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STRATEGIC MARKET PERSPECTIVE

U.S. Software Product
Support Market
1996 - 2001

Client/Server Program

U.S. Software Product Support Market 1996-2001

INPUT®

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Abstract

Dynamic supply and demand side pressures are continually changing the nature of software product support services. Indeed, today's software support services focus less on reactive offerings such as problem resolution, upgrades and bug fixes, and more on proactive support services which are akin to traditional consultancy services.

Furthermore, the industry continues to change as revenues generated by third-party software support vendors account for an increasing proportion of the market. Meanwhile, demand-side pressures are encouraging vendors to promote proactive business support services at the enterprise level and low-cost support services to smaller organizations.

Against this background, INPUT research reveals that:

- The third-party support market continues to offer new opportunities

- Vendors are increasingly attempting to climb the software support 'value chain' by focusing on proactive software support services

- Vendors can be expected to increasingly extend the market by using low-cost channels such as the Internet and flexible pricing structures in order to target smaller organizations

- Multivendor, customizable software environments continue to drive user demand for software product support

- The support of application development tools and application software, Enterprise Resource Planning (ERP) software in particular, offer vendors the greatest opportunities

This report contains 80 pages and 44 exhibits.

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Client/Server Software Program

*U.S. Software Product Support Market,
1996-2001*

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Introduction

This report was produced as part of INPUT's U.S. Client/Server Software Program.

A
Purpose

Dynamic supply and demand pressures are continually changing the nature of software product support services.

Many of today's software support services focus less on reactive offerings such as problem resolution, upgrades and bug fixes, and more on proactive support services which are akin to traditional consultancy services. This change can largely be explained by falling unit margins associated with the provision of reactive support services.

Hence, increasing numbers of software vendors have opted to outsource many of their reactive support activities in order to contain the costs of providing support demanded by their client base. Many third parties have seized the opportunity to generate significant revenues by providing high volumes of multivendor software support. These organizations, typically systems vendors and independent services vendors, invest heavily in software support infrastructures and offer both reactive and proactive support services.

Vendors currently have opportunities to benefit from latent demand for proactive business support services from enterprises and low cost reactive support services from smaller organizations.

This report identifies the main forces shaping the software product support market in the U.S. and the opportunities that they create. It quantifies the changes forecast for the software product support market and analyzes the driving forces and contemporary issues that are currently influencing the market.

B

Definition and Scope

INPUT defines the software product support business as those continuing activities provided by a vendor that are necessary to make the product work, outside the delivery of the product itself. Included are associated support activities such as telephone support, problem analysis and remote software diagnostics, software updates, software configuration and tuning, software installation, on-site support and initial training. Exhibit I-1 illustrates INPUT's definition of the software products market.

Exhibit I-1

Software Products Market Segmentation
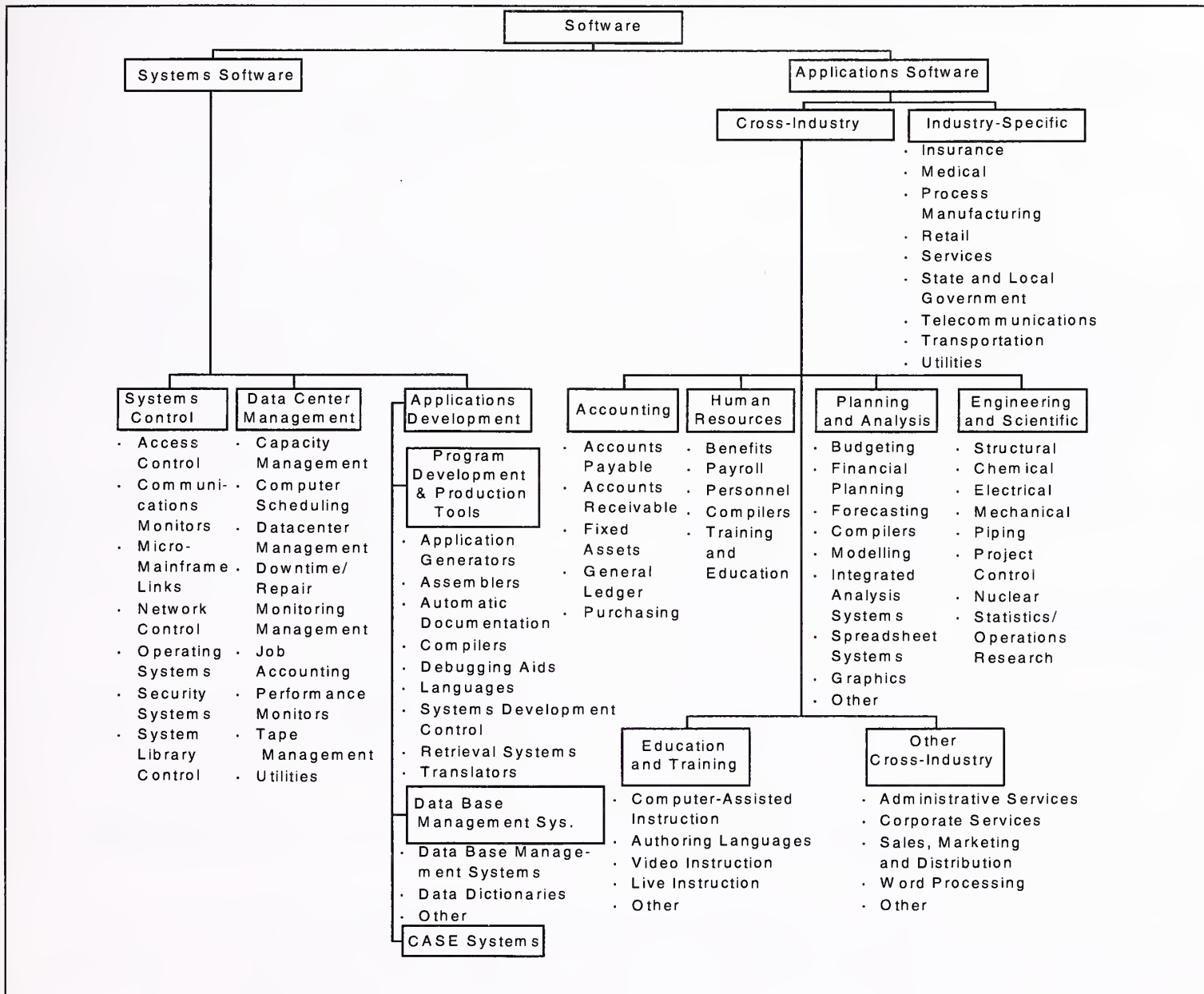
Source: INPUT

Exhibit I-2 shows INPUT's segmentation of the total software and services industry and indicates the positioning of software product support services within the overall market structure.

In each service sector, the definition of user expenditure includes only those services provided to users by an external organization on a chargeable basis. Services provided by subsidiaries or internal resources are excluded from the open market.

For complete coverage of the entire software and services opportunity see the INPUT report *U.S. Software and Services Market Analysis and Forecast — 1996-2001.*

Exhibit I-2

Information Services Market Segmentation
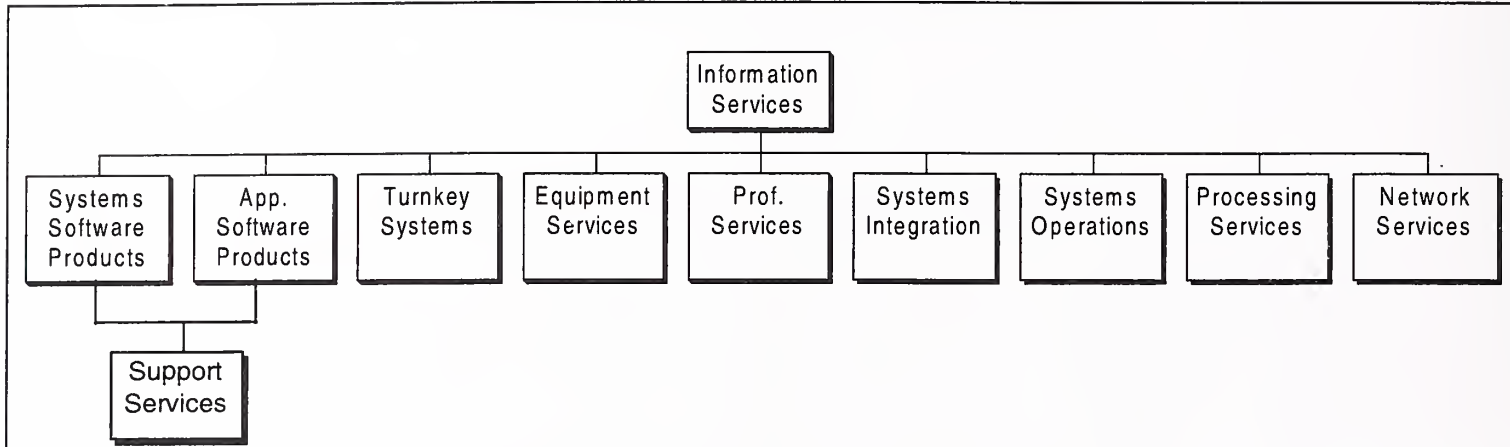
Source: INPUT

C

Segmentation

The support market can be broken down into two broad software product categories, system software products and applications software products.

1.   System Software Categories

This segmentation defines the product categories which comprise system software.

This report segments the system software support market by operating software (operating systems, systems management software, middleware, and communications software), RDBMSs, and application development tools.

Exhibit I-3 illustrates INPUT's traditional segmentation of the system software market.

Exhibit I-3

System Software—Sector Analysis

```
                              ┌──────────────┐
                              │   Systems    │
                              │   Software   │
                              └──────────────┘
```

Systems Control

- Access Control
- Communications
  Monitors
- Micro-Mainframe
  Links
- Network Control
- Operating Systems
- Security Systems
- System Library
  Control
- Other

Operations Management

- Capacity Management
- Computer Operations
  Scheduling
- Datacentre
  Management
- Disk Management
- Downtime/Repair
  Monitoring Management
- Job Accounting
- Performance Monitors
- Tape Management
- Utilities
- OLTP Monitors/
  Managers
- Software Distribution
  Tools
- Asset Management
- Network Management
- Security Systems
- Other

Applications Development

Program Development & Production Tools

- Application
  generators
- Assemblers
- Automatic
  Documentation
- Compilers
- Debugging Aids
- Languages
- Systems
  Development
  Control
- Retrieval Systems
- Translators

Database Management Systems

- Database
  Management
  Systems
- Data
  Dictionaries
- Other

CASE Systems

Source: INPUT

2.   Applications Software Categories

Applications software products, are segmented by vertical and cross industry markets as shown in Exhibit I-4.

Exhibit I-4

Applications Software—Sector Analysis

```
                        ┌─────────────┐
                        │ Applications│
                        │  Software   │
                        └─────────────┘
              ┌──────────────────┴──────────────────┐
       ┌─────────────┐                      ┌─────────────────┐
       │Cross-Industry│                      │Industry-Specific│
       └─────────────┘                      └─────────────────┘
```

Cross-Industry

Accounting	Human Resources
• General Ledger	• Human Resources Management
• Accounts Payable	• Benefits
• Accounts Receivable	• Payroll
• Billing/Invoicing	• Personnel
• Costing	
• Fixed Assets	
• International Accounting	
• Purchasing	
• Taxation	

Planning & Analysis	Engineering & Scientific
• Executive Information Systems	• CAD/CAE
• Budgeting	• Structural
• Financial Planning	• Chemical
• Forecasting	• Mechanical
• Modelling	• Piping
• Integrated Analysis Systems	• Project Control
• Spreadsheets	• Nuclear
• Project Management	• Statistics/Operations Research
• Graphics	• Mapping
• Other	

Education & Training	Other Cross-Industry

Industry-Specific

- Discrete Manufacturing
- Process Manufacturing
- Transportation
- Utilities
- Telecommunications
- Retail Distribution
- Wholesale Distribution
- Banking & Finance
- Insurance
- Healthcare
- Education
- Local Government
- Central Government
- Business Services
- Other Industries

Source: INPUT

3. Segmentation

This report concentrates on the U.S. and Wordwide client/server software support markets.

D
Methodology

INPUT's methodology for market analysis and forecasting remains consistent with that used in previous years.

The research process is accomplished through interviews, the use of public data such as press articles and annual company reports and estimates by INPUT consultants.

This report is based on the following sources of information:

- A vendor research program of interviews with over five hundred software and services vendors across the U.S. and worldwide

- Secondary research from INPUT's corporate library

- Secondary research from on-line information sources

- Ongoing analysis of software products and information services markets in the U.S. and worldwide

In previous years, it has not been possible to estimate IBM's software support revenues since these figures have been bundled into the cost of products. However, INPUT has acquired sufficient information to estimate IBM's software product support revenues and have included them in this year's study.

E
Report Structure

The remaining chapters of this report are organized as follows:

Chapter II is an executive summary that provides an overview of the major issues relating to the U.S. and worldwide software product support market

Chapter III analyzes the major trends that are influencing the software product support market

Chapter IV analyzes trends relating to software product support in major product categories, namely operating software, RDBMSs, application development tools, and application software.

Chapter V provides commentary on the competitive environment in which software product support vendors operate, and the different types of vendor.

Chapter VI provides INPUT's estimates of growth in the U.S. and worldwide software product support markets over the period from 1996 to 2001. The markets are analyzed by system software, applications software, and hardware platform. The system software support market is further segmented by operating software, database and information management systems, and application development tools.

Appendix A provides a definition of terms commonly associated with client/server systems which may be found in this report.

Appendix B lists leading worldwide system and application software product support vendors.

F
Related INPUT Research Reports

Recent INPUT reports which address topics related to the subjects discussed here include the following:

- *The Impact of the Internet on Software Support—U.S. 1996*

- *The Influence of Support on Software Product Selection —U.S. 1996*

- *The Future of IT Support —Multivendor Services in the U.S. 1995 - 2000*

- *Help Desk Services Opportunities—U.S. 1996*

- *Vendor Software Product Support Strategies—U.S. 1995*

- *Software Product Support, New Open Market Opportunities in the U.S—1994*

II
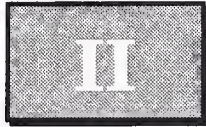
Executive Overview

A

Vendors and Users Change the Focus of Software Support Services

Dynamic supply and demand side pressures are continually changing the nature of software product support services. Indeed, today's software support services focus less on reactive offerings such as problem resolution, upgrades and bug fixes, and more on proactive support services which are akin to traditional consultancy services.

Furthermore, the industry continues to change as revenues generated by third-party software support vendors account for an increasing proportion of the market. Meanwhile, demand-side pressures are encouraging vendors to promote proactive business support services at the enterprise level and low cost support services to smaller organizations.

Against this background, INPUT research reveals that:

- The third-party support market continues to offer new opportunities

- Vendors are increasingly attempting to climb the software support 'value chain' by focusing on proactive software support services

- Vendors can be expected to increasingly extend the market, by using low cost channels such as the Internet and flexible pricing structures in order to target smaller organizations

- Multivendor, customizable software environments continue to drive user demand for software product support

- The support of application development tools and application software, in particular Enterprise Resource Planning (ERP) software, offer vendors the greatest opportunities

B

Third Party Support Market Offers New Opportunities

Client/Server systems software product support spending in the U.S. will grow from a $4.9 billion market in 1996 to a $12.5 billion market in 2001 at a 21% CAGR. Worldwide, these figures are expected to grow from $12.3 billion in 1996 to $36.2 billion in 2001 at a 24% CAGR (see Exhibits II-1 and II-2).

Exhibit II-1

Growth in Client/Server Software Product Support Market, U.S. 1996-2001
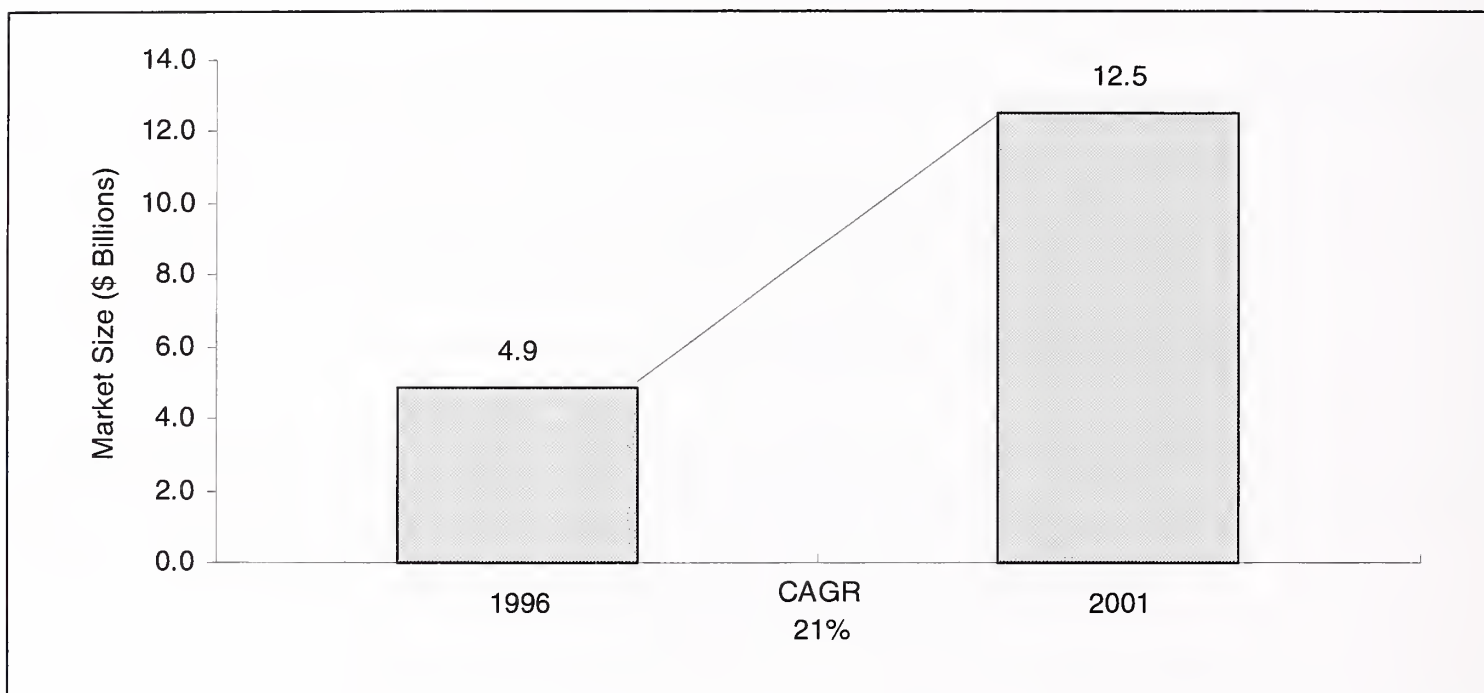
Source: INPUT

Exhibit II-2

Growth in Client/Server Software Product Support Market, Worldwide, 1996-2001
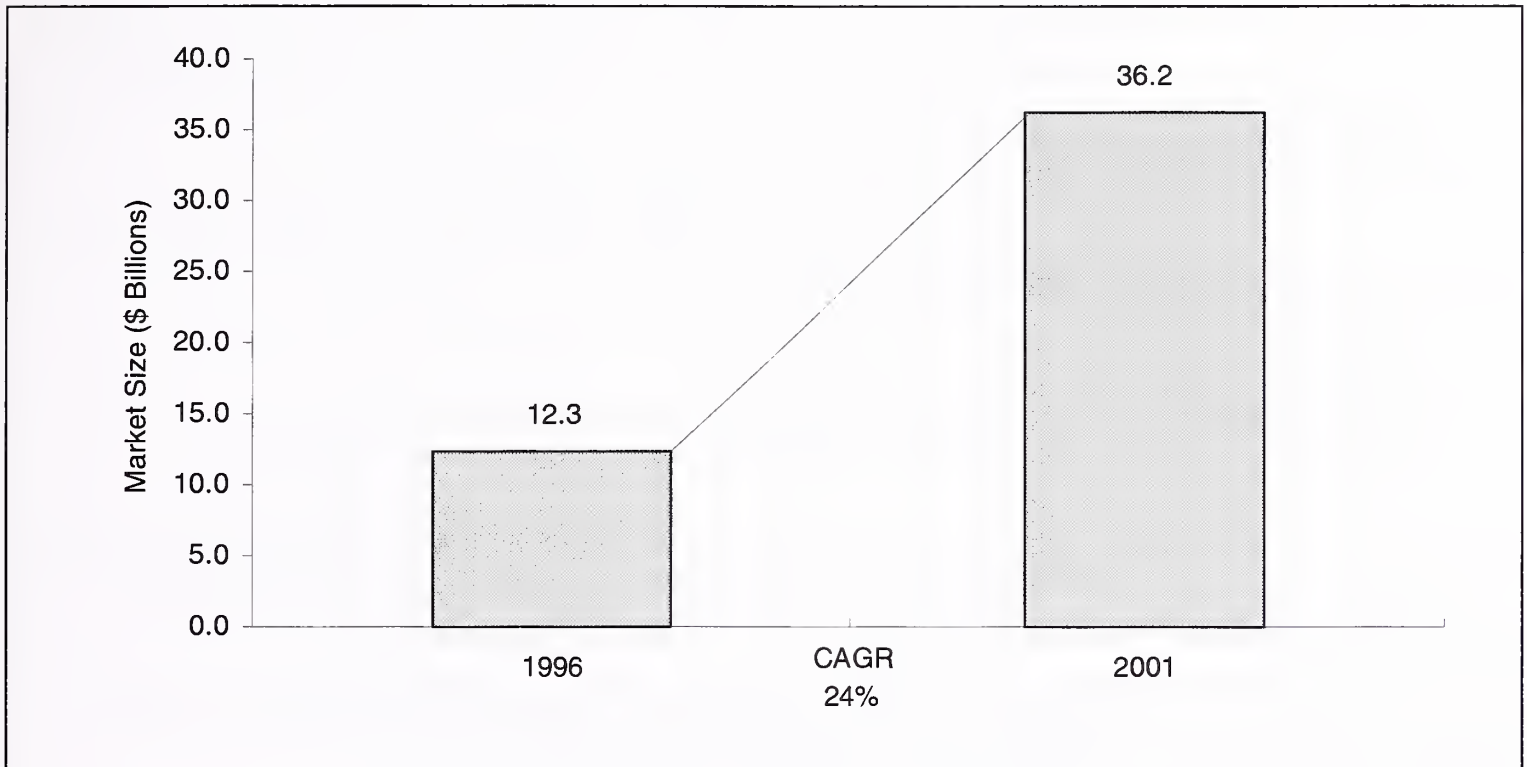
This growth can be explained largely by the following supply and demand factors:

- The installed base of software products is growing at a CAGR of nearly 20%, leading to an increase in demand for software support services.

- Profit margins generated from software products are falling causing many vendors to unbundle the price of software support from the overall software product price in order to generate additional revenue streams.

- Migration to client/server environments from mainframe environments is precipitating a demand for multivendor software support which is relatively expensive to provide.

- Businesses are increasingly using customizable software products which require specialized software support services.

- Support is now being used as a means of differentiating between "commoditized" software products.

- Businesses are increasingly outsourcing support activities in order to focus on their core competencies and contain the costs of software support.

Support by third parties (i.e. vendors other than the original software publisher) currently accounts for 26% of the market and can be expected to account for 34% by 2001.

