation applications and web services.

Acopia's products will integrate application aware switching and network intelligence to create a scalable new service-rich infrastructure.

Products

Not yet public

Fiorano Software

www.fiorano.com

Fiorano develops fully network-centric infrastructure technology based on a SuperPeer Architecture and a Coarse-Grained Component Model, enabling the implementation of general-purpose distributed solutions in several domains including EAI (Enterprise Application Integration), BPM (Business Process Management), Collaboration, Content Delivery, Supply Chain and many others.

Products
FioranoMQ
Tifosi

Flamenco Networks

www.flamenconetworks.com

Flamenco Networks is a provider of Web services networking solutions. Use of the Flamenco Network allows customers to secure, provision, and monitor Web services connections while providing a platform for ongoing Web services management.

Services
The Flamenco Network

Kenamea

www.kenamea.com

Kenamea is a provider of Web messaging software and services. The Kenamea Web Messaging Platform is designed expressly for delivering enterprise class applications over the Internet. By combining Kenamea with existing tools and application infrastructures, enterprises can build and deploy standards-based Internet applications.

Products
Kenamea Message Switch
Kenamea Connectors
Kenamea Enterprise Adapters
Kenamea Developer Tools and Libraries

KnowNow

www.knownow.com

KnowNow has created Web infrastructure software designed to connect people, applications, and services inside and outside of organizational boundaries. KnowNow makes it possible to access, process, and deliver information to and from internal and external people and systems. KnowNow Application Event Routers connect people, applications, and Web Services.

Products
KnowNow Application Event Router
KnowNow Router Modules
KnowNow Gateways
KnowNow Microservers
KnowNow Administration Tools

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Metapa

www.metapa.com

Metapa is pioneering a new class of "purpose-built" integration software products. Unlike generic EAI or Web Services platforms, Metapa's breakthrough solutions are designed to address specific integration problems in the extended enterprise.

Metapa's flagship products address two of the most critical processes facing today's large enterprises. M8 Analytics Router automates the process of providing real-time analytics and reporting throughout the extended enterprise. M12 Gateway Router provides the first secure web services gateway to enable the exchange of data outside the firewall. Metapa's purpose-built solutions make the automation of key business processes simple, fast, and cost-effective.

Products
M8 Analytics Router
M12 Gateway Router

MultiNet

www.multinetsecurity.com

MultiNet is a provider of software solutions for securely managing web applications and services. MultiNet's mission is bringing to the industry the most complete and high performance security and application data routing platform for optimizing web applications and services. MultNet's solution provides a Web application layer firewall performing real-time intrusion prevention and protection from all application level vulnerabilities, and a Web services gateway for high performance application data routing, XML/ SOAP schema validation, authentication services, transformation services, dynamic transaction authorization, session management, and transaction level load balancing. MultiNet's solutions are complementary with network firewalls, user authentication systems, and web SSO services. MultiNet ensures business process by enabling protection of enterprise information and optimizing of e-business gateway management.

Products
iSecureWeb Application Firewall
iSecureWeb Services Gateway

PolarLake

www.polarlake.com

PolarLake develops products that solve the problems faced by organizations migrating to XML and Web Services based architectures. The PolarLake patent-pending XML routing and processing technology has been under development since 1999 and provides a platform for Java developers to assemble and deploy solutions. PolarLake focus on processing business level documents, as well as remote procedure call (RPC) interactions. PolarLake provides a complete deployment platform and a set of graphical tools supporting the software life cycle from development to deployment and maintenance.

Products
PolarLake
PolarLake Web Services Express

Vordel

www.vordel.com
Vordel's flagship product, VordelSecure, provides authentication, authorization, accounting and content validation for XML based-communications, including Web Services. SAML, WS-Security, XKMS, as well as other XML and security technologies are supported.

Products
VordelSecure
Professional services

XML Switches

DataPower

www.datapower.com

DataPower Technology provides enterprises with XML-Aware network infrastructure to ensure performance, security and manageability of applications and XML Web Services. The XA35 XML Accelerator is powered by DataPower's patent-pending XML Generation Three technology.

Products
XA35 XML Accelerator

Forum Systems

www.forumsys.com

Forum Systems is an XML Web services security company that designs and markets XML-based communications/exchange infrastructure hardware and software. The company's hardware appliances provide secure transmission and acceleration of XML data. Using proprietary software developed by Forum Systems, the ForumSentry1500 provides translation, validation, archiving and conditional routing of XML documents while protecting the data within the document, not just the packet itself.

Products
ForumSentry1500

Sarvega

www.sarvega.com

Sarvega Inc. is a provider of intelligent XML Switches, information-aware infrastructure products that provide Global 1000 enterprises with the smart, fast, and secure networks required for mission critical XML applications such as Web Services.

Products
Sarvega XPE Switch

Intermediary Services

Bang Networks

www.bangnetworks.com

Bang Networks offers services designed to reduce the technology costs associated with sharing critical business information and lower the technology hurdles. Bang Networks uses an approach that embeds application intelligence and business logic directly into the network. The Bang Network approach can eliminate complex systems based on proprietary standards and technologies.

Services
STP (Straight Through Processing) Solutions
Sales/CRM Solutions
Trading/Price Distribution Solutions
Management-Operational Reporting
Market Data-Composite View

Grand Central Communications

Grand Central Communications provides subscription services to their Web services network that can reduce the cost and complexity of managing integration relationships with partners and customers. Grand Central Communications uses open Internet and Web services standards to enable a range of applications and platforms to communicate across organizational and enterprise boundaries.

Services
Content Publishing and Consumption
Service Syndication
Demand Chain Integration
Vertical Process Hub

Market Size and Growth

The 2002 ADR study forecasts cover products and services that automate delivery of data from multiple sources to multiple destinations over open standards protocols, and programmatically access the router via Web services and facilitate the movement of multiple data types whether they reside in databases, file systems, or enterprise applications. While XML and Web services provide the standards and protocols necessary to more easily exchange data, data routers ensure that the flow of data between systems is handled in a reliable, secure, and scalable fashion.

Currently, the economy is in a downturn, which is impacting capital expenditures. ADR solutions hold the promise of saving significant amounts of money when used with a migration strategy from legacy applications to Web services and the real-time enterprise.

Following are significant market factors influencing our forecasts:

Market Factors and Assumptions

- The biggest driver will be application integration, over the last 2 years it has come to the forefront of priority of spending

- Web services standardizations

- Open standards and framework

- Economy will begin picking up at the end of 2003

- Market education is a significant challenge for ADR vendors; integrators and vendors will drive education

- Understanding ADR technology is the largest barrier to the immediate adoption of ADR solutions

- Cost is the second largest barrier to the adoption of ADR solutions

- Price of ADR solutions will decrease over time, driving adoption rates up

- Web service deployments, increasing from 56% in 2002 to 78% in 2003, are driving the need for ADR solutions

- Most organizations implementing ADR solutions will deploy product to solve specific integration issues first, and over time deploy product in throughout a network

- Various types of ADR solutions that perform distinct application level functions will emerge

Methodology

The 2002 Application Data Routing Study Forecast examines the opportunity for ADR product manufacturers and service providers. This forecast is based on primary and secondary information sources. To understand the total population of enterprises in North America, we considered public information gathered on the total number of businesses by size. For this, we used statistics gathered in 1999 and aggregated by the US government, and statistics gathered in 2000 and aggregated by the Canadian government.

For our forecast, we used extrapolation techniques and market factors to estimate the worldwide market and growth for ADR solutions. Using demand-side information gathered in this study, as well as supply-side sources, we projected the opportunity for ADR solutions.

2002 ADR Forecast

What's Included

Included in this forecast are products that organizations use and plan to use for application data routing. For this forecast, we include ADR hardware and software. Some ADR implementations will require professional services as part of the deployment. This forecast includes these products and services.

Products counted for this report include the following:

- ADR hardware
- ADR software
- ADR network services
- ADR professional services

What's Not Included

This forecast does not include the following revenue sources for the ADR solutions:

- General-purpose operating systems
- General-purpose operating system servers
- Routers, switches, and hubs
- EAI products
- Stand-alone integration tools

Chart 2-1: 2002 ADR Forecast

2002 Application Data Router Forecast

Year	(millions)
2002	$28.3
2003	$333.2
2004	$770.8
2005	$1,492.3
2006	$2,901.4
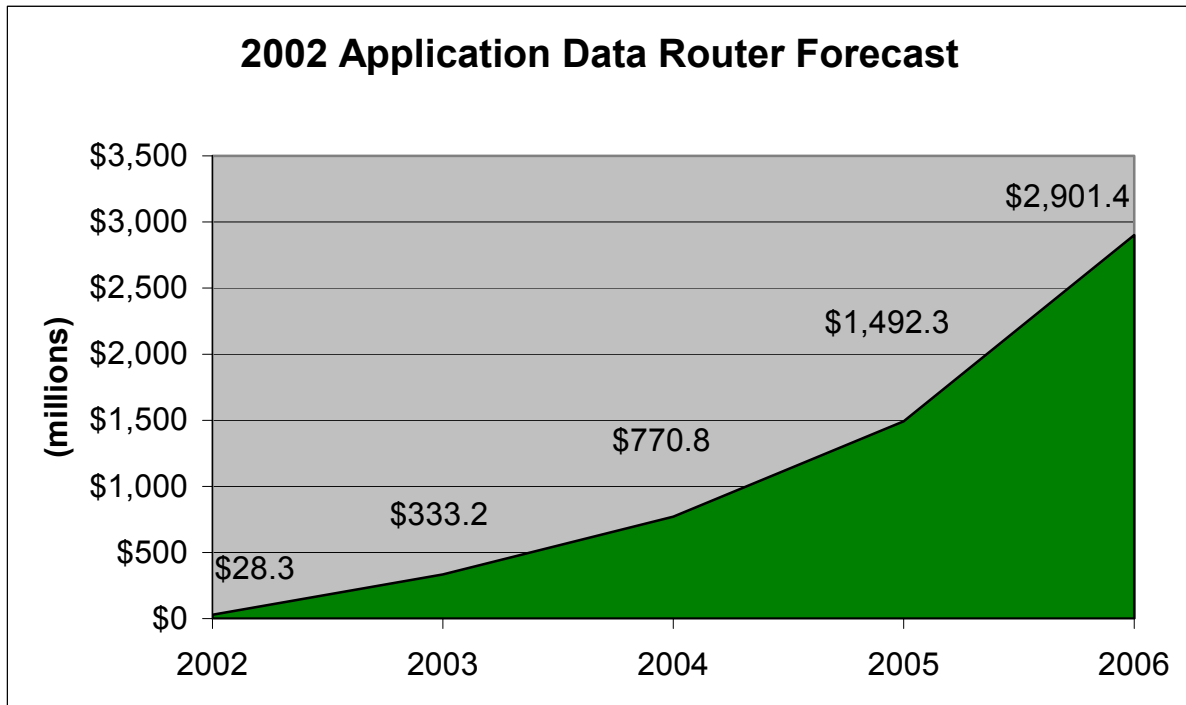
Chart 2-2: 2002 ADR Forecast by ADR Category

2002 ADR Forecast By ADR Category

	2002	2003	2004	2005	2006
Intermediary Services	$11.3	$41.6	$85.6	$152.2	$275.6
XML Switches	$7.3	$118.6	$253.6	$499.9	$1,120.0
ADR Software	$9.6	$172.9	$431.6	$840.2	$1,505.8
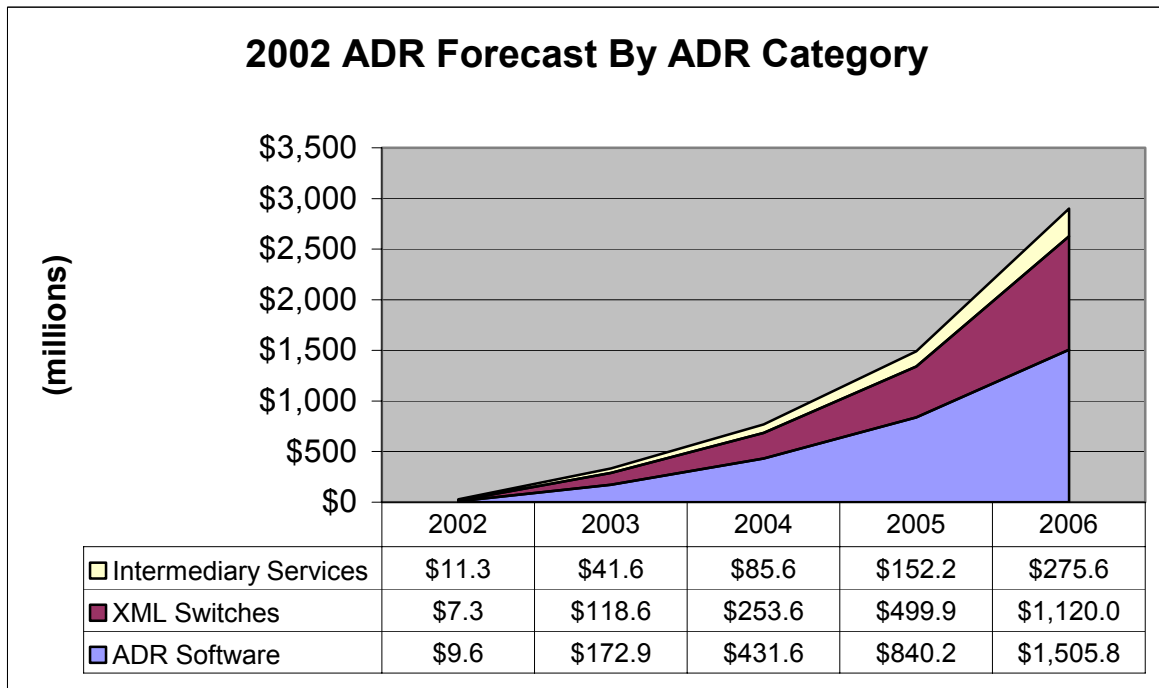
The 2002 Application Data Routing Study

"The 2002 Application Data Routing Study: The Evolution of Content Networking," examines the opportunity for emerging products and services that utilize application layer routing and switching to direct content in proper format to and from applications and data sources. Using critical supply and demand side information, this study examines the market opportunity for providers of Application Data Routing products and services.

The 2002 Application Data Routing Study was conducted to gather critical market information on ADR implementation plans. This valuable demand-side study examines the details of the ADR product and service opportunity for service providers and product manufacturers.

The 2002 Application Data Routing Study provides an in-depth analysis of critical market information gathered including:

- Worldwide Forecasts: Application Data Routing Products and Services
- Plans for Application Data Routing products and services
- Web site hosting strategies
- Planned XML use
- Plans for Web-based applications
- Applications that require multiple databases
- Protocol use, including SOAP, WSDL, .Net, J2EE, CIBX, EBXML, EDI, and others
- Plans for Web services and Web application platforms
- Purchase plans for Application Data Routing solutions
- Applications driving the need for Application Data Routing Solutions
- Concerns regarding Web services
- Customer portal applications
- Applications for exchanging data internally and between companies
- Familiarity with Application Data Routing products
- In-house Application Data Routing development plans
- Reasons for implementing Application Data Routing solutions
- Applications driving the need for Application Data Routing solutions
- Critical features for Application Data Routing solutions
- Important criteria for selecting Application Data Routing solutions
- Expenditures for Application Data Routing solutions
- Sources for learning about new products and services
- Influential publications
- Final decision maker titles

Study Methodology

To gain a thorough understanding of the opportunity for ADR products and services, we interviewed 104 technical decision makers, selected at random from IT professionals who subscribe to one or more of CMPs publications. All respondents have 1000 or more employees; interviews were terminated with individuals at organizations with less than 1000 employees. All respondents were decision makers for purchasing products and services. Interviews were terminated with individuals with no decision making influence. Determination of a respondent's knowledge of the content site (including Web-based applications, Web services strategies, applications, XML use, and database use) was based on the first interview question. Selection was further refined by actual contact; interviews were terminated with prospects that did not have detailed knowledge of their organization's database and application use as indicated by their inability to answer the majority of the interview questions. Not all survey participants answered all questions, as indicated by the "n" on each chart.

Interviewers, trained by the HTRC Group, conducted 20-minute telephone interviews using The 2002 Application Data Routing Study Questionnaire located in Appendix A. Respondents were given the opportunity to take the Web-based survey instead of a telephone interview. Greg Howard, Principal Analyst of the HTRC Group, LLC, developed the study questionnaire based on market trends, hot issues, and feedback from ADR product manufacturers.

Respondents were offered a copy of the summary results of this study as well as a chance to win an MP3 player as an incentive to participate in the interview. A combination of telephone interviews and Web based research were conducted. Respondents were given the opportunity to take the Web-based survey if they did not have the time to immediately complete the telephone interview.

Quick Take

- Number of respondents: 104
- Respondent organizations had 1000 or more employees
- All respondents were decision makers
- All respondents had detailed knowledge of their Web-based applications, Web services strategies, applications, XML use, and database use
- Twenty minute interviews or Web-based survey
- Respondents received summary of survey results

Demographics

Company Sizes

Survey responses revealed a wide variety of company sizes, with employees ranging in number from 1,000 to 330,000, with a mean of 33,200. With this wide range, the mode was 5,500 and standard deviation 58,207.63. The largest numbers of respondents at 43% were organizations with 1,000 to 5,000 employees.

Chart 3-1: Organizational Sizes (n=104) Q2

Number of Employees

Category	Percentage
1,000-5,000	43%
5,001-20,000	23%
20,001or more	34%
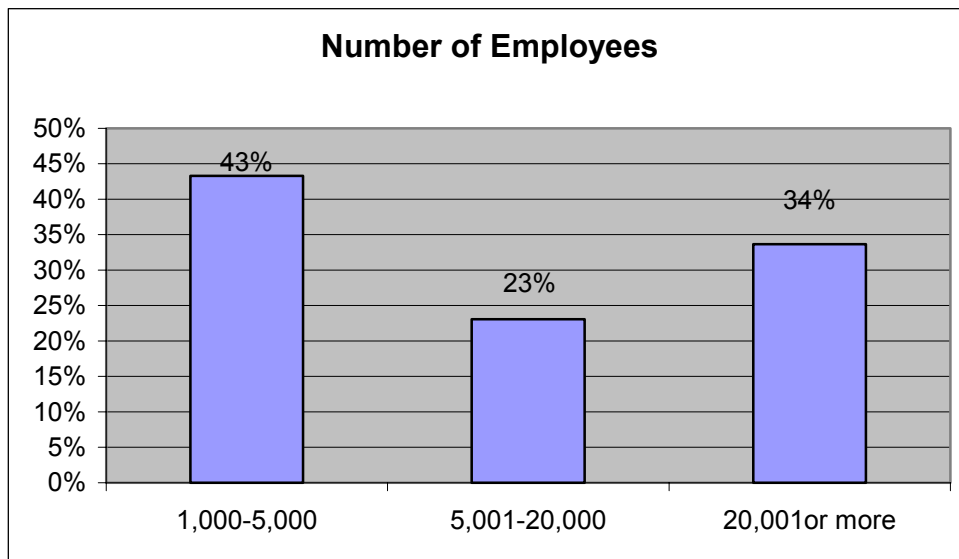
Decision Makers

Targeting the right decision makers to interview in organizations can be difficult. However, it is necessary in order to obtain dependable data that reflects current buyer thinking. Respondents must have influence on product and service purchase decisions. In Question 4, we asked respondents what type of decision maker they were, including primary decision maker, secondary decision maker, and ancillary decision maker. Primary decision makers are those responsible for making the final decision on products and services. Secondary decision makers were defined as those having *significant* influence on product or service procurement; ancillary decision makers as those having *some* influence on product or service procurement. Interviews were terminated with respondents that had no influence on the purchasing decision. Of the three decision maker groups, percentiles were as follows: primary 17%, secondary 48% and ancillary 35%. The chart below shows the breakdown of respondent decision maker types.

Chart 3-2: Decision Maker Types (n=104) Q4

Respondent Decision Makers

Primary 17%

Ancillary 35%

Secondary 48%
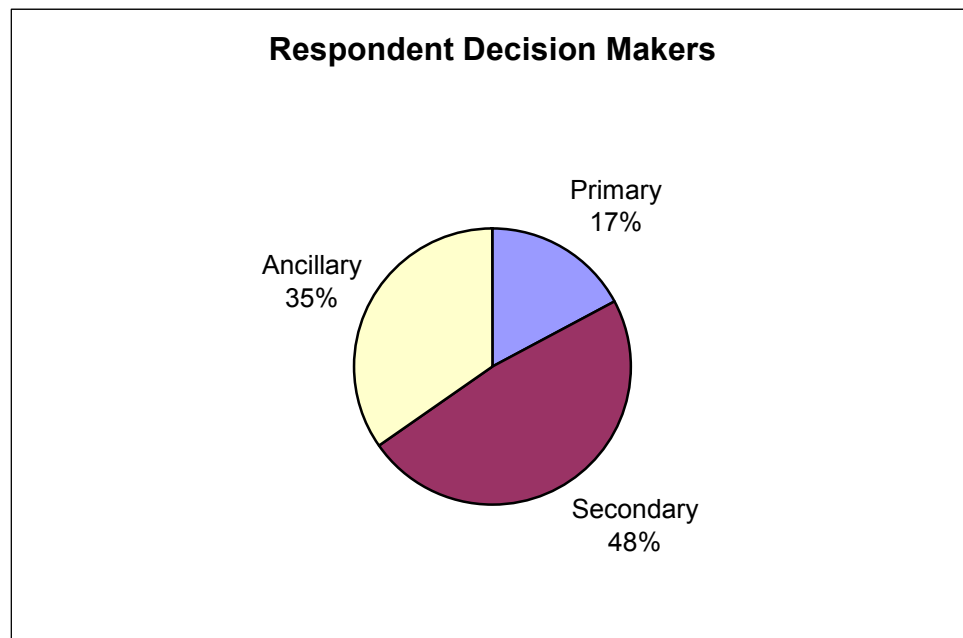
Company Line of Business

Respondents were asked what type of business their company was in, as an open-ended question. Responses to Question 5, ranged from manufacturing to entertainment companies. Responses were organized into the categories below. Manufacturing, listed at 38%, was the most frequent business type in the sample, followed by Professional Services at 28%, and Finance and Insurance at 27%. The chart below shows respondents line of business.

