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## COMPETITIVE ANALYSIS

# Worldwide Embedded Database Management Systems 2003 Vendor Shares

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## IDC OPINION

The embedded database management systems (DBMS) market is perhaps the most durable of the subsegments of the DBMS markets overall. Its performance is based on the performance of tools and applications (and hardware) that have databases embedded in them, which are so varied that this competitive market tends to be remarkably stable over time. It also offers better growth potential for all but the leading DBMS vendors than does the regular exposed DBMS route. The salient characteristics of this market are:

- Products in this market do not compete directly with name-brand DBMSs at the end-user site because they are essentially hidden from view and require no maintenance.
- This market requires DBMS products that are self-managing, robust, recover automatically, and require no DBA or other technical staff to manage them.
- Products in this market are sold through ISVs that choose them based on their technical characteristics; therefore, they need not be specifically relational or fit particular categories. They must only do the job that the ISV needs done.

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## IN THIS STUDY

This IDC study examines the embedded DBMS market for the 2001–2003 period. Worldwide market size is provided for 2003, with trends from 2002. Vendor competitive analysis, with revenue and market shares of the leading vendors, is provided for 2003. This study also provides profiles of leading vendors and identifies the characteristics that vendors will need to be successful in the future.

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The vendor shares and competitive analysis contained herein provide historical detail regarding this market, the forecast for which is found in *Worldwide Embedded Database Management Systems 2004–2008 Forecast* (IDC #31300, May 2004).

### Methodology

See the Learn More section for a description of the data collection and analysis methodology employed in this study.

In addition, please note the following:

- The information contained in this study was derived from the IDC Software Market Forecaster database as of September 27, 2004.
- Because the embedded DBMS market is a competitive market, its figures are not the result of simple rollups of collected data, but involve analyst allocation of revenue from the source markets on a vendor-by-vendor basis, using information from surveys, anecdotal intelligence, and the vendors themselves.
- All numbers in this document may not be exact due to rounding.
- For more information on IDC's software definitions and methodology, see *IDC's Software Taxonomy, 2004* (IDC #30838, February 2004).

### Embedded Database Management Systems Market Definition

Embedded DBMSs are DBMSs that are sold to ISVs for inclusion in their software products. They have no visible aspect to the end user, with management functions either handled automatically or through an API, so that the client ISV can handle them in the context of normal product operation. They are typically designed and tuned for performance and small footprint rather than flexibility or ease of use (because they have no visible user interface). This competitive market cuts across the following source functional markets:

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- Relational and object-relational DBMS (RDBMS)
- Pre- and postrelational DBMS (PDBMS)
- Object-oriented DBMS (ODBMS)
- XML DBMS (XDBMS)

## SITUATION OVERVIEW

### The Embedded Database Management Systems Market in 2003

The market for embedded DBMS grew by 11% to $1.128 billion in 2003, as shown in Table 1. The fastest-growing segment was the postrelational component of the PDBMS market, which grew from a fairly small base, as ISVs found that specialized and optimized internal databases often provided more useful internal data storage capability than the relatively bulkier and less efficient relational DBMSs. Nonetheless, the RDBMS segment remains the largest and grew by 9.9%. ODBMSs and XDBMSs fared badly in this category, as their vendors have turned to other uses for their technologies. This may be a temporary reversal, however.

The relational RDBMS segment remains the largest and grew by 9.9%.

**TABLE 1**

Worldwide Embedded Database Management Systems Software Revenue by Functional Market, 2001–2003 ($M)

| | 2001 | 2002 | 2003 | 2002 Share (%) | 2002–2003 Growth (%) | 2003 Share (%) |
|---|---|---|---|---|---|---|
| Object-oriented DBMS | 37.3 | 31.5 | 27.6 | 3.1 | -12.3 | 2.4 |
| Pre- and postrelational DBMS | 156.8 | 164.1 | 208.3 | 16.2 | 26.9 | 18.5 |
| Relational and object-relational DBMS | 823.1 | 797.7 | 876.6 | 78.7 | 9.9 | 77.7 |
| XML DBMS | 23.4 | 19.9 | 15.5 | 2.0 | -22.1 | 1.4 |
| Total | 1,040.6 | 1,013.2 | 1,128.0 | 100.0 | 11.3 | 100.0 |

Source: IDC, 2004

#### *Performance of Leading Vendors in 2003*

Table 2 displays 2001–2003 worldwide revenue and 2003 growth and market share for embedded DBMS vendors. Embedded DBMS specialists Progress Software and InterSystems led the market both in share and in growth, as interest in providing internal, hidden data storage for applications has increased among ISVs weary of the DBMS wars. General DBMS vendors Oracle and Microsoft have made some gains as they continue to strive to provide embeddable versions of their RDBMS technology for this segment. IBM remains a player as well. Although Sybase's iAnywhere division has been a perennial major player in this space, it seems to have suffered from a general malaise affecting Sybase overall, but remains a key factor in this market. Another leading pure-play vendor, Pervasive, has rebounded from a difficult 2002 and seems poised to make significant gains in this market.