This can largely be explained by:

- The increasing cost of providing software support services

- The trend among many independent software vendors (ISVs) to focus on their core technology strengths and outsource less profitable support activities

- The emergence of organizations that provide high-volume support services at relatively low unit costs

- The increasing popularity of using indirect sales channels as a means of targeting niche markets

Many ISVs have opted to outsource reactive support activities to third parties.

Systems vendors account for most third-party support activity. This can be explained by the fact that systems vendors have leveraged their multivendor hardware support infrastructures to enable them to additionally provide multivendor software support. Furthermore, systems vendors are focusing more heavily on services as both hardware and software products become increasingly commoditized.

Several independent services vendors have emerged and developed a capacity to offer a high volume of multivendor software support at a relatively low unit cost. These include Stream, PSC-Softbank and Sykes.

In addition to the well-known examples of Microsoft, Novell and Lotus, several other major ISVs have outsourced support activities. Examples include Sybase which has outsourced its first-line support to the independent services vendor Sykes.

Growth in the third-party support market can be expected to be significantly higher than that in the non-third-party sector as ISVs continue to outsource support activities.

Systems vendors and independent services vendors will benefit from the growth of the software product support market (particularly the third-party segment) largely at the expense of ISVs.

However, many ISVs have opted to retain support activities internally as one way of maximizing their services revenues. They have made a strategic decision to build up their services infrastructures in order to benefit from opportunities to provide services around their increasingly commoditized products. Examples of such organizations include Oracle, Informix, and Computer Associates.

Computer Associates is the only ISV among the U.S.'s leading five software product support vendors. Several large ISVs, such as Computer Associates and Oracle are ramping up their services infrastructures. However, it is unlikely that ISVs will offer the same high volume, low margin reactive support services as many systems vendors. They can be expected to invest in providing higher value services - such as consultancy - rather than invest heavily in huge call centers from which unit returns are diminishing.

C

Vendors Climb Software Support 'Value Chain'

The automation of first-line reactive support services combined with economies of scale derived from providing high volumes of support at low prices is precipitating the commoditization of many first-line support services.

Furthermore, the growth of the market for support services centered around individual products is being inhibited as software products become more user friendly, more bug-free, more interoperable, and offer greater cross-platform compatibility.

Consequently, demand (per product sold) for reactive support such as problem resolution is falling in conjunction with prices. Hence, support vendors are attempting to derive higher unit margins from second and third-line problem resolution, in addition to providing more proactive support services such as consultancy and training services.

Exhibit II-3 illustrates the emerging 'value chain' of software support services. Services which are becoming commoditized such as first-line problem resolution will offer less profitable opportunities in the near future.

Exhibit II-3

Software Support 'Value Chain'
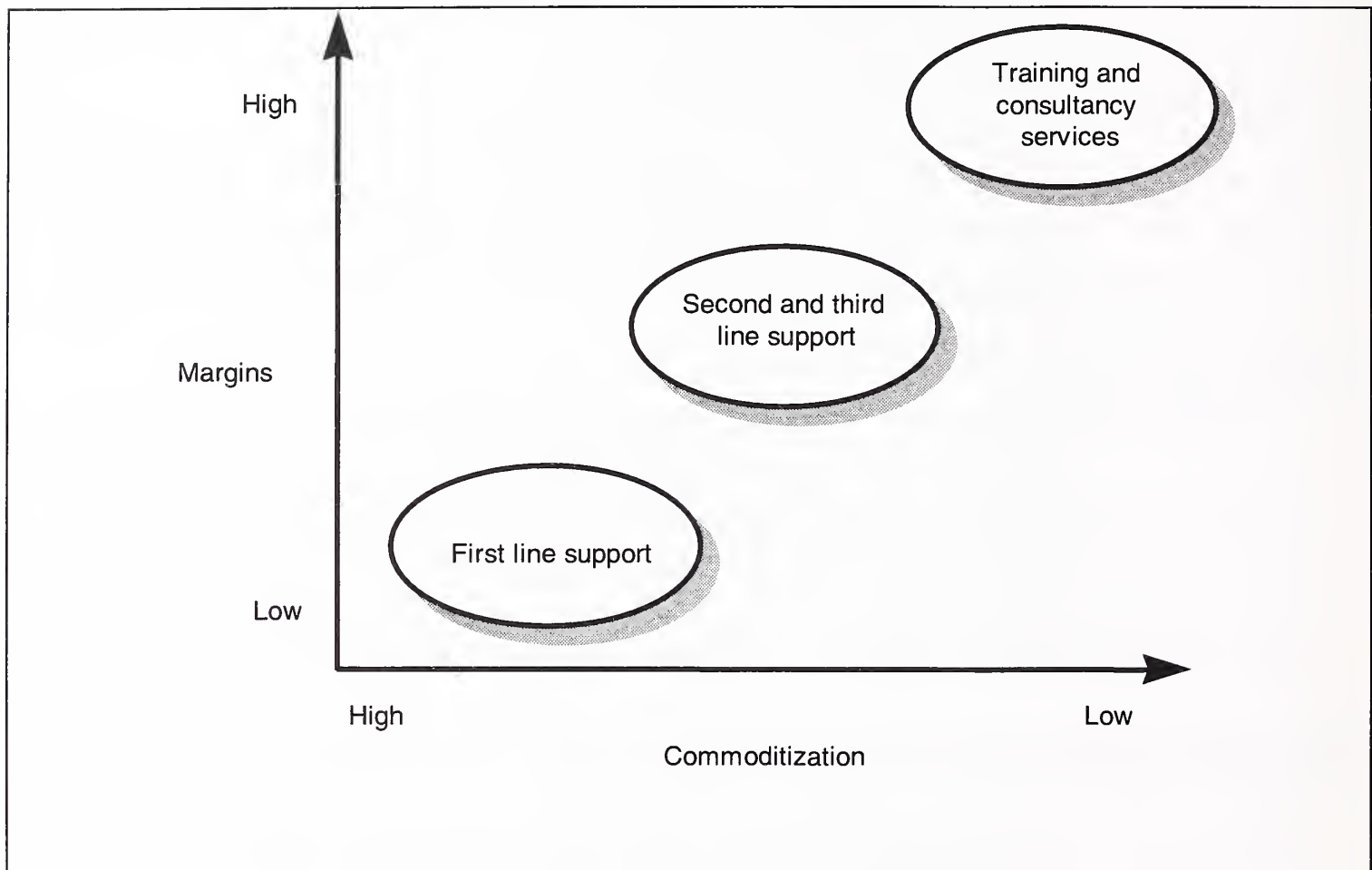
Source: INPUT

Demand per product sold for first-line support services is being further contained by the provision of proactive support services such as early warnings and assistance with optimizing software environments.

For example, the three major database vendors, Oracle, Informix and Sybase now use the Internet as a channel for the provision of reactive, problem-related support services thus reducing unit margins on first-line reactive support. However, all three companies are increasingly focusing on, training, consultancy, and systems integration centered around their products as a means of generating significant services revenues.

Reactive problem resolution services can now be offered cheaply and efficiently using electronic channels such as the Internet and CD ROM.

Additionally, Computer Telephony Integration (CTI) and interactive voice recognition (IVR) technologies enable increased help desk automation which in turn, reduces the cost of first-line support and provides customers with a more efficient service.

Proactive support is usually incorporated into a vendor's most comprehensive and expensive support package. For example, Novell has recently introduced a set of proactive customized support offerings as part of its *Premium* service which includes product optimization, proactive analysis, early warnings and access to an account manager who is familiar with the customer's business.

Such proactive services have existed for some time; however, vendors are now promoting them more aggressively in order to compensate for shrinking profit margins generated from reactive first-line support activities.

D

Vendors Respond to Market Extension Opportunities

Support vendors are increasingly extending their potential markets by matching demand for low cost reactive support from smaller organizations with cheaper support offerings, and matching demand from the enterprise for more business support with proactive support services (see Exhibit II-4).

Exhibit II-4

Extending the Software Support Market

Smaller Organizations	Enterprises
Per incident pricing	Planning and design services
Heavily automated help desks	Training services
Use of the Internet as a delivery channel	Advice and guidance services
	Software management services
Low margin/high volume	**High margin/low volume**

Support Offerings
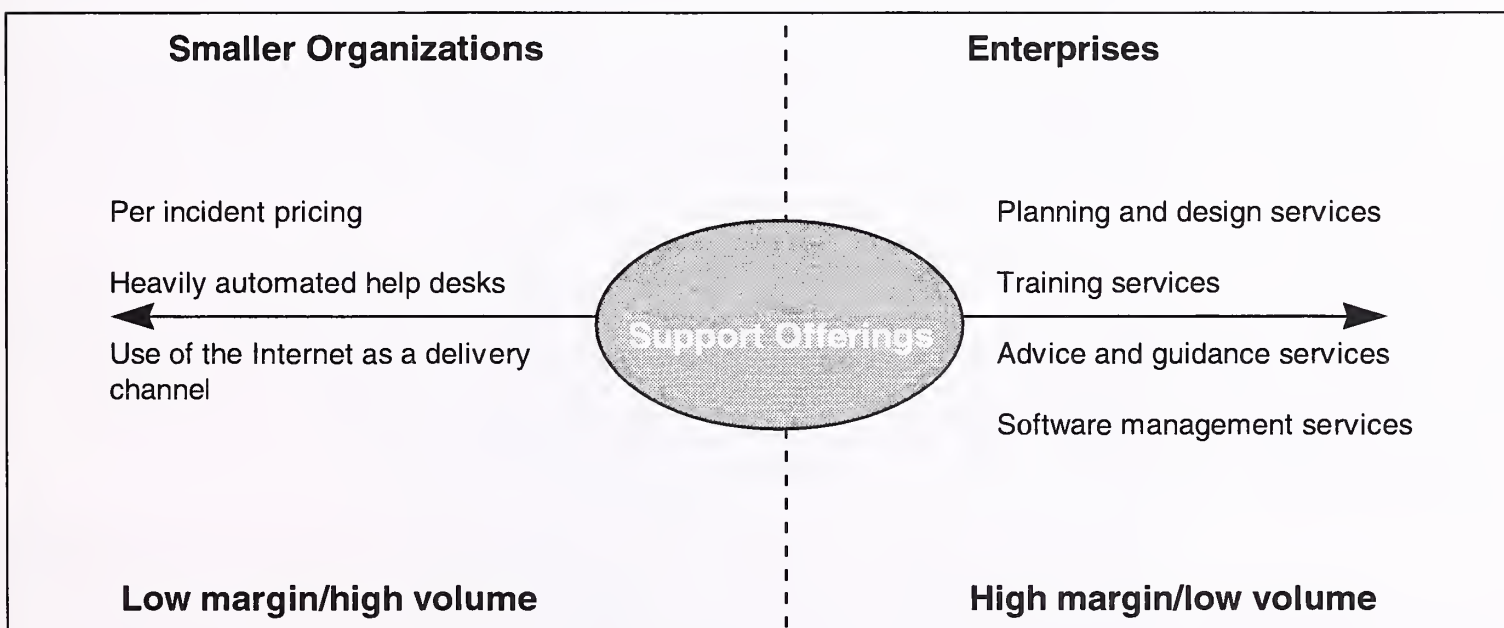
Source: INPUT

Many support vendors target their services at the enterprise level and have little or no provision for smaller organizations or business units that fall into SOHO, SME, workgroup and departmental market segments.

However, some vendors have responded to demand from smaller organizations by offering cheaper support options. One of the most popular is the introduction of "per-incident" pricing where the user pays for support each time the service is required. For example, Sybase has introduced per-incident pricing charging $175 per incident and the offering is targeted squarely at the departmental/workgroup market. Microsoft's *AnswerPoint* range of support offerings also includes per-incident options.

The Internet offers vendors an opportunity to provide low-cost support and distribution services to smaller organizations. For example Stream International now has an electronic 'store' on the Web where customers can browse, purchase and download the latest version of the software of their choice. Additionally, Stream is charging users very low prices for support. Via the Web, users can send a message to a technical specialist and receive a response within 24 hours for $9.95. Users can enter a 'live chat' session with a specialist for $19.95 and receive a telephone call from a technician for $29.95 after requesting it via the Web.

Downloads of bug fixes and upgrades can also be offered cheaply, or free in the case of Microsoft via the Web. Other Internet support offerings include Microsoft's on-line support, Oracle*Mercury* and Sybase's *SupportPlus Online*.

The use of third-party, high volume, support specialists is another means of containing the costs of providing support to smaller organizations. ISVs such as Microsoft, Sybase, Lotus, and Novell use third parties for the support of software purchased by smaller organizations.

Unit profit margins are likely to remain very small when providing support via the Internet. However, the potential volume of customers and the falling costs of using Internet services, as well as the opportunity to eliminate other channels, promise a means of generating large amounts of revenue from markets that until recently went virtually untouched.

Conversely, enterprises typically demand personalized support from product vendors and express scepticism regarding sourcing support from alternative channels. In addition to reactive support, they demand proactive support involving services such as planning and design, consultancy, and software management. Indeed, such services are increasingly being perceived by enterprises as business support services. The relatively labor-intensive

nature of this type of support engenders higher margins generated from lower volumes of service provision.

E

Customizable, Multivendor Software Environments Drive User Demand for Support

The complexity associated with today's software environments is triggering strong demand for multivendor software support services. Furthermore, many software products facilitate extensive customization - an activity which invariably necessitates support.

The demand side pressures precipitated by customizable software and multivendor software environments are addressed below.

1. Customizable Software

The most significant opportunities lie in the support of applications software products that require extensive customization to particular business processes - such as SAP's R/3.

Professional services vendors have seized the opportunity to bundle support offerings into implementation projects for many business applications such as R/3. Offering support independently of any other IT service is less feasible for such products given that an understanding of the user's business is necessary in addition to an understanding of their existing software environment. Vendors such as Andersen Consulting and the outsourcing arms of the large systems vendors, for example IBM ISSC, have become involved in the implementation and on-going support of SAP R/3 projects.

2. Multivendor Software Environments

The multivendor nature of software environments offers opportunities to vendors with strong multivendor capabilities. Many systems vendors and have invested heavily in in-house multivendor expertise in order to meet user demand for multivendor software support from a single point of contact. Examples include Digital's Multivendor Customer Services (MCS) division, ICL Sorbus, and Olivetti's OliService.

Some systems vendors have chosen not to focus on the provision of third-party multivendor software support but instead only provide such support when their own product customers demand it. Such organizations typically form strategic alliances with vendors of products that run in a common environment and resolve problems collaboratively where necessary.

Examples of such systems vendors include Sun Microsystems and Silicon Graphics.

F

Applications Development Tools and Applications Software Offer Greatest Opportunities

Support packages for many system software products, including operating software (operating systems, systems management software and middleware) are becoming increasingly commoditized as vendors of such products utilize large call centers to deliver a high volume of low cost support for relatively robust products. This situation is compounded by increasing usage of the Internet as a support delivery channel. Indeed, similar pressures are inhibiting the growth of the RDBMS software support market. Despite growth in the U.S. RDBMS product market of 21% CAGR between 1996 and 2001, the associated support market can only be expected to grow at a CAGR of 16%.

However, application development tools and application software products - particularly ERP software products - are less commoditized and much consolidation has yet to take place in both market segments. Therefore, the skills required to support each individual product are scarce and more expensive. Consequently, the market for the support of such products can be expected to show relatively high growth (see Exhibits II-5 & 6 which offer market growth projections for the U.S. and World respectively).

Exhibit II-5

Client/Server Software Product Support, U.S., 1996 - 2001
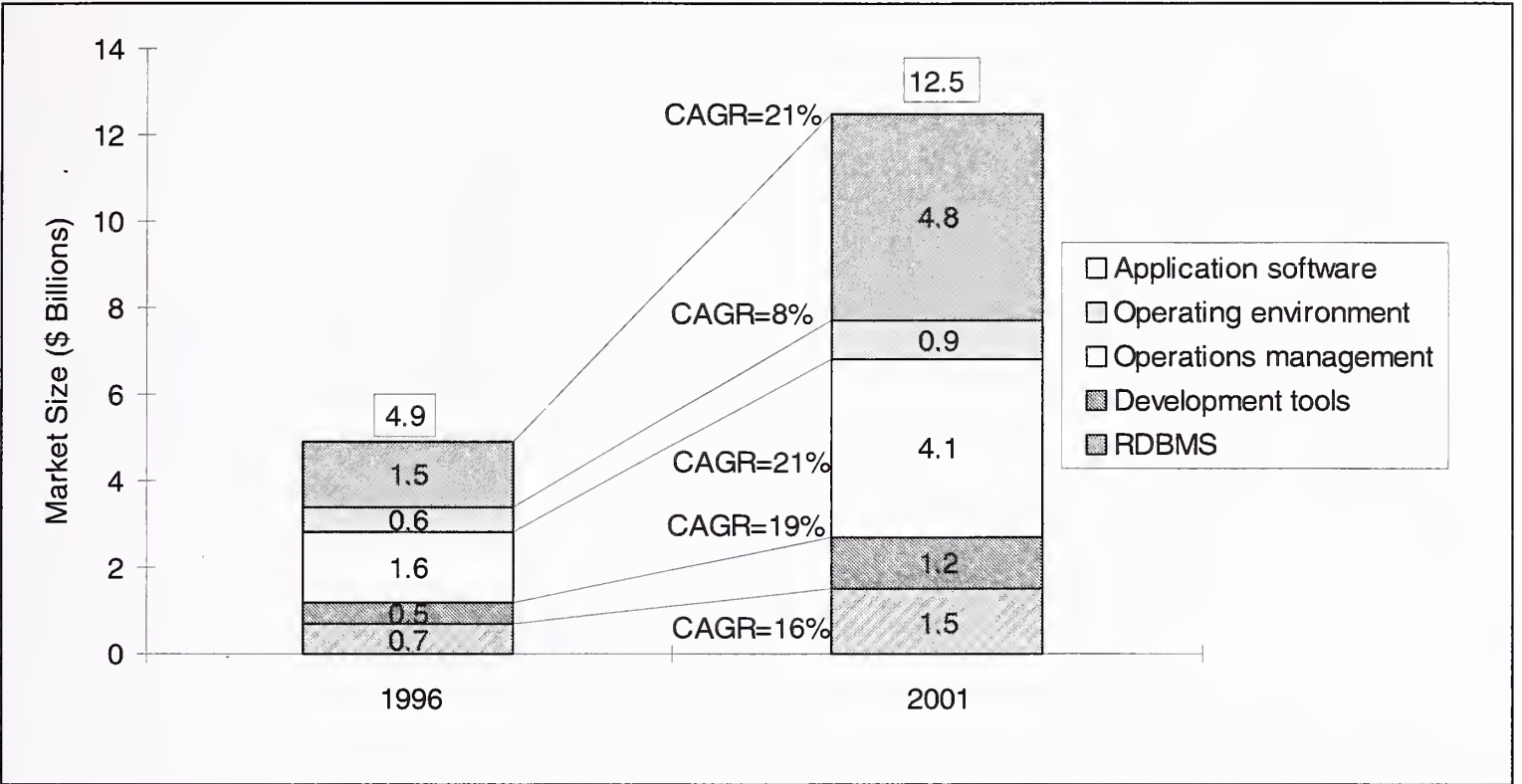
Exhibit II-6

Client/Server Software Product Support, Worldwide, 1996 - 2001
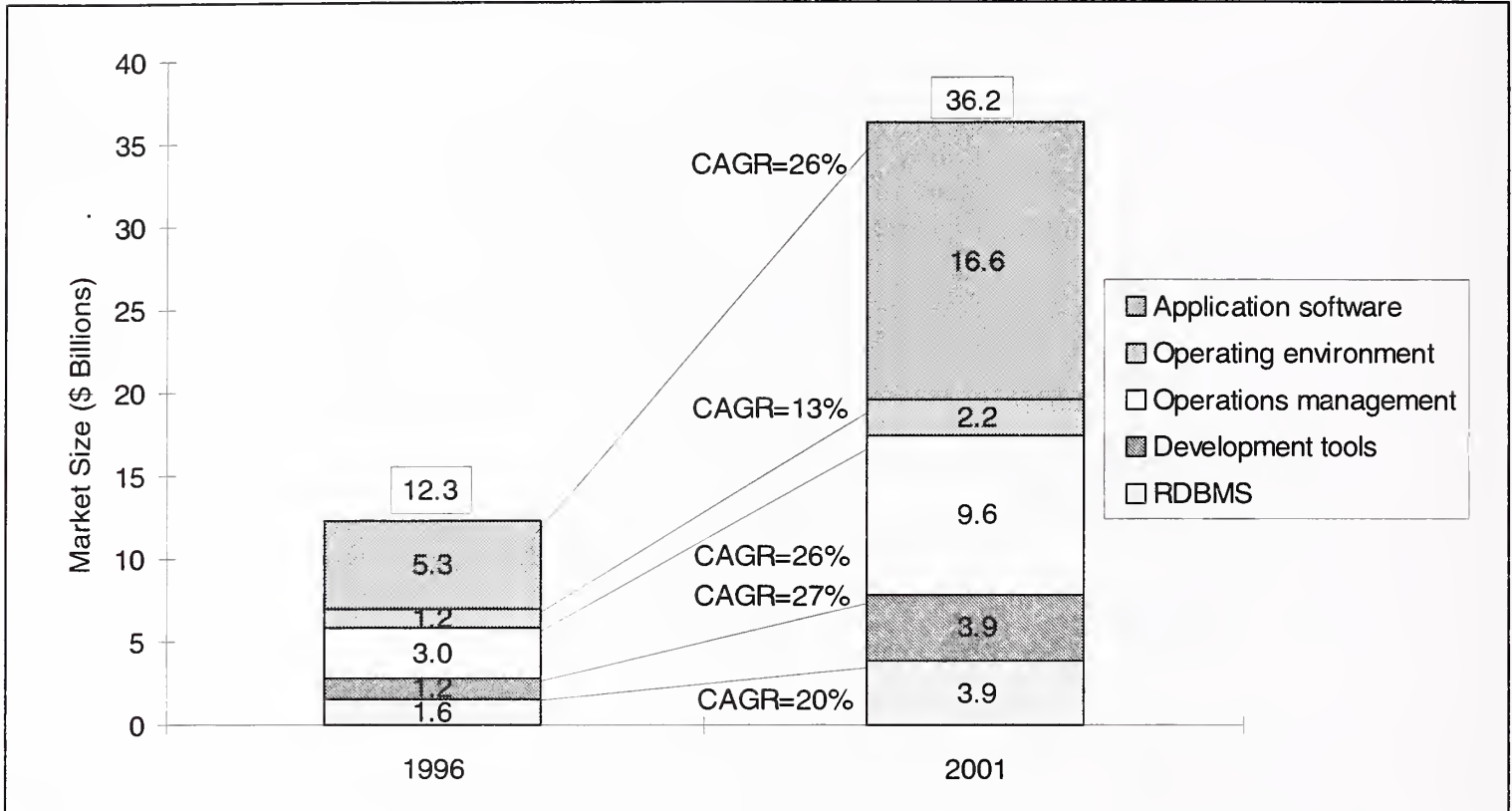
The following section analyses the market for server operating systems in more detail, followed by analyzes of database and information management, application development tools and application software.

1.   Server Operating Systems

Migration away from mainframes to client/server and Internet-oriented environments is leading to a change in the types of operating systems that are being most widely used. The installed bases of both multi-user Unix and Windows NT Advanced Server can be expected to increase significantly at an 11% CAGR and 41% CAGR respectively between 1996 and 2001, largely at the expense of mainframe operating systems and Netware.