Chart 3-3: Company Line of Business (n=100) Q5
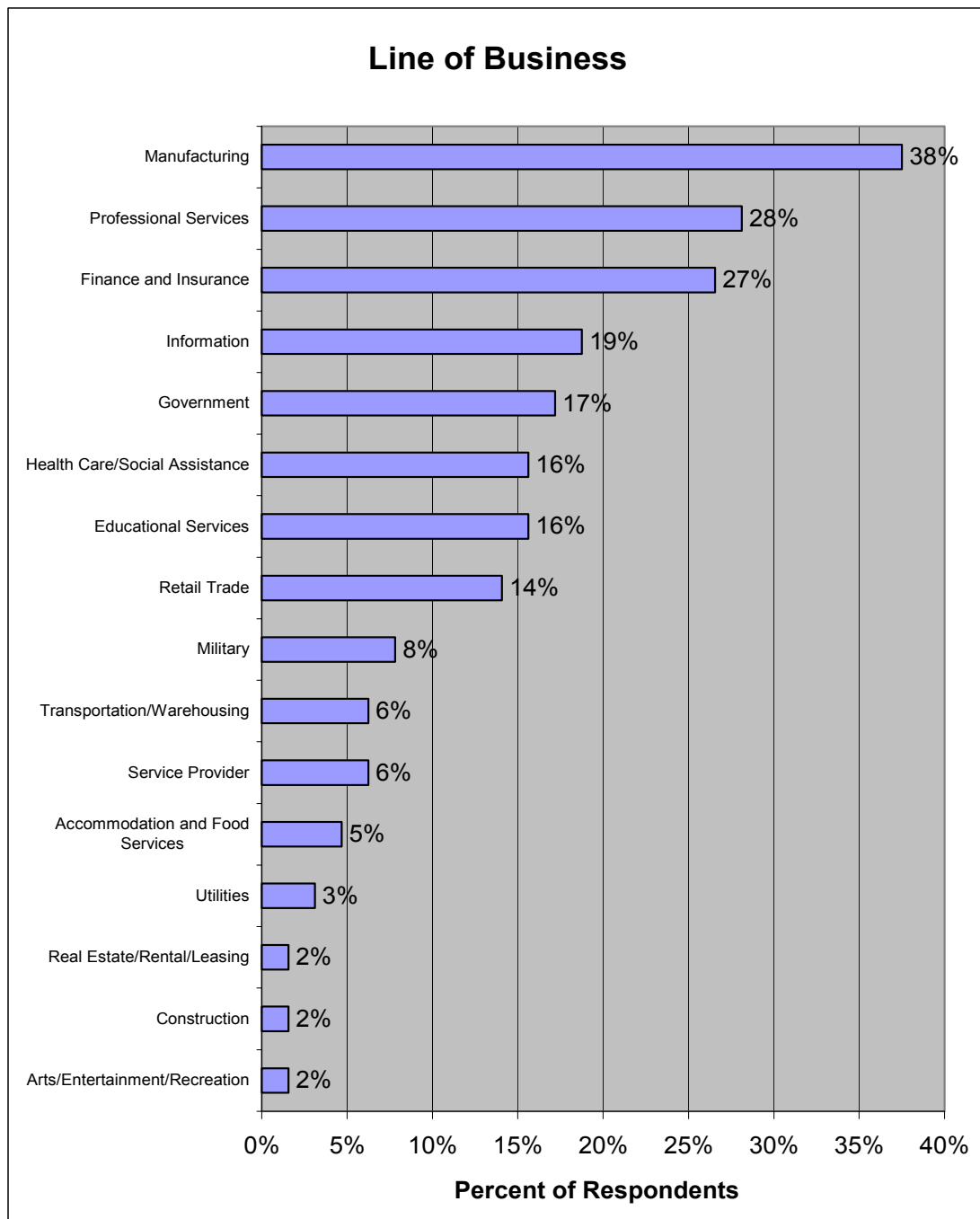
The Use of XML

The Growth of XML

The use of XML with database driven applications is increasing significantly over the next year. Respondents were asked if they use XML with database driven applications in 2002 and 2003. Enterprise XML use with database driven applications grows from 62% in 2002 to 88% in 2003, an increase of 18 percentage points. XML is rapidly becoming the protocol of choice for enterprise application integration.

Chart 4-1: XML Use With Databases (n=104) Q6, 7
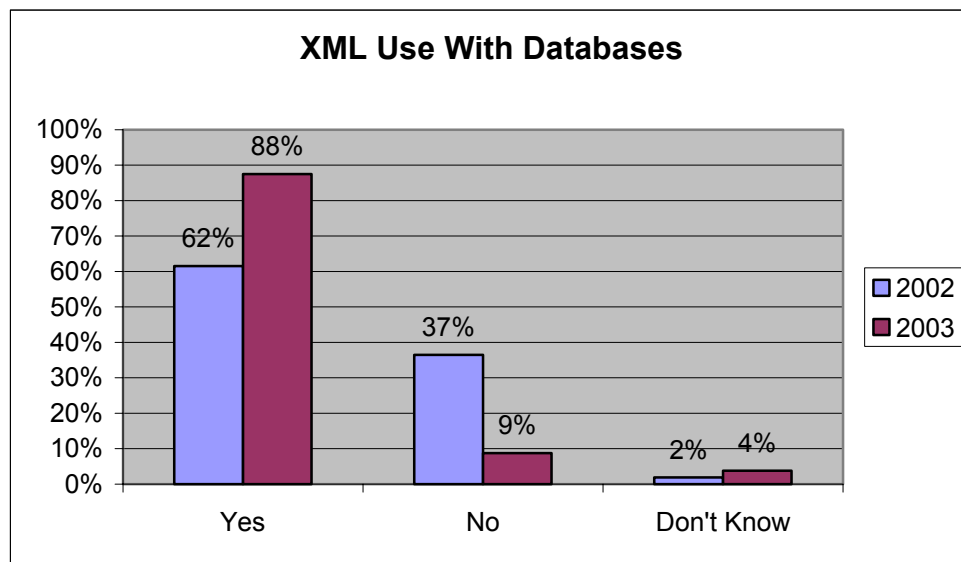
Web Services

Plans for Web Services

Web services represent a significant class of technologies that have emerged to provide greater means to integrate disparate applications and services together. As we mentioned earlier, Web services provide a common framework for finding, invoking, and integrating distributed components/services over the Internet. Respondents were read a definition of web services and asked if they deployed or plan to deploy Web services in 2002 and 2003. Respondent plans for Web services are surprisingly high, increasing from 56% in 2002 to 78% in 2003.

Chart 5-1: Plans for Web Services (n=103) Q12-13

Web Services Plans

Response	2002	2003
Yes	56%	78%
No	30%	9%
Don't know	14%	14%
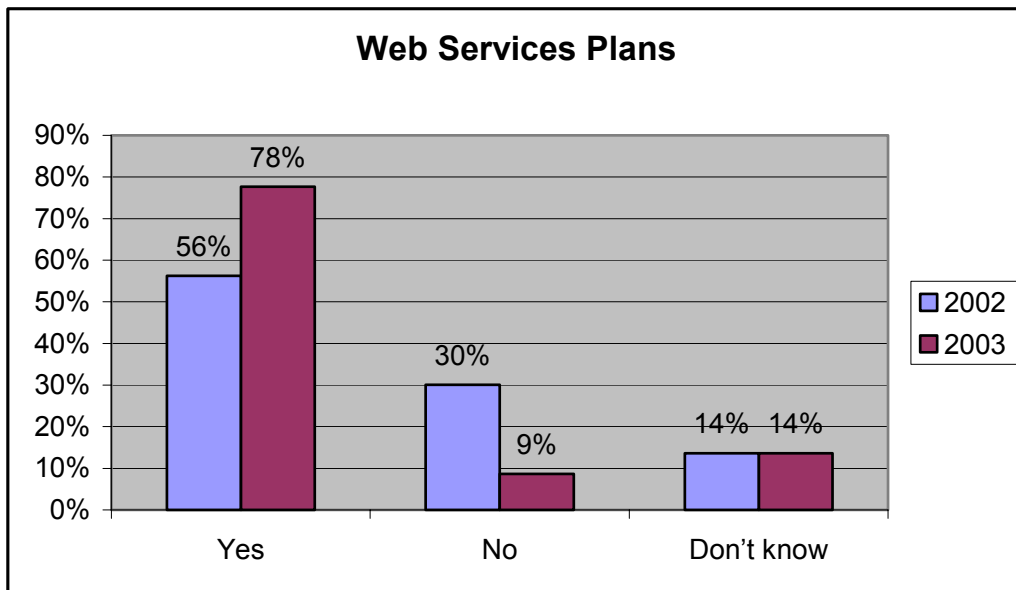
Web Service Platforms

Web services continue to receive much attention in the press, and for good reason. The marketing of Microsoft, IBM, and Sun, are making headway with enterprise IT decision makers. Web services hold the promise of reducing integration costs through standardized Web service development platforms. Microsoft leads the pack with 46% of respondents this year and 52% in 2003. IBM's Web Sphere is a strong second with 35% in 2002, increasing to 42% in 2003. A number of respondents plan to use multiple Web service platforms.

Chart 5-2: Plans for Web Services Platforms (n=100) Q14, 15

Current and Future Web Services Platforms

Platform	2002	2003
Microsoft's .NET	46%	52%
IBM's Web Sphere	35%	42%
Sun's Iplanet	19%	22%
BEA Weblogic	15%	14%
No plans for Web application platforms	2%	2%
Other	22%	16%
Don't know	14%	12%

Percent of Respondents
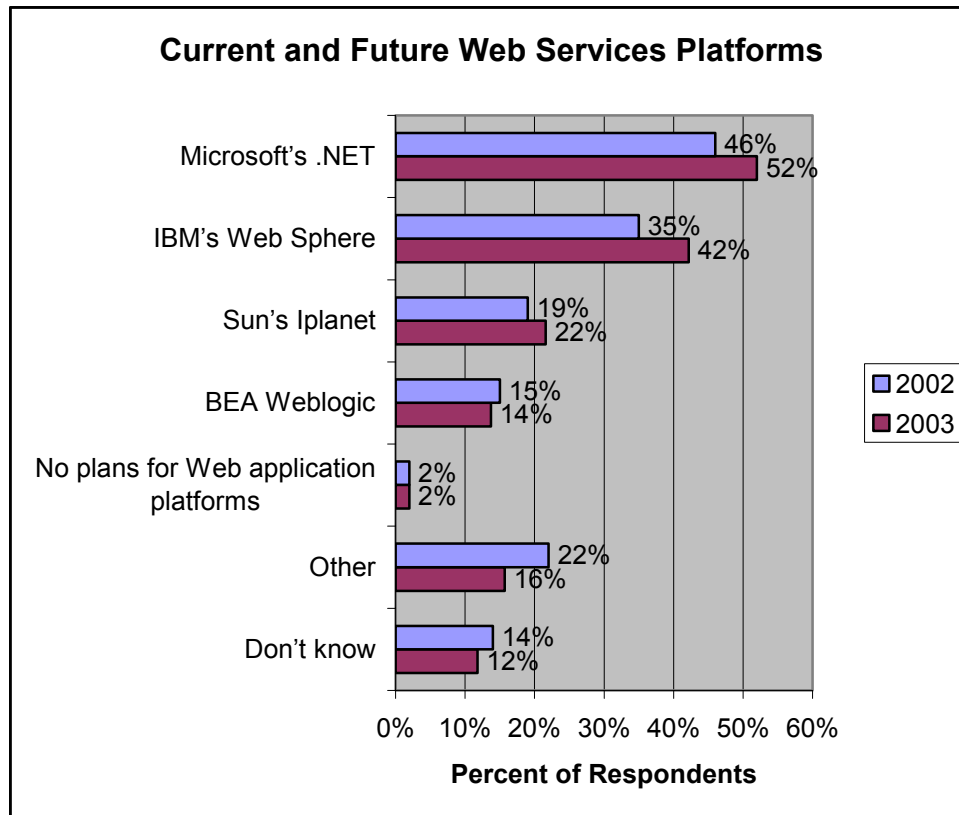
Table 5-1 below includes the "Other" responses for Web services platforms. Responses range widely from custom developments to the use of Oracle 9i as a Web service platform.

Table 5-1: Other Responses for Web Services Platforms (n=22) Q14, 15

Other 2002	Other 2003
Custom development (5)	Custom development (4)
Apache	Apache on Linux
ASP	ASP
Cold Fusion	Cold Fusion
CORBA	CORBA
Cross World	Cross World
Globus	Globus
IIS	Internally developed.
ISS & Oracle application server	ISS & Oracle application server
Jakarta	Jakarta
MS Biztalk	Notes Domino
Notes Domino	Oracle
Oracle	Oracle
Oracle 9iAS, Apache	Oracle 9i
Oracle, Apache	Oracle 9i AS
Oracle 9i	Oracle, Apache
Oracle 9i AS	Tomcat
Tomcat	
Tomcat, Oracle, maybe Jrun	
Vendor integrated product	

Web Service Deployments

Respondents were asked in an open-ended question what Web services they plan to deploy in 2002 and in 2003. For both years no horizontal application was named in any great number. Rather, responses indicated a growing trend—Web services are planned for a myriad of applications ranging from custom-built enterprise applications to specialized vertical applications, such as ArcIMS (geographic information system). The largest gain in any Web services category was custom applications. Many respondents have applications they have developed internally and are not off the shelf software. Organizations with custom applications have the most to gain from ADR solutions because ADRs can significantly reduce ongoing application integration and operational costs. The largest increase overall was in "Don't know" responses. In conversations with respondents, many were not sure how Web service deployments would go. They planned to make future Web service deployment decisions based on the experience they gain from initial Web service rollouts.

Chart 5-3: 2002-2003 Web Services (n=91) Q16, 17

Web Services

Category	2002	2003
None	24%	10%
Custom Applications	13%	27%
Account Management	11%	7%
Don't know	10%	30%
Web Service Platforms	10%	9%
Collaboration	7%	2%
Financial	7%	3%
Medical Applications	4%	4%
HR Applications	4%	4%
Advertising	2%	0%
Customer Support	2%	2%
eLearning	2%	3%
Reporting	2%	0%

Percent of Respondents
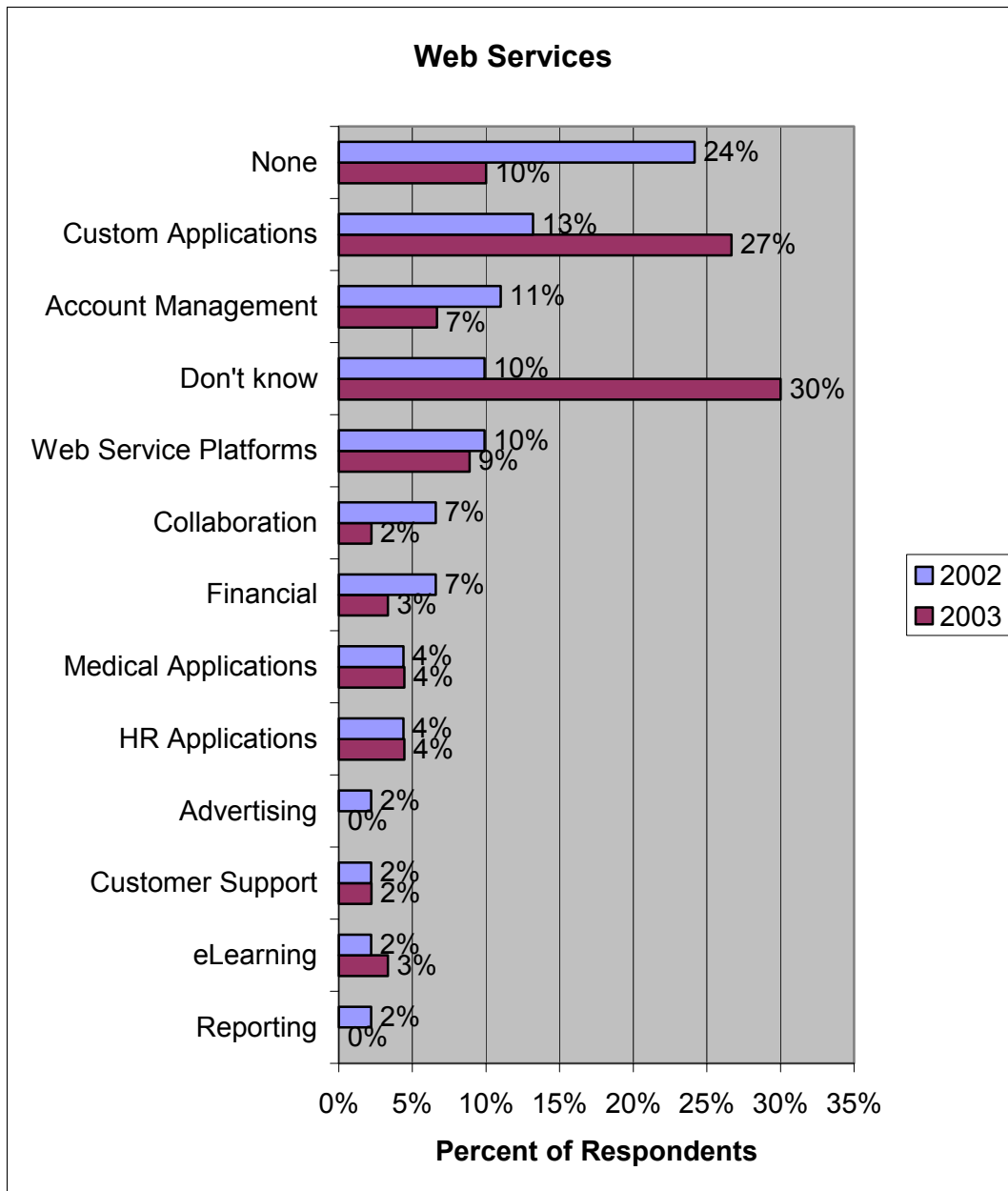
Key Concerns for Deploying Web Services

In an open-ended question, respondents were asked to name their key concerns for deploying Web services. To no surprise, security was the greatest concern for respondents. Security awareness has increased in past years. Hackers, viruses, worms, and malicious code have cost millions to defend against and have brought security to the forefront of many IT managers' agenda. While Web services may make integration and application use

easier, Web-based systems are considered inherently less secure by many respondents.

Performance concerns for Web services were cited by 30% of respondents. Web services are new, the performance of applications in a new environment is uncertain; respondents just don't know how some applications will perform.

Chart 5-4: Web Services Deployment Concerns (n=100) Q18

Web Service Deployment Concerns

Concern	Percent
Security	55%
Performance	30%
Integration	12%
Reliability	10%
Don't know	10%
None	8%
Learning Curve	4%
Ease of use	4%
Cost	4%
Standards	3%
Control	2%

Percent of Respondents
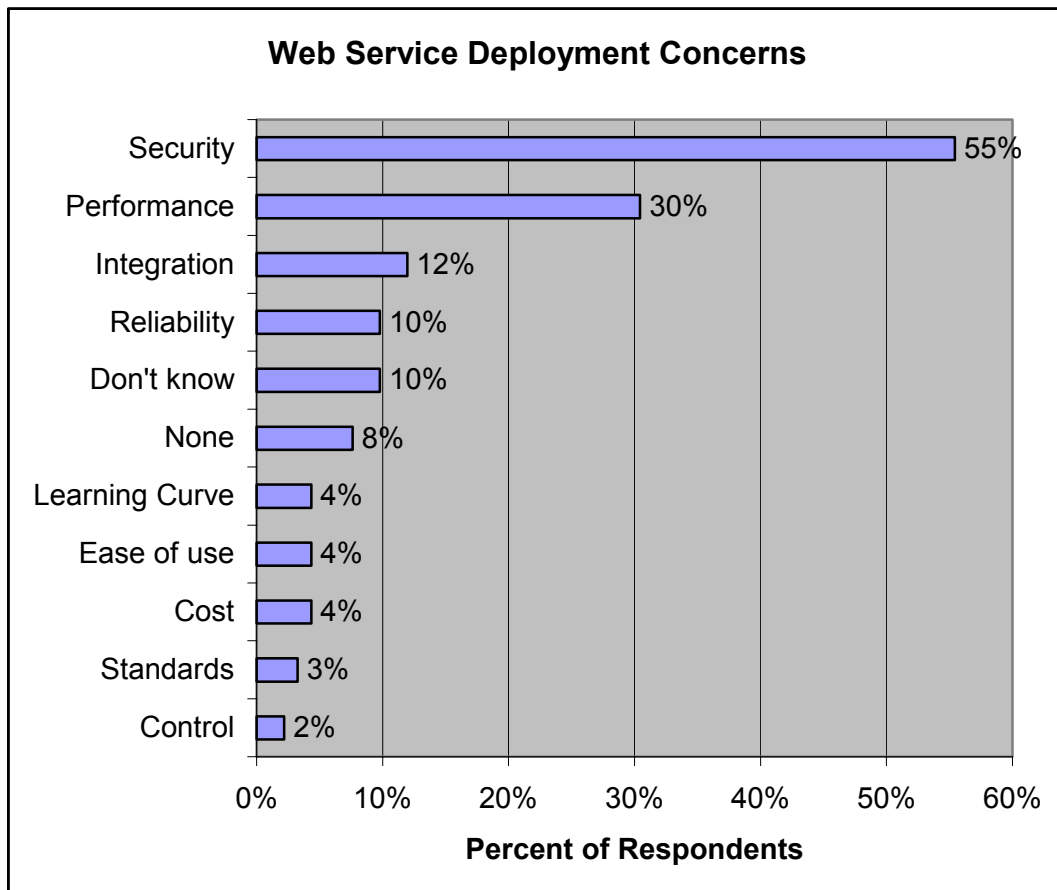
Separate Infrastructure Same Network

Respondents were asked if their Web-based applications run on infrastructure separate from enterprise applications. The majority of respondents (66%) run their Web-based applications on separate infrastructure. Only 29% use the same database and application infrastructure. Most Web-based applications use the same or similar data that enterprise applications use (non Web-based).