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**TABLE 2**

Worldwide Embedded Database Management Systems Software Revenue by Vendor, 2001–2003 ($M)

| | 2001 | 2002 | 2003 | 2002 Share (%) | 2002–2003 Growth (%) | 2003 Share (%) |
|---|---|---|---|---|---|---|
| Progress Software Corp. | 182.3 | 187.2 | 222.6 | 18.5 | 18.9 | 19.7 |
| InterSystems Corp. | 86.0 | 102.0 | 141.0 | 10.1 | 38.2 | 12.5 |
| Oracle Corp. | 134.7 | 124.3 | 135.1 | 12.3 | 8.6 | 12.0 |
| IBM | 101.8 | 101.0 | 106.3 | 10.0 | 5.2 | 9.4 |
| Sybase Inc. | 98.8 | 87.8 | 88.4 | 8.7 | 0.7 | 7.8 |
| Microsoft Corp. | 31.3 | 36.0 | 41.3 | 3.5 | 14.7 | 3.7 |
| Cincom Systems Inc. | 41.9 | 36.2 | 36.9 | 3.6 | 2.1 | 3.3 |
| Pervasive Software Inc. | 35.5 | 33.0 | 35.1 | 3.3 | 6.4 | 3.1 |
| Empress Software | 29.1 | 28.6 | 29.2 | 2.8 | 2.0 | 2.6 |
| Computer Associates Intl. Inc. | 19.1 | 20.4 | 20.0 | 2.0 | -2.0 | 1.8 |
| TimesTen Inc. | 6.7 | 6.6 | 15.3 | 0.7 | 132.2 | 1.4 |
| Versant | 7.4 | 7.3 | 7.7 | 0.7 | 6.3 | 0.7 |
| MySQL | 0.8 | 3.0 | 7.2 | 0.3 | 140.1 | 0.6 |
| Software AG | 10.9 | 10.0 | 6.5 | 1.0 | -34.9 | 0.6 |
| Platinum Equity | 6.0 | 5.9 | 6.0 | 0.6 | 2.0 | 0.5 |
| PointBase | 3.6 | 4.5 | 4.6 | 0.4 | 2.0 | 0.4 |
| Solid Information Technology | 2.0 | 2.0 | 4.0 | 0.2 | 103.5 | 0.4 |
| Objectivity Inc. | 3.8 | 4.0 | 3.7 | 0.4 | -6.6 | 0.3 |
| Birdstep Technology | 0.2 | 2.9 | 3.0 | 0.3 | 2.0 | 0.3 |
| Poet Software Corp. | 2.7 | 2.2 | 2.0 | 0.2 | -6.7 | 0.2 |
| Matisse | 0.5 | 1.2 | 1.2 | 0.1 | -6.7 | 0.1 |
| Other | 235.6 | 207.1 | 210.8 | 20.4 | 1.8 | 18.7 |
| Total | 1,040.6 | 1,013.2 | 1,128.0 | 100.0 | 11.3 | 100.0 |

Source: IDC, 2004

### *Performance by Geographic Region in 2003*

Western Europe appears to have taken some share from North America, as indicated in the regional performance data for this market in Table 3 and Figure 1. This gain is illusory, however, as it may be attributed to the shifting exchange rate between the euro and the U.S. dollar. In constant currency terms, North America gained share over all other regions in this market.