Microsoft actively encourages third parties to support NT which is leading to significant competition in the NT support market. The price of NT support is therefore being contained, which is further strengthening the product's competitive position. Consequently, the NT support market will grow at 32% between 1996 and 2001 - considerably lower than the growth rate for the product. However, this still heralds a massive support opportunity for third-party support providers.

Multi-user Unix is becoming the standard high end server operating system and offers significant support opportunities. Its support market can be expected to grow at 4% CAGR which is significantly less than the growth rate for the product itself. Unix vendors can be expected to contain the costs of supporting their product as a means of responding to the competitive threat posed by NT. Additionally, Unix versions are becoming increasingly similar which further contributes to the prospect of a competitive Unix support market.

The market for Netware is stagnating as a result of NT's increasing functionality and increasing use of corporate intranets as a substitute for traditional LANs. Thus, support opportunities can be expected to follow suit. However, INPUT expects Novell and its partners to resist the competitive pressure to reduce support prices. Instead, they will support as a means of compensating for diminishing product revenues.

2.   Multi-User Databases

The mainframe RDBMS market and the RDBMS market on other proprietary platforms such as AS400 can be expected to offer relatively few new support opportunities over the next five years. However, the Unix and NT RDBMS markets will offer significant support-related opportunities in the same timeframe.

Indeed, software support revenues for RDBMSs running on a Unix platform will grow at 9% CAGR and support revenues generated from RDBMSs running on NT will grow in excess of 80% CAGR between 1996 and 2001.

NT is opening up opportunities for the support of RDBMSs in workgroup/departmental markets where Netware once dominated. Netware was never an ideal platform for RDBMSs; however, RDBMS vendors are now producing NT compliant software products which are proving highly successful.

3.   Application Development Tools

The market for application development tools support will grow at an 11% CAGR between 1996 and 2001.

This healthy growth is explained by the demand for specialized tools which are used to develop and customize applications. Businesses are increasingly demanding software environments which match their unique activities. This

necessitates highly specialized and hence highly profitable support services centered around optimizing software environments for specific business processes.

Third party support opportunities are increasing in this area, many of which are stimulated by Microsoft. Microsoft's Visual Basic dominates low end application development and is a product which Microsoft has encouraged third parties to support.

4.   Application Software

The market for client/server application software support in the U.S. will grow at a CAGR of 26% between 1996 and 2001. Worldwide, the CAGR will also be 26%. Application software product vendors are responding to falling product margins by offering support services that add value to businesses. Initial training and consultancy services are enabling businesses to optimize the use of applications and carry out business processes more effectively.

Support centered around PC applications will offer relatively few new opportunities over the next five years as ISVs find ways of reducing the cost of ownership of their products by adding intelligent installation facilities to their products, offering CD ROMs with problem databases and offering increasing volumes of reactive support over the Internet.

However, the support of ERP software products offers a much greater opportunity to support vendors, in particular systems integrators. Indeed, systems integrators are increasingly implementing ERP projects for vendors such as SAP, Baan, PeopleSoft and Oracle. Vendors such as Andersen Consulting and IBM ISSC can reap significant returns from the ongoing support of ERP implementations.

ERP products offer vendors the opportunity to provide higher value support services such as consultancy and software management services, given that the software is normally deployed in business critical environments where demand for such services is greatest.

III

Major Trends in U.S. Software Support—1996-2001

This chapter examines the major trends that are influencing the U.S. software support market.

A
Users Increasingly Source Software Support Externally

The complexity of multivendor, networked software environments is stretching the internal capabilities of user organizations. In response to this pressure, organizations are sourcing an increasing proportion of their support externally, from help desk support to consultancy services. Traditionally, IT managers have attempted to maintain control over help desk activities and have provided as much help desk support as possible internally.

INPUT research reveals that over one third of businesses will outsource IT help desks by the year 2001 (see Exhibit III-1).

Exhibit III-1

Proportion of User Organizations Outsourcing Help Desks
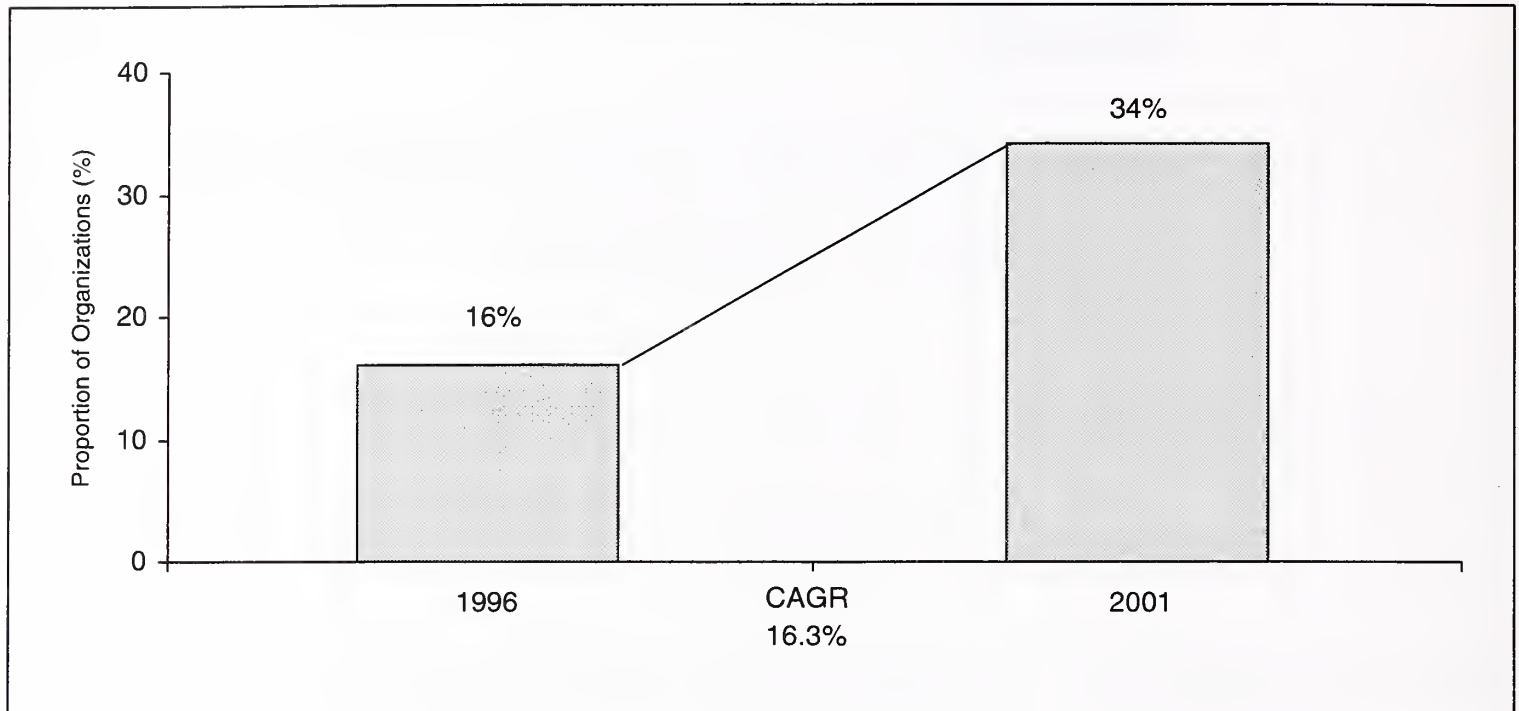
IT managers would typically have only contacted an external support vendor when all internal avenues had been exhausted. Today, user organizations are keen to contain their IT expenditures and perceive external organizations as more capable of offering value for money than elaborate internal support infrastructures. Thus, support vendors are both filling in the gaps where support was provided internally and also offering a broad selection of additional support services.

B

Help Desk Automation Reduces the Costs of Support Provision

The use of help desk management software incorporating problem resolution databases, enables organizations to automate interactions with customers in real time.

Effective implementation of help desk software is currently one of the hottest issues for software support vendors since it is capable of delivering:

- Cost reduction

- Rapid problem resolution

- Call avoidance

For user organizations, the cost of providing support is increasingly raising software ownership costs.

Typical cost benefits of automating a call center include a return on investment in under one year, and the reduction of software product support costs by up to 40%.

Exhibit III-2 illustrates INPUT's estimates of the costs that are typically incurred by the resolution of first-, second- and third-line support calls. First-line calls are those that can be resolved almost immediately by the customer's first contact. Second-line calls typically require a technical specialist to analyze the problem and suggest a workaround. Third-line calls normally require a developer to change code.

Exhibit III-2

Software Problem Resolution

Problem	Average Cost of Resolution
First-Line	$40
Second-Line	$150
Third-Line	$800

Source: INPUT

These costs can be further reduced by storing answers to problems in a database. This function can be carried out relatively simply through the use of many of today's help desk software products. Given that an estimated 80% of all support calls are repeat calls, the benefits of this process are potentially enormous.

The effective utilization of computer telephony integration (CTI) enables call center support consultants to access customer profiles immediately, giving support staff complete knowledge of the customer-to-company relationship.

The use of text retrieval mechanisms, decision trees and case based reasoning (CBR) enables support consultants to input details of a problem into their automated support system. If the problem has occurred previously, a solution should appear almost immediately. Relatively complex problems that might have previously required days to resolve can therefore be resolved in minutes.

A high rate of first-line problem resolution reduces staff costs, as more expensive second and third-line support becomes unnecessary. If a problem

becomes frequent, support staff can adopt a proactive approach by anticipating which customers are likely to encounter the problem, and prevent the problem from occurring. Additionally, learning curves for support staff are reduced as support consultants can utilize databases with pre-loaded expected questions and answers. This, in turn, reduces training costs.

Furthermore, early problem detection can be rapidly fed into the software product development cycle thereby enhancing new of revised software products.

INPUT estimates that help desk automation can reduce overall problem resolution times by around 75% after one year.

Problem resolution databases facilitate quicker response times and higher rates of problem resolution at the first point of contact.

Highly automated call centers can exploit interactive voice recognition (IVR) technology and CTI to start and finish problem resolution in call waiting queues, thus minimizing problem resolution times.

Second and third-line solutions can be stored in databases. Hence, INPUT estimates that automated support centers can typically expect an 80% increase in the number of calls resolved on the first call a year after implementation.

Faster problem resolution will increase customer satisfaction which perhaps surprisingly will increase demand for support. INPUT research indicates that satisfied customers are more likely to re-use support services. An increase in support calls is not necessarily caused by an increase in problems. Instead users may find the support service favorable and opt to use them more frequently.

In order to minimize user support requirements, support vendors can exploit problem databases to reduce call volume. Exhibit III-3 illustrates the benefits that can be derived from call avoidance.

Common problems can be monitored and resolutions incorporated into product training and documentation. New knowledge can be used to alert users of possible problems, thus minimizing their support requirements.

This additional information can then be fed into product development cycles, hence contributing to product enhancements.

Exhibit III-3

Means of Call Avoidance
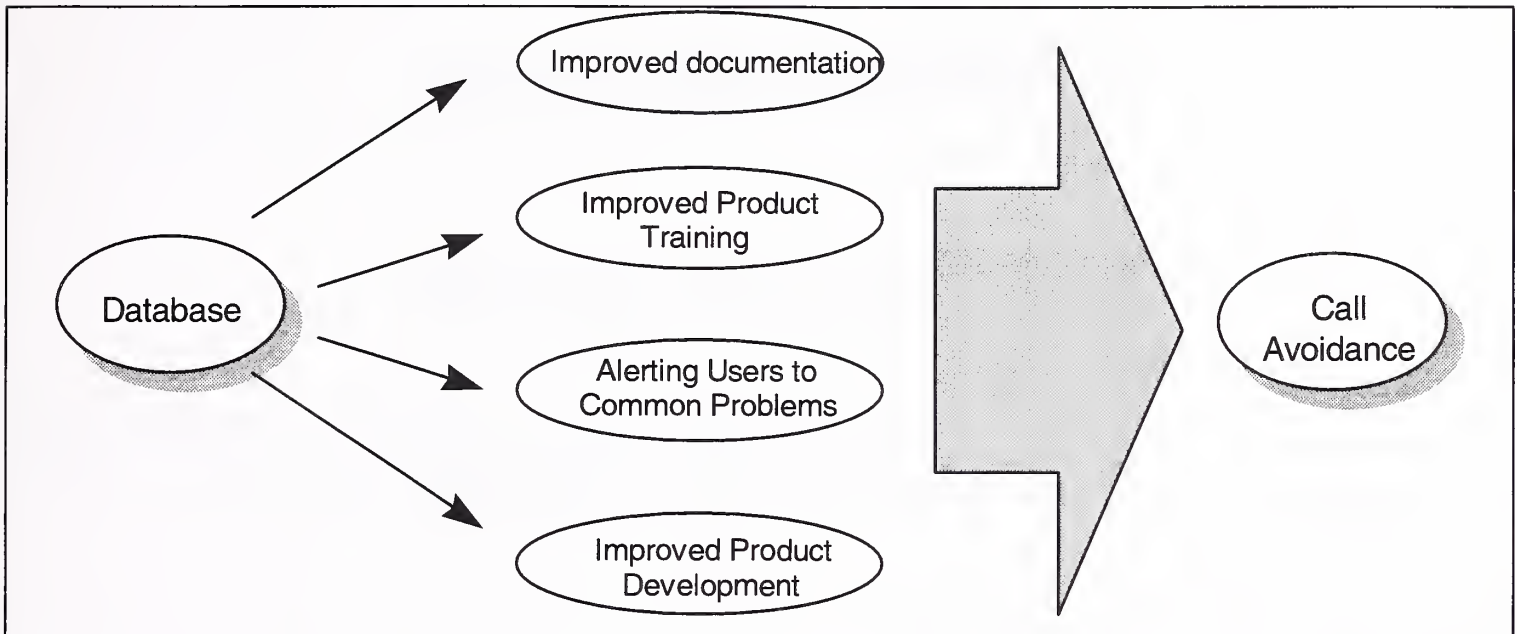
INPUT expects call center technology to be integrated with other important business functions. The integration of help desk software with systems management, asset management, change management, and configuration tools offers help desk managers increasing levels of sophistication in automated problem resolution and the implementation of corrective actions.

Indeed, identification of the most commonly occurring problems offers the opportunity to implement automated proactive support tactics, in other words, fixing the problem before it occurs.

Vendors that take a holistic view of the benefits of call center automation will gain a competitive advantage through exploiting the synergy between problem resolution and other critical functions such as software development and asset management.

C

Electronic Delivery Channels Drive Down Support Costs

The widespread adoption of new technologies has offered vendors new support delivery channels. These include:

- The Internet

- CD ROM

1.   The Internet

Recent INPUT research reveals that users are becoming increasingly aware of the benefits of using the Internet for software support. The major benefits are:

- Time savings

- Cost savings

- Improvements in the quality of support offered

Exhibit III-4 illustrates the proportions of users who believe that the Internet can deliver the aforementioned benefits when used for software support now and in the future.

Exhibit III-4

Proportion of Users Perceiving the Benefits of Internet Support

Quality Improvements — 77% / 23%

Time Savings — 86% / 71%

Cost Savings — 78% / 32%

□ 1998
□ 1996

Percentage of Users

n = 90 IT Managers

Source: INPUT
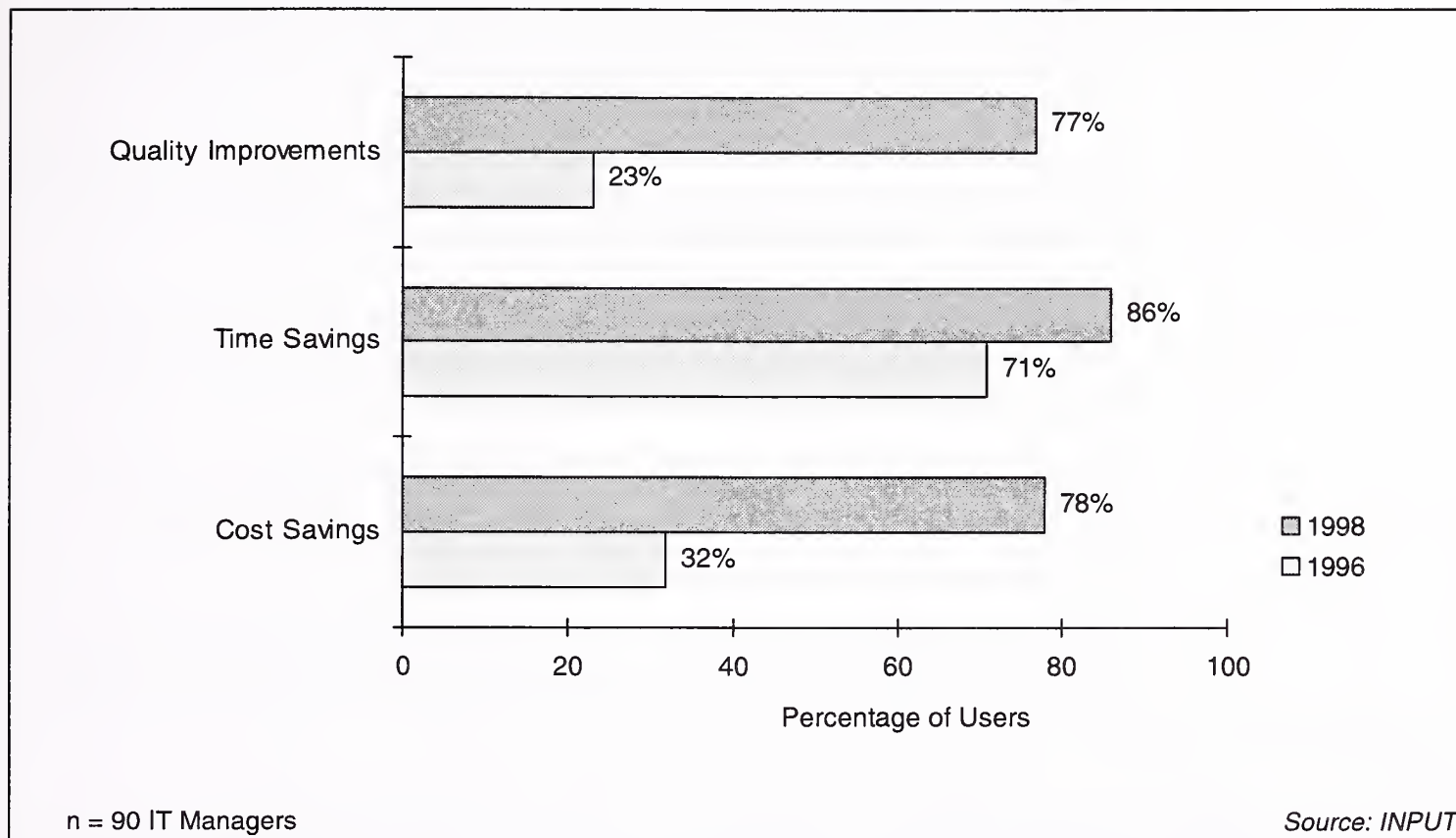
Software support contracts are perceived by many users as being expensive. Vendors have an opportunity to meet user price expectations by offering standard (first-line support) support services over the Internet. Standard Internet support offerings could include:

- Upgrade availability

- Bug fix/patch availability

- First line problem resolution using e-mail, discussion forums, WWW pages and frequently asked question (FAQ) databases

The advantage of this situation is that vendors can sell cheap standard support services via the Internet to a much wider market. The variable costs of offering such support are low, enabling vendors to charge a fraction of their current prices for their cheapest support packages.

At present, many users, in particular SOHO users, are unable to afford support contracts that meet their needs. Vendors can expect to benefit from demand for cheaper support from the growing SOHO market.

Vendors can additionally charge a premium for higher value support services, such as more complex problem resolution (second- and third-line problem resolution), on-site support and initial training, which are more expensive to provide.

Use of such Internet support services will reduce call volumes for product vendors such as Microsoft and its partners. In effect, the Internet will increasingly complement existing support delivery channels.

Importantly, automated support over the Internet can only adequately offer first-line problem resolution. Second and third-line support will require access to support consultants.

Furthermore, users reveal that in the near future they expect to replace many of their current, more traditional support services with support services delivered over the Internet.

Exhibit III-5 illustrates commonly used support delivery mechanisms at present and Internet equivalents which will become more commonly used.

Exhibit III-5

Internet Substitutes for Traditional Support Delivery Mechanisms

Support Service	Traditional Delivery Mechanisms	Internet Equivalents
Problem Resolution	Telephone; on-site support consultant	E-mail; WWW; Discussion forums; FAQ databases; Remote problem resolution
Installation	On-site support consultant	Remote installation
Upgrades/Bug Fixes/Patches	On-site support consultant; purchase directly from product vendor outlet and install	Remote upgrade; download upgrade and install
Initial Training	Training takes place on user site or at vendor site	Computer-based training

Source: INPUT

Most support vendors view Internet channels as complementary to their existing delivery channels. However, as users source increasing volumes of support from the Internet, the need for first-line support delivered by complementary channels will be reduced. Users will increasingly source first-line software support from the Internet.

Widespread Internet usage will enable support vendors to deliver their support services to a larger market than ever before. Additionally, product

vendors can potentially enjoy the benefits of delivering support and avoid many of the disadvantages. The product vendor can benefit from:

- Generating additional revenue

- Reduce the costs of providing support

- Providing support to more product customers

In addition, vendors can use customer feedback to:

- Enhance software products

- Improve product documentation

- Improve product training

- Alert users to common problems

- Incorporate customer feedback into other business activities where appropriate, such as asset management

Furthermore, product vendors can contain the following problems associated with providing support:

- Costs involved in employing large numbers of support staff

- Costs involved in investing in call center infrastructure

- Difficulties in offering affordable support to SOHO users

Given that software can be distributed via the Internet, in addition to many support functions, support vendors that do not offer second- and third-line multivendor support expertise could find themselves in a difficult position.

Much of the most complex problem resolution activity and initial training will continue to be critical high value support services that can only be delivered using traditional methods. Service vendors and channel players will therefore still have an opportunity to exploit these opportunities using traditional support channels.

Customers of many systems vendors have become accustomed to receiving point-to-point support services such as remote diagnostics. Such services involve establishing a single, direct link between the vendor's site and the customer's machine.

However, an increasing number of support vendors, in particular systems vendors, can be expected to replace such point-to-point support services with Internet support services. The Internet offers vendors the opportunity to implement 'one-to-many' remote support services as opposed to 'one-to-one' remote support.

2.   CD ROM

Increasingly, vendors are supplementing their support offerings with CD ROM knowledge bases.

For example, Microsoft invites customers to subscribe to their TechNet offering which entitles them to a CD every month containing the latest technical information regarding Microsoft products. It includes:

- Current technical notes

- Microsoft Resource Kits

- The entire Microsoft Knowledge Base

Additionally, Microsoft provide a second disk containing its most recent drivers and patches.

D

Software Product Commoditization Leads Vendors to Generate Revenue from Support

The software product market has become increasingly competitive, which has precipitated the following:

- Falling software product prices

- Escalating development costs

- Declining profit margins

- Market consolidation, with large vendors like Microsoft and Oracle dominating the market

- Little differentiation between competing products

Consequently, software products are becoming increasingly commoditized.

Vendors have responded by charging for support separately from the product. The cost of support has increased and vendors offer a wider choice of support services than ever before. Additionally, many vendors view support provision as a means of differentiating their products.

E
Complex, Multivendor Software Environments Precipitate Increased User Demand for Support

Client/server computing delivers greater flexibility to enterprises in the form of distributing information and user empowerment. However, it is costly and complex to support. For support personnel, such environments are characterised by:

- Disparate, isolated LANs

- Multiple platforms, applications and standards

- Software products sourced from many vendors

- Support infrastructures becoming unable to cope

Enterprises frequently purchase support contracts from numerous vendors, none of whom have a full understanding of the systems to be supported. User research has consistently revealed that users wish to source support for all of their software environments from one source.