Chart 5-5: Web-based Application Separation (n=100) Q8

Web-based Infrustructure Deployment

No Web-based apps 1%

Don't know 4%

Same infrastructure for Web-based apps 29%

Separate infrastructure for Web-based apps 66%
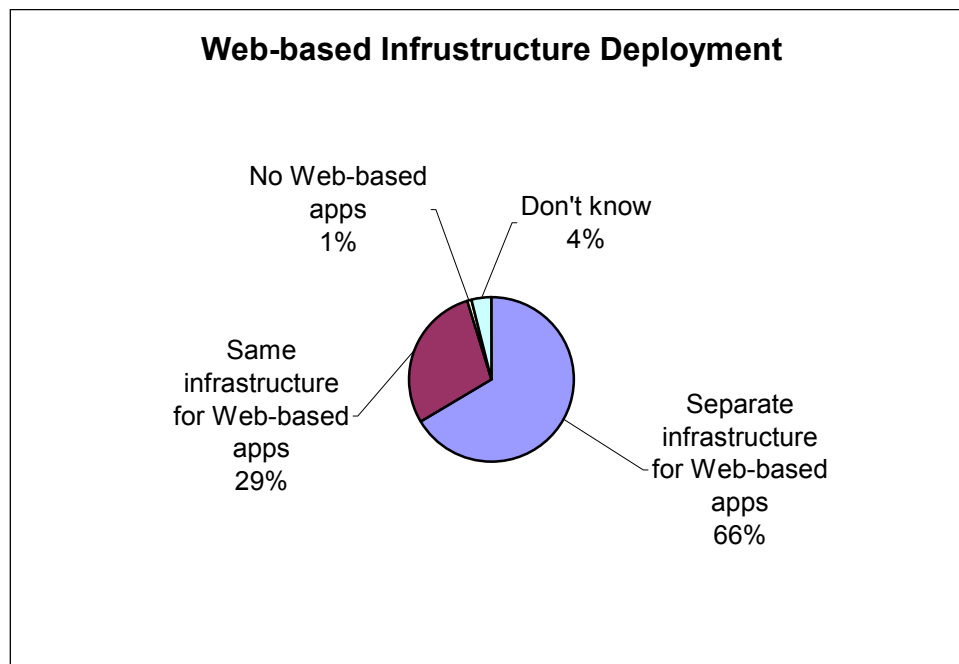
New Web-based Application Deployments

Respondents were asked if their organization deploys a new database and/or application server for each Web-based application. The majority of respondents (61%) do not deploy a new database or application server for each new Web-based application, as opposed to the remaining 39% that deploy new infrastructure.

For many of the Web-based applications deployed with new infrastructure, some or all of the data used by the new applications is located in existing databases. For IT managers, this means replicating data from other sources in the new application database. Database replication also requires continual synchronization to ensure the data is up to date.

Chart 5-6: New Web-based Application Deployments (n=100) Q19

Deploy New Database and/or Server for Each New Web-Based Application

Yes
39%

No
61%
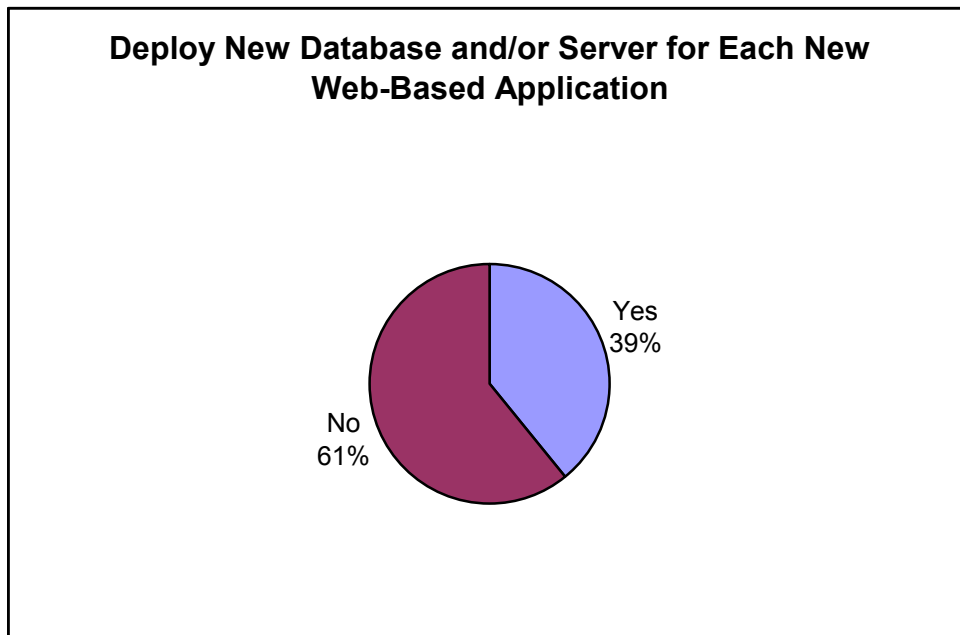
Protocols and Applications

Protocol Use

In Question 6 we asked respondents about their use of XML with database driven applications, XML increases from 62% in 2002 to 88% in 2003. In question 10 and 11 we asked respondents about all uses of XML, EDI, .Net, J2EE, SOAP, WSDL, EBXML, and CIBX. For all uses, XML was even more widespread than we anticipated. Respondents were asked to select from a list, the protocols they use in 2002 and plan to use in 2003. XML increases from 84% in 2002 to a surprising 92% in 2003. The only significant increases in protocol use were for .Net (increasing from 41% in 2002 to 60% in 2003) and SOAP (increasing from 41% in 2002 to 57% in 2003).

The increased use of XML is due to the ease of use and standardization, instead of struggling with proprietary formats, such as EDI and others. Many application vendors are requiring XML to be used with new products and upgrades. Industry efforts to encode data in a standard agonistic way, such as XML, are succeeding. In this effect, SOAP is also gaining ground as a standard agonistic way to integrate and reuse data. The standardization of XML enables a new level of application connectivity. Similar to other standardization efforts in technology, such as Ethernet, XML will provide a new era of application connectivity.

The HTRC Group, LLC © 2002

Chart 6-1: Protocol Use (n=100) Q10-11

Protocol Use

Protocol	2002	2003
XML	84%	92%
EDI	48%	43%
.NET	41%	60%
SOAP	41%	57%
J2EE	36%	40%
WSDL	18%	26%
EBXML	7%	14%
CIBX	2%	3%
Other	1%	3%

Percent of Respondents
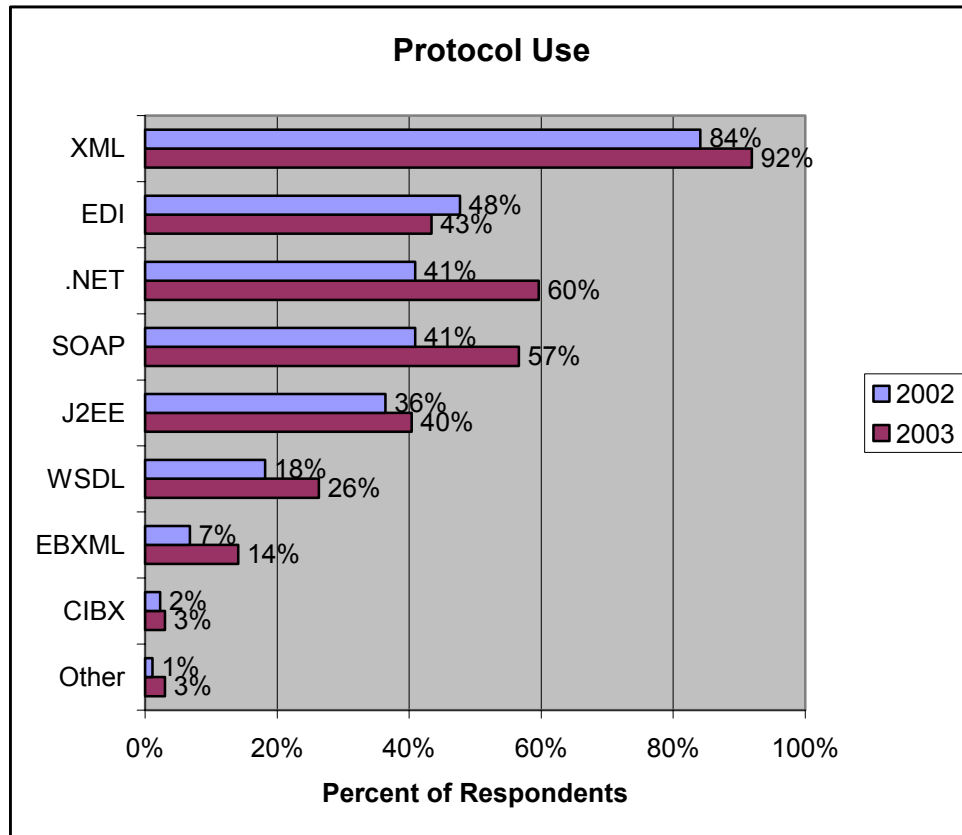
Applications That Require Multiple Databases

In an open-ended question respondents were asked to name the applications that utilize multiple databases. Applications that use multiple databases ranged widely with respondents, most being custom or legacy applications. For many of the respondent organizations that have applications utilizing more that one database, integration has consumed substantial time and budgets. While off the shelf integration tools exist, routing or switching data to applications involves significant effort for each application. Leading the list of applications that use multiple databases were "Custom Applications," cited by 27% of respondents.

Surprisingly only 17% of respondents indicated they have no application that utilizes multiple databases. There are a large number of organizations that use multi-data source application.

Chart 6-2: Applications Using Multiple DBs (n=71) Q9

Applications Requiring More Than One Database

Category	Percent
Custom	27%
Other	20%
None	17%
Don't Know	11%
Financial	8%
Health Care	7%
Sales	6%
SAP	3%

Percent of Respondents
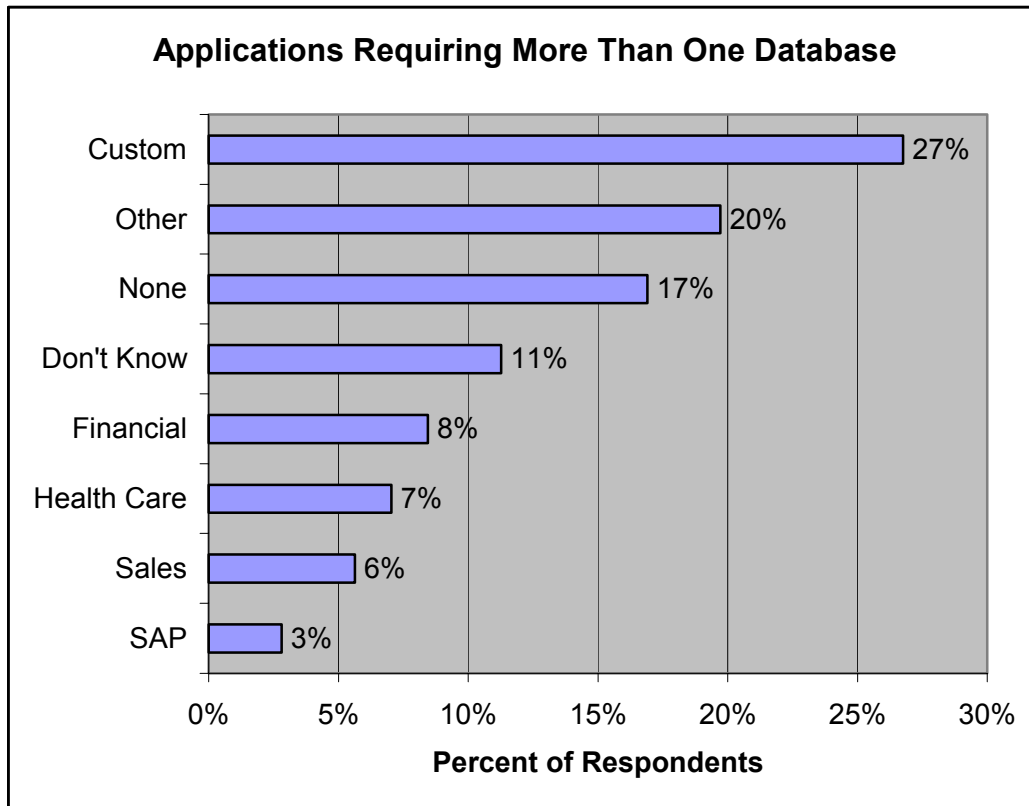
The table below lists other responses in the "Other" category in Question 9. Responses range from data warehousing, to custom travel and hospitality applications.

Table 6-1: Other Applications With Multiple Databases (n=14) Q9

Data warehousing
Email
GIS, and remote sensing applications
HR
News content
Nutrition Cardex
Our learning and content management system and our student tracking system
Programmatic applications
SQL Server and Sybase
Supply chain
Target and marketing
Traveling units
Web access to customer accounts
Web Applications

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Database and Application Configurations

In order to gain a better understanding of how enterprises are deploying application and database infrastructure, respondents were asked how to select from a list of statements that describes application and database deployments. Multiple responses were accepted. Surprisingly, there are no significant plans to change application infrastructure rollout strategies. We note that most respondents use a variety of strategies when deploying applications. Applications and databases rolled out over time were based on the technology available to meet the immediate needs.

Chart 6-3: Application Infrastructure Strategies (n=100) Q25-26
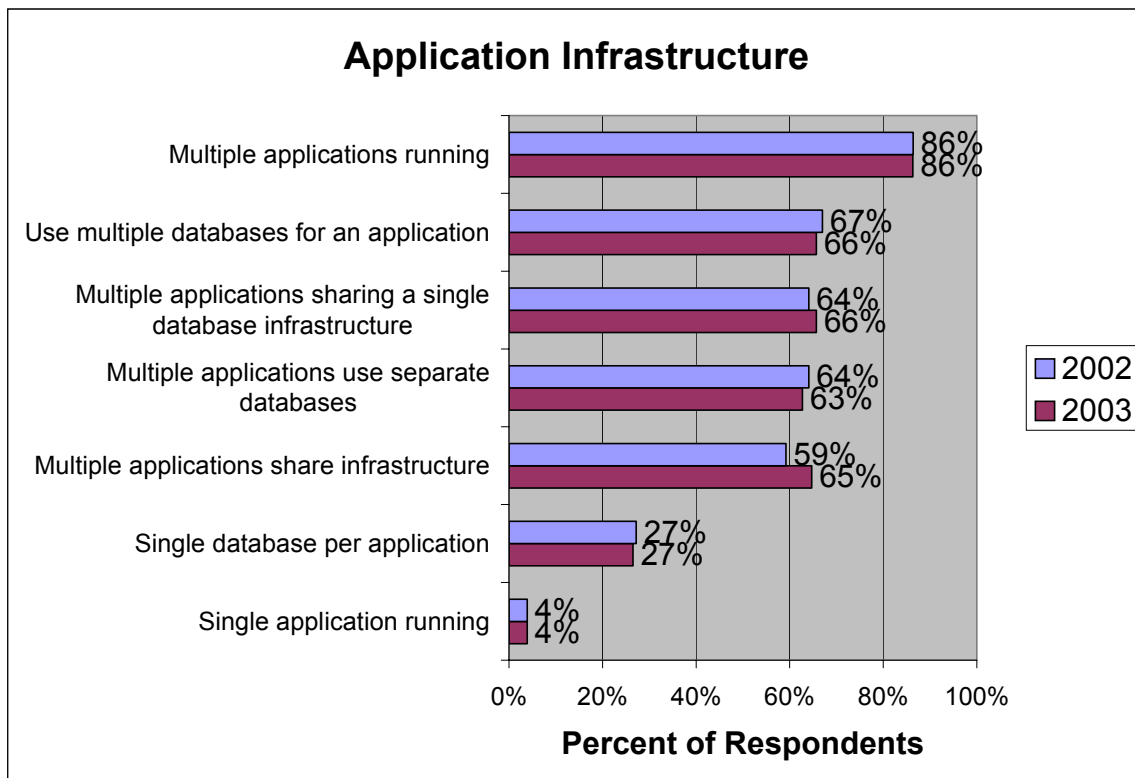
Company Portals

The use of company portals

Many large companies use portals to increase communications with employees, partners, and customers. Respondents that have portals use a variety of off the shelf software, such as Plumtree, to in-house developments. However, 22% of respondents have developed their own portal solution. Chart 7-1 below shows portal software used by respondents.

Chart 7-1: Portal Software (n=100) Q20

Portal Applications

Application	Percent of Respondents
Custom	22%
Don't know	21%
None	20%
Plumtree	8%
SAP	5%
Oracle	5%
Epicentric	4%
Microsoft	4%
Siebel	1%
PeopleSoft	1%
Informative Graphics Corp	1%
Iplanet	1%
IBS	1%
Datatel	1%
BEA	1%

Percent of Respondents

The HTRC Group, LLC © 2002
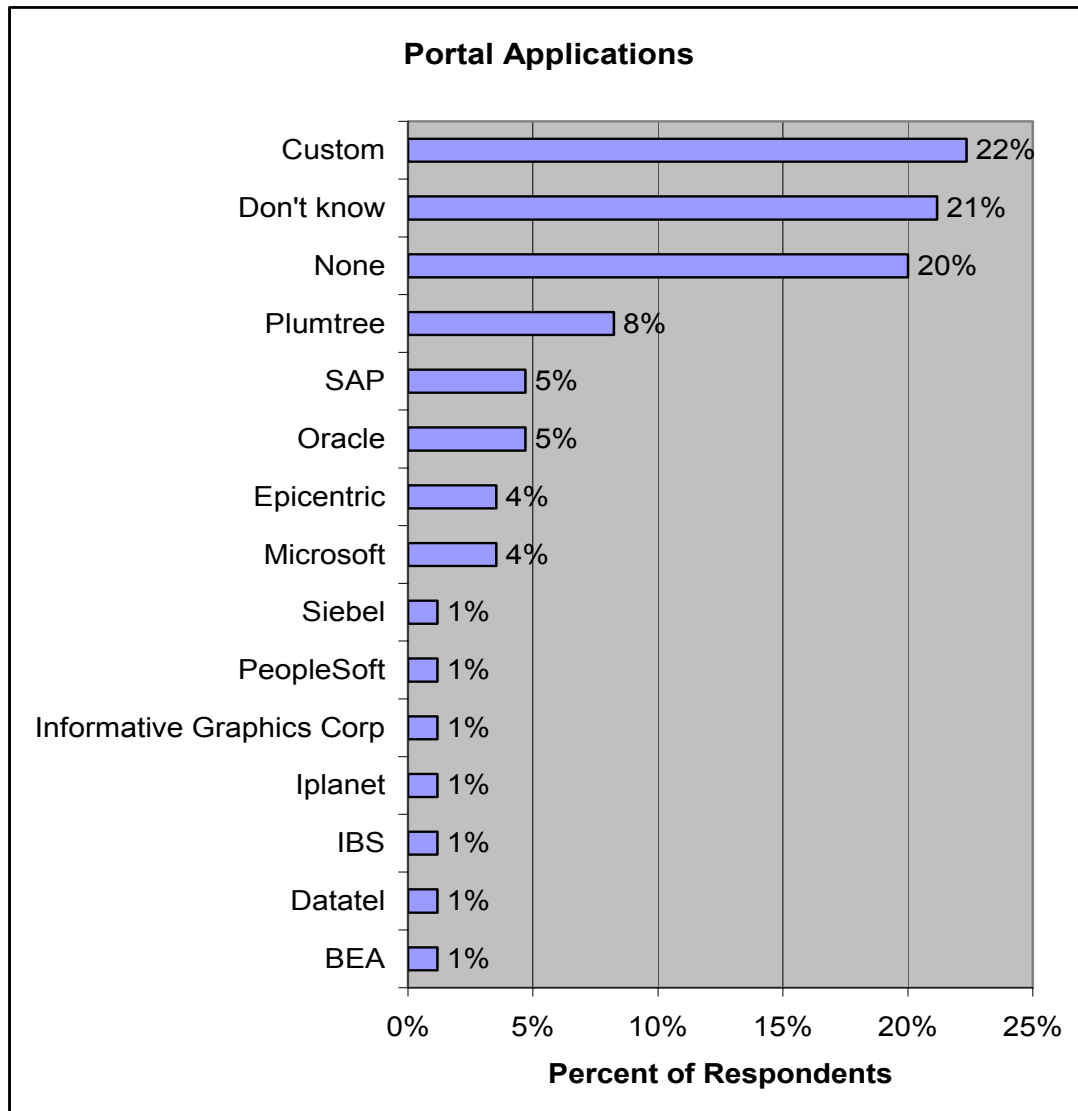
Data Exchanges

Connections to Outside Data Sources

Respondents were asked if they have applications that connect to systems controlled by other organizations in 2002 and 2003. The majority of respondents (57%) connect to systems outside of their network. Few respondents have different plans for 2003. The lack of change is likely due to the difficulty of integrating applications with outside systems. The standardization on XML and planned deployments of Web services will likely enable system interconnectivity in the future.

Chart 8-1: Applications Connected to Outside Systems (n=98) Q40, 41

Applications that Connect to Outside Systems
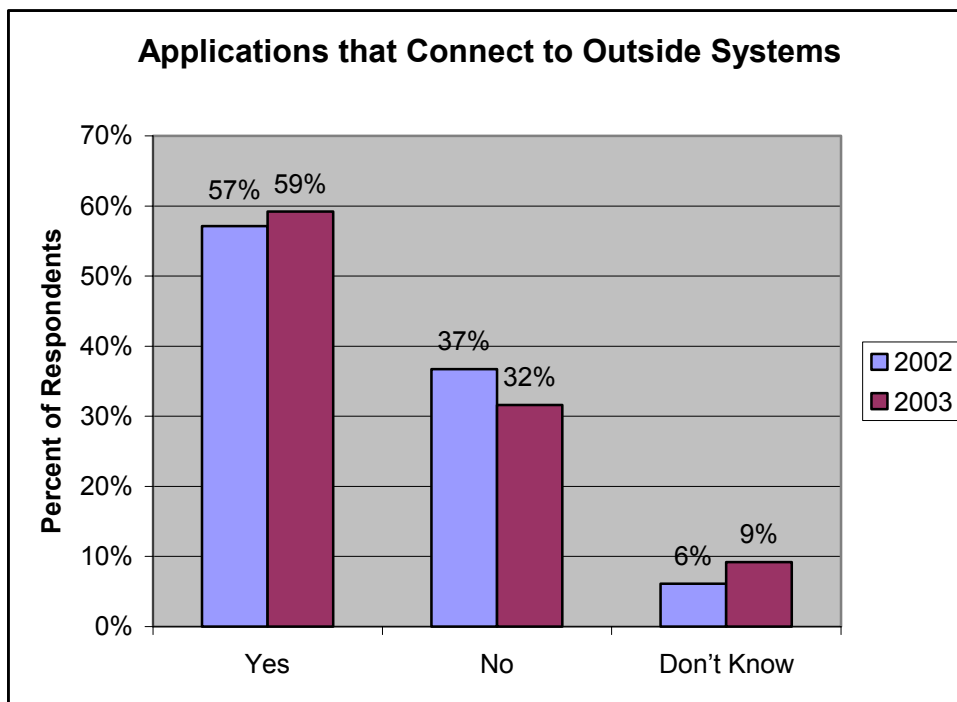
Exchange Applications

Respondents were asked to name the application they use to exchange data *externally* in an open-ended question. The top applications named by respondents (33%) were custom developments, reinforcing the custom application trend throughout this study. Aside from EDI, (10%), no other off the shelf software was named by more than one respondent.