**TABLE 3**

Worldwide Embedded Database Management Systems Software Revenue by Region, 2001–2003 ($M)

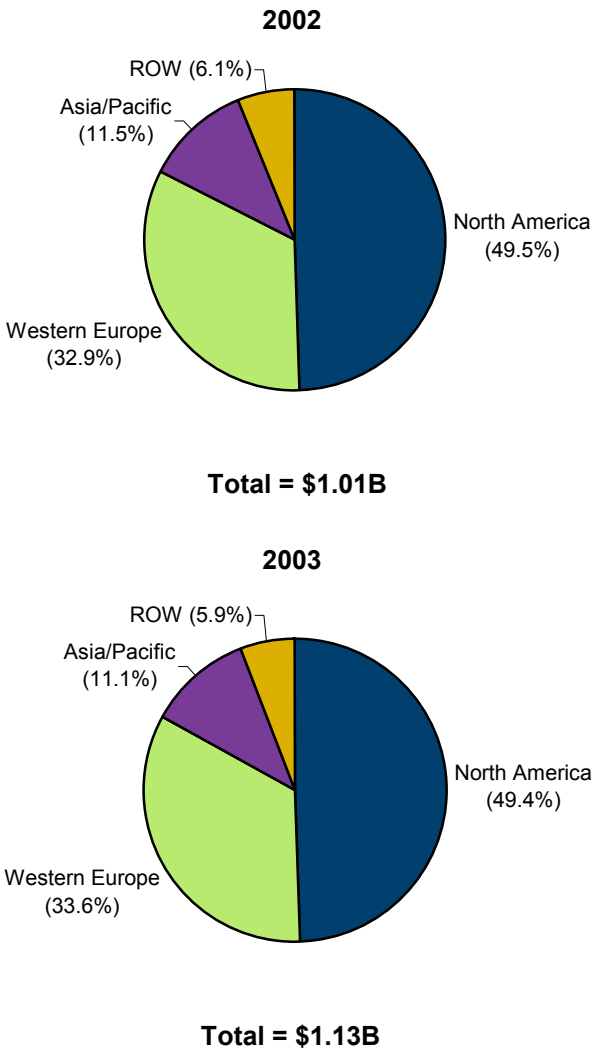
| | 2001 | 2002 | 2003 | 2002 Share (%) | 2002–2003 Growth (%) | 2003 Share (%) |
|---|---|---|---|---|---|---|
| North America | 496.4 | 501.8 | 557.6 | 49.5 | 11.1 | 49.4 |
| Western Europe | 364.3 | 333.2 | 379.0 | 32.9 | 13.7 | 33.6 |
| Asia/Pacific | 127.7 | 116.3 | 124.8 | 11.5 | 7.3 | 11.1 |
| ROW | 52.1 | 61.8 | 66.6 | 6.1 | 7.7 | 5.9 |
| Total | 1,040.6 | 1,013.2 | 1,128.0 | 100.0 | 11.3 | 100.0 |

Source: IDC, 2004

## FIGURE 1

Worldwide Embedded Database Management Systems Software Revenue Share by Geographic Region, 2002 and 2003




Source: IDC, 2004

### *Performance by Operating Environment in 2003*

Table 4 shows how the embedded DBMS market has grown or declined in the various operating environments, and Figure 2 graphically illustrates the changes between 2002 and 2003. It should come as no surprise that the lower-cost platforms, Linux and Windows, lead in terms of growth. The reader may be surprised, however, to find that the mainframe is the third-largest operating environment for this market, though it is slowly declining (despite a slight uptick in 2003). This is due to the longstanding practice of some vendors of embedding database functionality within their mainframe applications, using especially Software AG's Adabas, Computer Associates' IDMS and Datacom, and in Japan, the PDBMS products of various Japanese system vendors. Cincom is a particularly salient example of this, embedding its Supra PDBMS in its own line of applications, which has become its main business.

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The reader should not consider the platform-independent and embedded operating environment figures too closely; these platforms represent handheld devices, and the revenue figures for such software often rolls up on the server side, appearing under Unix, Linux, and Windows.

**TABLE 4**

Worldwide Embedded Database Management Systems Software Revenue by Operating Environment, 2001–2003 ($M)