Therefore, support vendors must offer multivendor expertise and satisfy all other user needs for the support of business critical client/server systems. Such offerings are expensive given the costs of providing them. However, upward pressure on the cost of providing support drives the support market in revenue terms and encourages price competition.

Importantly, given that each client/server environment is unique, vendors must introduce flexibility into their support offerings.

Demands for multivendor support are being met by partnering in two ways:

- Developing own multivendor expertise

- Routing third-party support issues to partners

1.   Internal Multivendor Expertise

Many large vendors have the necessary internal resources to provide extensive multivendor expertise. Many such companies choose to focus significantly on services provision and succeed in generating healthy revenues from support.

Systems vendors such as IBM, HP, Digital, and Unisys have strong services divisions and offer multivendor support services. The companies have partnered heavily with other vendors and trained their own staff to support products sourced from their partners. The ability the offer 'one stop shopping' has reaped dividends for the aforementioned organizations.

2.   Route Calls to Appropriate Partners

The other major approach for dealing with user demand for 'one stop shop' multivendor support is to take ownership of a problem when a call is made, isolate the problem and if it relates to a partner's product, route it to the partner in question.

Many vendors such as Sun and Oracle favor this approach. Both are members of the TSANet (Technical Support Alliance Network) which is a collection of vendors who agree to route problems to one another if necessary, thus enabling themselves to act as 'one stop shops' but without the internal multivendor expertise.

a.   How does TSANet Work?

Essentially it enables customer problems relating to a member's product to be resolved from a single point of contact (see Exhibit III-6).

Exhibit III-6

Co-operative Support
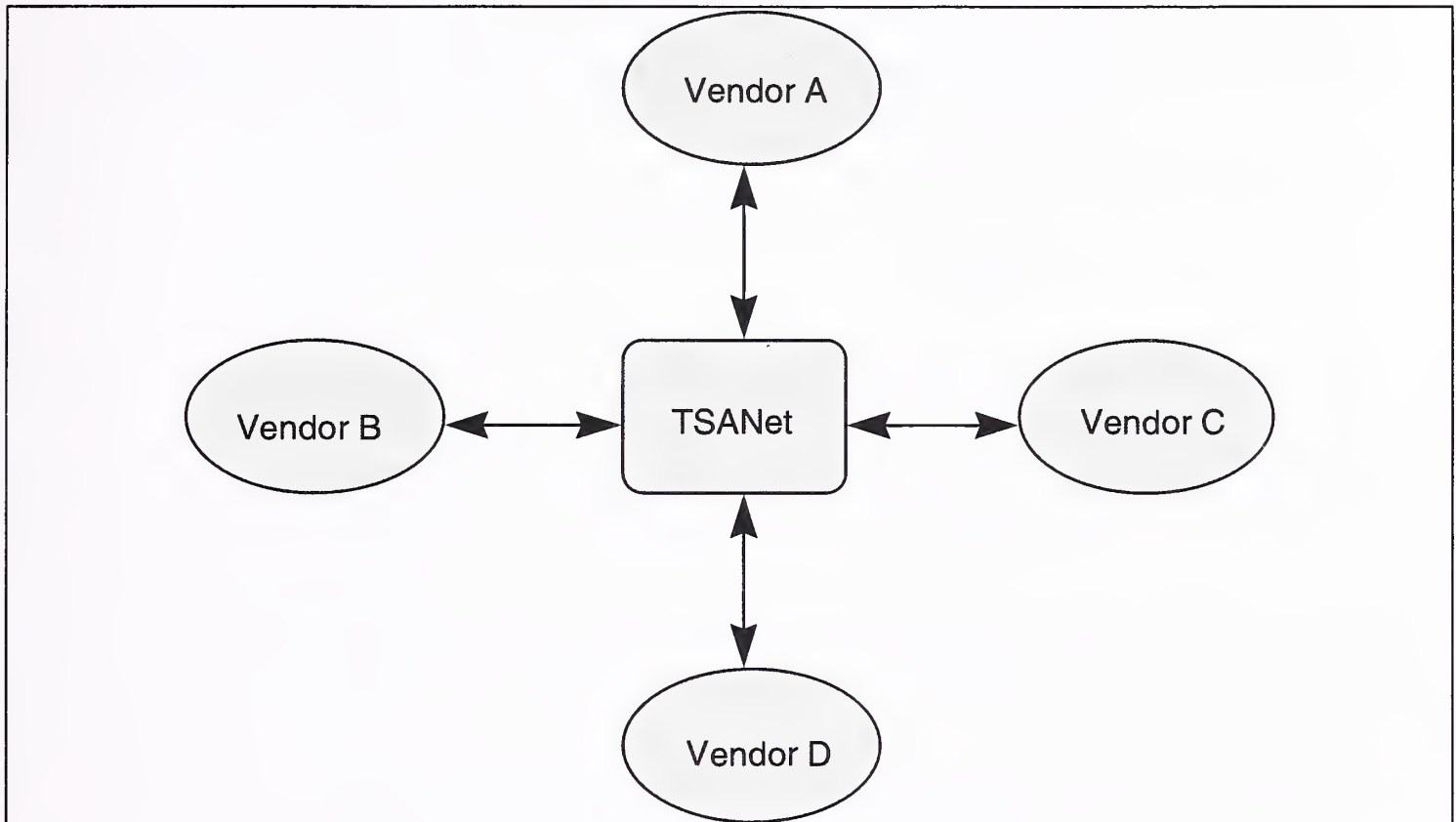
Resolving a problem using TSANet begins with a customer reporting a problem to Vendor A. Vendor A determines that the problem relates to products sourced from Vendor B and C. Since all three vendors are members of TSANet, Vendor A contacts vendors B and C to isolate the issue. The problem is identified and the original vendor (Vendor A) contacts the customer with the solution.

TSANet offers three major benefits:

- Vendors accept ownership of calls

- Raises customer satisfaction levels

- Lowers the costs of providing support

TSANet members accept ownership of customer calls which eliminates 'finger pointing' among vendors. Members work together to solve the customer's multivendor problem and the initiative engenders cross product training and information exchange. The initiative is not dominated by any

one vendor for the benefit of that vendor nor is it designed for those who wish to offer third-party support. It is an organization for product producers only, enabling them to resolve multivendor support problems.

In the U.S., there are over 70 TSANet members and the numbers are constantly growing. Currently U.S. members include:

- Borland

- Digital

- Hewlett-Packard

- IBM

- Informix

- Microsoft

- Novell

- Oracle

- Unisys

Nine vendors have so far become members of TSANet in Europe:

- 3Com

- Banyan

- ICL

- Lotus

- Madge Networks

- Novell

- Olivetti

- Oracle

- SCO

However, if a vendor has become a TSANet member in the U.S. but not in Europe, European members can contact U.S. members when necessary.

Each member nominates three support consultants as authorized callers. Authorized callers are listed in the TSANet database, hence the receiving organization can verify the authority of the caller.

Annual membership to TSANet costs $4,500. An additional $1,500 is charged for each additional site.

3. Product Customization

Most software products facilitate some degree of customization. Indeed, many enterprise applications suites are designed to be customized for particular cross and vertical industry functions. For example SAP's and Baan's Enterprise Resource Planning (ERP) applications suites can be customized for most business activities.

Highly tailored software products require highly tailored support services which cover not just the core product but also add-ons and enhancements.

For example, supporting Lotus Notes implementations offers a growing support opportunity as users invariably customize it to suit specific collaborative working environments.

The Notes-related software support market can be expected to exhibit significant growth as demand strengthens largely due to the increasing complexity of Notes implementations precipitated by customization.

INPUT estimates that the market size for the support of Notes-related software in the U.S., which includes Notes client and server and add-on products sold by third parties, is currently $132 million. It can be expected to:

- Grow at 38% CAGR between 1996 and 2000

- More than triple in size by the year 2000 (see Exhibit III-7)

Exhibit III-7

Notes-Related Software Support Market, U.S., 1996-2000
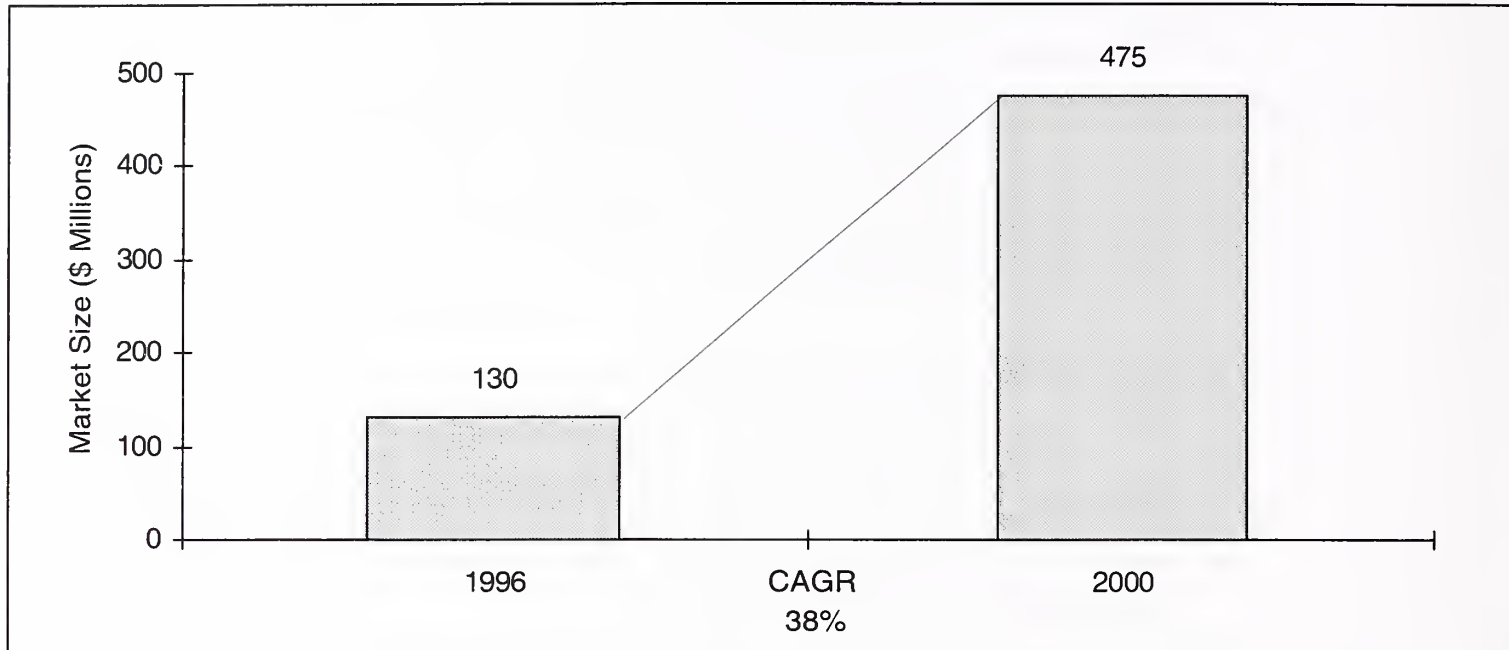
Source: INPUT

F

Market Inhibitors

1.   Help Desk Automation and Electronic Delivery

In addition to acting as a driver for the software product support market, help desk automation also inhibits revenue growth.

Given that automating help desks lowers the cost of providing reactive support services, the revenues generated by vendors for such services will decline. Stiff price competition will also be encouraged by such facilities, as users increasingly require fast, efficient and cheap reactive support services.

The use of the Internet and other electronic delivery channels is also a low cost means of delivering support. Users can be expected to increasingly seek first-line support from frequently asked question (FAQ) databases and to download bug fixes and upgrades. This will act as a form of preventative support in the sense, that these channels will filter out many callers, and call volume will fall. Essentially, the calls that are received at help desks will be more complex in nature and will require more time to resolve.

2.   Reactive Support Services Become Commoditized

In addition to the effect of automation, the market for reactive support is being inhibited by changes to software products. Individual products require less reactive support as they become more user friendly, more bug-free, more interoperable and offer greater cross platform compatibility.

The natural corollary of these inhibitors is the commoditization of reactive support services. Less reactive support will be required and, when it is provided, it will be cheaper and will be delivered increasingly by electronic channels.

3.   Focus on the Product

As software automates more business processes, from accounting to supply chain management, enterprises require more support for the business process as opposed to the product. Most vendors focus heavily on technological issues relating to products which does not closely match user requirements. Users will increasingly substitute technical support services with consultancy services that are focused on the business.

4.   The Internet as a Platform

The Internet faces many challenges before it will be perceived as a viable platform for business critical applications - including security concerns and bandwidth problems. However, Internet-based applications will change how vendors offer support. Software will increasingly be managed at a central site by vendors. This will reduce the cost of support and users' perceived need for support, thus further constraining the market for software product support.

5.   Customer Dissatisfaction and Poor Image

Competing successfully in the market for software support will be enhanced by effective marketing of support services and the provision of those services in an efficient and cost-effective manner.

Customers still remain sceptical about support services, largely as a result of past experience, but also because of negative media coverage. Hence, more innovative marketing strategies will be required to obtain the business of larger customers.

G

User Environments

User environments vary in size and complexity. Smaller user organizations can rarely afford the cost of supporting client/server environments. Many such organizations have either neglected to fully support their software environments or have not switched to the technology that suits them due to concerns about support and maintenance.

Many enterprises, however, have demanded ever more comprehensive support services in order to fully reap the benefits of their client/server implementations. Moreover, they are typically willing to pay the high price of fully supporting their software environments.

Vendors have begun to respond to the support services targeted at SOHO/SME environments by offering a wider range of support services that are priced to suit all potential customers. Vendors benefit by exploiting hitherto neglected markets. Many vendors such as Sybase, Oracle, and Microsoft have started to offer support services specifically targeted at SOHO/SME users. Offerings typically include:

- Electronic delivery of bug fixes and upgrades

- E-mail problem resolution enabling users to track the progress of their queries

- Access to FAQ databases with information that can resolve an estimated 85% of problems

- Per-incident pricing which allows users to pay for each problem involving the use of the telephone

Vendors earn lower margins when providing support to smaller organizations. However, the potential volume of support packages that could be sold far outweighs concerns about profitability. Many systems vendors, and independent services vendors such as Stream and PSC-Softbank specialize in providing high volume, low cost support to smaller organizations. Concurrently, many ISVs outsource reactive support services to such organizations. Sybase, Adobe and Microsoft are examples of organizations that rely heavily on third parties for the support of SOHO/SME environments.
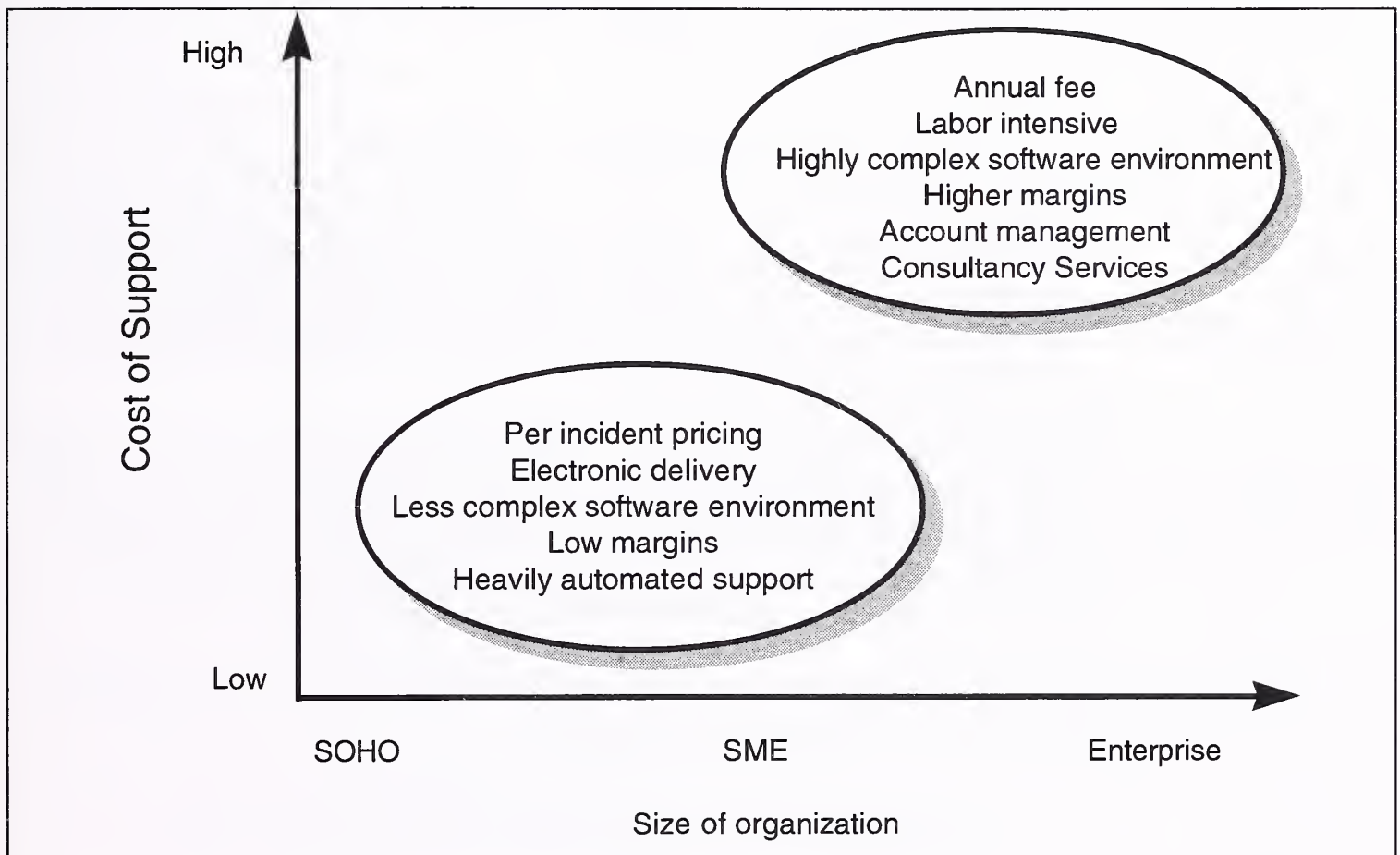
Enterprises typically demand support from the original product vendors and express scepticism regarding sourcing support from third parties.

In addition to reactive support, they demand proactive support services involving account management. This often encompasses planning, design and consultancy services around the products in question. The relatively labor-intensive nature of this type of support engenders higher margins which can be generated by charging an annual fee for support.

Exhibit III-8 illustrates the typical differences between support offered to the enterprise and that offered to smaller organizations.

Exhibit III-8

Supporting Organizations of Differing Sizes

Axis label (vertical): Cost of Support — High / Low

Upper ellipse:
Annual fee
Labor intensive
Highly complex software environment
Higher margins
Account management
Consultancy Services

Lower ellipse:
Per incident pricing
Electronic delivery
Less complex software environment
Low margins
Heavily automated support

Horizontal axis: SOHO   SME   Enterprise
Size of organization

Source: INPUT

H

Moving Up the Value Chain

The automation of first-line reactive support services, combined with economies of scale derived from offering high volumes of support at low prices, is driving the commoditization of first-line support services.

Vendors are responding to this commoditization by:

- Climbing the support 'value chain'

- Providing proactive advice and guidance services

- Improving training provisions

1.　　Vendors Climb the Support 'Value Chain'

Market growth for support services centered around individual products is being inhibited as software products become more user friendly, more bug-free, more interoperable, and offer greater cross-platform compatibility. Furthermore, economies of scale and automation are reducing the costs of providing many support services.

Consequently, demand per product sold for reactive support such as problem resolution is falling in conjunction with prices. Lower margins in this area are driving vendors to attempt to derive higher margins from second and third-line problem resolution, in addition to providing more proactive support services such as, consultancy, and training services.

Demand per product sold for first-line support services is being reduced by the following proactive support services:

- The use of electronic support channels to offer preventative information, updates and bug fixes

- The provision of early warnings once a problem has been uncovered

For example, the three major database vendors, Oracle, Informix and Sybase now use the Internet as a channel for the provision of reactive, problem-related support services. All three companies are increasingly focusing on training and consultancy as a means of generating significant services revenues.

Reactive problem resolution services can now be offered cheaply and efficiently by electronic channels such as the Internet and CD ROM.

Additionally CTI and IVR technologies enable increased help desk automation which in turn, reduces the cost of first-line support and provides customers with a more efficient service.

Exhibit III-9 illustrates some of the support services that are offered over the Internet by Oracle, Informix and Sybase.

Exhibit III-9

Internet Support Services Offered by Database Vendors

	Oracle's Mercury	Sybase's Electronic Support	Informix's TechInfo Center
Bug Fixes	*	*	*
Early Warnings	*	*	*
FAQ* Databases	*	*	*
Problem Logging	*	*	
Resolution Monitoring		*	

Frequently Asked Questions   *Source: INPUT*

2.   Proactive Advice and Guidance Services are Key

Proactive support is usually incorporated into a vendor's most comprehensive and expensive support package. For example, Novell has recently introduced a set of proactive customized support offerings as part of its *Premium* service. These offerings include:

- Configuration management to optimize software products

- Remote service management

- Proactive analysis and early warnings

- Access to a service account manager who liaises between the customer and Novell

Informix also promotes the proactive element of its *Regency* support offering. It provides customers with an account manager who assists in future planning. Account managers visit sites biannually, get the latest information on user environments, and help to match current software capabilities with anticipated user demands.

Although such proactive services have existed for some time, vendors are now promoting them more aggressively in order to compensate for shrinking revenues from reactive first-line support activities.

3.   Software Support Vendors Focus on Training

As complex multivendor software environments become more widespread, the skills that are required to take full advantage of them will become increasingly scarce for the following reasons:

- Demand for trained staff will increase as skill sets do not match complex new environments.

- Training in the use of complex software environments will demand a lot of time, thus creating lags in the supply of available product support.

Support vendors are realizing that training services are an integral part of their support offerings. Trained users will increasingly be able to resolve problems internally, thus avoiding the need to seek external problem resolution. This will further drive the shrinkage of the market for first-line support services and facilitate the commoditization of these services.

Vendors can be expected to increasingly focus on the training. It will frequently be promoted as a proactive support service that enables businesses to optimize software environments while reducing the need for reactive, problem-related support services.

The Adoption of Corporate Intranets

An Intranet is a miniature replication of the Internet environment created within an organization for its own use. Information and applications are delivered and accessed over an Intranet in exactly same way they are over the Internet.

The major features of the Internet include:

- Standardization of network infrastructure

- Standardization of service protocols

- Open of access from all platforms to all platforms

These features are equally apparent in an Intranet. Enterprises can be expected to implement Intranets for the following reasons:

- By distributing internal company documents and routing workflow processes electronically over an Intranet, considerable cost savings can be made - the costs of printing, storage and distribution are automatically removed. But use of an Intranet can also mean cost savings compared with a traditional groupware system such as Lotus Notes.

- Networking infrastructure is moving towards Intranet technology - supporting TCP/IP protocols. Applications are starting to migrate to the Web platform, and new, low-cost Internet access devices are emerging to make use of these applications in a standardized environment.

- If an organization were to implement a major upgrade of its enterprise network infrastructure that did not take TCP/IP into account, it would soon start to face a gradual reduction in the number of applications and technology enhancements available to it as the rest of its industry went down the Intranet route.