Chart 8-2: Applications Used to Exchange Data Externally (n=89) Q21

External Data Exchange Applications

Application	Percent
Custom	33%
None	27%
Don't know	19%
EDI	10%
FTP	3%
Siebel	1%
Microsoft	1%
Mercator	1%
Bluegill	1%
BizDoc	1%
ArcIMS	1%

Percent of Respondents
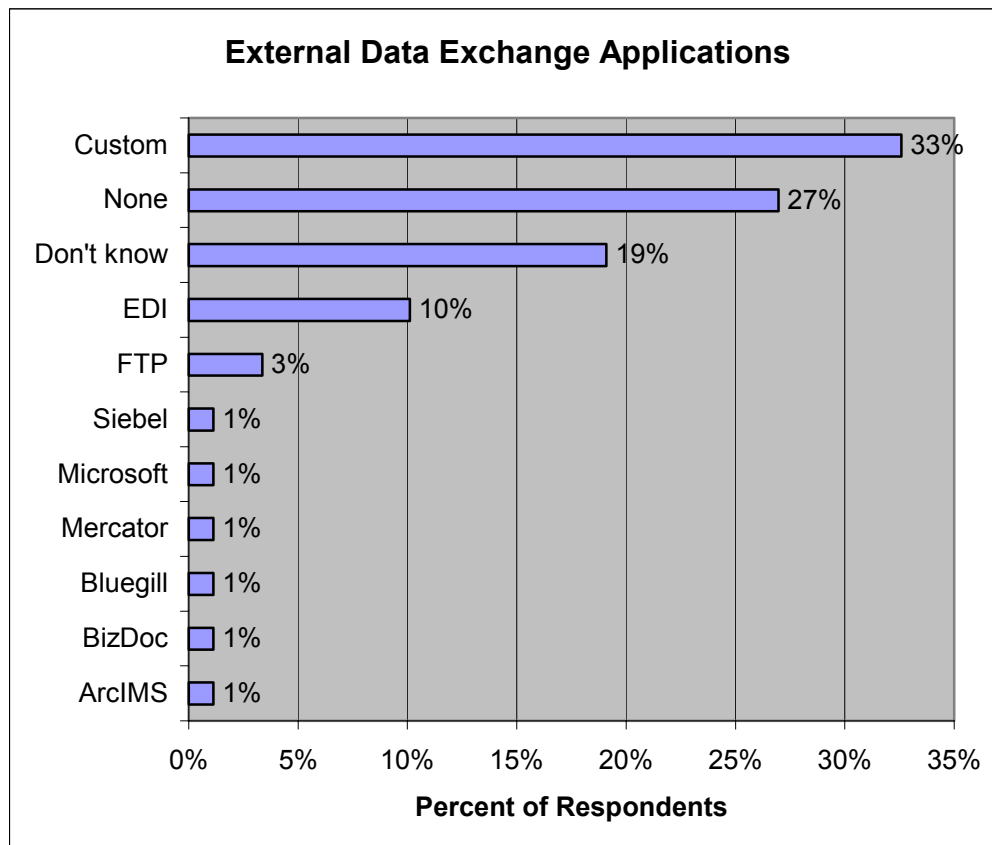
Respondents were asked to name the application they use to exchange data *internally* in an open-ended question. The top applications named by respondents (38%) were custom developments, reinforcing the custom application trend throughout this study. The lack of a standard application and implementation of a custom developed solution to exchange data internally means costly integration for new applications that need to exchange data.

Chart 8-3: Applications Used to Exchange Data Internally (n=81) Q22

Internal Data Exchange Applications

Application	Percent
Custom	38%
None	18%
Don't know	17%
Lotus	7%
Microsoft	6%
FTP	5%
EDI	2%
Siebel	1%
SAP	1%
Mercator	1%
McKesson	1%
Lawson	1%
Informative Graphics Corp	1%
Documentum	1%
Datatel	1%

Percent of Respondents
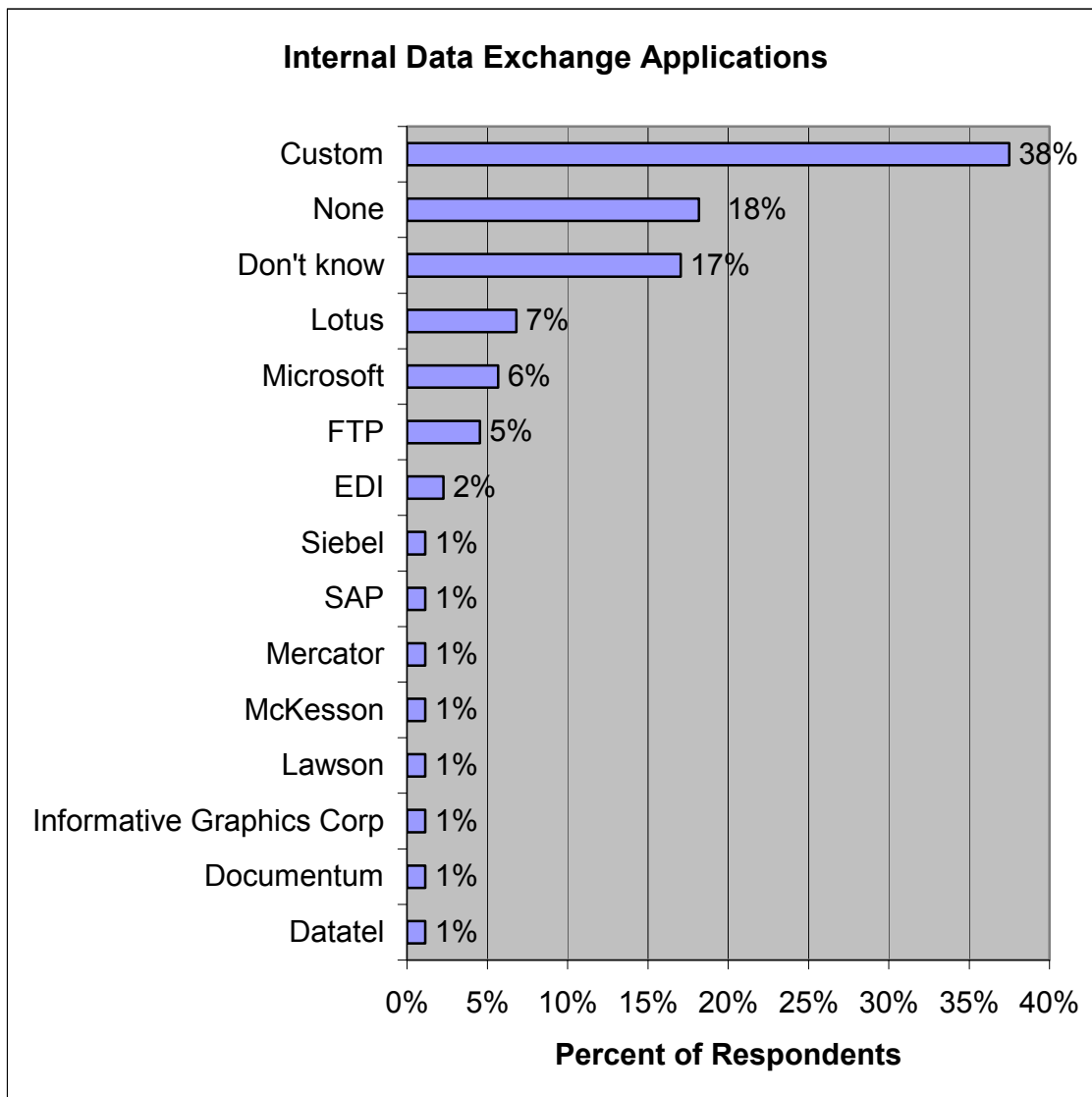
Real Time Challenges

The notion of the real-time enterprise as a goal has gained momentum over time spurred by advancements in technology. The real-time enterprise is a business strategy of having real-time (to the minute) information used by customers, suppliers, partners, and employees. The result is a more competitive organization that can make decisions with the most up to date information. We asked what challenges there are in making real-time data available to applications in an open-ended question to respondents. Of the 82 responses, we categorized them into "Compatibility," "Performance,"

"Security," "Network," "Learning Curve," "Database Synchronization," "Don't know," "Other," and "None." Only 9% of respondents said they have no problems making real-time data available, confirming our belief that enabling the real-time enterprise is a daunting task. The top challenge, cited by 20% of respondents was "Compatibility." An example response to the open-ended question in this category: "Getting applications to work together." Given the vast array of custom developments, we expected Compatibility (20%), Performance (15%) and Security (12%) to be the top three.

Chart 8-4: Challenges With Real Time Data (n=82) Q23

Real-time Data Challenges

Challenge	Percent of Respondents
Don't know	22%
Compatibility	20%
Performance	15%
Security	12%
Other	11%
None	9%
Network	7%
Learning Curve	6%
Database synchronization	6%
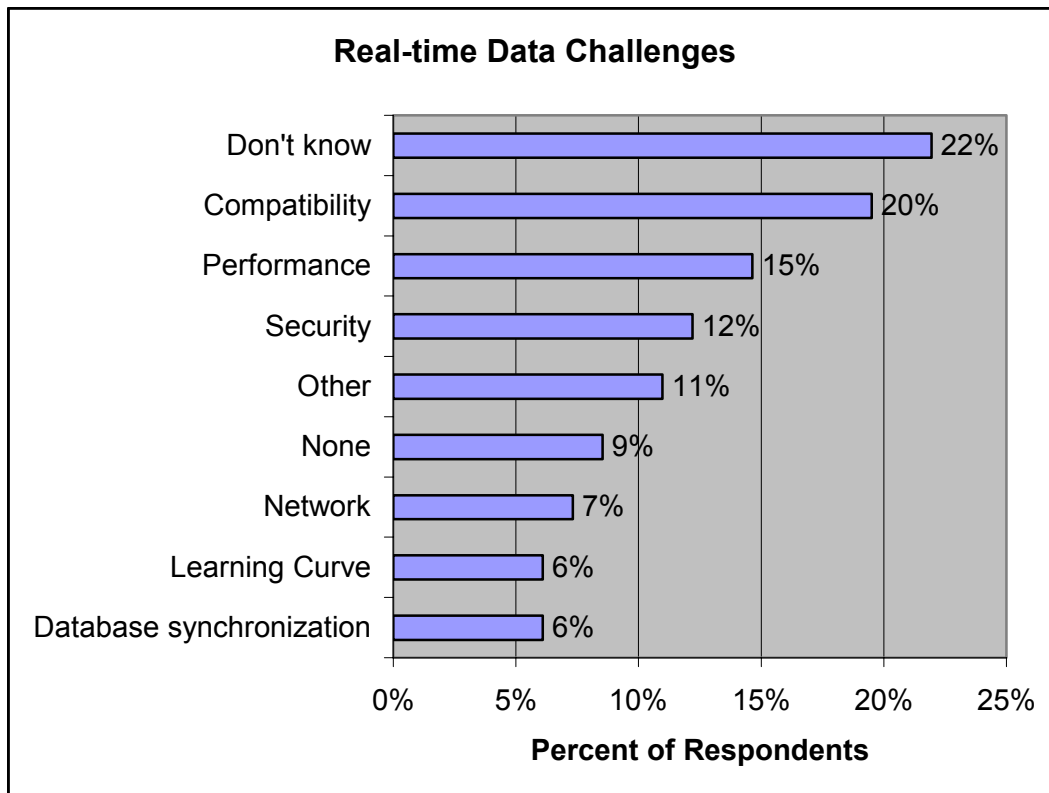
Application Data Routers

ADR Familiarity

Market education is key in all new technology market segments. We read respondents a definition of an ADR and then asked if they were familiar with ADR products. We defined ADRs as systems that automate delivery of data from multiple sources to multiple destinations. They facilitate the movement of multiple data types whether they reside in databases, file systems, or enterprise applications. ADRs allow companies to index relevant data, facilitate data transfer over open standards-based protocols, and programmatically access the router via Web services. While XML and Web services provide the standardization necessary to more easily exchange data, data routers ensure that the flow of data between systems is handled in a reliable, secure, and scalable fashion. A surprising 29% indicated that they were familiar, however, when asked what vendors come to mine, few named an actual ADR vendor.

Chart 9-1: Familiarity With ADR Products (n=101) Q27

Familiarity with ADR Products

Familiar With ADR Products 29%

Not Familiar With ADR Products 71%
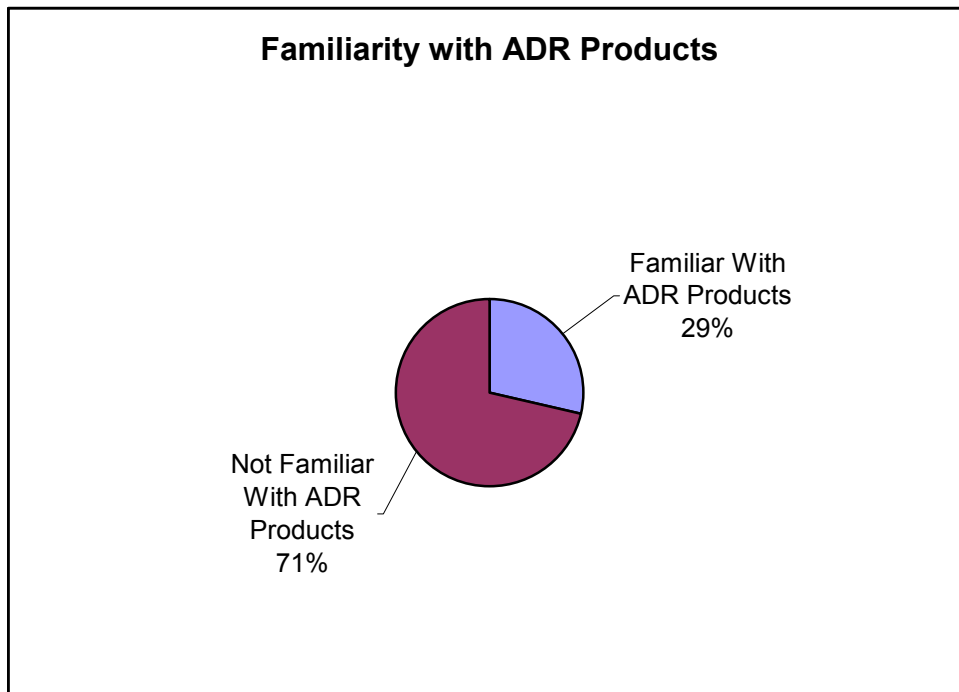
Applications Driving Application Data Routing

In order to gain a better understanding about the applications likely to drive the adoption of ADRs, we asked respondents their thoughts. In an open-ended question we asked what they thought the primary applications would be that drive the adoption of ADR products. We categorized responses into "Connecting legacy applications," "Web services," "High volume apps," "Financial," "None," and "Don't know." "Don't know" responses topped the list with 31% of respondents. Many of the respondents have developed custom applications tailored to their business, 29% believe ADR purchases will be driven by the need to connect legacy applications to new interfaces. Given the number of respondents planning Web services, many will need to connect legacy custom applications to new Web services. Web services were indicated by 16% of respondents and "High volume applications" by 10%.

Chart 9-2: Applications Driving ADRs: open-ended (n=80) Q28

Applications Driving ADR Adoption

Category	Percent
Don't know	31%
Connecting legacy apps	29%
Web services	16%
High volume apps	10%
Financial	8%
None	4%
Development tools	1%

Percent of Respondents
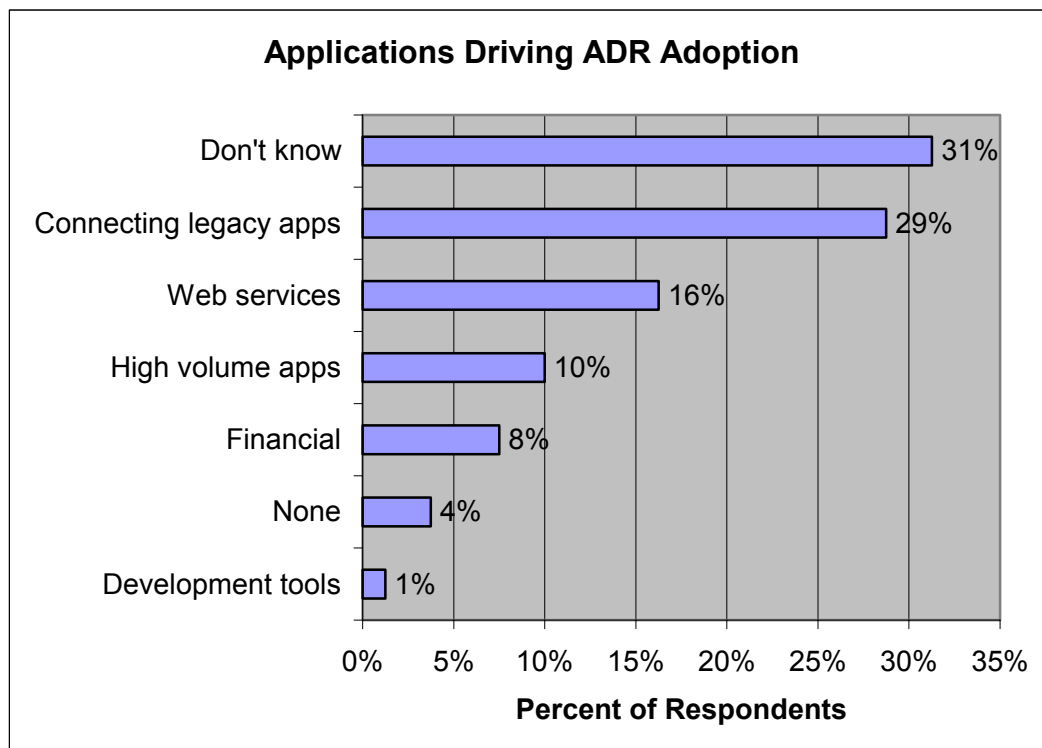
To further understand specific drivers prompting the need for ADR solutions, we read a list of application drivers and asked respondents to indicate which applications are driving their need for ADR solutions. Web-based applications increased from 45% in 2002 to 58% in 2003. Connecting legacy systems was named by 42% of respondents in 2002, increasing to 51% in 2003. Web sites remained constant with 42% of respondents. Respondent organizations expressed an increasing need to connect department and enterprise applications. Applications will continue to be deployed to meet the changing

needs of businesses. Standardizing the applications infrastructure on protocols such as XML enable organizations to streamline application integration and facilitate data exchanges between disparate applications.

Chart 9-3: Applications Driving ADR Solutions (n=94) Q37, 38

Applications Driving ADR Solutions

Category	2002	2003
Web-based apps	45%	58%
Connecting legacy systems	42%	51%
Web site	42%	42%
Connecting department apps to enterprise apps	37%	45%
Connecting enterprise backbone applications together	37%	47%
Don't know	34%	25%
e-Commerce	33%	38%
Connecting department apps	32%	36%
VPNs	21%	21%
Other	5%	4%

Percent of Respondents
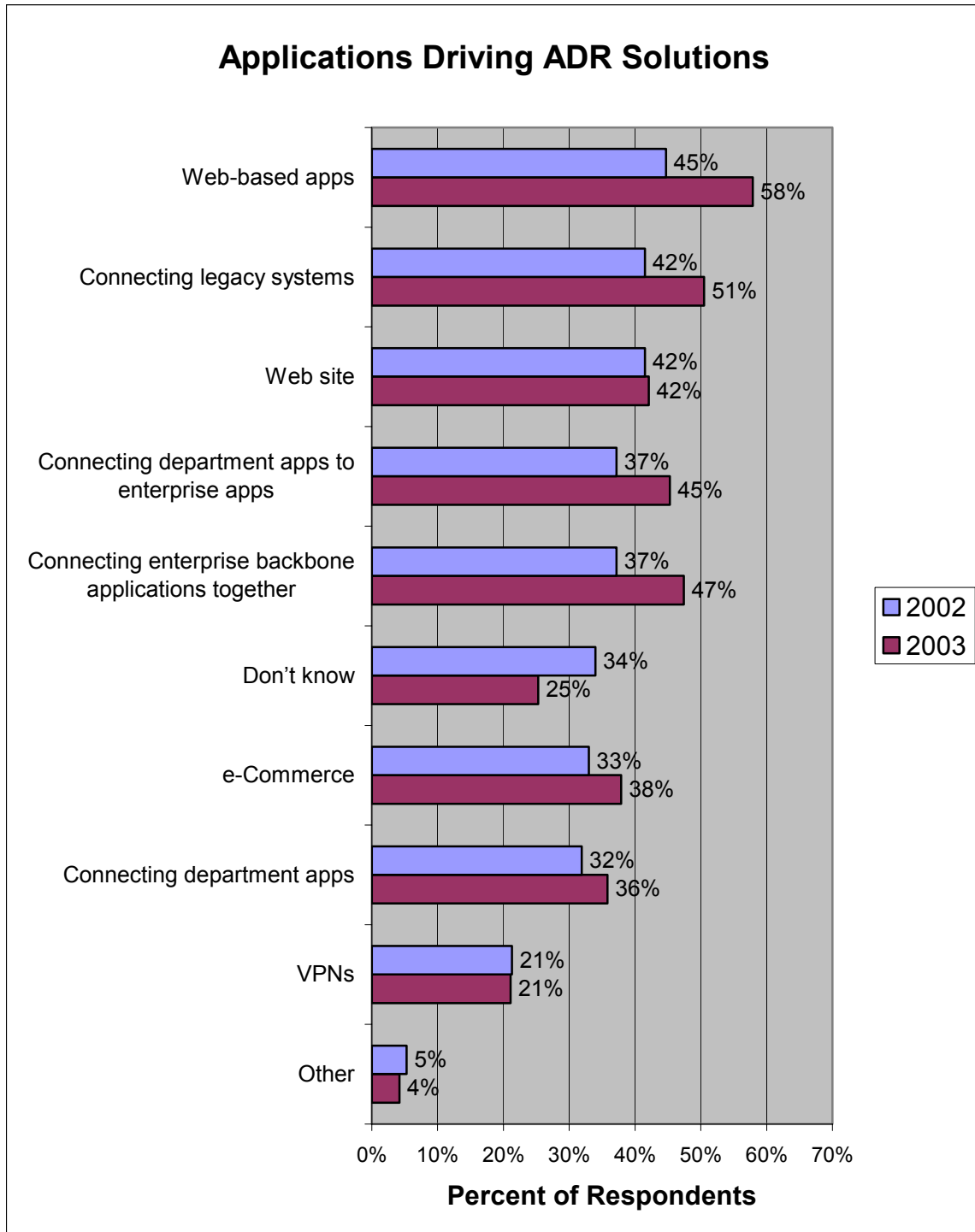
In-house Application Data Router Developments

Many organizations have developed integration and application development expertise out of the need to tailor business systems to unique requirements. The need to integrate custom applications into new internal and possibly external systems has sparked a surprising number (39%) of respondents to develop their own custom ADR. Given our definition of the functions an ADR performs, in-house ADR solutions can be very difficult to develop, maintain and support internally. While it appears a number of respondents already have software that functions as an ADR, we believe most will pursue a product solution from an ADR vendor. In-house developments may not scale to meet the needs of future growth. Any additional development on in-house systems likely requires the creator, who may be an employee or consultant—creating a dependence on individual expertise. Any additions to the custom development may require significant development and integration, reducing flexibility. Integrating new applications to use an in-house ADR may cost more than an off the shelf product.