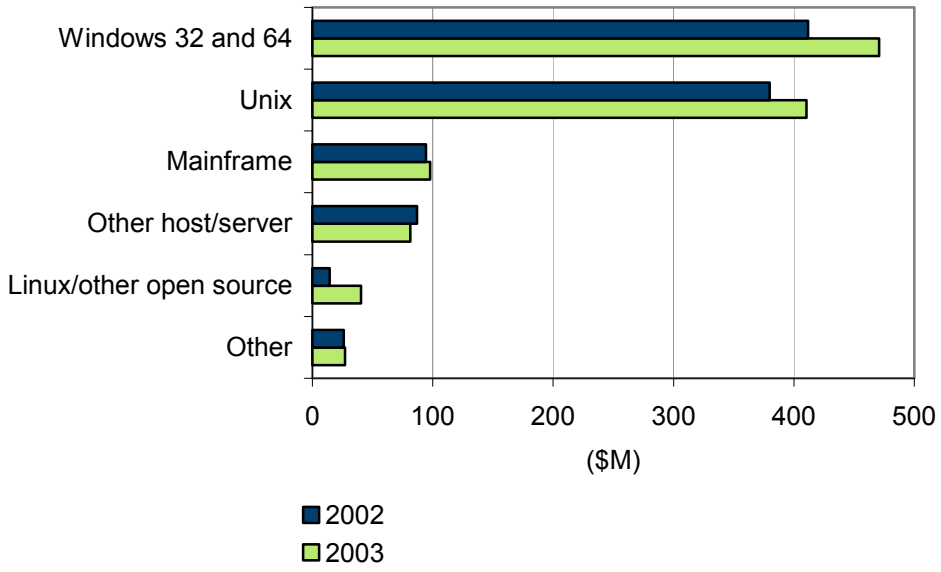
| | 2001 | 2002 | 2003 | 2002 Share (%) | 2002–2003 Growth (%) | 2003 Share (%) |
|---|---|---|---|---|---|---|
| Windows 32 and 64 | 416.5 | 411.7 | 470.7 | 40.6 | 14.3 | 41.7 |
| Unix | 401.4 | 379.9 | 410.5 | 37.5 | 8.1 | 36.4 |
| Mainframe | 94.3 | 94.4 | 97.8 | 9.3 | 3.6 | 8.7 |
| Other host/server | 94.9 | 86.9 | 81.4 | 8.6 | -6.4 | 7.2 |
| Linux/other open source | 5.5 | 14.3 | 40.5 | 1.4 | 184.4 | 3.6 |
| OS/400 | 15.7 | 11.9 | 11.2 | 1.2 | -6.2 | 1.0 |
| Other single user | 5.2 | 5.4 | 8.5 | 0.5 | 57.7 | 0.8 |
| Platform independent | 4.4 | 5.2 | 5.4 | 0.5 | 2.0 | 0.5 |
| Embedded | 2.8 | 3.6 | 2.0 | 0.4 | -43.0 | 0.2 |
| Total | 1,040.6 | 1,013.2 | 1,128.0 | 100.0 | 11.3 | 100.0 |

Source: IDC, 2004

**FIGURE 2**

Worldwide Embedded Database Management Systems Software Revenue by Operating Environment, 2002 and 2003




Source: IDC, 2004

## Vendor Profiles

### *Market Leaders*

#### Progress Software

Progress Software is one of the vendors that practically invented this strategy, with the company providing both DBMS and 4GL technology that was sold not to end-user organizations, but to ISVs who, in turn, developed and distributed products using that technology. The company has had to reinvent itself a few times over the years, most recently by seeking to expand that model to include integration servers with its Sonic subsidiary. Yet, its Progress RDBMS has remained a bulwark of the company and continues to show strong performance as an embedded RDBMS in applications most commonly deployed on Unix systems.

Progress has perfected virtually every dimension of this model, including its DBA-less RDBMS, close ISV relationships, and tiered support capability. Like most application vendors, the ISVs that use Progress have been reluctant to move to Linux, so Progress' own numbers on this platform are weak. This is likely to change, however, as a groundswell toward Linux develops and the operating environment improves in performance and robustness.

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### InterSystems

Up until recently, many dismissed privately held InterSystems as the keeper of the MUMPS flame and purveyor of the hopelessly outdated prerelational DBMS M-Technology, which was derived from the data management layer of MUMPS. Although InterSystems' postrelational DBMS, Caché, borrows its internal data storage ideas from M-Technology and offers a compatible API for migration, this technology offers scalable support for mixtures of structured and complex data, with direct access from the Web available through Caché Server Pages (CSP), and has its own object-oriented scripting language called Caché Object Script (COS). It is fully embeddable, requires no DBA, and offers a robust management API. It is most commonly deployed on Unix, though it is growing on Windows, and also offers relational access through ANSI SQL, ODBC, and JDBC.

Caché is used heavily by software and IT service providers that target the healthcare industry and directly by some hospitals as well, a legacy of the M-Technology business. Caché is also commonly embedded in development tools and Web-based horizontal business applications such as CRM and ERP systems, especially in Europe. The technology has broad geographic reach and has been showing some strength in Eastern Europe and Asia/Pacific, especially in Australia and New Zealand. As IT systems move increasingly toward deployment of service-oriented architectures (SOAs), which support the rendering of data services indirectly as, for example, Web services rather than by direct SQL, ODBC, or JDBC access, Caché stands to gain ground across the board going forward.