- A company can integrate existing Internet applications into its internal backend processing systems. For example, it may already have a public Web site that provides a set of forms with which partners and potential customers can request additional product information, order goods, or request customer support. Without an Intranet on the other side of the firewall, that company would either have to process each request manually as it arrived or implement an automated conversion system that translated incoming Web requests and transactions to the format usable within the corporate environment.

The Web will be a mainstream medium for deployment, execution and support of software applications. First network-centric, then database, then personal productivity applications will shift from hardware/operating system platform to the Web platform. The first category of application is currently undergoing this shift: witness the move of groupware onto the Web.

By the end of the century, half the applications available today will be available in Web form. Organizations are creating enterprise-wide Intranets first for document sharing, then for internal applications. The growth in the Intranet systems integration market will drive the Intranet application

market, and software application vendors must position themselves to address this market.

Corel has developed Java applet-based versions of several of its personal productivity tools. It plans to ship limited functionality versions of WordPerfect, Quattro Pro, Chart Presentation and Move in early 1997. The company plan to charge users on a usage basis. Users would pay around $100 for a one year subscription to on-line applications.

Corel's move is aimed to challenge Microsoft directly in terms of differentiating their product. This move will force the industry to consider the pricing and distribution issues inherent in Web-based applets. Corel suggests that its prices are 30-40% lower than those of competitors because the traditional channel can be circumvented.

The expected widespread adoption of corporate Intranets offers support vendors a new opportunity to support the next generation of 'best of breed' software products.

IV

Market Sector Analysis

This chapter analyzes the support opportunities centered around software product types. It examines the support of:

- Unix, Netware and Windows NT Advanced Server operating systems

- RDBMSs

- Application development tools

- Application software

A
Netware Threatened as NT Flourishes

This section analyzes the support markets for Windows NT Advanced Server, Unix, and Netware.

1.   Windows NT Advanced Server

The installed base of the Windows NT Server operating system in the U.S. will grow at a 40% CAGR between 1996 and 2001 (see Exhibit IV-1).

Exhibit IV-1

## Installed Base of NT Advanced Server—U.S.
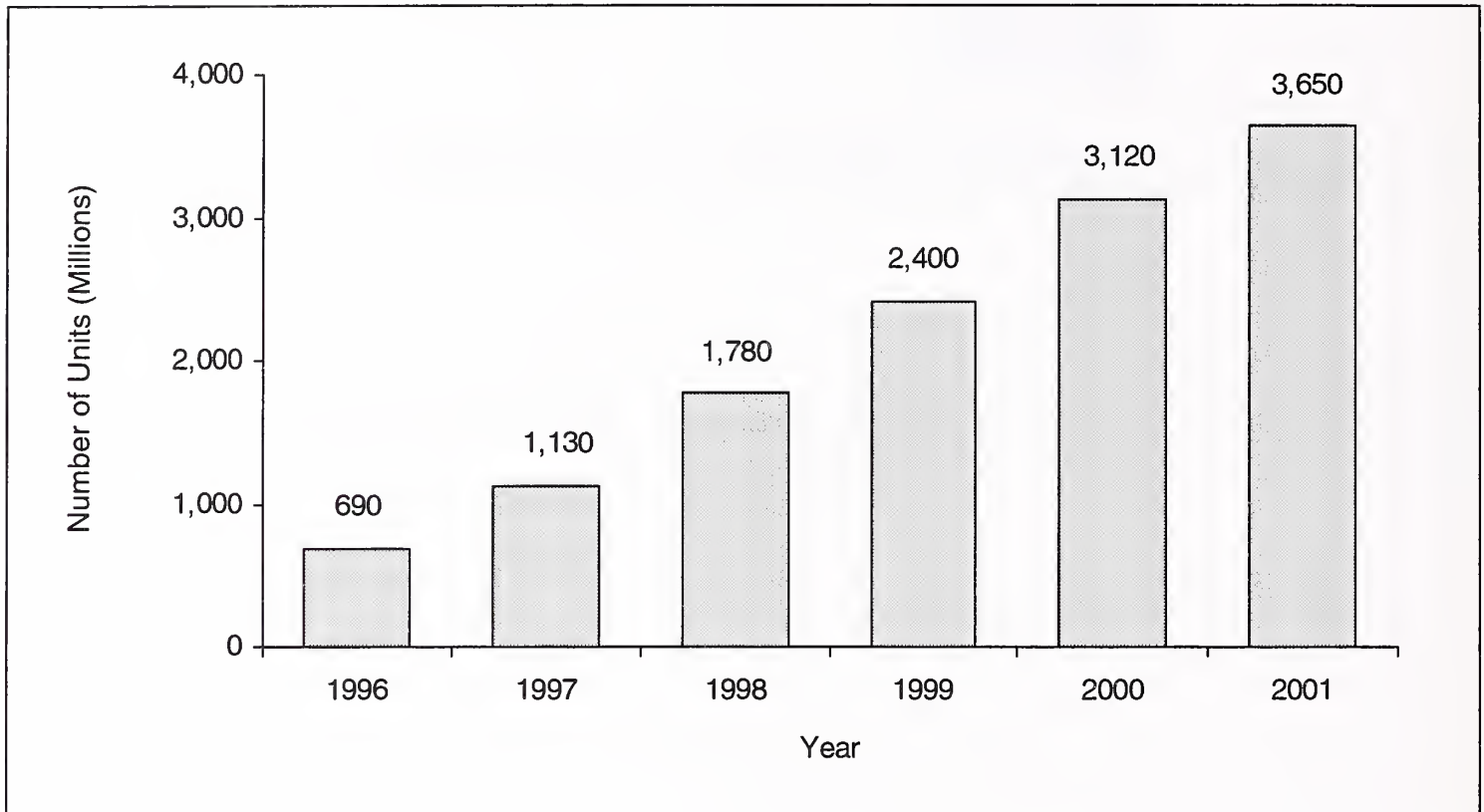
Source: INPUT

INPUT research reveals that this phenomenal growth can be attributed to several factors including:

- The relative ease of use of Windows NT (compared to Unix in particular)

- The growing number of software products that are NT-enabled

- The relatively low maintenance costs associated with Windows NT Server

- NT's increasing scalability

- NT's growing popularity as a mid-range operating system

- NT's ability to support the TCP/IP protocol natively, making it an ideal Web server operating system

- The relatively low installed base of Windows NT Server

Windows NT Server software support revenues can also be expected to show extremely high growth over the next five years (see Exhibit IV-2).

Exhibit IV-2

## Windows NT Server Software Support Revenues—U.S. ($ Millions)
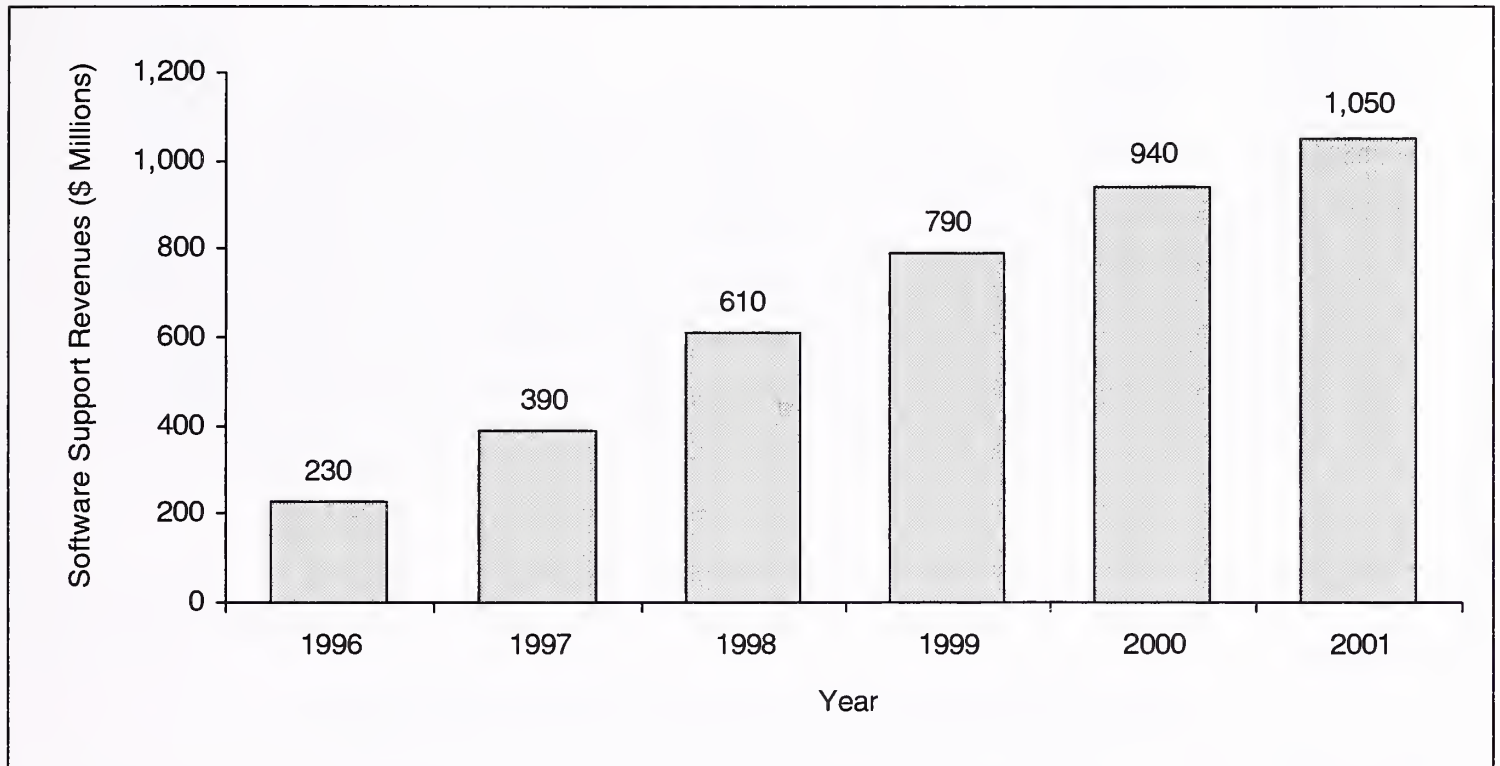
However, the NT support market will grow at a 35% CAGR between 1996 and 2001, which is lower than that for the product's installed base. This can be explained by the following factors:

- Automation is leading to lower support prices

- The relatively low installed base of NT at the end of 1995

- The relative ease of use of NT

- Healthy competition that exists in the market for NT support as thousands of Microsoft solution providers vie for services revenue centered around Windows NT Server

2.   Unix as a Multi-user Server Operating System

The installed base of Unix as a multi-user server operating systems can be expected to grow at a healthy 11% CAGR between 1996 and 2001 (see Exhibit IV-3).

Exhibit IV-3

Installed Base of Unix as a Multi-user Operating System
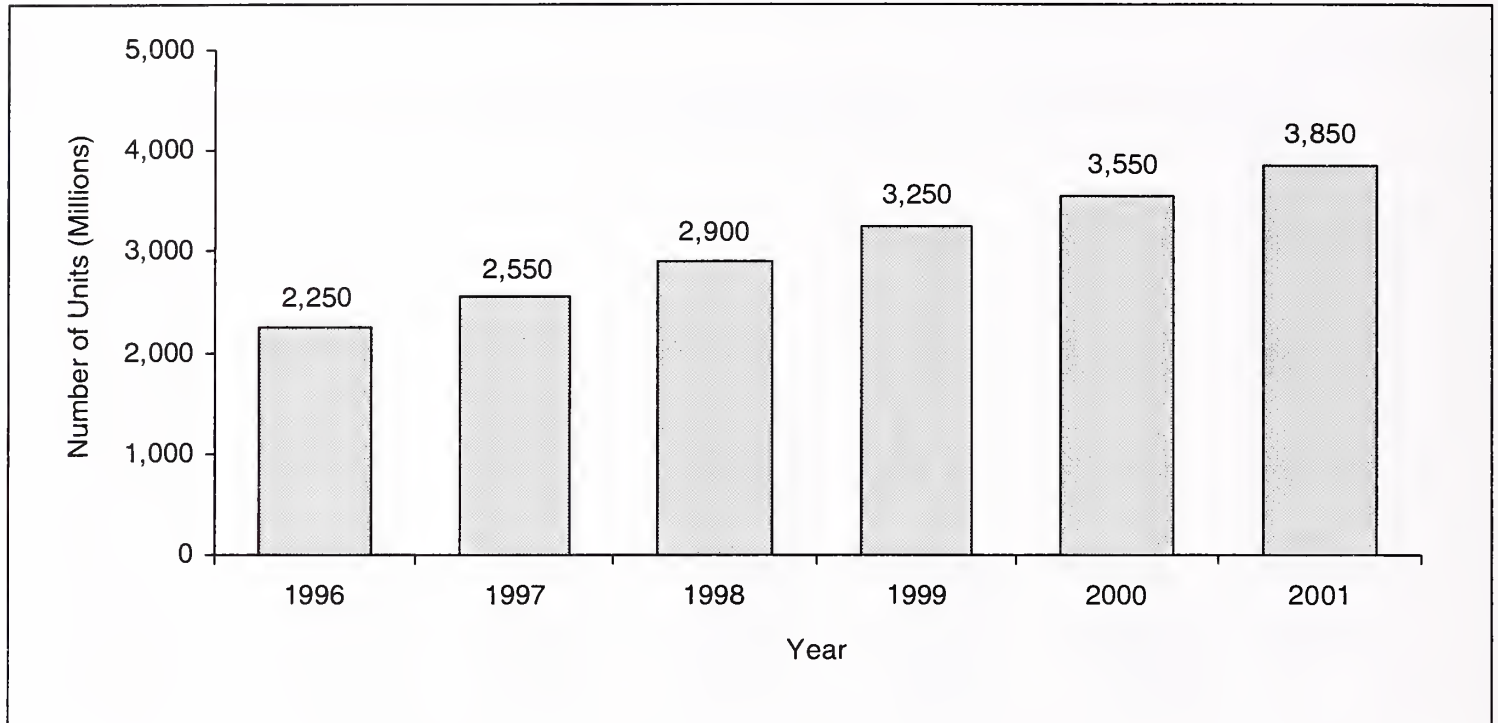
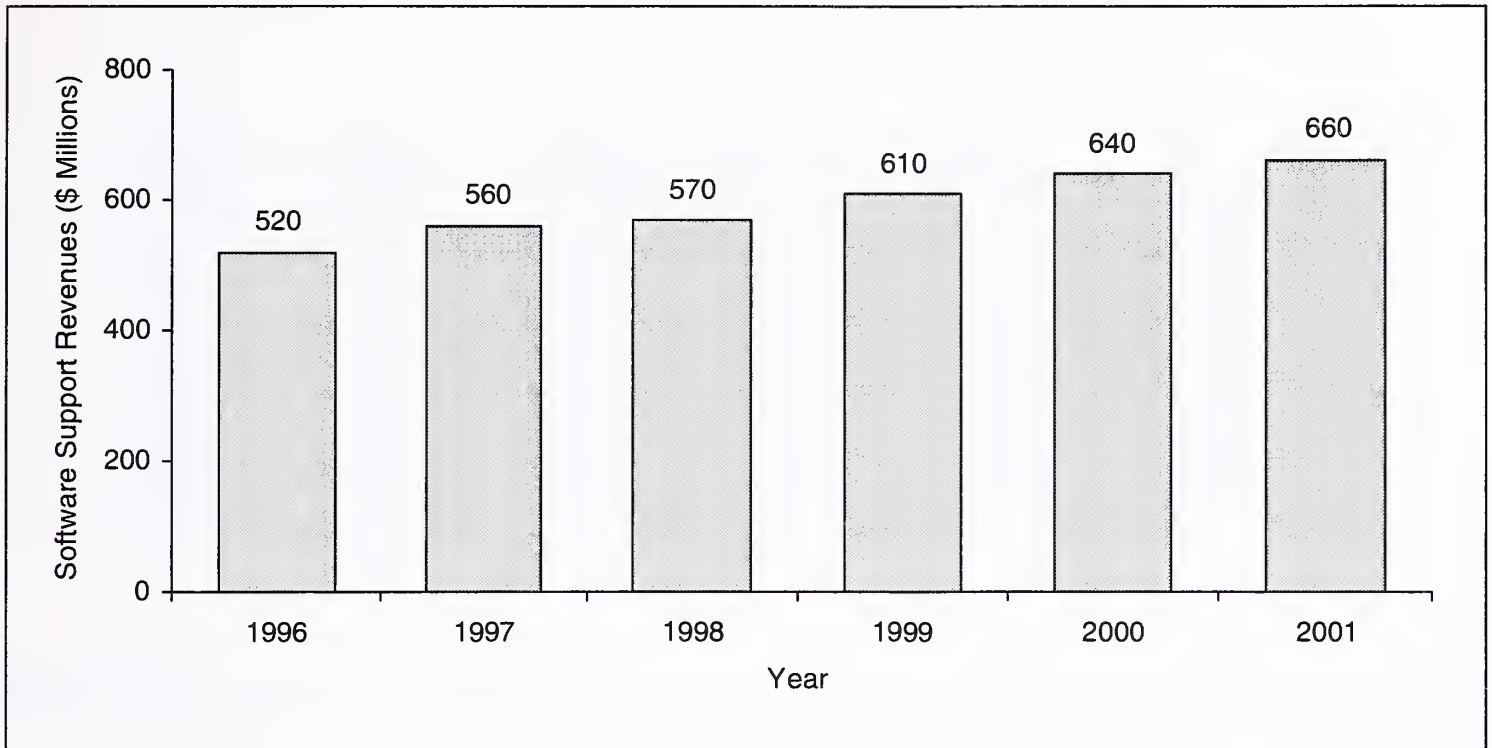This growth can be attributed to several factors including:

- Unix's scalability which will make it the most suitable operating system for enterprise servers at the high end for the next five years

- The existing base of enterprise software products that are designed to run on Unix

- Unix's open nature, in particular the TCP/IP protocol which is native to Unix. This facilitates its popularity as a Web server operating system

Although Unix will continue to flourish, it will lose a significant amount of market share at the low-end enterprise level and at the mid-range level to the increasingly scaleable and robust Windows NT Server. By 2001, the installed base of Unix as a multi-user operating system will be only marginally higher than that for Windows NT Server.

Software support revenues attributable to Unix as a multi-user server operating system can be expected to show a modest CAGR of 5% (see Exhibit IV-4).

Exhibit IV-4

Unix Software Support Revenues—U.S. ($ Millions)

Bar chart showing Software Support Revenues ($ Millions) by Year:
- 1996: 520
- 1997: 560
- 1998: 570
- 1999: 610
- 2000: 640
- 2001: 660

Source: INPUT

This relatively low growth can be explained by the following factors:

- Automation of support processes leading to falling support prices

- Pressure on Unix vendors to contain support costs in order to compete effectively with Windows NT Advanced Server

- The trend to outsource first- and second-line support leading to competitive support pricing

3.   Novell Netware

The installed base of Novell's Netware products can be expected to show significant growth over the next few years. However, this will be reduced to a negligible growth rate by 1999.

The CAGR for the installed base of Netware between 1996 and 2001 is estimated to be a modest 3% (see Exhibit IV-5).
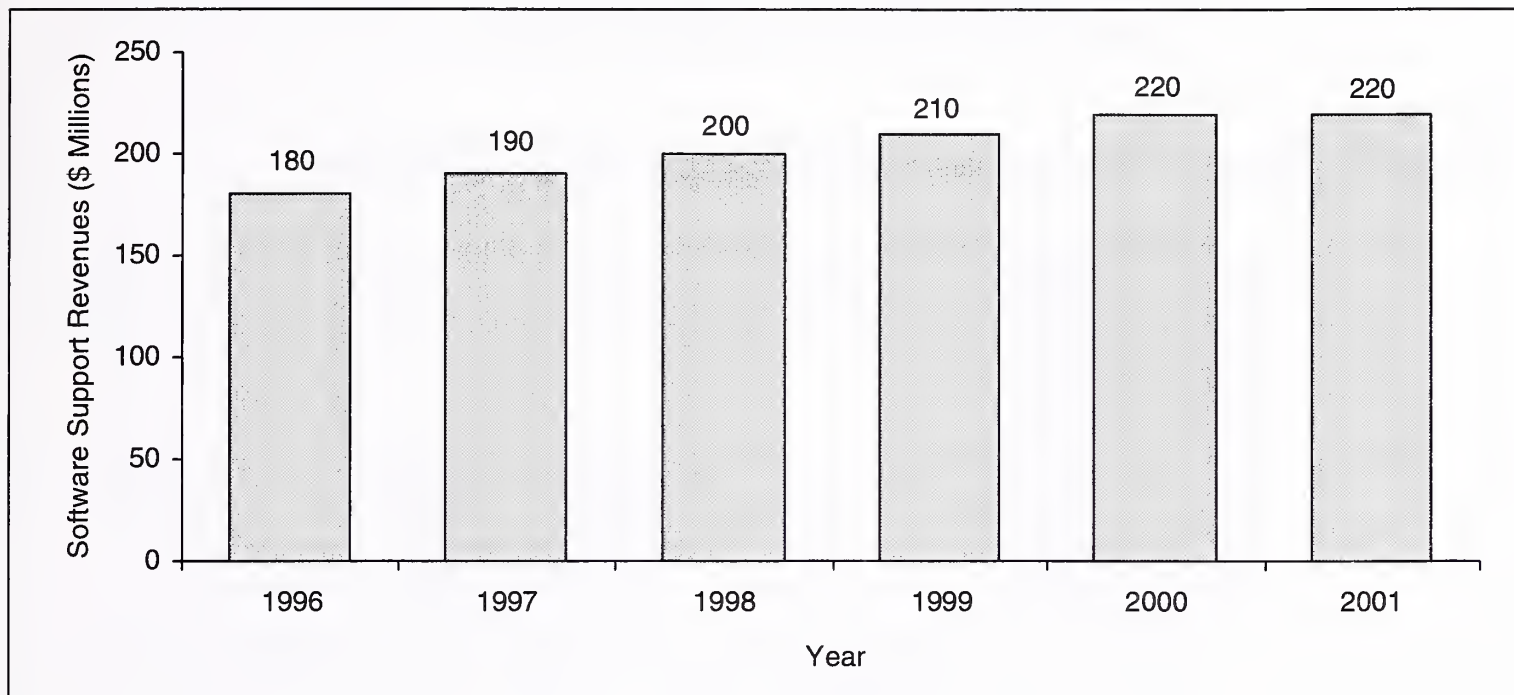
Exhibit IV-5

Installed Base of Netware—U.S.
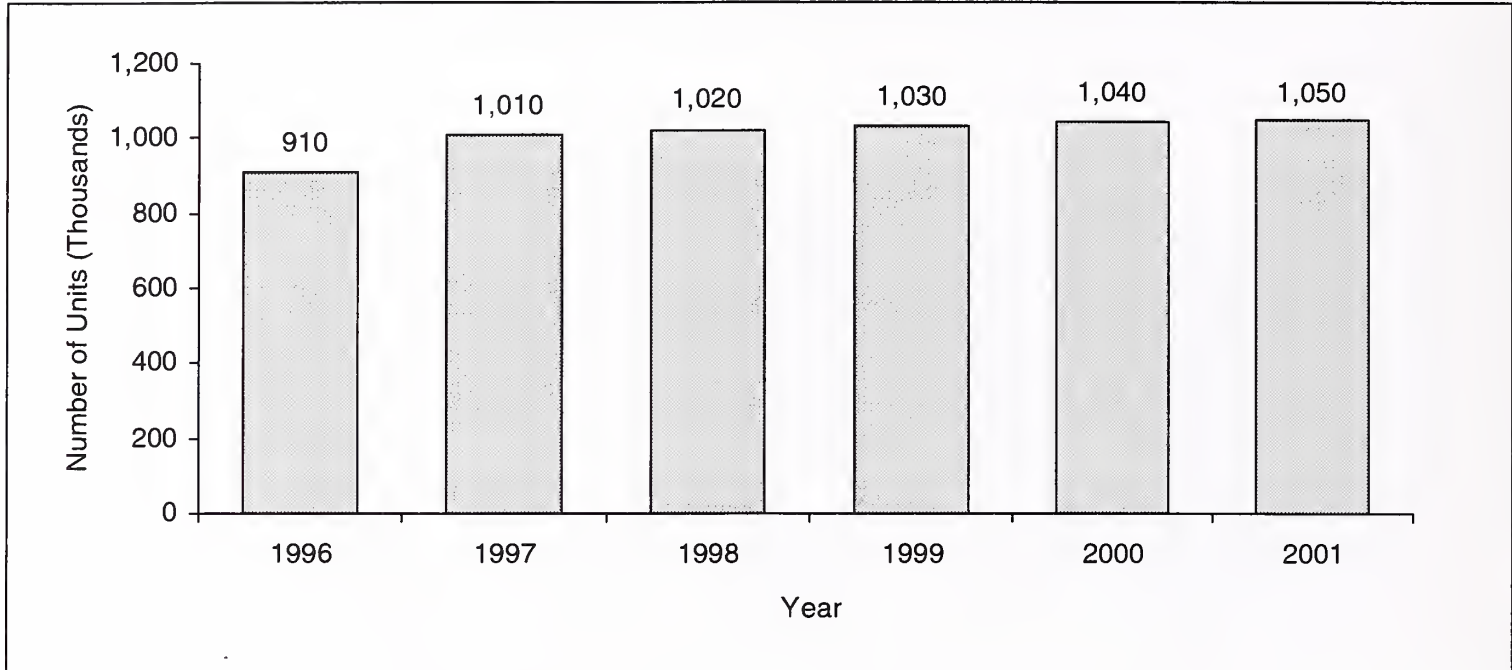
The installed base of Netware can be expected to decline at the beginning of the next century. This forecast is based on the following factors:

- Given that Intranets are expected to increasingly replace traditional LANs, and Netware's relatively rigid architecture does not facilitate its use in an Intranet environment, Netware sales can be expected to decline rapidly.