Chart 9-4: In-house ADR Developments (n=92) Q29

In-house ADR Developments

In-house ADR
39%

No In-house
ADR
61%
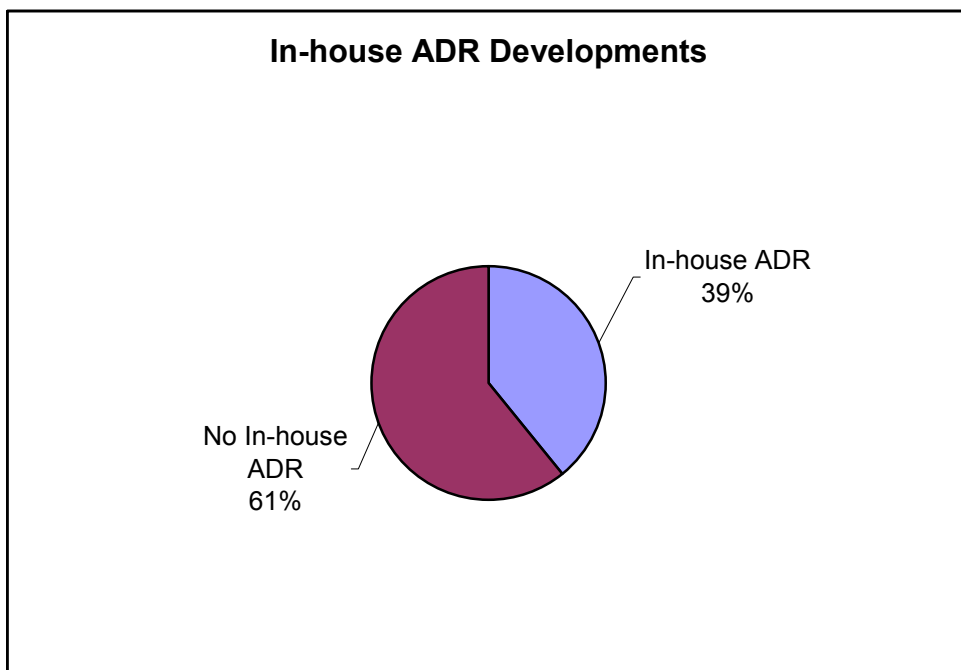
Pilot Plans for Application Data Routers

With the technology market in turmoil, purchase plans for new technology can be elusive. In order to gain a better understanding of when the market will evaluate ADR solutions, we asked respondents when they planned to pilot ADR solutions. A surprising 15% of respondents planned to pilot ADR solutions in 2002, increasing to 47% in 2003. Multiple responses were accepted, for example some respondents planned to pilot ADR solutions in 2002 and 2003.

The large percentage of respondents planning to pilot ADR solutions indicates a potentially larger market than we first thought. IT managers are faced with tough decisions on how to spend decreasing budgets. They must look for ways to get the best value for the dollars spent. ADRs show great potential for reducing integration costs and increasing performance and security. For some legacy custom applications, ADRs are the only feasible way to securely integrate with new Web services.

Chart 9-5: ADR Product Pilot Plans (n=89) Q30, 31, 32
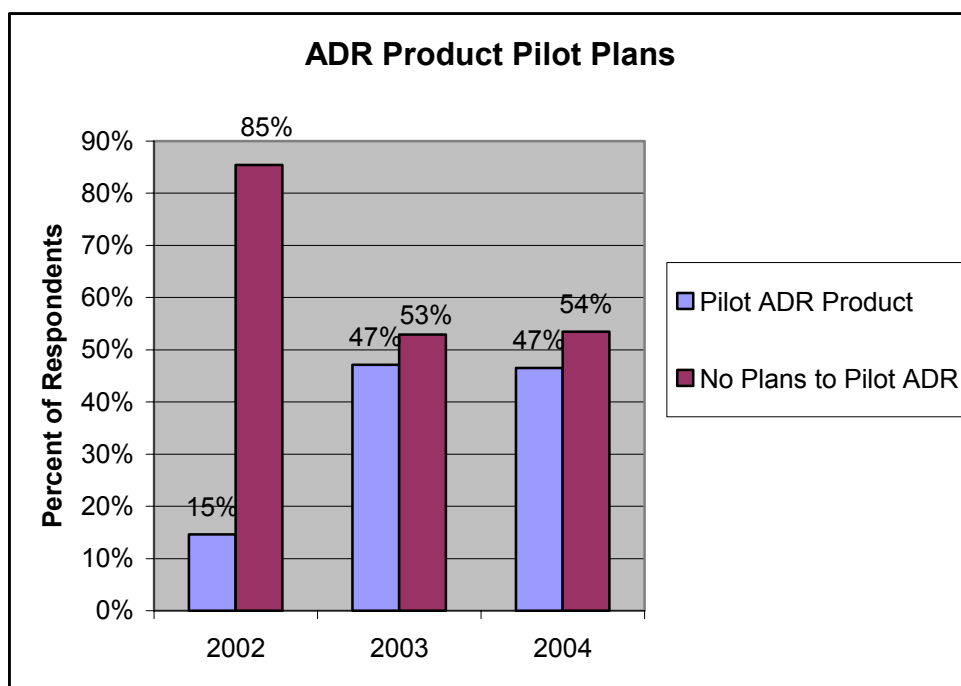
Reasons for Implementing ADRs

We asked respondents to rate, on a scale of 1 to 7, where 1 is not important and 7 is critical, the importance of the following reasons they would implement an ADR product. We define a respondents rating "critical" if they

rated the criteria a 5, 6, or 7. Security was rated at the top of the list by 86% of respondents. Security awareness is driving the need to closely examine all aspects of data networking for potential breaches and risk. Security will remain at the forefront of most IT group's agendas.

Reducing operational costs was second, rated critical by 73% of respondents. The economic crunch has forced many IT managers to examine how they spend precious budgets. ADR solutions are expected to reduce operational costs.

Chart 9-6: Reasons for Implementing ADRs (n=94) Q33

Reasons for Implementing ADRs

Reason	Percent Rating 5, 6, or 7
Security	86%
Reduce operational costs	73%
Improving current bottlenecks	64%
Implementing new apps not possible with current architectures	61%
Reduce deployment costs	60%
Reduce roll-out times	56%
Learning curve	44%
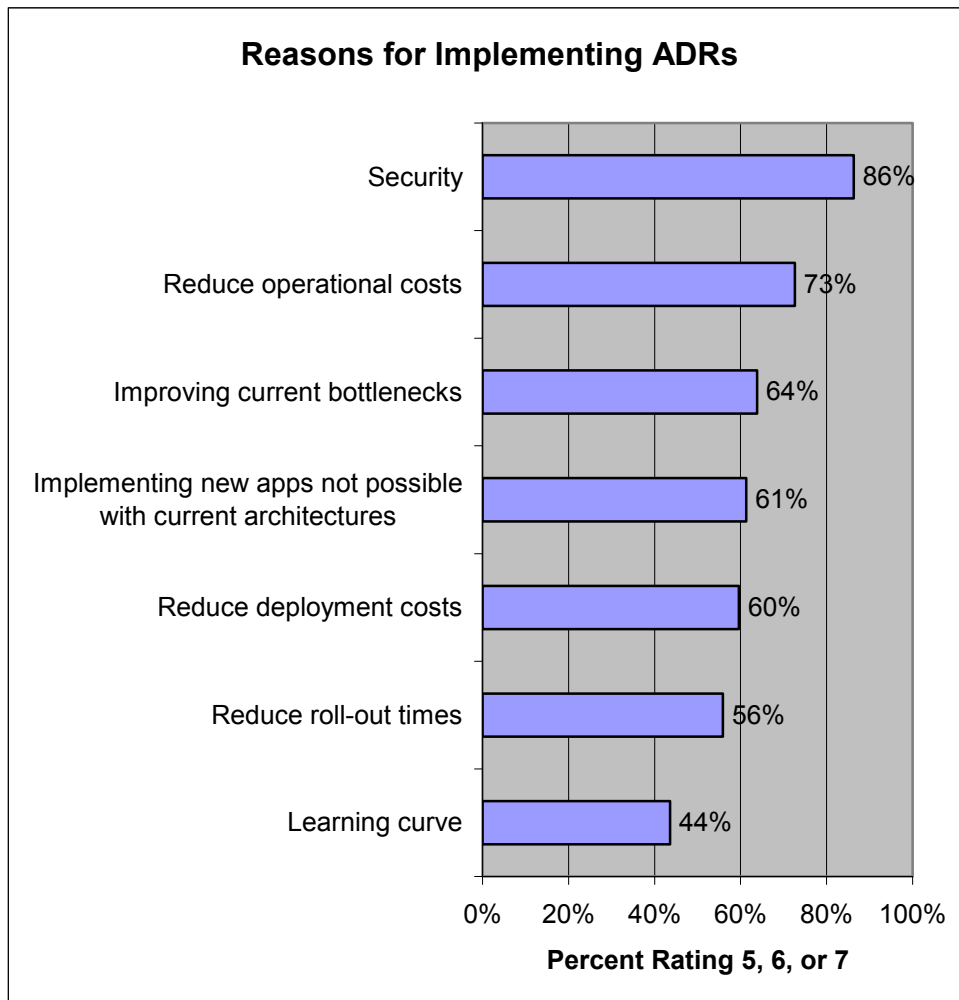
Application Data Router Brand Awareness

In an unaided brand awareness question, we asked respondents to name any ADR vendor that came to mind. The top 3 vendors named were IBM (25%), Microsoft (13%), and Oracle (9%). For the most part, respondents named software vendors with integration tools. While some integration tool vendors are working toward offering ADR products, few have true ADR products today.

Chart 9-7: ADR Vendor Mind Share (n=75) Q34

ADR Vendor Mindshare

Vendor	Percent
Don't Know	28%
IBM	25%
None	24%
Microsoft	13%
Oracle	9%
Cisco	5%
WebMethods	3%
Sun	3%
Tibco	1%
Mercator	1%
HP	1%
Ditria	1%
Cross World	1%
BEA	1%

Percent of Respondents
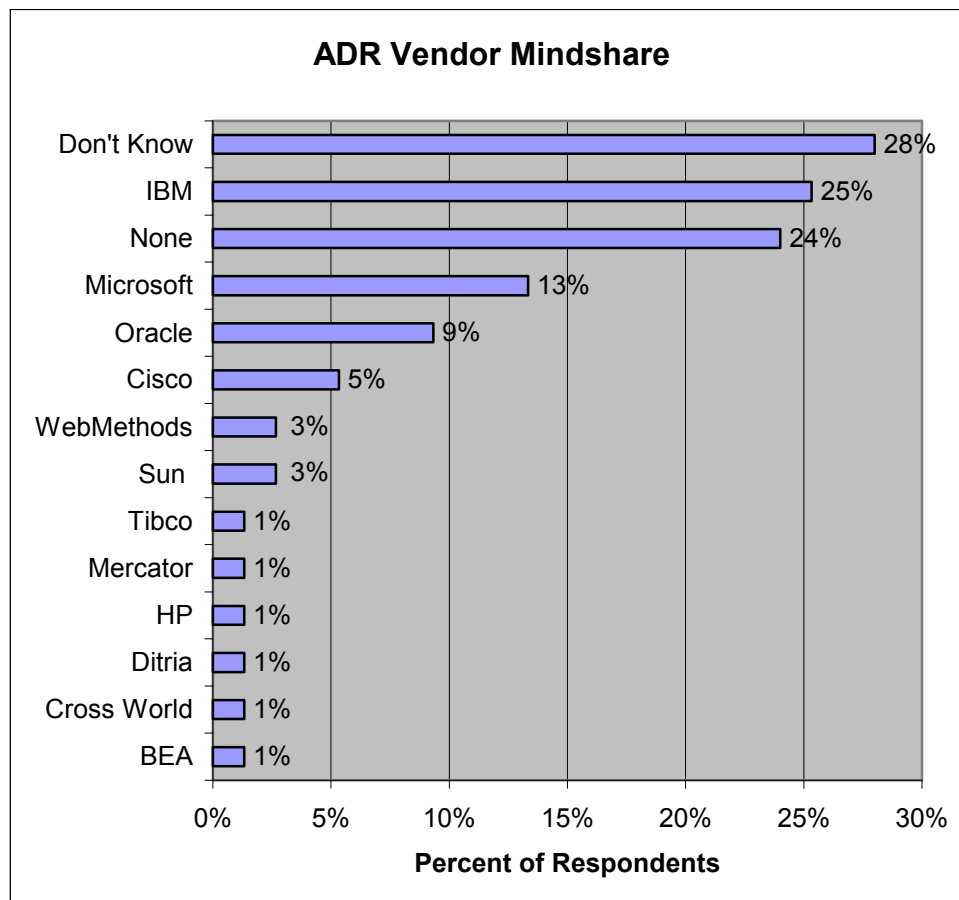
Application Data Router Deployment Strategies

We asked respondents to rate, on a scale of 1 to 7, where 1 is not likely and 7 is definitely, the likelihood of their organization implementing a product or service based on ADR solutions. We define a respondents rating "Definite" if they rated the strategy a 5, 6, or 7. The majority of respondents preferred an ADR product strategy (65%) verses a service strategy (15%).

Chart 9-8: ADR Product Strategies (n=89) Q35

ADR Deployment Strategies

ADR Product	65%
ADR Service	15%

Percent Rating 5, 6, or 7

(x-axis: 0% 10% 20% 30% 40% 50% 60% 70%)
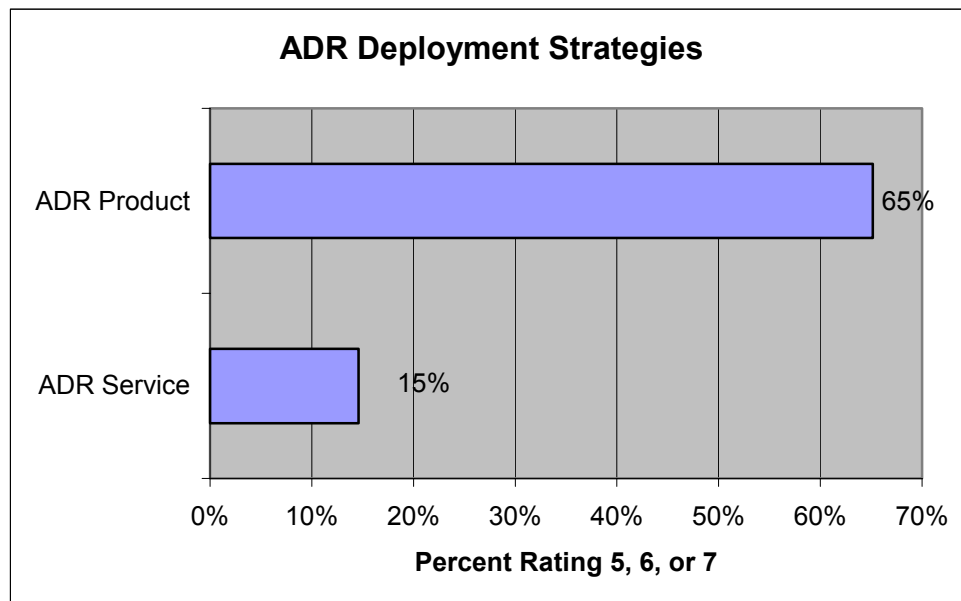
Favored ADR Solution Features

In an open-ended question respondents were asked what they liked most about ADR solutions. ADR technology is new and few respondents were intimately familiar with current ADR solutions. Consequently, only 65 respondents answered the question. The majority (54%) of respondents simply don't know. We categorized responses into the following categories: Development efficiency (12%), Increased performance (11%), Flexibility (9%), Automation (6%), and Security (6%).

Chart 9-9: Liked Most about ADRs (n=65) Q36

Liked Most About ADRs

Category	Percent
Don't Know	54%
Development Efficiency	12%
Increase performance	11%
Flexibility	9%
Automation	6%
Security	6%

Percent of Respondents
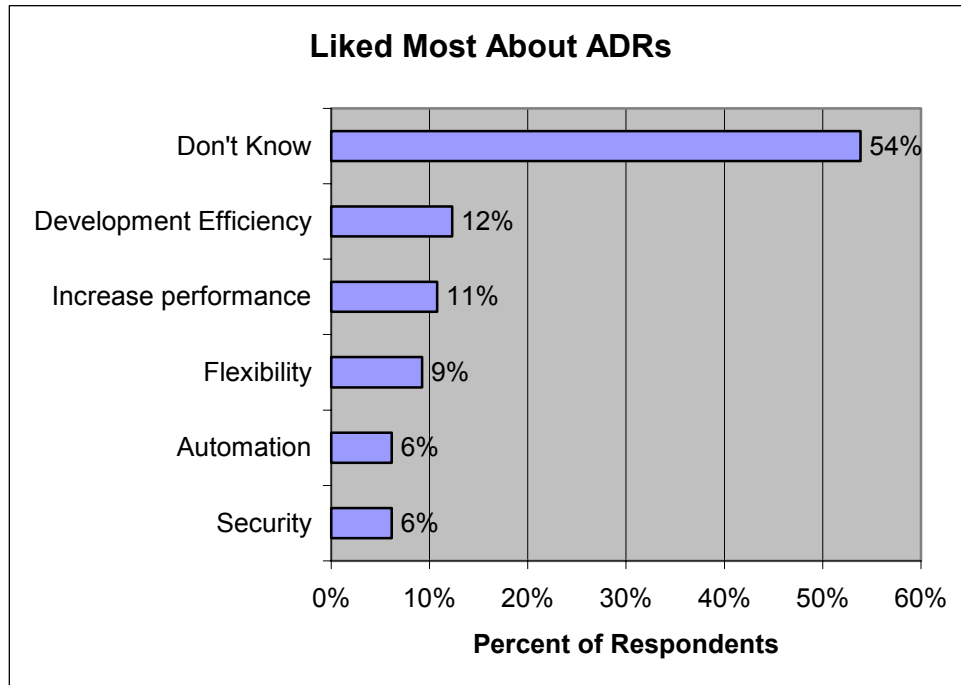
Critical ADR Features

Respondents were asked to rate features for ADR solutions on a scale of 1 to 7, where 1 is not important and 7 is critical. Respondents had to rate the feature a 5, 6, or 7, in order to be considered critical. Topping the list of features was, uses standards based protocols (93%). In the coming era of Web services, standardization is a key requirement for system interoperability. Integrates with existing environment was rated critical by 92% of respondents, further reinforcing the need for standardization. Seventy-nine percent of respondents rated the need to provide real-time data to partners as a critical feature for ADR solutions.

Chart 9-10: Critical ADR Features (n=91) Q39

Critical ADR Featurers

Feature	Percent
Uses standards based protocols	93%
Integrates with existing environment	92%
Provides real-time data to applications for partners	79%
Compatible with Web Service platforms	76%
Provides real-time data to customer applications	72%
Enables a clear ROI	62%
Provides real-time data for financial information	58%

Percent of Respondents Rating 5, 6, or 7

Web Site

Web Site Hosting

Respondents were asked to identify the category that best describes their hosting strategy for their organization's Web site. The majority (71%) of respondents host their own Web site, driving the need for multi-home locations. The deployment of Web services will further the need to connect public and private systems, creating points where data exchanges will need to securely pass data to a diverse application environment.