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### Oracle

Oracle has been putting increasing emphasis on developing embeddable configurations of Oracle Database for resale by ISVs. This is not a key dimension of the company's business at this moment, but its sheer size makes it a key player in this market. A key value proposition here is that embedded Oracle is easily integrated with the user's corporate Oracle database at both an API and data management levels, making integration of packaged applications with Oracle inside easy to connect to an Oracle-centric IT environment.

### IBM

IBM has tried various ways to offer DB2 Universal Database (UDB) as an embedded DBMS, with some success, albeit mainly in DB2 settings. Although less focused on DB2 centricity in the way that Oracle is focused on Oracle centricity, IBM's DB2, whether as part of an Everyplace offering or not, seems to share with Oracle the idea that DB2 inside makes the most sense when DB2 is also outside. IBM may be looking to move in another direction, however, as there is some indication that IBM is exploring embedded DBMS options.

### Sybase

Sybase has struggled of late and grew only slightly in this market in 2003. Nonetheless, the company's iAnywhere is a key player in the embedded DBMS space and maintains competitive, leading-edge products for mobile computing as well as an aggressive partner program. This area of business should bounce back for Sybase, assuming that a negative overall impression of Sybase does not stunt its growth.

## *Vendors to Watch*

### Microsoft

Microsoft SQL Server is not generally distributed as a DBA-less product, but a number of ISVs bundle SQL Server into their products and offer an administration-free installation. The advantage here is that the application database can be seen within the same context as other data kept in SQL Server. Microsoft may look to push this capability more in the future because, in addition to providing another revenue stream, it ensures that the ISV will remain committed to Windows.

### Pervasive

Pervasive is best known for its PDBMS, BTrieve, which is embedded in dozens if not hundreds of tools and utilities as an internal data store or cache. It is also embedded within Novell NetWare and used for directory services. Pervasive's RDBMS, Pervasive.SQL, uses the same data storage foundation, but adds full relational management support. Like BTrieve, it offers a small footprint and good performance and is mainly used for fairly small databases that are internal to applications and tools. Pervasive also is fully committed to the embedded model, and after some misadventures attempting to penetrate other software markets, has returned to its roots.

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### MySQL

About 60% of MySQL's current business consists of embedding its RDBMS in ISV products. Because it is open source, the ISVs can use the source to help them debug and to suggest changes. They can, in some cases, alter the product slightly to fit their application or tool (not recommended because it complicates the support relationship). Because MySQL Inc. owns the intellectual property rights to MySQL, ISVs pay a fairly standard royalty to distribute MySQL in their products.

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### TimesTen

TimesTen is successfully pursuing the embedded channel for its product, which makes sense given that it is a main-memory RDBMS that requires little in terms of setup or storage management. The company's RDBMS is mainly used in applications that require lightning fast response times, even for fairly complex queries and update operations.

### Solid

Solid's RDBMS is designed to provide a smooth-flowing network of information across many nodes, coordinated from a reference database with subset databases on the nodes. It is mainly used for applications that maintain hardware and is commonly embedded in switches and routers. Solid shows that an RDBMS can be used for hardware operational state information, not just business data.

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## FUTURE OUTLOOK

The future looks good for embedded DBMS as environments become increasingly componentized and application and tool vendors look for ways to encapsulate and manage their internal data without publishing it to the broader environment or requiring database maintenance on the part of the DBAs or operations staff. Embedded DBMSs support IT strategies around SOAs and data integration by helping simplify the business data environment. Relevant trends include:

- Data integration and broader enterprise information integration, as some tools may be used to stage data and such tools will require internal data stores
- Service-oriented environments, where data internal to a service is best kept encapsulated within the service
- A broad distribution of data, including to field offices and mobile devices

See *Worldwide Embedded Database Management Systems 2004–2008 Forecast* (IDC #31300, May 2004) for more details.