- Although Windows NT still lacks a directory service such as Novell's NDS, it *is* eroding Netware's market share. Competition from NT is likely to become more extreme when a single directory tree architecture appears in the Cairo version of NT scheduled for late 1997.

Although the installed base of Netware 4.1 is growing rapidly, it can largely be accounted for by existing customers upgrading from Netware 3.x.

Growth in Netware support revenues can be expected to grow at a CAGR of 4% which is higher than its installed base CAGR (see Exhibit IV-6).

Exhibit IV-6

Netware Software Support Revenues—U.S. ($ Millions)

Bar chart showing Software Support Revenues ($ Millions) by Year: 1996 = 180, 1997 = 190, 1998 = 200, 1999 = 210, 2000 = 220, 2001 = 220.

The difference between Netware's installed base growth and its support revenue growth can largely be attributed to services vendors attempting to maintain revenue in response to the decline in product revenues. This can be expected to occur despite the downward pressure on support prices in general.

In summary, NT is gaining significant market share from both Unix and Netware at the mid-range or departmental/workgroup server level. NT is not yet sufficiently scaleable and robust to compete with Unix at the high end. Many enterprises cannot wait for NT to become suitable as some large organizations are currently in the process of replacing mainframes with high end Unix servers.

Despite the rapid build-up of NT servers, many vendors are continuing to sell Unix servers in conjunction with NT servers. However, Novell must revise its strategy if Netware is to remain a major player. When NT incorporates a directory tree structure to compete with NDS, Netware will cease to offer any significant benefits that are not delivered by NT.

Note that Netware has recently launched a suite of products known as IntraNetware which includes the latest version of Netware 4.1.1, Netscape Navigator version 2.5 of Novell's Web Server integrated with Novell

Directory Services, and the new Novell Internet Access Server. Internet Access Server provides a gateway between TCP/IP and IPX that enables Internet access and acts as a natural firewall.

B
RDBMSs Support Market Boosted by Client/Server Migration

The RDBMS market is buoyant, largely due to migration from mainframes to client/server Unix platforms and the growth of the workgroup/departmental market segment which can be expected to be further boosted by growing NT usage.

By the end of 1996, the U.S. RDBMS market (client/server + mainframe) will be worth $6.4 billion. The client/server component of this figure is alone estimated to be $3.7 billion. The market for database and information management systems running on a client/server Unix platform can be expected to be worth more than the mainframe RDBMS market this year. The market for RDBMSs running on Windows NT Advanced Server will grow at 84% CAGR and represent approximately three-quarters of the Unix market by 2001.

In the U.S, the market for database and information management support will grow at 16% CAGR which is lower than the 21% CAGR in the product market (see Exhibits IV-7, 8).
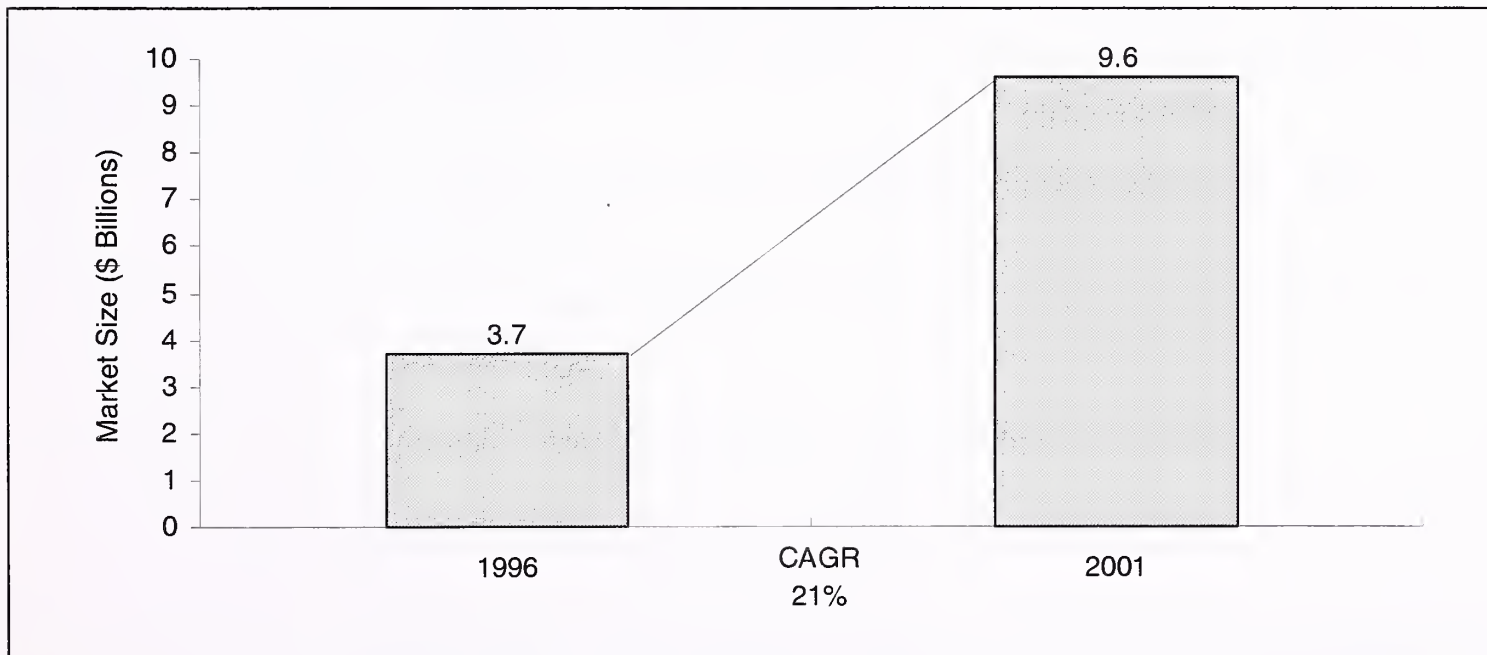
Exhibit IV-7

Client/Server Database and Information Management Software Support, U.S., 1996 - 2001
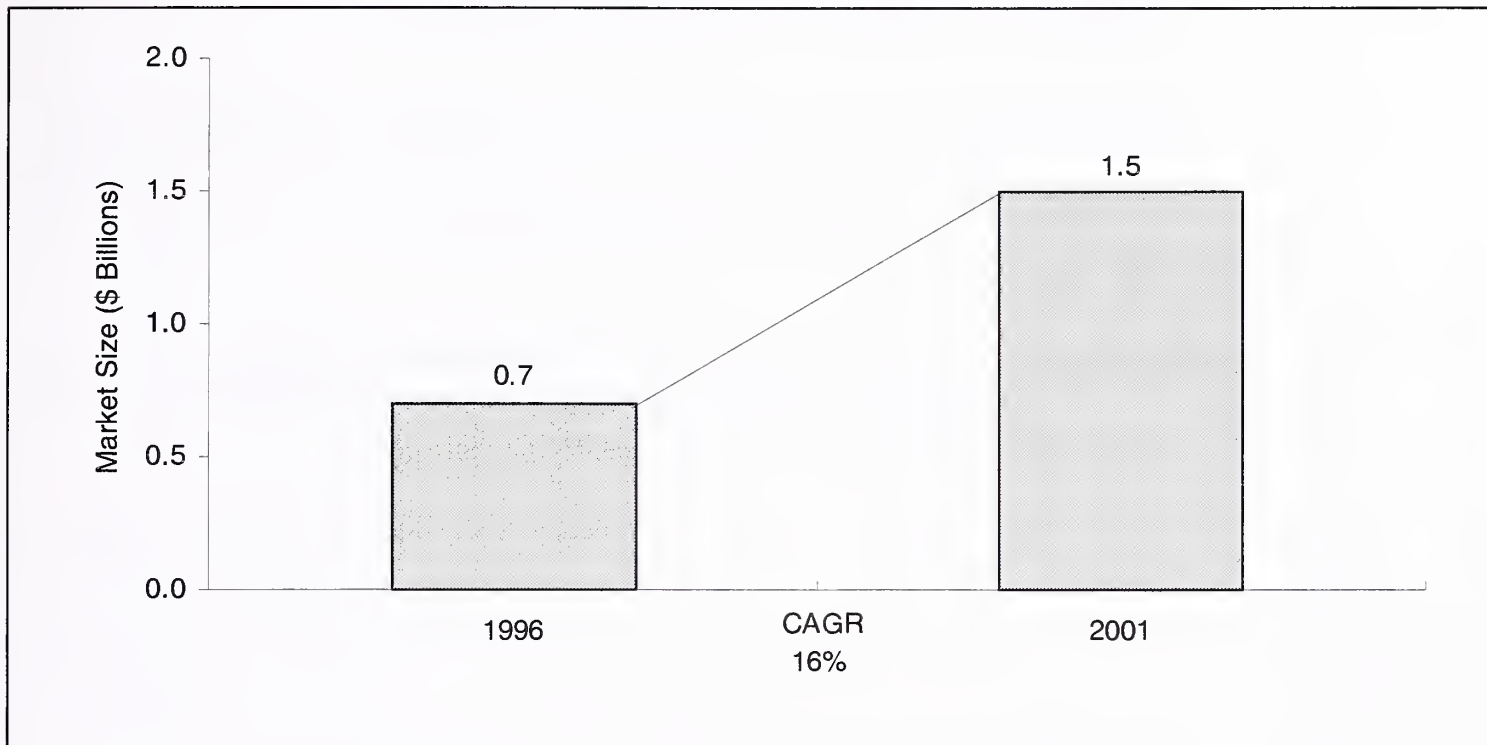
Source: INPUT

Exhibit IV-8

### Client/Server Database and Information Management Software Market, U.S., 1996 - 2001

Source: INPUT

The market for RDBMSs running on other platforms - including mid-range proprietary operating environments such as AS400, OS/2, and Windows - can be expected to remain stagnant over the next five years exhibiting a CAGR of -1%.

The most dynamic platforms for multi-user RDBMS vendors are Windows NT and client/server Unix. Between 1996 and 2001, the overall client/server database and information management market will grow at a 12% CAGR in the U.S. and 24% worldwide (see Exhibits IV-9,10).
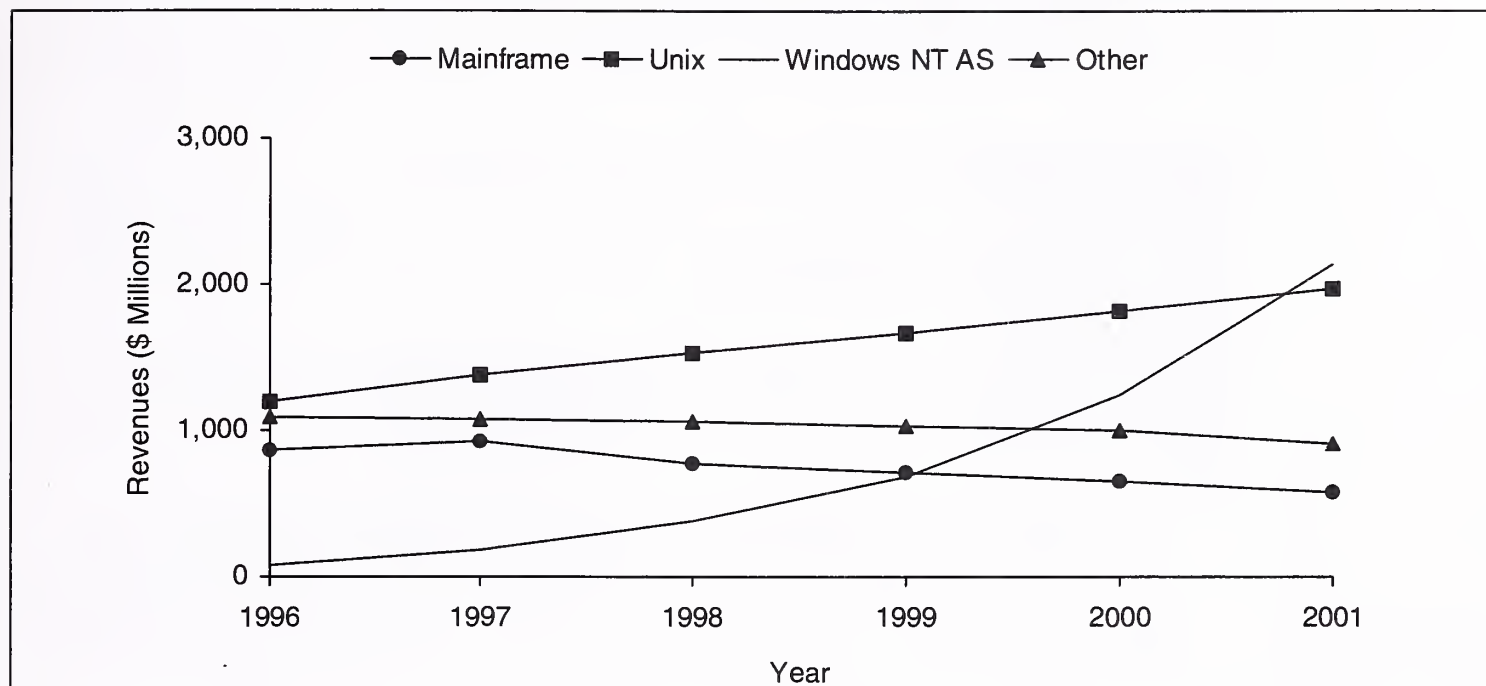
Exhibit IV-9

RDBMS Software Support Market, U.S., 1996-2001 ($ Millions)
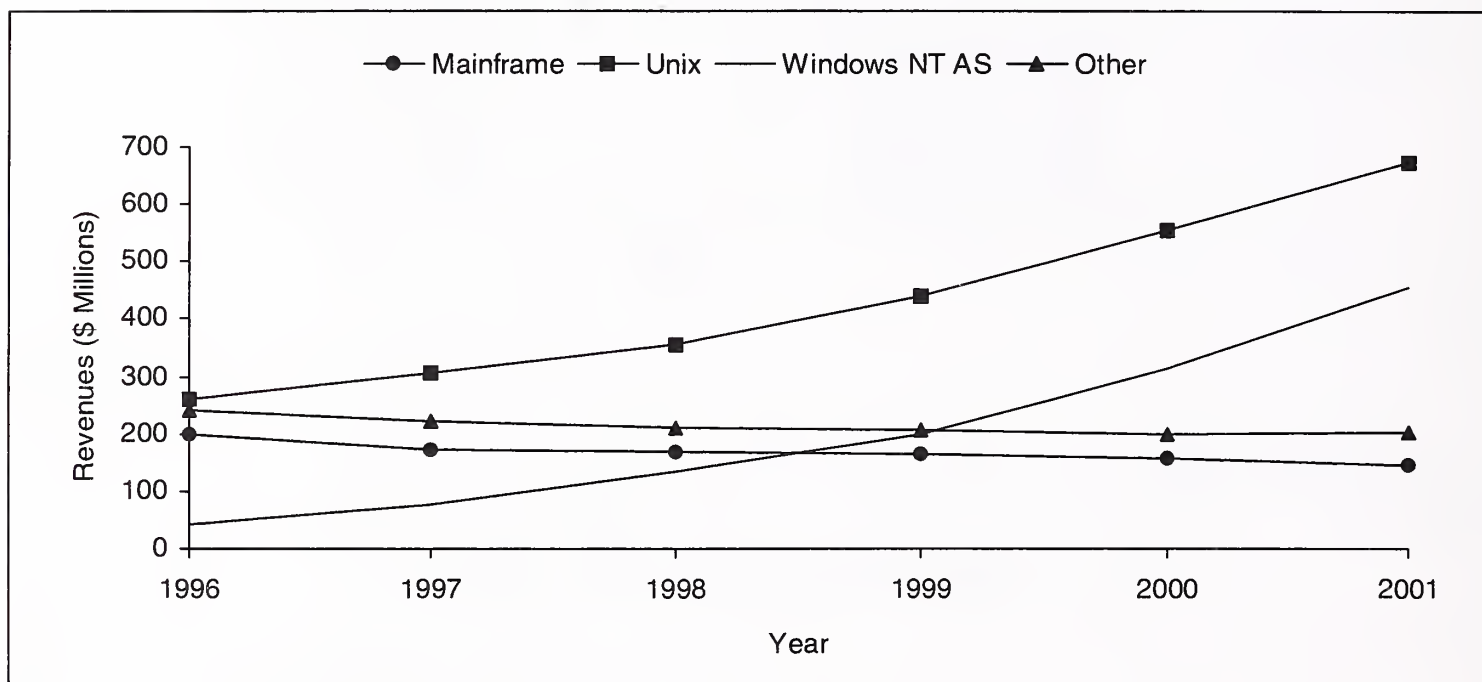
Source: INPUT

Exhibit IV-10

Growth in RDBMS Revenues by Platform—U.S. ($ Millions)

Source: INPUT

This growth in the RDBMS market can be explained by:

- The growth in popularity of on-line transaction processing (OLTP) as a means of cutting costs

- Corporate downsizing leaving fewer middle managers. Thus, senior management require RDBMSs as a means of retrieving information rapidly

- Improved performances of RDBMSs facilitating the use of data warehouses

- An increasing number of business applications that are supported by RDBMSs

- An increased requirement to store multimedia objects

The market for the support of RDBMSs running on Unix and Windows NT can also be expected to grow significantly (see Exhibit IV-9).

Support revenues for RDBMSs running on a Unix client/server platform in the U.S. will grow at 21% CAGR which is lower than the CAGR of RDBMS products running on a Unix platform (23%). Indeed, support revenues generated from RDBMSs running NT will grow at 61% CAGR between 1996

and 2001 which is considerably less than that for the products to be supported (82%).

This can be explained by:

- The growing automation of support services

- Increased competition in support markets as vendors attempt to contain ownership costs

- Less of a requirement for reactive support services as RDBMS products become more robust and support toolsets become available

Worldwide, the market for the client/server component of database and information management support will grow at 20% CAGR which again, is lower than the 24% CAGR forecasted for the product market (see Exhibits IV-11,12).

Exhibit IV-11

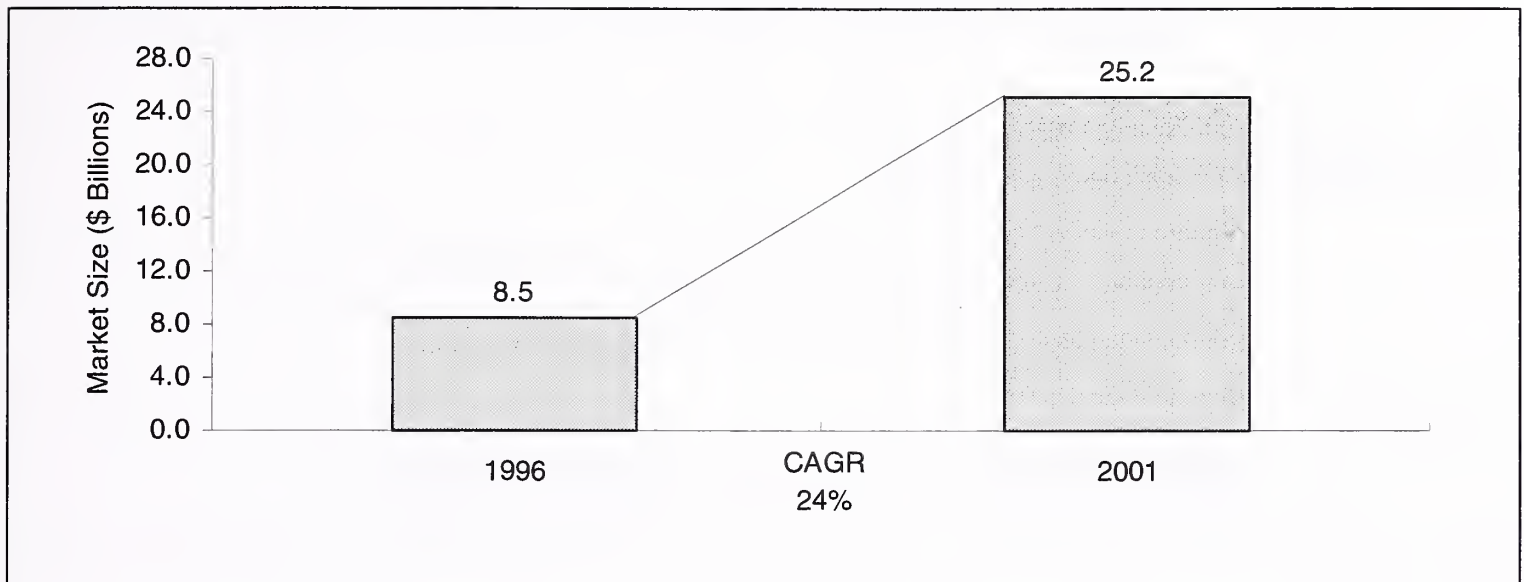## Client/Server Database and Information Management Software Support, Worldwide, 1996 - 2001
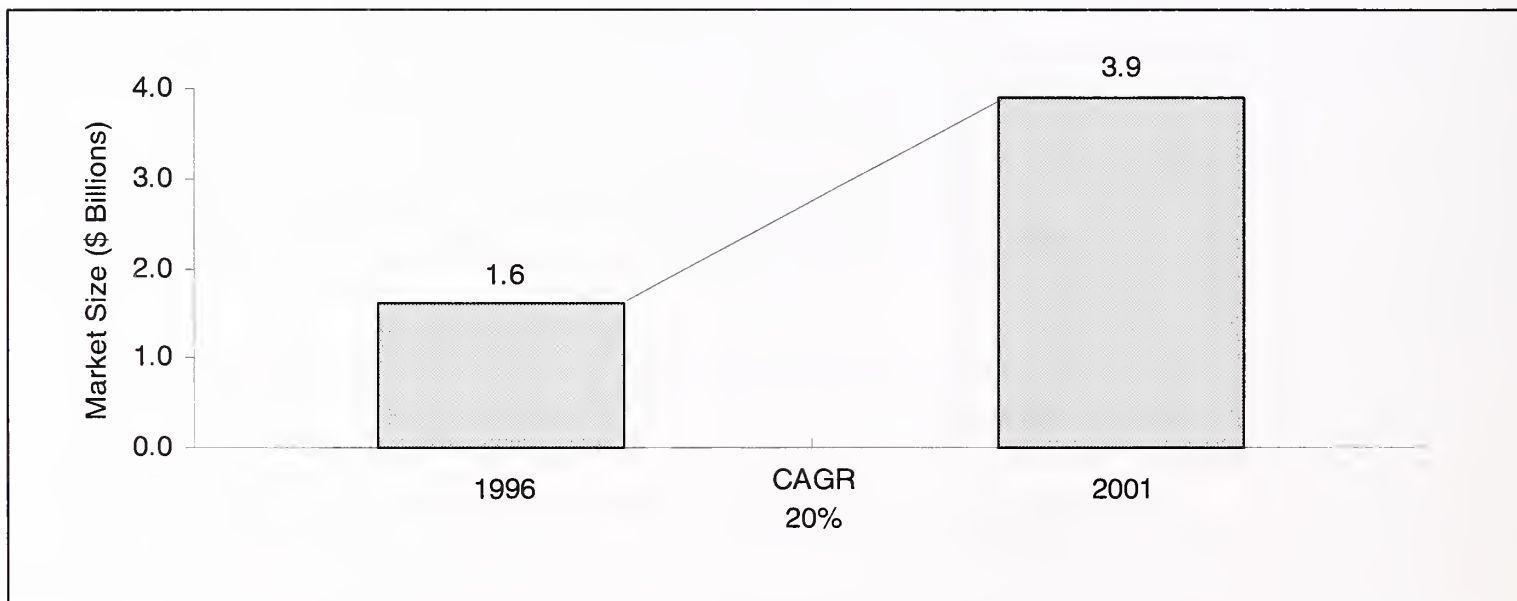
Source: INPUT

Exhibit IV-12

Client/Server Database and Information Management Software Market, Worldwide, 1996 - 2001

The major RDBMS vendors have all recently revised their support offerings to reflect changing client bases (i.e. more workgroup/departmental customers) and to provide cheaper and higher quality support services which it is hoped will give them a competitive advantage in product markets.