Chart 10-1: Web Site Hosting (n=100) Q20

Web Site Hosting Strategies

Category	Percent of Respondents
Self-hosted	71%
Hybrid colocation	16%
Hosted	6%
Colocated	7%

Percent of Respondents
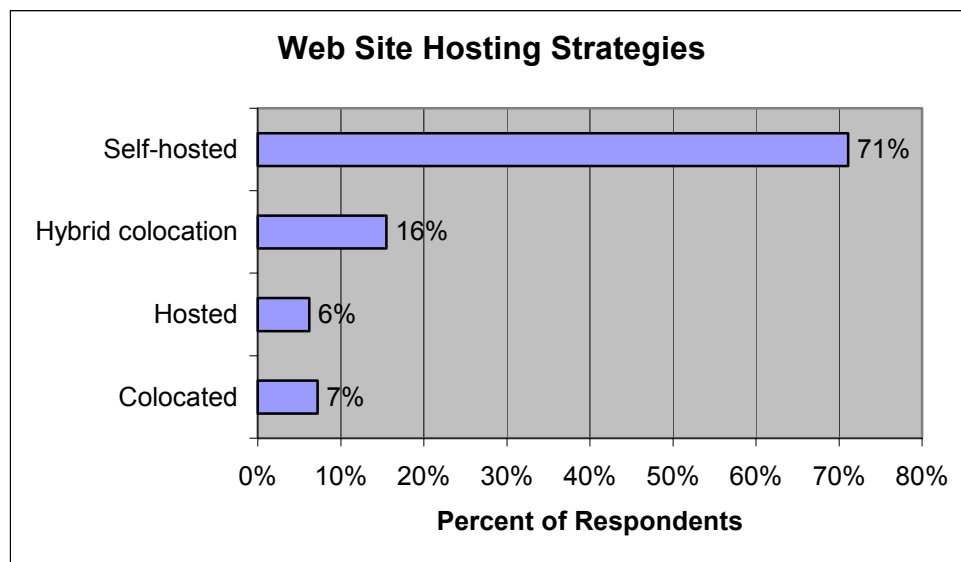
Expenditures

Expenditure Plans

In two open-ended questions, we asked respondents to approximate their expenditures in several areas for 2002 and 2003. Those expenditure areas include "Database Software," "Database Driven Applications," "Web Services Platforms," "Integration Services," and "XML and Integration Tools." The largest increase in expenditures from 2002 to 2003 was in database driven applications and XML and integration tools.

Chart 11-1 below shows the average expenditures for 2002 and 2003.

Chart 11-1: Expenditures (n=19) Q47 and Q48

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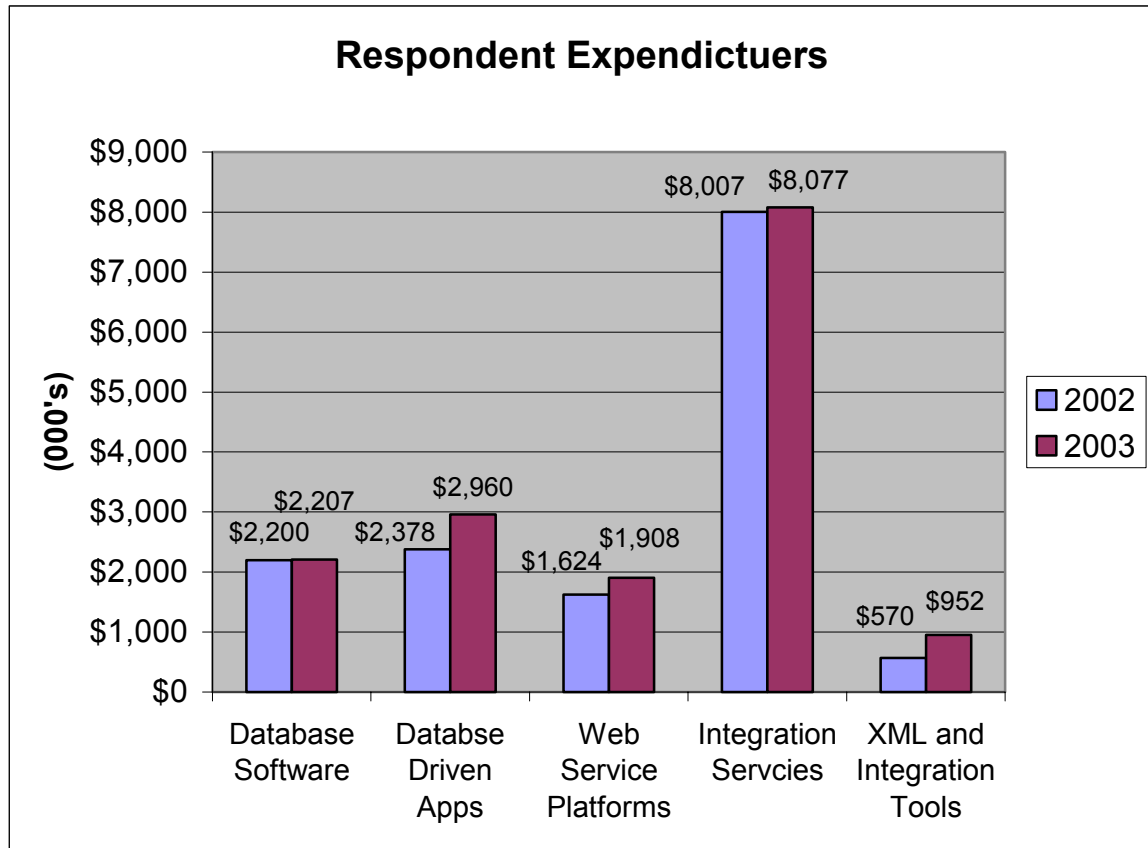
Market Messaging

Information Sources

In order to gain a better understanding of the best sources technical decision maker's use for learning about new products and services, respondents were asked to rate the sources of learning on a scale of 1 to 7. One is "not useful" and 7 is "very useful"; responses with a 5, 6, or 7 should be considered as being "most useful."

Of the top sources for information, "Independent White Papers" (73%) and "Vendor Web Sites" (72%), were reported by study respondents as the most useful. Independent white papers are essential for helping customers understand the technology of the product or service in general and the problem it addresses in the industry. In The HTRC Group's ongoing research, results have consistently shown that customers lack the educational material needed to diligently evaluate product and service offerings. Marketing confusion sets in when customers can recall the vendor's name but not what their product or service is used for.

"Vendor Web Sites" were rated by 72% of study respondents as very useful. A vendor's Web site is a useful and important source of information for customers. Customers visit vendors Web sites to gather and research information about your products and services. It is the first impression the customer experiences of your business even before they interact with a live person from your organization. Customers can be drawn to vendor Web sites by marketing efforts. For example, 57% of respondents rated "Vendor White Papers" a very useful information source. If a vendor's Web site does not offer product or service, educational material or the specific information prospects are looking for, they will likely consider another vendor for their buying decision.

"Trade Shows" continue to decrease in importance as only 46% of respondents rated them very useful. There are too many unfocused trade shows to send IT professionals to. The benefit of attending a trade show to gather information is diminishing because most of the beneficial information customers seek is collected on the vendor's Web site.

The chart below shows the different sources for learning and how they rated among the 97 respondents.

Chart 12-1: Critical Information Sources (n=97) Q42a and Q43a

Critical Information Sources

Source	Percent
Independent white papers	73%
Vendor Web sites	72%
Trade magazines	63%
Vendor white papers	57%
Trade show conference sessions	46%
Trade shows	46%
Online magazines	43%
Traditional seminars	40%
Online seminars	33%

Percent Rating 5, 6, or 7

0% 10% 20% 30% 40% 50% 60% 70% 80%
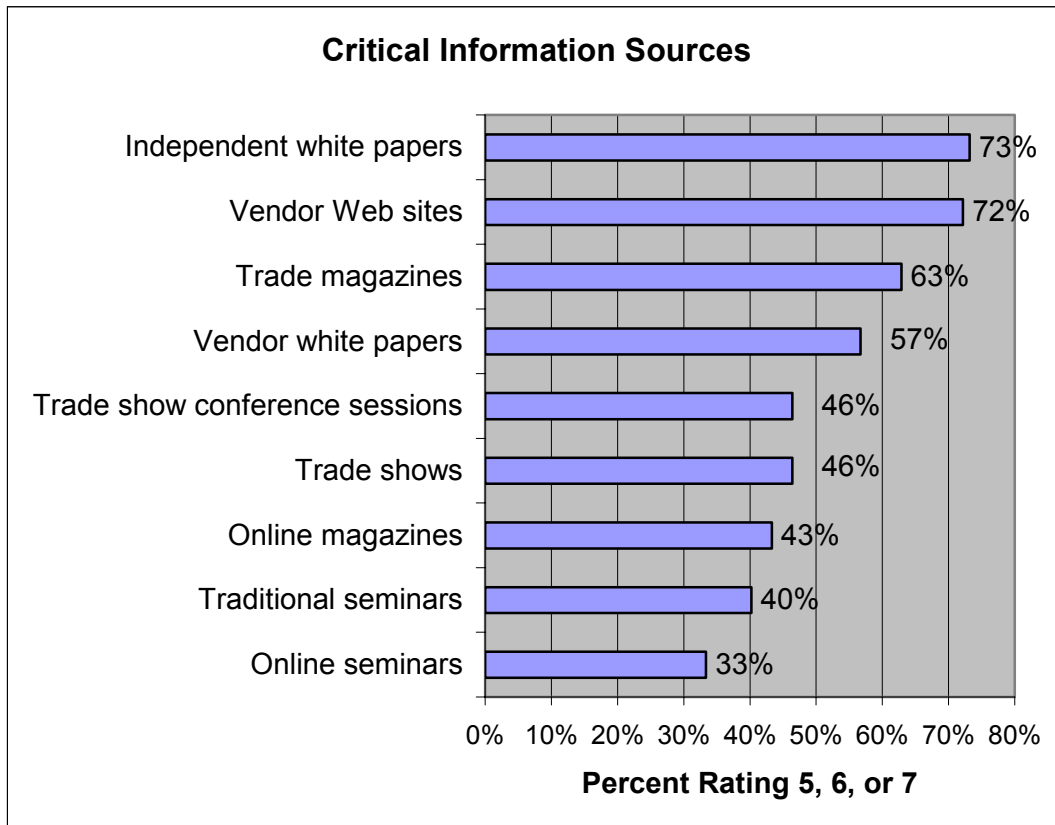
Top Publications

Content professionals read many publications; this creates a challenge when determining which publications to advertise in. In an open-ended question, we asked respondents for the top three publications that were influential in their purchase of products and services. The chart below shows the most influential publications.

The list of publications varied widely. Forty-six percent of the study respondents rated Internet World as the most influential publication. The list used for names was from an aggregated list of 20 publications. However, some publications collect more Web site professional titles than others. We believe this to be the case for Internet World, and may account for its frequent response. The significant publications with which product manufacturers and service providers should maintain close relationships also include Information Week (44%), PC Magazine (17%), eWeek (17%), and Computer World (16%).

Chart 12-2: Most Influential Publications (n=75) Q43

Influential Publications

Publication	Percent of Respondents
Other	80%
Information Week	44%
None	21%
PC Magazine	17%
E-week	17%
Computer World	16%
Network World	8%
CIO Magazine	8%
Internet Week	5%
InfoWorld	5%
Application Development Trend	5%

Percent of Respondents
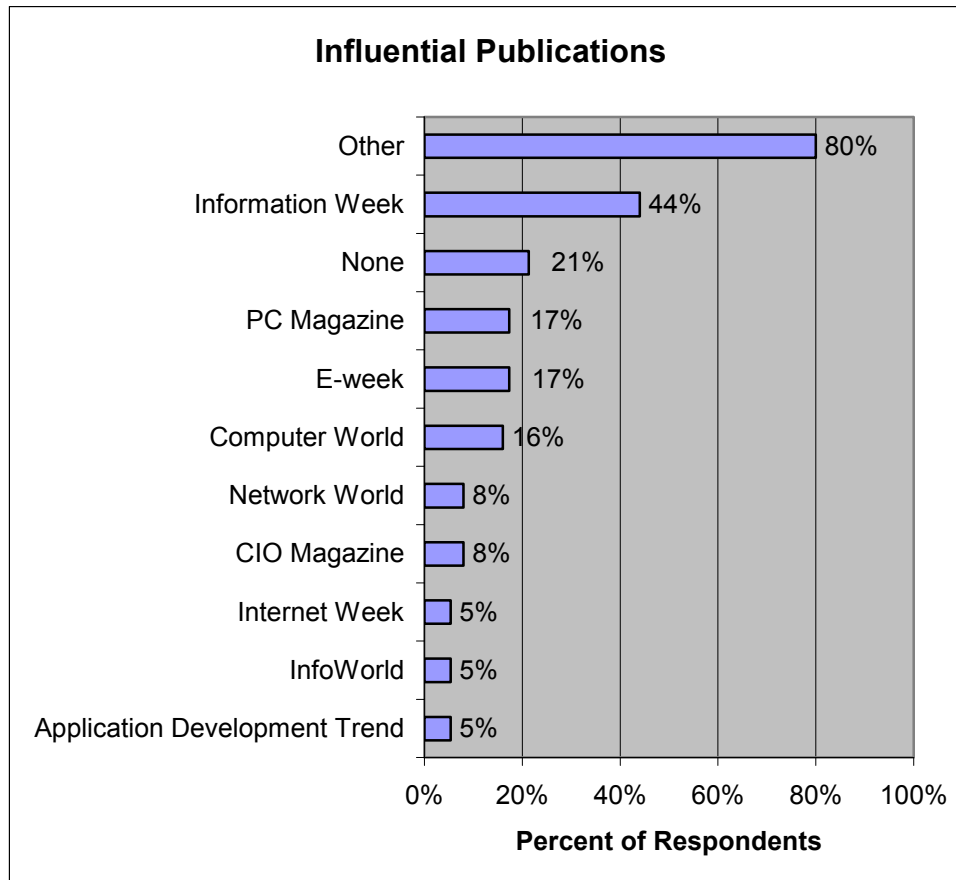
The Decision Maker

To better understand who the final decision makers are, we asked respondents, in an open-ended question to identify the individual(s), by title, in their companies who make the decision to choose ADR products or services. The chart below shows the breakdown of the categorized responses for company decision makers.

Product manufacturers and service providers must sell to both technical buyers and business buyers. Sales attempts and marketing material targeting specific buyers should include detailed technology information positioning the resiliency and redundancy of products and services.

The majority of the study respondents identify the Director of Information Systems (36%), Chief Information Officer (CIO) (31%), and IT Manager (26%) as the final decision makers.

Chart 12-3: Final Decision Makers (n=97) Q45

Final Decision Makers

Title	Percent
Director of IS	36%
CIO	31%
IT Manager	26%
VP of Technology	21%
CFO	16%
CTO	13%
Chief Network Architect	7%
CEO	6%
COO	4%
Webmaster	2%
Other	12%

Percent of Respondents

The HTRC Group, LLC © 2002
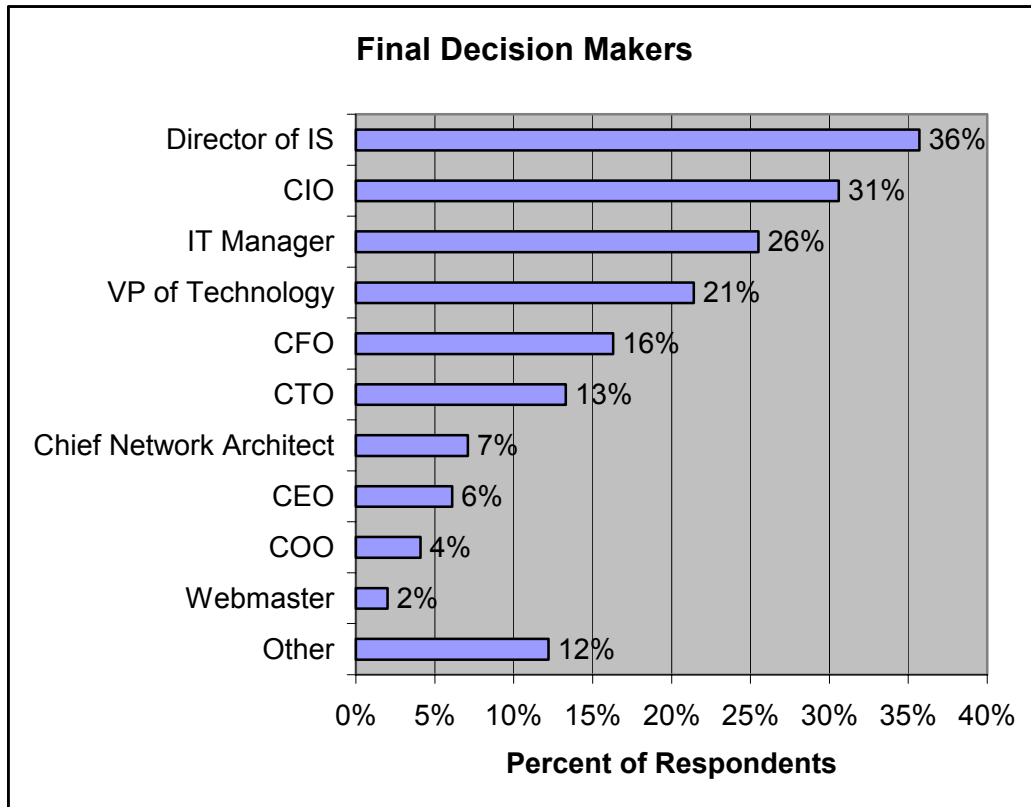
Barriers and Challenges

In order to gain a better understanding of the barriers IT professionals have with ADR solutions, we asked respondents in an open-ended question asking what the top 3 barriers for purchasing Application Data Router products were. We categorized the verbatim responses as follows: Learning curve (38%), Cost (35%), Budget (24%), Justification (19%), Time (18%), Don't know (14%), Compatibility (99%), None (9%), and Other (8%). The chart below shows a percentage breakdown by category of barriers. Please see the verbatim responses in the data summary in appendix C.

The top barrier, described by 38% of the study respondents, was the high learning curve in technology. ADR vendors have a diverse selection of products and services; many IT groups struggle with understanding new technology.

Chart 13-1: Purchase Barriers (n=74) Q44

Purchasing Barriers for ADR Solutions

Barrier	Percent
Learning curve	38%
Cost	35%
Budget	24%
Justification	19%
Time	18%
Don't know	14%
Compatibility	9%
None	9%
Other	8%

Percent of Respondents
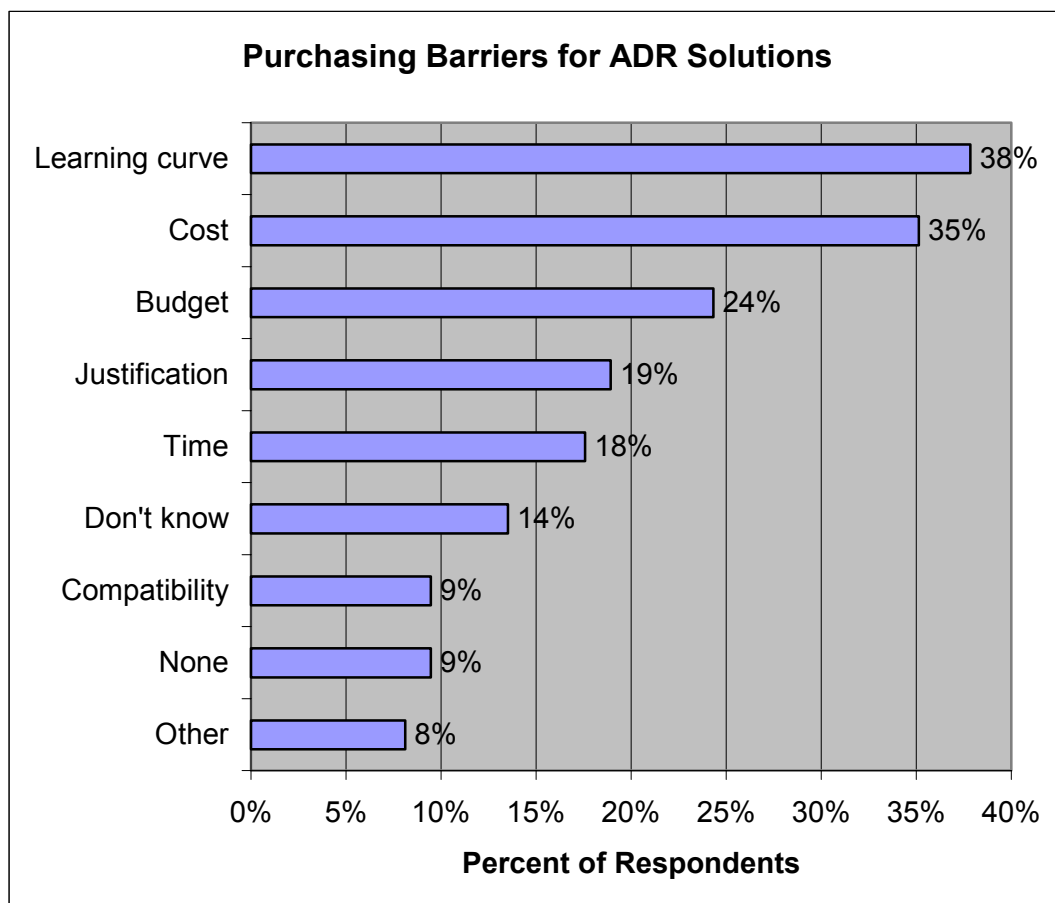
To gain a better understanding of the technical challenges IT groups face, we asked, in an open-ended question, what were the largest database/application technical challenges their company faces. We categorized the verbatim responses as follows: Integration (25%), Application performance (25%), Managing data (10%), None (8%), Learning curve (7%), Don't know (7%), Security (4%), Network performance (4%), Migrating to new systems (4%), Compatibility (4%), and Budget (4%). The chart below shows the percentage breakdown by category of the respondents' application and database technical challenges.