## ESSENTIAL GUIDANCE

The embedded DBMS market offers a means for organic growth to DBMS vendors that:

- Avoid direct competition with big-name DBMS vendors
- Enable rapid growth (by royalty or runtime license fees) through the ISV channel (the direct customers) without requiring a corresponding growth in support or sales staff

To get into this market, a vendor should:

- Make the DBMS self-managing, requiring no DBA, with an API to allow the tool or application in which it is embedded to manage the database
- Decide what sorts of products to target for embedding the DBMS
- Identify the targeted software product types based on a determination of which markets make the most sense for the DBMS product based on its characteristics and the growth potential for those markets
- Ensure that the size, performance, and reliability characteristics make sense for embedding in such products
- Price the product so that its royalty or runtime fees to not distort the overall price of the target product

## LEARN MORE

### Related Research

- *The RDBMS Top 10: License Sales Analysis and Market Forecast, 2003–2008* (IDC #32140, November 2004)
- *Worldwide Enterprise Database Management Systems 2003 Vendor Shares* (IDC #31681, August 2004)
- *Worldwide Enterprise Database Management Systems 2004–2008 Forecast* (IDC #31607, July 2004)
- *Worldwide Relational and Object-Relational DBMS 2004–2008 Forecast Update: July 2004* (IDC #31603, July 2004)
- *The Open Source DBMS Movement Gathers Momentum: New Developments from MySQL, Sleepycat, and Computer Associates* (IDC #31601, July 2004)
- *Object DBMS: A Market in Transition* (IDC #31368, May 2004)
- *Worldwide Relational and Object-Relational Database Management Systems 2004–2008 Forecast* (IDC #31303, May 2004)
- *Worldwide Embedded Database Management Systems 2004–2008 Forecast* (IDC #31300, May 2004)
- *Worldwide DBA Tools and Utilities 2004–2008 Forecast* (IDC #31297, May 2004)
- *IDC's Software Taxonomy, 2004* (IDC #30838, February 2004)
- *What's Up with Oracle?* (IDC #30835, February 2004)
- *The Worldwide Packaged Software Market in 2003: A Reality Check* (IDC #30577, December 2003)

### Methodology

The IDC Software Research Group (SRG) market sizing and forecasts are presented in terms of "packaged software revenue." Packaged software is defined as programs or codesets of any type commercially available through sale, lease, or rental, or as a service. Packaged software revenue typically includes fees for initial and continued right-to-use packaged software licenses. These fees may include, as part of the license contract, access to product support and/or other services that are inseparable from the right-to-use license fee structure, or this support may be priced separately as software maintenance. Upgrades may be included in the continuing right of use or may be priced separately.

Packaged software revenue *excludes* service revenue derived from training, consulting, and system integration that is separate (or unbundled) from the right-to-use license but *includes* the implicit value of software included in a service that offers

software functionality by a different pricing scheme (e.g., the implicit or stated value of software included in an application service provider's [ASP's] or other hosted software arrangement). It is the total packaged software revenue that is further allocated to markets, geographic areas, and operating environments.

IDC's industry analysts have been measuring and forecasting IT markets for more than 30 years. IDC's software industry analysts have been delivering analysis and prognostications for packaged software markets for more than 25 years.

The market forecast and analysis methodology incorporates information from five different but interrelated sources, as follows:

- **Reported and observed trends and financial activity.** This study incorporates reported and observed trends and financial activity in 2003 as of the end of April 2004, including reported revenue data for public companies trading on North American stock exchanges (CY 1Q03–4Q03 in nearly all cases).

- **IDC's *Software Census* interviews.** IDC interviews all significant market participants to determine product revenue, revenue demographics, pricing, and other relevant information.

- **Product briefings, press releases, and other publicly available information.** IDC's software analysts around the world meet with hundreds of software vendors each year. These briefings provide an opportunity to review current and future business and product strategies, revenue, shipments, customer bases, target markets, and other key product and competitive information.

- **Vendor financial statements and related filings.** Although many software vendors are privately held and choose to limit financial disclosures, information from publicly held companies provides a significant benchmark for assessing informal market estimates from private companies. IDC also builds detailed information related to private companies through in-depth analyst relationships and maintains an extensive library of financial and corporate information focused on the IT industry. We further maintain detailed revenue by product area models on more than 1,000 worldwide vendors.

- **IDC demand-side research.** This includes thousands of interviews with business users of software solutions annually and provides a powerful fifth perspective for assessing competitive performance and market dynamics. IDC's user strategy databases offer a compelling and consistent time-series view of industry trends and developments. Direct conversations with technology buyers provide an invaluable complement to the broader survey-based results.

Ultimately, the data presented in this study represents IDC's best estimates based on the above data sources as well as reported and observed activity by vendors and further modeling of data that we believe to be true to fill in any information gaps.

 

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