Many vendors now market more flexible, cheaper support packages targeted at workgroup/departmental users. For example Sybase's SupportLite offering includes allows users to pay per incident. The company charges $175 per incident. Oracle is currently market testing a per-incident option and Microsoft has introduced per-incident pricing for all of their products.

Additionally, many RDBMS vendors are using the Web to offer support cheaply and effectively. For example Sybase's SupportPlus Online Services offer a number of support activities using the Web as a delivery channel including:

- Electronic case management which enables users to log problems, monitor its escalation and receive a resolution to a problem via e-mail

- A technical support database

- Electronic software distribution which enables users to download bug fixes and upgrades

Increasing opportunities for RDBMS vendors at the workgroup/departmental level are largely due to Windows NT opening up this market. Netware was never successful as a RDBMS platform largely due to the expense of running RDBMSs on Netware loadable modules and resource allocation problems.
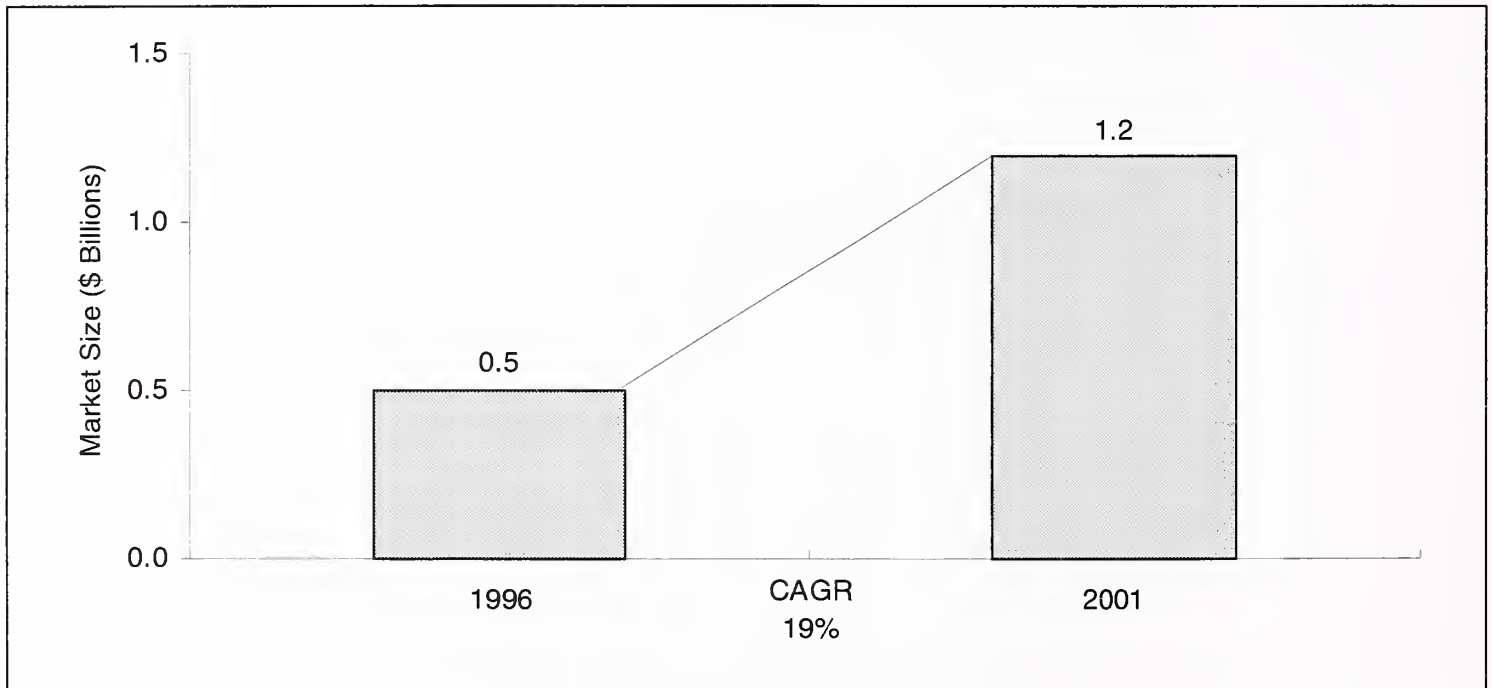
C
Application Development Tools

In the U.S., application development tools support revenues can be expected to show CAGR of 19% which is higher than the CAGR of 14% for the products to be supported (see Exhibits IV-13,14).

Exhibit IV-13

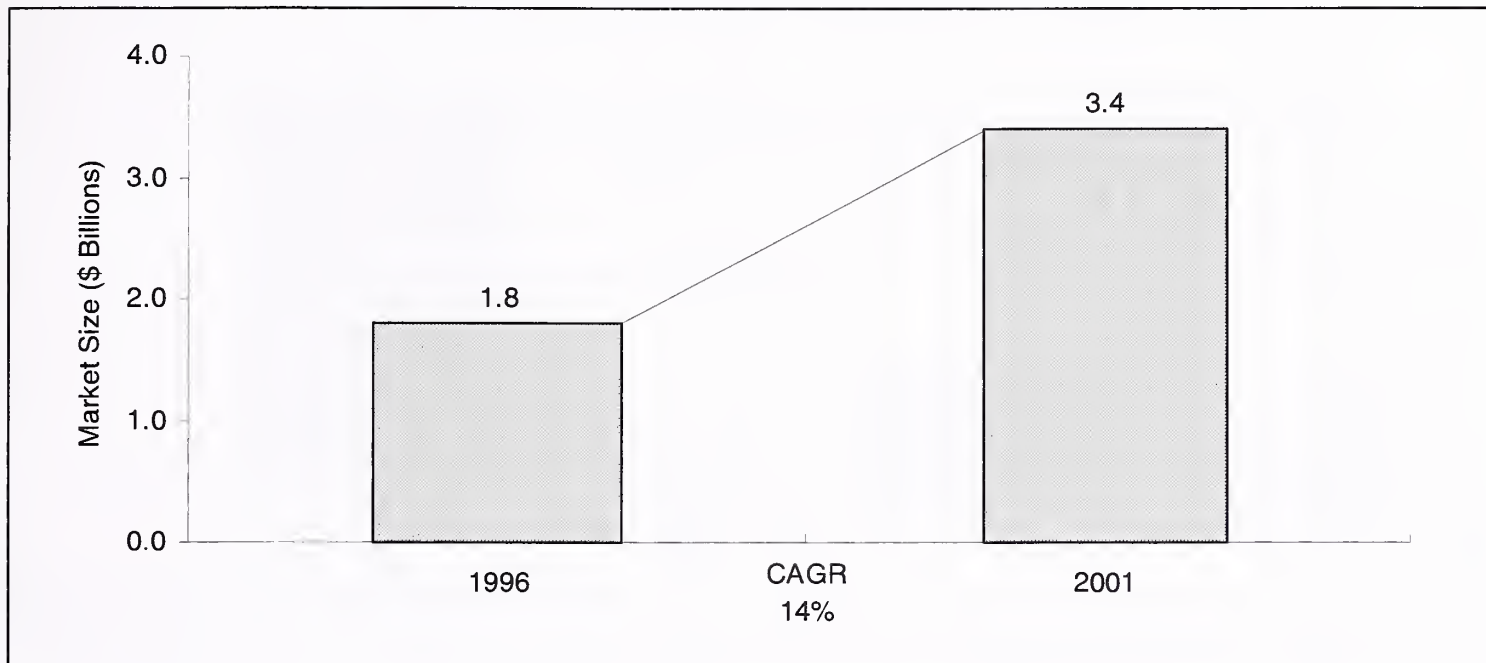### Client/Server Application Development Tools Support, U.S., 1996 - 2001

Source: INPUT

Exhibit IV-14

Client/Server Application Development Tools
Software Market, U.S., 1996 - 2001

Worldwide, revenues from application development support are anticipated
to grow at a 27% CAGR; higher than the 21% CAGR expected for the
corresponding product market (see Exhibits IV-15, 16).

Exhibit IV-15

Client/Server Application Development Tools Support, Worldwide, 1996 - 2001

Source: INPUT

Exhibit IV-16

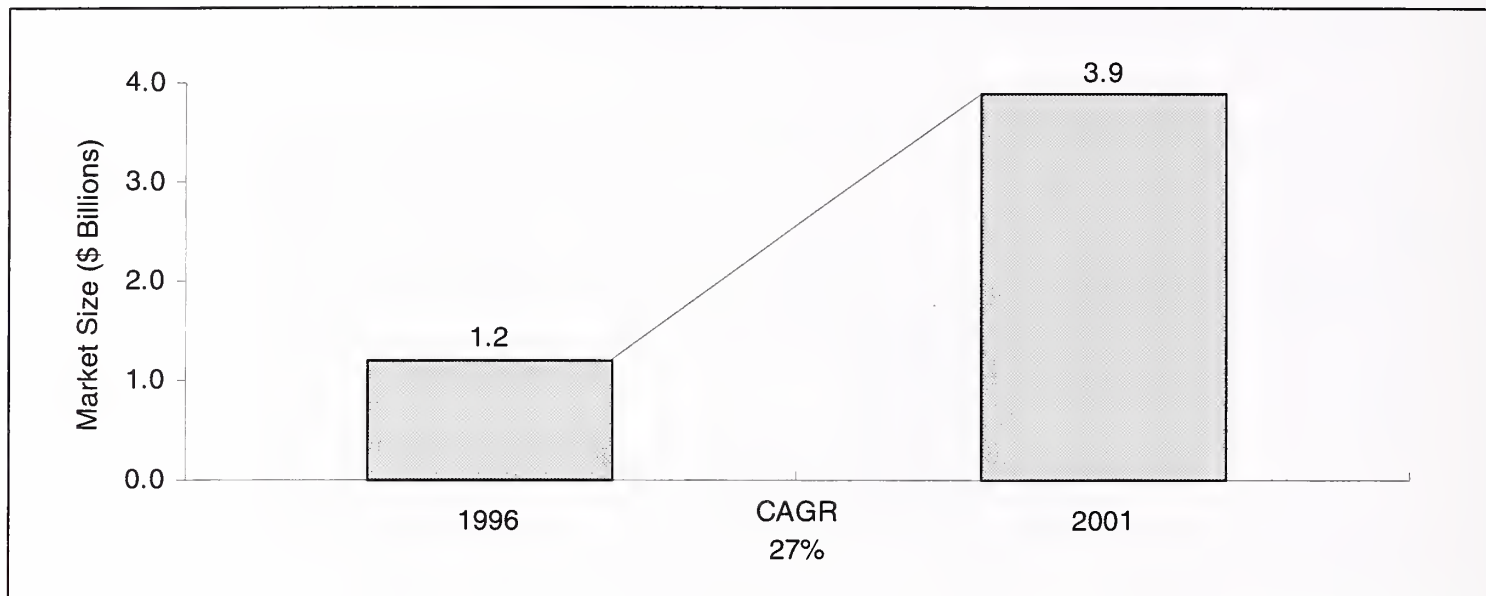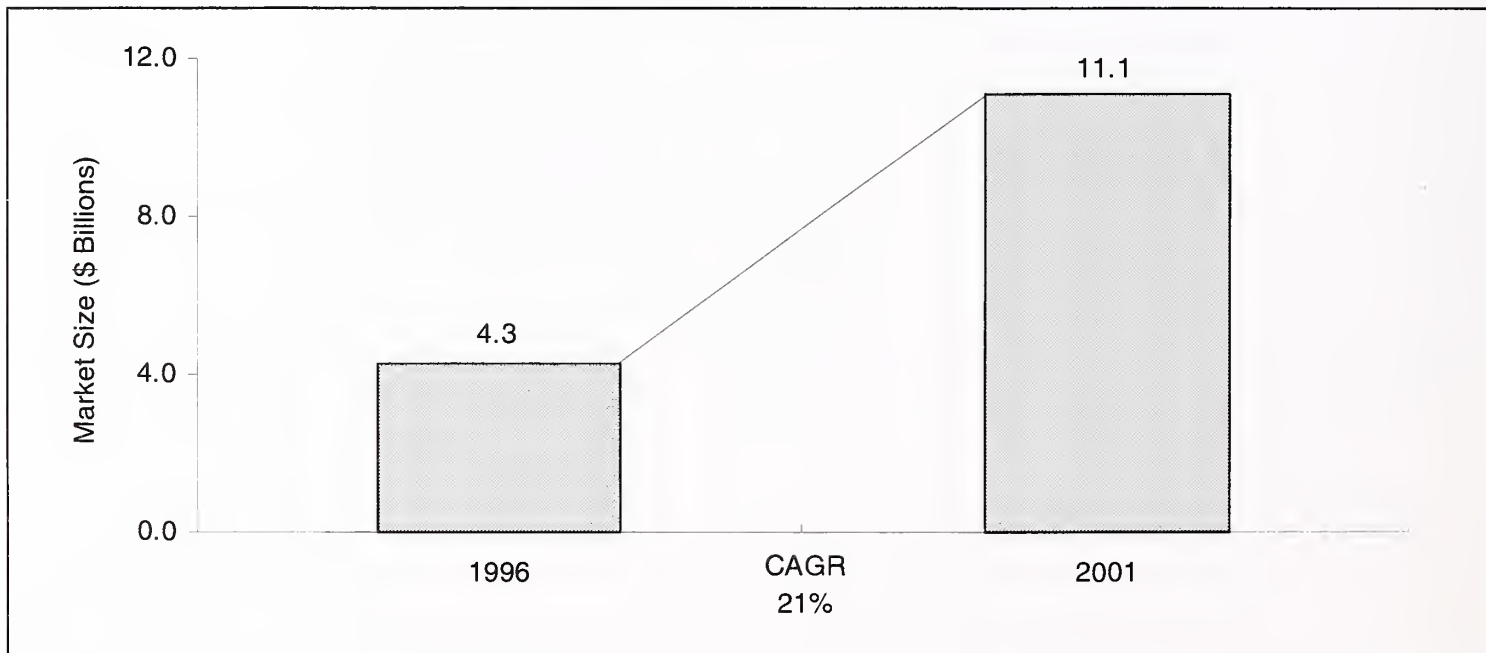## Client/Server Application Development Tools Software Market, Worldwide, 1996 - 2001

Source: INPUT

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This growth can be explained by several factors including:

- The growth in the RDBMS market precipitating demand for associated tools

- The need to develop distributed systems that can be partitioned as migration to client/server environments continues

- The growing popularity of component software leading to a demand for associated development tools

Although automation and the commoditization of reactive support services will exert downward pressure on application development tools support revenues, the growth rate for the support of application development tools can be expected to be higher than that of the products to be supported for the following reasons:

- The specialized and complex nature of the application development tools support

- Continued demand for the support of legacy CASE tools and 3GLs where skills shortages exist

- Particularly strong user demand for higher value support services such as usage advice and training

D
Application Software

Between 1996 and 2001, the market for application software support in the U.S. will grow at a 26% CAGR matching the 25% growth expected in the product market (see Exhibits IV-17, 18).

Exhibit IV-17

Client/Server Application Software Support, U.S., 1996 - 2001
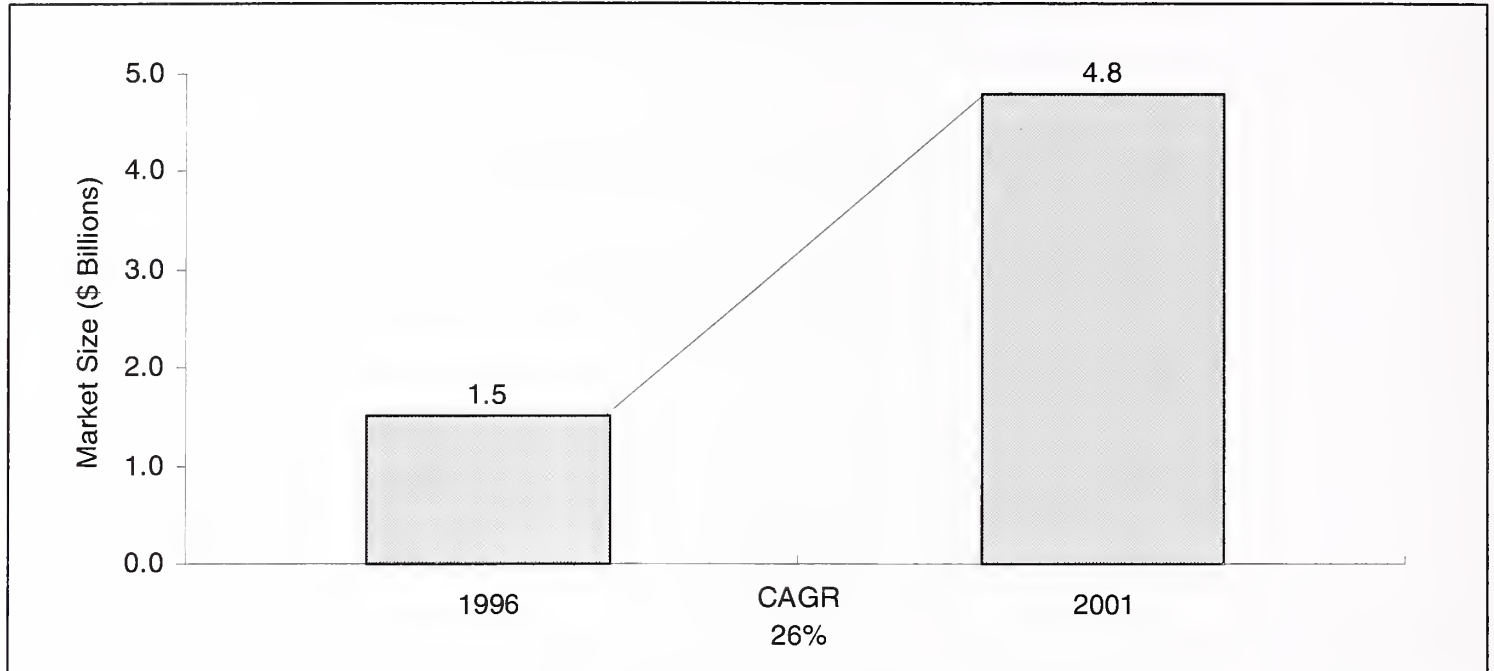
Exhibit IV-18

Client/Server Application Software Market, U.S., 1996 - 2001
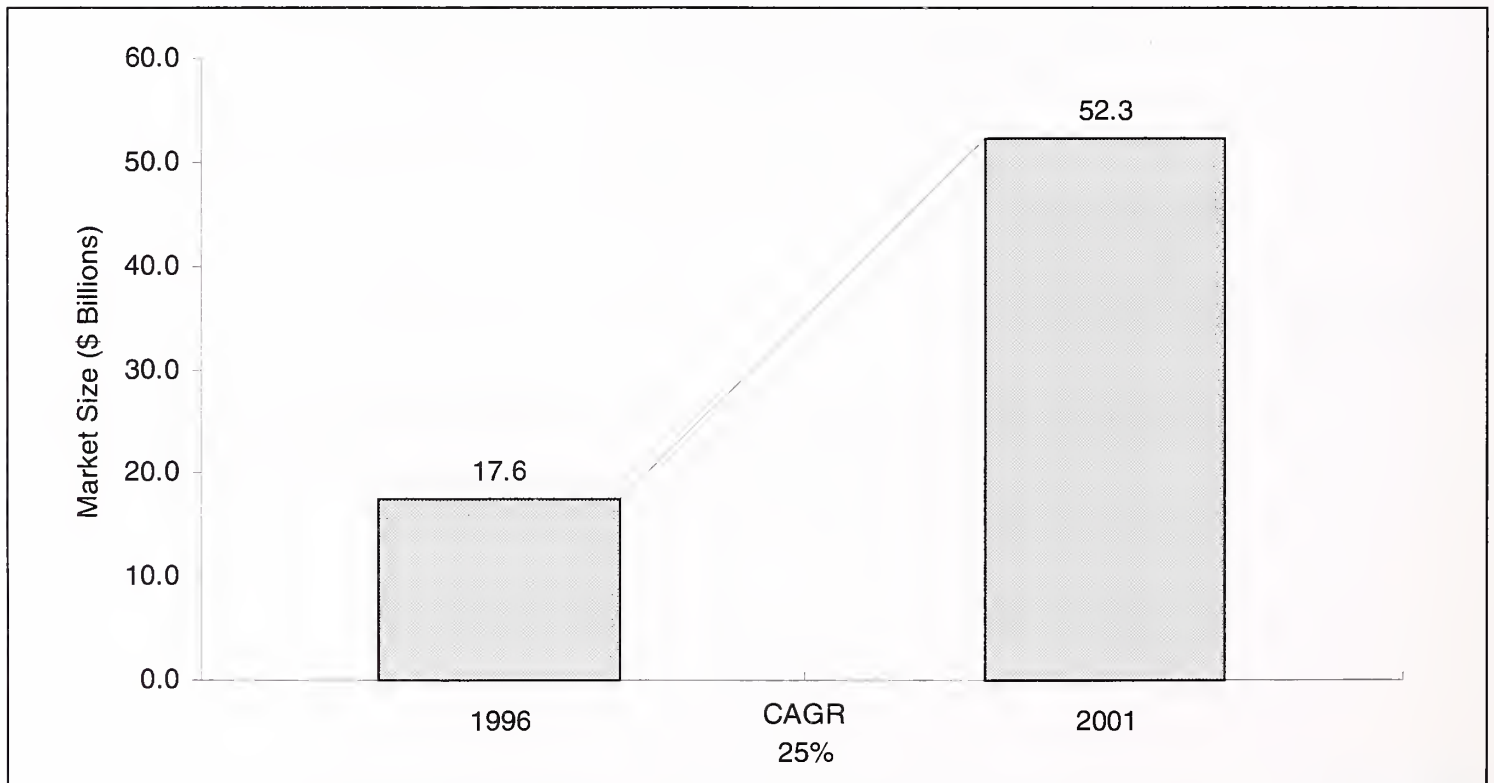
Similarly, the worldwide application software support market is expected to grow at a CAGR of 26%, however the product market is predicted to grow at a marginally lesser rate of 23% (see Exhibits IV-19,20).