Chart 13-2: Technical Challenges (n=71) Q46

Database and Application Technical Challenges

Category	Percent
Integration	25%
Application performance	25%
Managing data	10%
None	8%
Learning curve	7%
Don't know	7%
Security	4%
Network performance	4%
Migrating to new systems	4%
Compatibility	4%
Budget	4%

Percent of Respondents
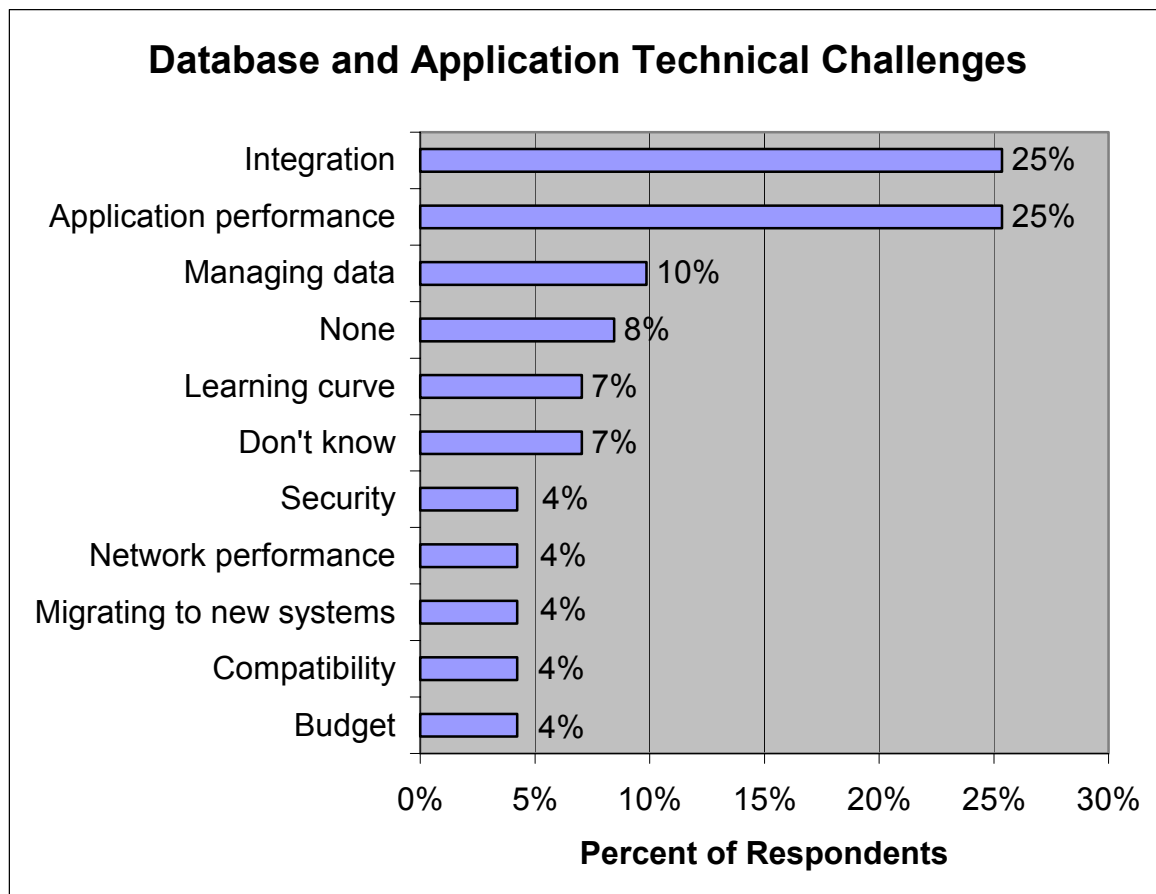
Appendix A

The 2001 Streaming in the Enterprise Study Questionnaire

1. Do you have detailed knowledge of your Web-based applications, Web services strategy, Applications, XML use, databases, and challenges? (check one)
   - ❍ Yes
   - ❍ No
   - ❍ Don't know

2. Would you say your company has 1000 employees or more or does it have less than 1000 employees?
   - ❍ 1000 + employees
   - ❍ Less than 1000 employees
   - ❍ Don't know

3. Approximately how many employees are in your entire company?

   Number of employees: _____

4. Of the following categories of decision makers, which would best describe your position when purchasing products or services? Are you a... (Check only one)
   - ❍ Primary decision maker
   - ❍ Secondary decision maker, that is you have *significant* influence on product or service procurement
   - ❍ Ancillary decision maker, where you have *some* influence on product or service procurement
   - ❍ No influence on purchase decisions

5. What is your company's line of business? (Check all that apply)
   - ❑ Accommodation and Food Services
   - ❑ Administrative and Support and Waste Management and Remediation Services
   - ❑ Agriculture, Forestry, Fishing and Hunting
   - ❑ Arts, Entertainment, and Recreation
   - ❑ Construction
   - ❑ Educational Services
   - ❑ Finance and Insurance
   - ❑ Health Care and Social Assistance
   - ❑ Information
   - ❑ Management of Companies and Enterprises
   - ❑ Manufacturing

❑ Mining

❑ Military

❑ Professional, Scientific, and Technical Services

❑ Public Administration, Government

❑ Real Estate and Rental and Leasing

❑ Retail Trade

❑ Service Provider, Telecommunication, ISP

❑ Transportation and Warehousing

❑ Utilities

❑ Wholesale Trade

❑ Other (Specify)_____

6. Do you use XML with database driven applications? (Check only one)

    ❍ Yes

    ❍ No

    ❍ Don't Know

7. Do you plan to use XML with database driven applications by April 2003? (Check only one)

    ❍ Yes

    ❍ No

    ❍ Don't Know

8. Do your Web-based applications run on infrastructure separate from your enterprise applications?

    ❍ Yes

    ❍ No

    ❍ We have no Web-based applications

    ❍ Don't know

9. If your organization uses or plans to use more than one database for a single application, what application requires the use of multiple databases? (open-ended)

    _____

    _____

    _____

10. Which of the following protocols are you using or planning to use in 2002? (Check all that apply)

- ❑ SOAP
- ❑ WSDL
- ❑ XML
- ❑ .NET
- ❑ J2EE
- ❑ CIBX
- ❑ EBXML
- ❑ EDI
- ❑ Are there any other protocols (Specify): _____

11. Which of the following protocols are you planning to use in 2003? (Check all that apply)

- ❑ SOAP
- ❑ WSDL
- ❑ XML
- ❑ .NET
- ❑ J2EE
- ❑ CIBX
- ❑ EBXML
- ❑ EDI
- ❑ Are there any other protocols (Specify): _____

12. Have you or do you plan to deploy Web-services in 2002? (Check only one)
- ❍ Yes
- ❍ No
- ❍ Don't know

13. Do you plan to deploy Web-services in 2003?
- ❍ Yes
- ❍ No
- ❍ Don't know

14. What Web application platforms (e.g. Application Server) does your organization plan to use in 2002? (Check all that apply)

❏ Microsoft's .NET

❏ IBM's Web Sphere

❏ Sun's Iplanet

❏ BEA Weblogic

❏ Cape Clear

❏ No plans for Web application platforms

❏ Don't know

❏ Or is it something else (Specify): _____

15. What Web application (e.g. Application Server) platforms does your organization plan to use in 2003? (Check all that apply)

❏ Microsoft's .NET

❏ IBM's Web Sphere

❏ Sun's Iplanet

❏ BEA Weblogic

❏ Cape Clear

❏ No plans for Web application platforms

❏ Don't know

❏ Or is it something else (Specify): _____

16. What Web-Services do you plan to deploy in 2002? (open-ended)

_____
_____
_____

17. What Web-Services do you plan to deploy in 2003? (open-ended)

_____
_____
_____

18. What are your key concerns for deploying Web-services? (open-ended)

_____
_____
_____

19. For each new Web-based application, does your organization use a new database and/or application server? (Check only one)

❍ Yes

❍ No

20. What application does your organization use for your various customer portals (customer, partner, employee)? (open-ended)

_____
_____
_____

21. What applications does your organization use for exchanging data between you and your trading partners? (open-ended)

_____
_____
_____

22. What applications does your organization use for exchanging data internally? (open-ended)

_____
_____
_____

23. What challenges are there in making real-time data available to these applications? (open-ended)

_____
_____
_____

24. Which of the following best describes the hosting strategy for your Web site? (Check only one)

❍ Self-hosted: host server(s) in your own network

❍ Hosted: entire site is hosted on service provider's server

❍ Colocation: your server(s) are hosted in service provider's network

❍ Hybrid colocation: host servers both in service provider's network and your own network

25. Of the following descriptions, please select all that describe your application and database infrastructure for 2002? (Check all that apply)
   ❑ We use a single database for each application
   ❑ We only have a single application running in our network
   ❑ We have multiple applications running in our network
   ❑ We use multiple databases for an application(s)
   ❑ We use multiple applications sharing a single database/infrastructure
   ❑ We have multiple applications running that use separate databases/infrastructure
   ❑ We have multiple applications running that share databases/infrastructure

26. Of the following descriptions, please select all that describe your application and database infrastructure for 2003? (Check all that apply)
   ❑ We use a single database for each application
   ❑ We only have a single application running in our network
   ❑ We have multiple applications running in our network
   ❑ We use multiple databases for an application
   ❑ We use multiple applications sharing a single database/infrastructure
   ❑ We have multiple applications running that use separate databases/infrastructure
   ❑ We have multiple applications running that share databases/infrastructure

For this survey we define **Application Data Routers** as systems that automate delivery of data from multiple sources to multiple destinations. They facilitate the movement of multiple data types whether they reside in databases, file systems, or enterprise applications. Application Data Routers allow companies to index relevant data, facilitate data transfer over open standards protocols, and programmatically access the router via Web Services. While XML and Web Services provide the standards and protocols necessary to more easily exchange data, data routers ensure that the flow of data between systems is handled in a reliable, secure, and scalable fashion.

27. Using our definition of Application Data Routers, are you familiar with these products? (Check only one)

   ❍ Yes

   ❍ No

28. With this definition of Application Data Routers in mind, what are the primary applications that will drive the adoption of these products? (open-ended)

   _____
   _____
   _____

29. Do you currently use an Application Data Router solution your organization has created in-house? (Check only one)

❍ Yes

❍ No

30. Do you plan to trial or pilot an Application Data Router in 2002? (Check only one)

❍ Yes

❍ No

31. Do you plan to trial or pilot an Application Data Router in 2003? (Check only one)

❍ Yes

❍ No

32. Do you plan to trial or pilot an Application Data Router in 2004? (Check only one)

❍ Yes

❍ No

33a. On a scale of 1 to 7, where 1 is not important and 7 is critical, please rate the importance of the following reasons you for implementing Application Data Router products? (Check rating)
   Staying ahead of the technology learning curve
   Improving current bottlenecks
   Implementing new apps not possible with current architectures
   Reduce the time it takes to roll-out new application
   Reduce operational costs
   Reduce deployment costs
   Security

33b. Are there any other reasons for implementing Application Data Router products? (open-ended)

_____
_____
_____

34. What vendors come to mind when you think about route Application Data Router products? (open-ended)

_____
_____
_____

35. On a scale of 1 to 7, where 1 is not likely and 7 is definitely, please rate the likelihood of your organization implementing the following options for Application Data Router products and services? (Check rating)
-Application Data Router products product managed and operated by *your* organization in your network
-Application Data Router service where the product managed and operated by a *service provider* in your network

36. What do you like most about Application Data Router products? (open-ended)
   _____
   _____
   _____

37. What applications are driving your need for Application Data Router products in **2002**? (Check all that apply)
   ❑ Web site

   ❑ VPNs

   ❑ Services /Web based applications

   ❑ e-Commerce

   ❑ Connecting disparate department applications together

   ❑ Connecting disparate department applications and enterprise backbone applications together

   ❑ Connecting disparate enterprise backbone applications together

   ❑ Connecting Legacy systems to new user interfaces

   ❑ Don't know

   ❑ Or is it something else (Specify): _____

38. What applications will drive your need Application Data Router products in **2003**? (Check all that apply)

- ❏ Web site
- ❏ VPNs
- ❏ Services /Web based applications
- ❏ e-Commerce
- ❏ Connecting disparate department applications together
- ❏ Connecting disparate department applications and enterprise backbone applications together
- ❏ Connecting disparate enterprise backbone applications together
- ❏ Connecting Legacy systems to new user interfaces
- ❏ Don't know
- ❏ Or is it something else (Specify): _____

39a. On a scale of 1 to 7, where 1 is not important and 7 is critical, please rate the importance of the following features for Application Data Router products? (Check rating)

Uses standards based protocols
Provides real-time data to applications for partnered organizations
Integrates with existing databases and applications
Compatible with the Web Service initiatives from Microsoft, Sun, BEA, and IBM
Enables a clear return on investment (ROI)
Provides real-time data to applications for customers
Provides real-time data for financial information

39b. Are there any other important Application Data Router product features? (open-ended)

_____
_____
_____

40. Does your organization currently have applications that connect to systems that are controlled by other organizations? (Check only one)

- ❍ Yes
- ❍ No
- ❍ Don't Know

41. Will your organization have applications that connect to systems that are controlled by other organizations in 2003? (Check only one)

❍ Yes

❍ No

❍ Don't Know

42a. On a scale of 1 to 7, where 1 is not useful and 7 is extremely useful, please rate the following sources for learning about new products and services? (Check rating)
Trade magazines
Traditional Seminars
Trade Shows
Vendor Web sites
Online magazines
Vendor White papers
Trade Show conference sessions
Online Seminars
Independent White papers

42b. Are there any other sources that are important for learning about new products and services? (open-ended)
_____
_____
_____

43. What are the top 3 publications that are influential in your purchase of products and services? (open-ended)
_____
_____
_____

44. What are the top 3 barriers for purchasing Application Data Router products? (open-ended)
_____
_____
_____

45a. What is the title of the person or persons responsible for making the final decision on Application Data Router products? (Check all that apply)

- ❑ Chief Technology Officer (CTO)
- ❑ Chief Executive Officer (CEO)
- ❑ Chief Financial Officer (CFO)
- ❑ Chief Operations Officer (COO)
- ❑ Chief Information Officer (CIO)
- ❑ Director of Information Systems
- ❑ VP of Technology
- ❑ Webmaster
- ❑ Chief Network Architect
- ❑ IT Manager
- ❑ Other, Specify Title: _____

45b. What is your title? (Check all that apply)

- ❑ Chief Technology Officer (CTO)
- ❑ Chief Executive Officer (CEO)
- ❑ Chief Financial Officer (CFO)
- ❑ Chief Operations Officer (COO)
- ❑ Chief Information Officer (CIO)
- ❑ Director of Information Systems
- ❑ VP of Technology
- ❑ Webmaster
- ❑ Chief Network Architect
- ❑ IT Manager
- ❑ Other, Specify Title: _____

46. What are your largest database/application technical challenges your company faces? (open-ended)

_____
_____
_____

47. How much has your company spent, or plan to spend, on the following expenditure areas for 2002? (Fill in expenditures)

Expenditures	2002
Database Software	$ _____
Database driven applications	$ _____
Web Services platforms (e.g. .NET)	$ _____
Professional integration services for database/application integration	$ _____
XML tools and integration	$ _____

48. How much has your company spent, or plan to spend, on the following expenditure areas for 2003? (Fill in expenditures)

Expenditures	2003
Database Software	$ _____
Database driven applications	$ _____
Web Services platforms (e.g. .NET)	$ _____
Professional integration services for database/application integration	$ _____
XML tools and integration	$ _____

Thank you for participating in the HTRC Group's Application Data Router study. We will email you a PDF version of the executive summary for your participation as soon as it is available in July.

Appendix B

Data Summary

Q.3 Number of employees:

Mean	33,200
Median	7,750
Mode	2,500
Trimmed Mean	18,568

Q.4 Decision Maker Types

Percent	Choice
17%	Primary
48%	Secondary
35%	Ancillary

Q.5 What is your company's line of business?

Percentage	LOB
38%	Manufacturing
27%	Finance and Insurance
16%	Educational Services
19%	Information
28%	Professional, Scientific, and Technical Services
17%	Public Administration, Government
16%	Health Care and Social Assistance
14%	Retail Trade
8%	Military
6%	Transportation and Warehousing
2%	Arts, Entertainment, and Recreation
2%	Real Estate and Rental and Leasing
6%	Service Provider, Telecommunication, ISP
3%	Utilities
5%	Accommodation and Food Services
0%	Administrative and Support and Waste Management Services
0%	Agriculture, Forestry, Fishing and Hunting
2%	Construction
0%	Management of Companies and Enterprises
0%	Mining
0%	Wholesale Trade

Q.6-7 XML use with database driven applications

2002	2003	
62%	88%	Yes
37%	9%	No
2%	4%	Don't Know

Q.8 Web-based apps run on infrastructure separate from your enterprise apps

Percent	Choice
66%	Yes
29%	No
1%	No Web-based applications
4%	Don't know

Q.10-11 Protocol use

2002	2003	
84%	92%	XML
48%	43%	EDI
41%	60%	.NET
36%	40%	J2EE
41%	57%	SOAP
18%	26%	WSDL
7%	14%	EBXML
1%	3%	Other
2%	3%	CIBX

Q.12-13 Web-services plans

2002	2003	
56%	78%	Yes
30%	9%	No
14%	14%	Don't know

Q.14-15 Web application server platforms

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2002	2003	
46%	52%	Microsoft's .NET
22%	16%	Other
35%	42%	IBM's Web Sphere
19%	22%	Sun's Iplanet
15%	14%	BEA Weblogic
14%	12%	Don't know
2%	2%	No plans for Web application platforms
0%	0%	Cape Clear

Q.19 - New database and/or application server for each new Web-based application

Percent	Choice
39%	Yes
61%	No

Q.24 - Web hosting strategy

Percent	Choice
71%	Self-hosted
16%	Hybrid colocation
6%	Hosted
7%	Colocated

Q.25-26 Application and database infrastructure strategies

2002	2003	
86%	86%	Multiple applications running
67%	66%	Use multiple databases for an application
59%	65%	Multiple applications share databases
64%	66%	Multiple applications sharing a database
64%	63%	Multiple applications use separate databases
27%	27%	Single database per application
4%	4%	Single application running

Q.27 Are you familiar with ADR products?

Percent	Choice
66%	Yes
63%	No

Q.29 Use an in-house ADR Solution

Percent	Choice
39%	Yes
61%	No

Q.30-32 Do you plan to trial or pilot ADR products?

2002	2003	2004	
15%	47%	47%	Yes
85%	53%	54%	No

Q.33a Reasons for implementing Application Data Router products?

(Percent rating 5, 6, or 7)

86%	Security
64%	Improving current bottlenecks
56%	Reduce the time it takes to roll-out new application
73%	Reduce operational costs
60%	Reduce deployment costs
61%	Implementing new apps not possible with current architectures
44%	Staying ahead of the technology learning curve

Q.34 What vendors come to mind when you think about ADR products?

Percent	Open Ended Response
41%	None
20%	IBM
15%	Don't Know
10%	Microsoft
7%	Oracle
7%	Cisco
2%	BEA
2%	HP
2%	Sun
2%	TIBCO
2%	WebMethods

Q.35 Implementation options for ADR products and services

(Percent rating 5, 6, or7)

65%	ADR Product
15%	ADR Service

Q.37-38 Applications driving need for ADR products

2002	2003	
42%	42%	Web site
45%	58%	Web based applications
42%	51%	Connecting Legacy systems to new user interfaces
32%	36%	Connecting department apps
33%	38%	e-Commerce
37%	45%	Connecting department apps to enterprise apps
37%	47%	Connecting enterprise backbone applications together
34%	25%	Don't know
21%	21%	VPNs
5%	4%	Other

Q.39 Critical ADR features

(percent rating 5, 6, or 7)

92%	Integrates with existing databases and applications
93%	Uses standards based protocols
79%	Provides real-time data to applications for partnered organizations
76%	Uses Is compatible with the Web Service initiatives
72%	Provides real-time data to applications for customers
62%	Enables a clear return on investment (ROI)
58%	Provides real-time data for financial information

Q.40-41 Have applications that connect to systems controlled by other organizations

2002	2003	
57%	59%	Yes
37%	32%	No
6%	9%	Don't Know

Q.42 Critical information sources

(Percent rating 5, 6, or 7)

73%	Independent White papers
72%	Vendor Web sites
43%	Online magazines
63%	Trade magazines
57%	Vendor White papers
40%	Traditional Seminars
46%	Trade Shows
33%	Online Seminars
46%	Trade show conference sessions

Q.45a Final decision makers for ADR Products

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Percent	Title
31%	CIO
36%	Director of IS
26%	IT Manager
13%	CTO
21%	VP of Technology
12%	Other
16%	CFO
6%	CEO
7%	Chief Network Architect
4%	COO
2%	Webmaster

Q.45b Respondent titles

Percent	Title
67%	Other
22%	IT Manager
2%	CTO
2%	Chief Network Architect
1%	CIO
6%	Director of IS
1%	VP of Technology
0%	CEO
0%	CFO
0%	COO
0%	Webmaster

Q.47-48 Average respondent expenditures

2002	2003	
$2,200	$2,207	Database Software
$2,378	$2,960	Database Driver Apps
$1,624	$1,908	Web Service Platforms
$8,007	$8,077	Integration Services
$570	$952	XML and Integration Tools

Appendix C

Verbatim Responses

Q.9 What application requires the use of multiple databases?

SAP
SAP R/3
SAP, CBMS (Customer Business Management System), CCS (Central Customer System), WMIS (Work Management Information System)

Sales
CRM
Inventory
Sales forecasting
Oracle, Siebel

Health Care
Health care system
Medical records
Multiple
Oracle, IDMS
Pathlore, surgical information systems

Financial
Billing and accounting
Financial application uses 3 dbs Subscriber management app uses 2 db publication application
Financial apps
Financial transactions
Point of sale, and warehousing applications (custom home grown)
We have an internet-based payroll application that runs on at least three servers (Gui, Oracle database, temporary library) plus additional servers for extra features

Don't Know
Don't Know
Don't Know
Don't Know
Don't Know
Don't Know
Confidential
Confidential
Multiple areas will be run from more than a single database

None
None
None
None
None
None

None
None
None Yet
Not cut and dry
One DB
We use single DB, will use multiple in future
Single instance database environment, SQL and Oracle, no use of multi DBs yet

Other
Data warehousing
Email
GIS, and remote sensing applications
HR
News content
Nutrition Cardex
Our learning and content management system and our student tracking system
Programmatic applications
SQL Server and Sybase
Supply chain
Target and marketing
Traveling units
Web access to customer accounts
Web Applications

Custom
311 systems, 12 oracle servers, municipal court, financial, some in-house apps, Maximus Access, SQL server
Custom application: Claims that utilize work flow projects   Bought work flow engine, now building around that
Custom health care application
Custom sales application
Custom sales inventory application
Integration of legacy applications
Oracle MS SQL
Sequel Server 1st choice, Oracle 2nd choice (but only if we have to) We try not to use multiple DB's
IAS & ODBC, you develop your own
Mainframe: Oracle Data warehouse: SQL server
Sequel server
Statistical analysis of Workers Compensation claims and employer rating
We run an in house developed application that utilizes 18 separate SQL databases, as well as individual databases for specific needs.
We use an SIS and MIS database
Product administration, in house apps
Core business applications run on the legacy HP3000 platform, using the Image DBMS. All extensions of these core applications (e.g. e-commerce) utilize these databases in conjunction with RDBMS - e.g. SQL Server
Project management, oracle Sybase
Work flow applications uses the data from several different platforms

Q.16 What Web-Services do you plan to deploy in 2002?

Reporting
Report generator
Reporting tools

Customer Support
Customer support
Web-based Customer Self Service, Web-based Employee Self Service

Advertising
Advertising front end
ArcIMS

eLearning
Computer Based Education Classes
On-line interactive testing

Medical Applications
Medical applications
Medical applications
Patient health care application
HIPPA

HR Applications
Going to replace all corporate apps within the next 2 years: payroll, HR, muni. court system
HR apps
HR materials, MIS services
Pilot HR apps

Collaboration
Collaborative engineering; supercomputing
CORBA
Government procurement
Grade, pay, and more
Paging
Travel based

Financial
Financial
Financial applications
Financial transactions
Financial transactions
Info delivery, trading and exchanges
Online credit card servicing, online banking applications, and instant credit decisioning

Don't know
Don't know
Don't know
Don't know
Don't know

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Don't know
Don't know
Don't know
Not sure
Confidential

Web Service Platforms
.Net
.Net
.Net and J2EE
Web service to support GIS (Global Information Systems) to work with existing applications. Also
working with an outside vendor to doe stuff with reporting
Web-Sphere and .NET
WebSphere based services
Microsoft .net, plus vertical venders far ors
Microsoft based web apps, that talk to an oracle back end db
Oracle

Account Management
Billing, hosting services, customer requested applications
Subscriber management
Subscriber management
Supply chain management
E-Hub, hosting apps
For customers, Biz Talk Server
Ordering, scheduling
Purchasing
Student oriented applications--business processes and student administration over the web
E-business

Custom Applications
Custom apps. for customers
Custom enterprise app
Internal apps
Internal compensation processing system which needs to communicate with international base of
Independent Distributors in 54 countries
Internal Intranet-based applications
Internally developed software distribution web services
JAVA based JSP, J2E
Data acquisition and data serving
Personal Information Kiosks for all employees
JSP type of applications, server pages in XML—e-commerce, intranet applications
Programmatic applications for user web usage
In 2002 we are looking to place all facilities in our department and all Programs run by our
department on the web, this first stage will be in read only access

None
None
None
None
None

None
None
None
None
None
None
None
None
None
None
None
None
None
None
None
None
None
None

Q.17 What Web-Services do you plan to deploy in 2003?
Collaboration
Collaborative engineering; supercomputing
Paging

Customer Support
Customer support
Web-based Customer Self Service, Web-based Employee Self Service

eLearning
Computer Based Education Classes, Online Registration and Payment with different back end integration
On-line interactive testing
Perhaps web hosting for some of our training applications

Financial
Financial
Financial applications
Financial transactions

Medical Applications
ArcIMS
Medical
Medical applications
Patient health care application

HR Applications
HR & MIS continued expansions, Programmatic applications
HR applications
HR applications
HR applications

Account Management
E-Business
Sales application
Sales application
Purchasing
Student oriented applications--business processes and student administration over the web
Supply chain management

Web Service Platforms
.NET
.NET
.Net
.Net and J2EE
Biz Talk Server
Expanding MS based apps to customers, suppliers, and partners, EDI
Web-Sphere and .NET
WebSphere based services

None
None
None
None
None
None
None
None
None
None

Custom Applications
Configuration
CORBA
As many as possible
As many as possible
Client front end, thin client version of current applications
Customer Access Objects
Customer access to database data
Customer requested applications
Data acquisition and data serving, migrating other enterprise application over to be web based
Expansion of 2002 applications as well as new areas for automation
Extensions of our 2002 initiatives
Going to replace all corporate applications within the next 2 years: payroll, HR, Municipal court system
If the budget allows we hope to make the facilities reservation and program registration interactive to allow our customers to make there own reservations on-line; In addition we will be placing the Golf Courses on the web
Increased use by Supervisors and Managers
Internal applications
Internal Intranet-based applications
Internally developed software distribution web services
JSP type of applications, server pages in XML—e-commerce, intranet applications

Legacy applications
Legacy applications will be migrated from HP3000, opening up massive possibilities for future years
More of the same
The remaining corporate applications
Travel based
We will offer our services as a web service and sell software to others that is WS enabled

Don't know
Don't know
Don't know
Don't know
Don't know
Don't Know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Confidential
Confidential
Confidential
Depends on how first Web services go
More, depending how initial deployments go
Not Sure
Not sure
Not sure yet, evaluating which ones will work
Not sure, see how first install goes
Others, not sure it depends on how first implementation goes
Same as 2002
Same as last year
Same ones

Q.18 What are your key concerns for deploying Web-services?

Control
Control
Control, reporting

Standards
Standards are not in place, competing standards
Standards compliance
Standards still in a state of flux

Cost

Cost
Cost of migrating and lic from Microsoft
Future Microsoft licensing considerations to update the MS Office suite to .NET once we start
using Web-services
Primary concerns are costs and support

Ease of use
Ease of maintenance
Ease use
End users Pref's, Stability and ease of use
That they be end user friendly and that they work

Learning Curve
Having skills and infrastructure in place
No experience
Retaining skills for personnel
Time to develop and lack of internal experience

None
None
None
None, don't have any
None, No need
None. We are IBM
Not needed yet
No concerns at this time

Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Unsure

Reliability
Available at all times
Finding apps that are needed to be used, ability to connect to services, ability to use services
that we have registered
Reliability
Reliability
Reliability
Reliability
Reliability
Responsiveness
Data loss

Integration

Ease of development
Flexibility
Infrastructure
Integration
Integration
Integration and legacy integration
Integration problems
Interoperability
Legacy integration
Network infrastructure, does the cable plant sufficient, servers, etc...
Content management (integration)

Performance

Response times
Performance
Performance
Performance
Performance
Performance
Performance
Performance
Performance
Performance
Performance
Performance
Performance
Performance
Performance
Performance
Performance
Performance
Performance and bottlenecks
Performance for a good price
Machines able to run, licensing, cost
Network performance
Response time
Speed
Speed
Speed
Speed of delivery
Enterprise functionality

Security

Security
Security
Security
Security
Security
Security
Security

Security
Security
Security
Security
Security
Security
Security
Security
Security
Security
Security
Security
Security
Security
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Security
Security
Security
Security
Security
Security
Security
Security
Security
Security
Security
Security
Security
Security
Security
Security
Security
Security
Security
Security
Security of data
Post 9/11/01 no out access through firewall
Lots of proprietary information not for public
The biggest concern is always security not only protecting our existing programs but making the
Payment information from the customers secure; I have had problems in the past with credit card
verification and posting; One of the products in use in the past was posting a single transaction
up to four times for a single transaction. This became a bookkeeping nightmare

Q.20 What application does your organization use for your various customer portal?

BEA

BEAWeblogic

Datatel

Datatel

IBS

U Portal by IBS, Java based

Iplanet

Iplanet

Informative Graphics Corp

Net-It central

PeopleSoft

PeopleSoft, Cognos

Siebel

Siebel and Smartstream

Microsoft

Exchange
.NET
We only have one Portal; Our Physician Portal is a .NET Web-based application, and development is somewhat faster in this programming environment than in the Windows arena, so Providence can expect to get new versions more frequently than in the past

Epicentric

Epicentric
Epicentric
Exchange

Oracle

Oracle
Oracle
Oracle applications; PeopleSoft; several others
Oracle Documentum

SAP

SAG EntireX, IVR
SAP
SAP and custom developed applications
SAP, TIBCO

Plumtree

Plum tree, homegrown
Plumtree
Plumtree

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Plumtree
Plumtree
Plumtree
Plumtree

None
No portal software
No portals
No portals
No portals
None
None
None
None
None
None
None
None
None
None
None
None yet
None yet
N/A

Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Employee portal
Confidential
TBD

Custom
Built it in house
Custom
Custom
Custom
Custom built

Custom, in-house
Developed in-house
Help services, state government portal
I know we use Java and Oracle databases, plus IBM Blue Gill I develop training on using the end product
In-house and CEBO
Internally developed pages served off IIS server; These are developed using a variety of development tools
Portal for employees
Proprietary
Various
Various
B2B, B2C and B2E apps
CRM like Epiphany
Document presentation
Black Board, Citrix, and others

Q.21 Applications used for exchanging data between trading partners?

ArcIMS
ArcIMS

BizDoc
BIZ DOC

Bluegill
Bluegill billing software

Mercator
Mercator

Microsoft
Exchange Microsoft products

Siebel
Siebel, WebSphere

FTP
FTP, email, Oracle. State servers-sequel server
FTP, Secure File Transport, magnetic tape
FTP, tapes, disks, IDMS cobalt based

EDI
EDI
EDI
EDI
EDI
EDI, File TRansfer, OFX
EDI, FTP, home grown
EDI, x12, XML
SAP, EDI

Web based apps or EDI

Don't know
Confidential
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Web
Web

None
Don't exchange data
Don't exchange data for security reasons
N/A
N/A
N/A
N/A
N/A
N/A
None
None
None
None
None
None
None
None
None
None
None
None
None yet
Not decided yet
Physical file interchange, XML in the future
The Coast Guard has no trading partners

Custom
Currently legacy, future TBD
Custom

Custom
Custom
Custom
Custom
Custom
Custom
Custom
Custom
Developed in-house
Exchange, legacy mail train, EDI, web services type data flow
Homegrown
In-house and equalled (not public, financial organizations only)
In-house development
In-house development
Materials management, financial applications, accounts payable, sourcing, transportation, medical applications
No standard application, custom
Proprietary
SQL, ASCII text files; Transmission over VPN and SSL secure HTTP posting, as well as Sterling Commerce Connect Direct and BARR RJE
Use Java and Extricity, will use Webmethods
Uses custom file definition on file server (10 different versions)
Various
Various
VB, VBnet, XML spy
We are using Java and XML based web protocol written by software vendors; The databases are a mixture of Oracle, SQL and Access
We have internal interface programs that are based on the HL7 protocol
We have private data connections that go behind each others Firewalls
Oracle

Q.22 Applications used for exchanging data internally?
Datatel
Oracle, Datatel

Documentum
Documentum, NT 2000

Informative Graphics Corp
Net it central

Lawson
We use Lawson ERP to exchange internal business data

McKesson
McKesson software for Health Information Systems

Mercator
Mercator

SAP

SAP

Siebel
Siebel, WebSphere

EDI
EDI
Web based apps or EDI

FTP
FTP
FTP, Email
FTP, shared mainframe DASD, IBM RJE
FTP, tapes, disks, IDMS cobalt based

Microsoft
Microsoft Office
Microsoft Office, Lawson
Microsoft share point
MS IIS
Outlook, Exchange

Lotus
LOTUS Notes, Oracle, ASP
Louts Notes
Louts Notes and Domino
Novell, Louts Notes
Lotus Notes
Intranet and Lotus Notes Domino

Don't know
Confidential
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
No Standard
Web, intranet
ERP & CRM

None

N/A
N/A
None
None
None
None
None
None
None
None
None
None
None
Primary exchange options are via email, distribution lists, online chats, conference calls, and video teleconferencing
WAN and LAN
ViewNow, Microsoft file sharing, and Samba

Custom
Custom
Custom
Custom
Custom
Custom
Custom
Custom
Custom
Custom
Custom
Custom
Custom built
Custom built for legacy mainframes and applications servers
CUSTOM, MQ Series, MDM, Secure STP
DB Platforms, email, data sharing, Lotus notes, outlook and exchange
HL7, XML
Homegrown, Biztalk in the future
In-house applications
In-house development
In-house development
Mainly legacy, future TBD
Many
MQ series and custom in-house
MQ series for mainframe
NT DB2 connect and many others
Oracle
Same as this year
SQL, OLAP
TIBCO
Uses custom file definition on file server (10 different versions)
VB, VBnet, XML spy

J2EE and SOAP

Q.23 What challenges are there in making real-time data available to these applications?

Database synchronization
Application performance and database synchronization
Synchronization both ends at the same time, length of data, size of messages, speed
Syncing communicating between oracle database and as/400
Database synchronization between applications
Keeping data up to date

Learning Curve
People, education
Building system skills
Poor programming and lack of technical support
Rate of data change
Trying to find middle ware that would ease that process

Network
Connections
Connectivity
Infrastructure, security, speed of Internet, VPNs
Networking issues
Our patchwork infrastructure, outdated equipment, and limited computing environment
The biggest challenge is trying to keep traffic to a minimum to lower the amount of data traveling across the backbone

None
None
None
None
None
N/A
No need
Don't do real time, we have 24 hour delay and no order taking

Other
Depends on the application
Getting the development time, the que is growing
Protocols
Standards
Cost of implementation
Time to do it
Updates
Data mining/warehousing
Error recovery

Security
Security
Security and access control
Security and telecommunications load (bandwidth)

Security vs. speed is always a problem
Security
Performance, security, validation
No software related and security
Security and authentication and authorization are fragmented
Security, and time
Security, performance

Performance
Application performance
Application responsiveness
Performance
Performance
Performance
Performance issues, high volume, security
Performance
Processing time, file availability, size of data
Response time
Database performance
Scalability & availability
Storage space, and a high performance storage array

Compatibility
Getting applications to work together
Dealing with the issues of distribution of software
IDMS is our large DB, it's non relational, not open DB
Integration
Integration issues, compatibility
Interface program development
Problems getting different applications communicating
The custom development that is required
Transaction processing service, generally data is structured and formatted for processing, making it real time for users requires
Writing interface to exchange data with mainframe and getting info outside in format that's useful to customers
Not in a relational format, huge legacy apps
Biggest challenge is the legacy platform
Connecting, formatting
Defining interchange language
Data formatting and integrity
Data integrity and incompatibility

Don't know
Don't know
Don't know
Don't know
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Don't know
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Don't know
Don't know

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Don't know
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Don't know

Q.28 What are the primary applications that will drive the adoption of ADR products?

Development tools
Applications development tools

None
N/A
None
None

Financial
Credit card processing/settlement
Financial application data and information
Financial systems within the university, and human resources
Order Processing, Material Control, Inventory Management
Service accounting with back end billing
Financial planning, collaborative work; business orders/invoicing

High volume apps
Data intensive applications
Applications that need data or that makes requests
Demand by customer, server load
Everything we run
Programmatic applications
Real-time use of data
Speed routing
Availability

Web services
Web services
Web services
Web services
Web services
Web services
Web services
Web services
Web services
Web services
Web services

Web services
Web services
Microsoft

Connecting legacy apps
Connecting legacy applications to new web services
Connecting legacy applications to web services
Connecting legacy applications together
Integrating legacy applications to web services
Internal system (CRM, Marketing, Credit, Risk)
Inventory control systems other proprietary
Just made discussion to purchase these types of systems, the methodology that is imbedded in these systems will drive how we operate in the future
Moving legacy stovepipe applications to common upgradeable architecture
CRM, telephone based, finance
Customer facing, cross cell initiatives, customer service reps., call center applications, sale management applications, financial, market analysis
Data mart, people soft, partner applications
Directory services, customer systems
Share data between forest services and bureau of land management
Trading, Billing, Reporting, acct. maintenance
Transfer of data to customers
Transfer of data to customers in various ways. Customers are internal as well as external
Use of SSA data entry for many programmatic applications
Already in place but not for everything we use
Customer applications
Demonstration of capabilities to infrastructure architects
Enterprise applications
Expansion applications
Sr Mgmt reporting

Don't Know
Don't know
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Confidential
Not familiar
Not sure
Not sure
Not sure I need more information
Not sure with custom applications

Q.36 What do you like most about ADR products?
Automation
Put a request out without knowing who's responding to it
Automation
Automation
Being able to provide information at time of need

Security
Security
Security
Security features
They make things faster and easier to keep things secure

Flexibility
Sharing of data from many sources
System wide application
The ability to gather information from several different systems
The ability to link and expand an application to include new data sources
Adaptability, flexibility, cheaper for time to market, repurposing data
Common bases to share information, regardless of the data source

Increase performance
Performance
Scalability of data
Speed
Zero latency to data
Bandwidth reduction and bottleneck fixes
Making network more efficient
Manageability and reliability

Development Efficiency
Development speed, consolidation of effort
Ease, portability, functionality
Flexibility of merging different applications
Flexibility and pre-built APIs
If I have a business need for this product then I like it a lot; The fact that it offers me some
options that I don't otherwise have would be what I like about the Routers, unless I self develop;
We don't want to reinvent the wheel
Integration and time to deployment
Single set of transport APIs
The ability to abstract mainframe interfaces so they don't have to interface directly with the
mainframe

Don't Know

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Don't Know
Don't Know
Don't Know
Don't know
Don't know enough about them
Hard to answer, don't know much about ADR's
Haven't used any ADRs
No response
None
None
Not familiar
Unfamiliar with those types of products

Q.43 Top Publications
Information Week (33)
None (16)
PC Magazine (13)
E-week (13)
Computer World (12)
Network World (6)
CIO Magazine (6)
Internet Week (4)
InfoWorld (4)
Application Development Trend (4)
Java Developer Journal (3)
Network Computing (3)
Oracle Magazine (3)

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Web (3)
CRN (2)
Government Computer News (2)
Network Magazine (2)
Software Development (2)
Advance For Health Information Executives
Americas Network
Baseline
Bio-IT World
Business Week
CDWG
Certification
Communications Week
Computer Design
Data Communications
DM Review
Dr. Dobbs
EAI Journal
Energy Technology
Enterprise Systems Journal
Federal government trade publications
Health Data Management
Infosystems Executive
Intelligent Enterprise
Interactive Week
IT
Java Report
Light Reading
List Services
Local Gov.
MCP
Net Working
Network
Network fusion
Networking Week
Packet
Presentations
Sys Admin for Linux
Tech Net
Tech Republic on line
The Tech Zone
VAR Business
Visual studio magz.
Web Tools
Windows 2000 Magazine

Q.44 What are the top 3 barriers for purchasing ADR products?
Other
Customers
Security

Security
Speed to market
Standards
Support issues

None
None
None
None
None exist at this time
We already have them
No purchasing power, we just purchased our system and dependent on them for theses types of services
No barriers

Compatibility
Compatibility
Compatibility
Compatibility
Compatibility with existing systems
Installed infrastructure
Capacity to change
Integration of ADR products

Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Don't know
Not sure

Time
Time
Time
Time
Time
Time
Time
Time
Time to evaluate
Time to implement
Time to implement
Government contracting, up for bid
Government procurement process
Product delivery cycles

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Justification
Approval
Benchmarks to check performance, references, installed base
Bureaucracy
Business justification
IT Management buy-in
Lack of an architecture team--battle between Unix admins and DBAs
Lack of interest by upper management
Maturity of products
Life cycle
Obtaining consensus
Organizational inertia
Political climate for state procurement
Reasonable evaluation periods
Stupid managers saying use what you already have

Budget
Budget
Budget
Budget
Budget
Budget
Budget
Budget
Budget
Budget
Budget
Budget
Budget
Budget
Competing needs for limited budget
Money
Money
Money
Purchasing power

Cost
Cost
Cost
Cost
Cost
Cost
Cost
Cost
Cost
Cost
Cost
Cost
Cost
Cost

Cost
Cost
Cost
Cost
Cost
Cost
Cost
Cost of implementation
Costs
High licensing costs
Licensing agreements
Price
Length of time for ROI

Learning Curve
Know-how
Knowledge
Knowledge organization
Familiarity with technology
Don't have enough information
Don't understand the technology
Don't work with them
Lack of expertise
More education
Need more skills
Not familiar with products
Not familiar with products
Not familiar with products
Not familiar with technology
Not familiar with technology
Not familiar with technology
Not familiar with technology
Not familiar with technology
Not familiar with vendors
People
Staffing for the environment
Training & education
Training for support personnel
Uncertainty, lack of information, track record on product
Understanding the technology
Deployment and performance
Ease of use
Expertise

Q.46 What are your largest database/application technical challenges?
Budget
Budget
Consolidation for cost avoidance; SW and HW application consolidation and application stacking
Costs, as Microsoft continually changes their pricing for SQL Server as well as the licensing for
It; Forcing us to go to Oracle

Compatibility
Compatibility
Compatibility with new deployments
Multiple platforms

Migrating to New Systems
Migration of core business systems to current technology
Migration to new system
Moving legacy systems on to standard database platforms

Network Performance
Network connections, and WLANS
Network performance
Usability on existing infrastructure

Security
Security
Security
Security

Don't know
Don't know
Don't know
Don't know
Don't know
Varies from project to project

Learning Curve
Keep up with new technology and learning new functionality
Learning the technology
Training how to use new database
Getting the information out to people, getting people to the information
No internal expertise, money for hiring consultants for jobs, very dependant on consultants

None
Do not have any challenges at the moment
N/A
None
None
None
None

Managing Data
Data management
Data standards
Database growth and performance
Dealing with need and proliferation of data warehousing
Keeping data up to date and backed up
Keeping product and sales databases synchronized
No enterprise objects in the database--the same code is in a million different places

Application Performance

Application responsiveness
Keeping applications functioning
Keeping applications running
Keeping applications up and running
Performance and reliability
Speed, stability
System responsiveness
Uptime
Trying to keep everything working and staying current with patches and new releases
Staying on top of upgrades
Scalability of systems, must scale to worldwide
24x7 Access
Access
Availability of long load times
Design and performance for end users
Keeping up with demand
Keeping users happy
Open standards, software changing quickly

Integration

Integrating legacy systems to web front end
Integrating new applications
Integrating new applications
Integration across multiple organizations and platforms
Integration new applications with old data
Integration of different databases
Integration with Oracle
Integrating new applications that use existing data sources
Faster development; building more intelligent software
How to retrieve data from different databases at different platforms and locations in order to generate a uniform format set of data for presentation/analysis
Conversion from flat file systems to relational dbs
Converting legacy systems to Web based systems
Creating a generic Db schema that will work with the generic oo code that we have developed
Data integration between disparate systems
Implementing most SAP R/3 modules across the entire organization including company just merged with
Keeping up with the end users quest for systems integration
Establish single authoritative force of data and integration
Multilingual, many field offices, diverse product line

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