Exhibit IV-19

Client/Server Application Software Support, Worldwide, 1996 - 2001

Exhibit IV-20

Total Client/Server Application Software Market, Worldwide, 1996 - 2001

This growth can be explained by:

- User demand for products that are tailored specifically for both vertical and cross-industry processes

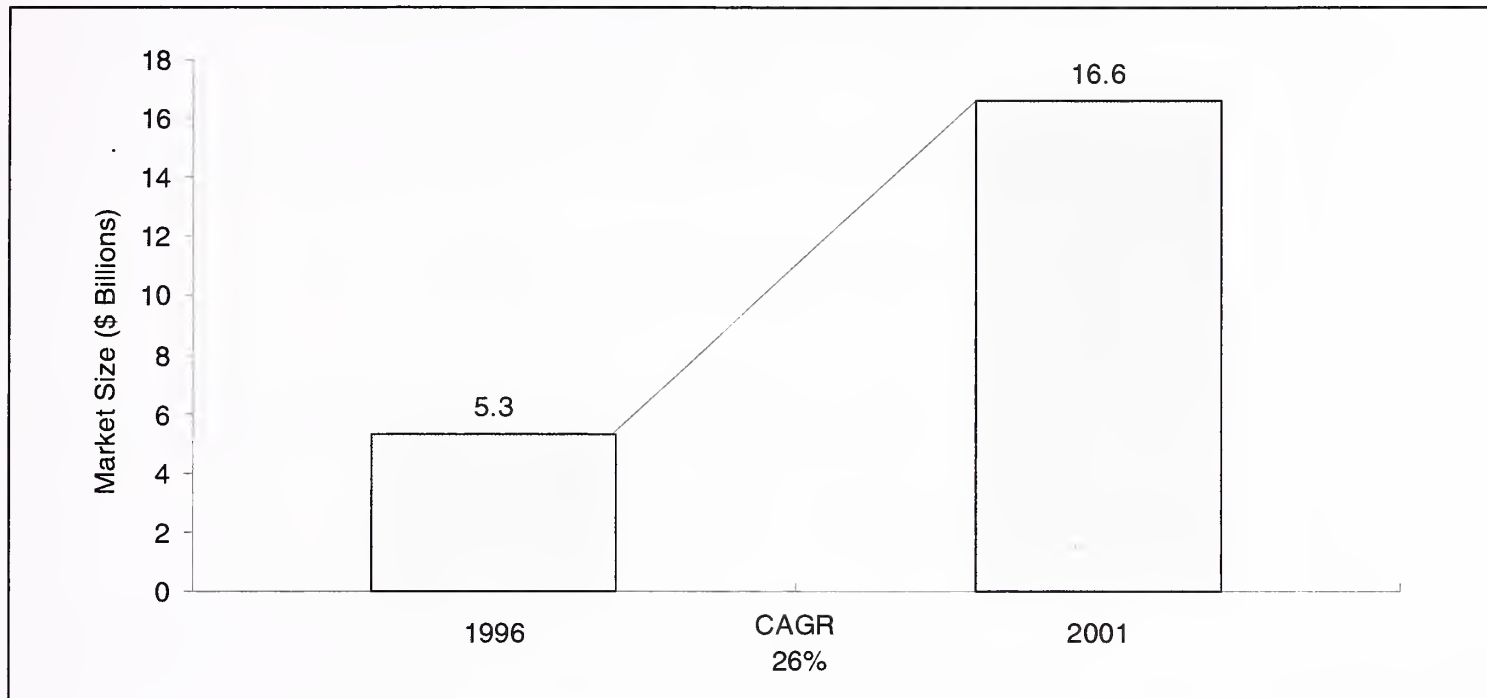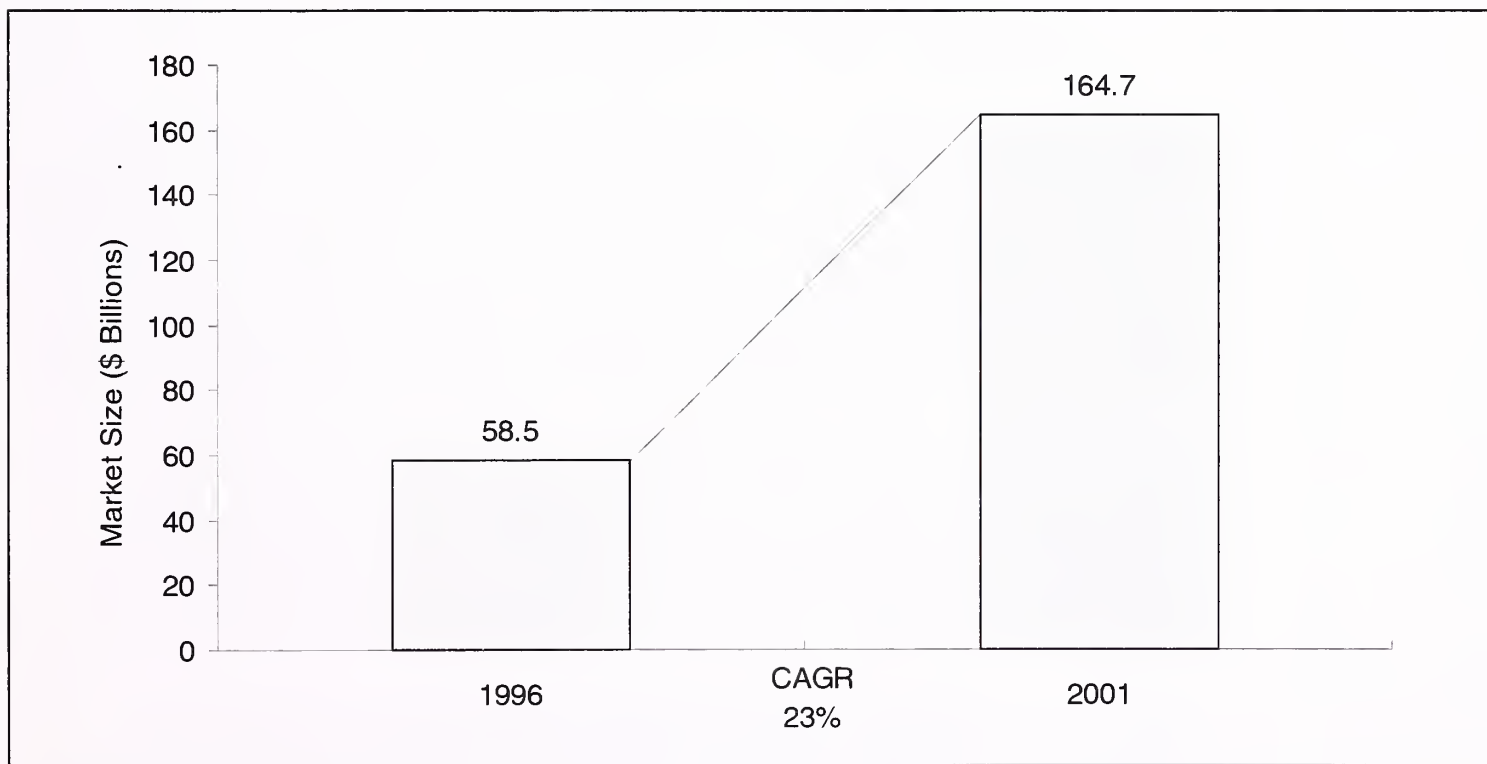- The increasing use of application software for specialized business processes

- Heavy marketing of application software

- Less in-house application development

- The growing popularity of Enterprise Resource Planning (ERP) software products such as SAP's R/3

The growth in ERP software is being driven by:

- Corporate decisions to standardize their software across international boundaries by choosing internationally recognized packages to be used across the enterprise

- Most ERP product suites are designed to leverage the benefits of client/server technology

- Increasing functionality of ERP products as 'modules' that are developed for specific business purposes

The market for applications software support is growing at a higher rate than that for applications software products. Applications products are becoming increasingly commoditized as competition heats up in key vertical and cross industry markets. However, vendors are responding to falling product margins by offering support services that add value to businesses. Initial training and consultancy services are enabling businesses to optimize the use of applications and carry out business processes more effectively.

Support centered around PC applications will offer relatively few new opportunities over the next five years as ISVs find ways of proactively supporting their products and reducing call volumes significantly. The Internet can be expected to become an important support channel at this level.

However, the support of ERP software products offers a much greater opportunity to support vendors, in particular systems integrators. Indeed, systems integrators are increasingly implementing ERP projects for vendors such as SAP, Baan, PeopleSoft and Oracle. Vendors such as Andersen

Consulting and IBM ISSC can reap significant returns from the on-going support of ERP implementations. ERP products offer vendors the opportunity to promote higher value support services such as consultancy and software management services, given that it is normally deployed in business critical environments.

(Break)
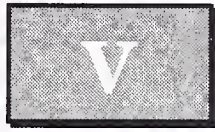
The Competitive Landscape for Software Support

This chapter examines some of the dynamics affecting the supply side of the software support business.

INPUT has identified the following competitive trends in the market for software support:

- Support is increasingly being sourced from third parties.

- Vendors are extending markets by introducing flexible pricing.

- Vendors are heavily promoting higher value services such as consultancy, software management and other proactive services as profits on reactive support services fall.

A

Third Parties Increase Their Share of the Market

The trend towards outsourcing support activities to third parties is continuing.

Vendors of shrink-wrapped products such as Microsoft, Novell, Lotus, and Adobe have outsourced much of their first-line support for some time. A number of third parties have exploited these opportunities, most notably the larger systems vendors such as IBM, HP and Digital and several independent services vendors.

However, the most significant opportunities lie in the support of products that require extensive customization to particular business processes. These are typically application software products such as SAP's R/3.

Professional services vendors have seized the opportunity to bundle a support offering into an implementation project for many business applications such as R/3. Offering support independently of any other IT service is less feasible for such products given that an understanding of the user's business is necessary. Vendors such as Andersen Consulting and the outsourcing arms of the large systems vendors, for example IBM ISSC, have become involved in the implementation and on-going support of SAP R/3 projects.

Database vendors are warming up to the idea of outsourcing first-line support services. Sybase has recently outsourced its U.S. first-line support activities to the services vendor, Sykes. Neither Oracle nor Informix presently outsource first-line support. Instead, both companies are ramping up their service infrastructures in order to benefit from opportunities to provide services centered around their products. However, it is unlikely that they will continue to offer reactive, first-line support for much longer as the installed bases of their products continue to grow rapidly.

The trend to outsourcing support by ISVs has not been as rapid as anticipated because many ISVs regard support as a means of generating significant revenue streams for themselves and wish to keep information derived from user feedback confidential. As unit profit margins fall for the provision of first-line reactive support services, this situation can be expected to change.

Exhibit V-1 illustrates the share of the support market that can be attributed to third parties in 1996 and in 2001.

Exhibit V-1

Share of Client/Server Software Support Market Attributable to Third Parties, U.S., 1996 & 2001

1996

Third Parties
74%

Product
Vendors
26%

Total Market Size: $4.9

2001

Third Parties
66%

Product
Vendors
34%

Total Market Size: $12.5
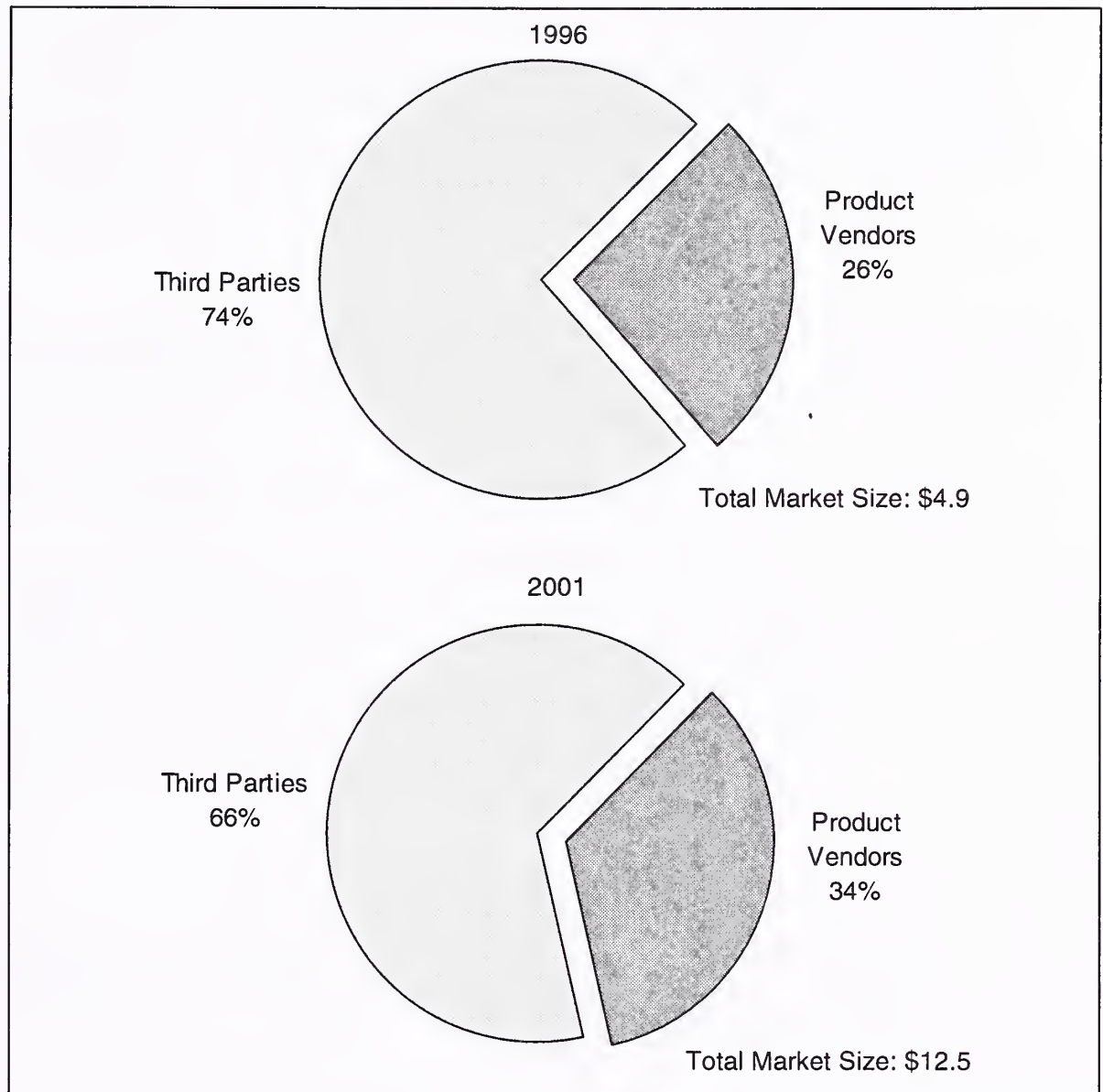
Source: INPUT

For the purposes of this report, INPUT identifies three groups of support providers, namely systems vendors, ISVs and independent services vendors.

1.   Systems Vendors

Software product support revenues generated by systems vendors account for the largest share of the software product support market. Given the established support facilities and the multivendor capabilities available to systems vendors, most systems vendors will continue to support their own products directly. Additionally, an increasing number of systems vendors

will augment their revenues by offering third-party support for software products developed by other vendors.

Systems vendors such as IBM, Digital, and Unisys are continually enhancing their service divisions in order to capitalize on the open market for multivendor software product support. These vendors are increasingly offering third-party support for software from ISVs such as Microsoft and Novell as well as from other more product oriented systems vendors.

2.   ISVs

U.S. client/server software product support revenues generated by ISVs vendors currently account for 27% of the total market value ($4.9 billion). These figures can be expected to decline somewhat as an increasing number of ISVs choose to focus on their core product offerings and higher value services and outsource reactive support activities to third parties.

ISVs such as Microsoft have found it logistically difficult to meet demand for the support of their products. On the other hand, vendors that retain most of their support functions, such as the DBMS vendors SAP and Computer Associates, interface with a smaller number of users who are generally specialists within IS departments, and therefore face fewer capacity problems. This can be expected to change as many of these vendors extend their markets well beyond the enterprise.

3.   Independent Services Vendors

For the purposes of this report, the term independent support vendor is used to collectively refer to the following types of vendors, all of whom offer third-party support:

- Professional services vendors

- VARs

- Dealers

- Training companies

- Independent vendors that solely offer support services

Many independent services vendors do not fall neatly into the above categories. Some may even develop applications software products though software development is not their primary concern.
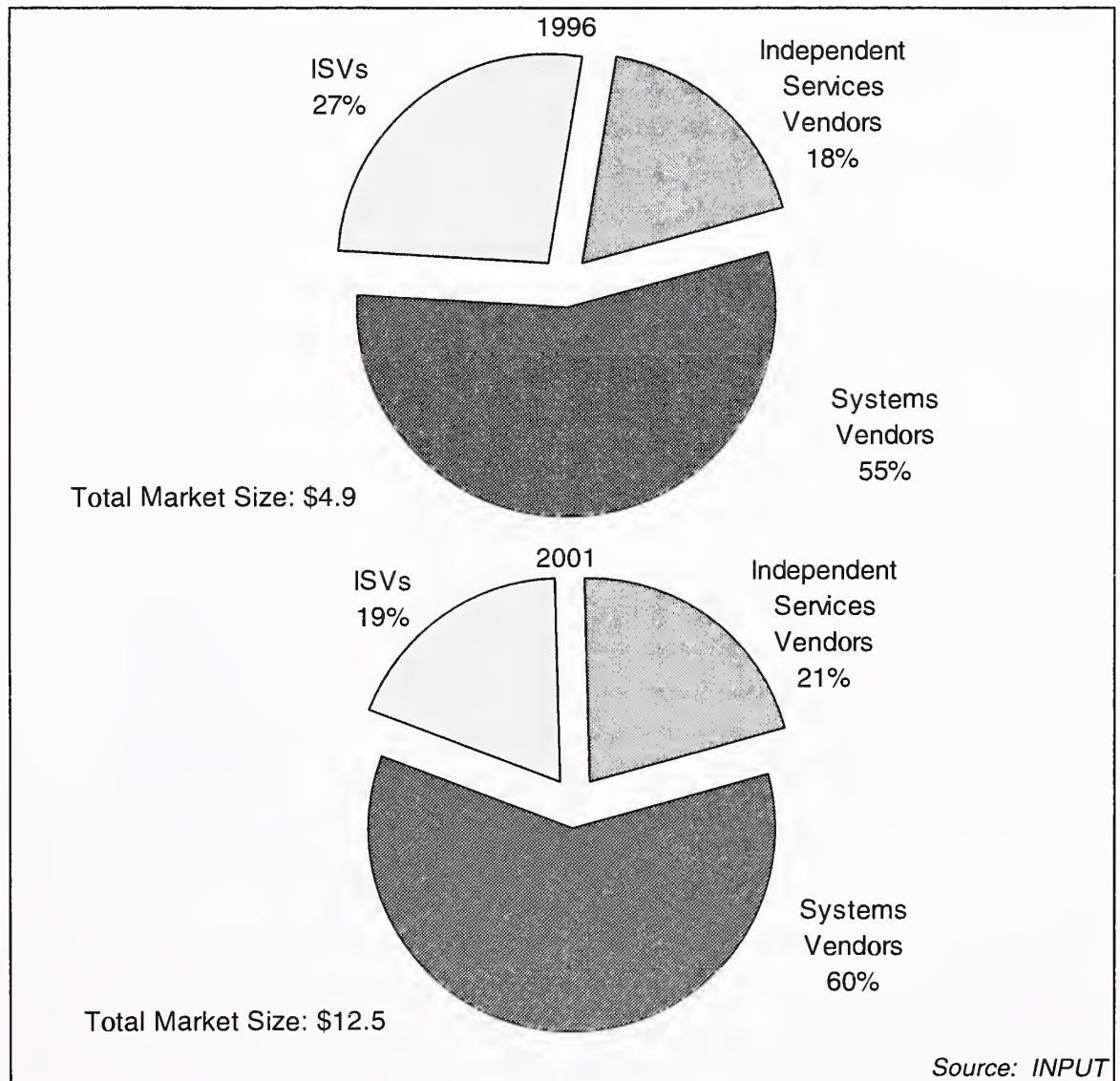
A number of independent services vendors have penetrated the market. For example, Stream is rapidly increasing its market share. The market share and hence the visibility of a number of smaller independent vendors are increasing, largely as a result of partnerships with Microsoft. For example, PSC-Softbank in the United Kingdom and Helpline in France are both Microsoft Desktop Support Partners (DSPs) and can be expected to grow rapidly over the next few years. Note that Stream is also a Microsoft DSP.

Exhibit V-2 shows market shares for vendor categories in 1996 and expected shares in 2001.

Independent services vendors as a group can expect to see their share of the market increase from 18% in 1995 to 21% at the turn of the century, largely at the expense of ISVs who will increasingly outsource their support.

Exhibit V-2

Total Software Product Support Market by Vendor Categories, U.S., 1996 & 2001

1996

ISVs
27%

Independent
Services
Vendors
18%

Systems
Vendors
55%

Total Market Size: $4.9

2001

ISVs
19%

Independent
Services
Vendors
21%

Systems
Vendors
60%

Total Market Size: $12.5

Source: INPUT

Systems vendors as a group can expect to see their market share rising from 55% to 60% over the next five years, also largely at the expense of ISVs. Most systems vendors are capitalizing on their established multivendor hardware support infrastructures by incorporating multivendor software product support activities into their business models.

Consequently, INPUT believes that systems vendors will continue to dominate the market for software product support.

By no means all systems vendors will promote multivendor software product support offerings. Some systems vendors have chosen to focus on their own products and offer multivendor support solely in response to local demand from their customer bases. These systems vendors can be expected to increasingly outsource their support functions.

Four of the five largest software product support vendors in terms of revenues are systems vendors as shown in Exhibit V-3.

Exhibit V-3

Leading Vendors Market Shares—Software Product Support, U.S. 1995

Total Market Size: $4.9 billion
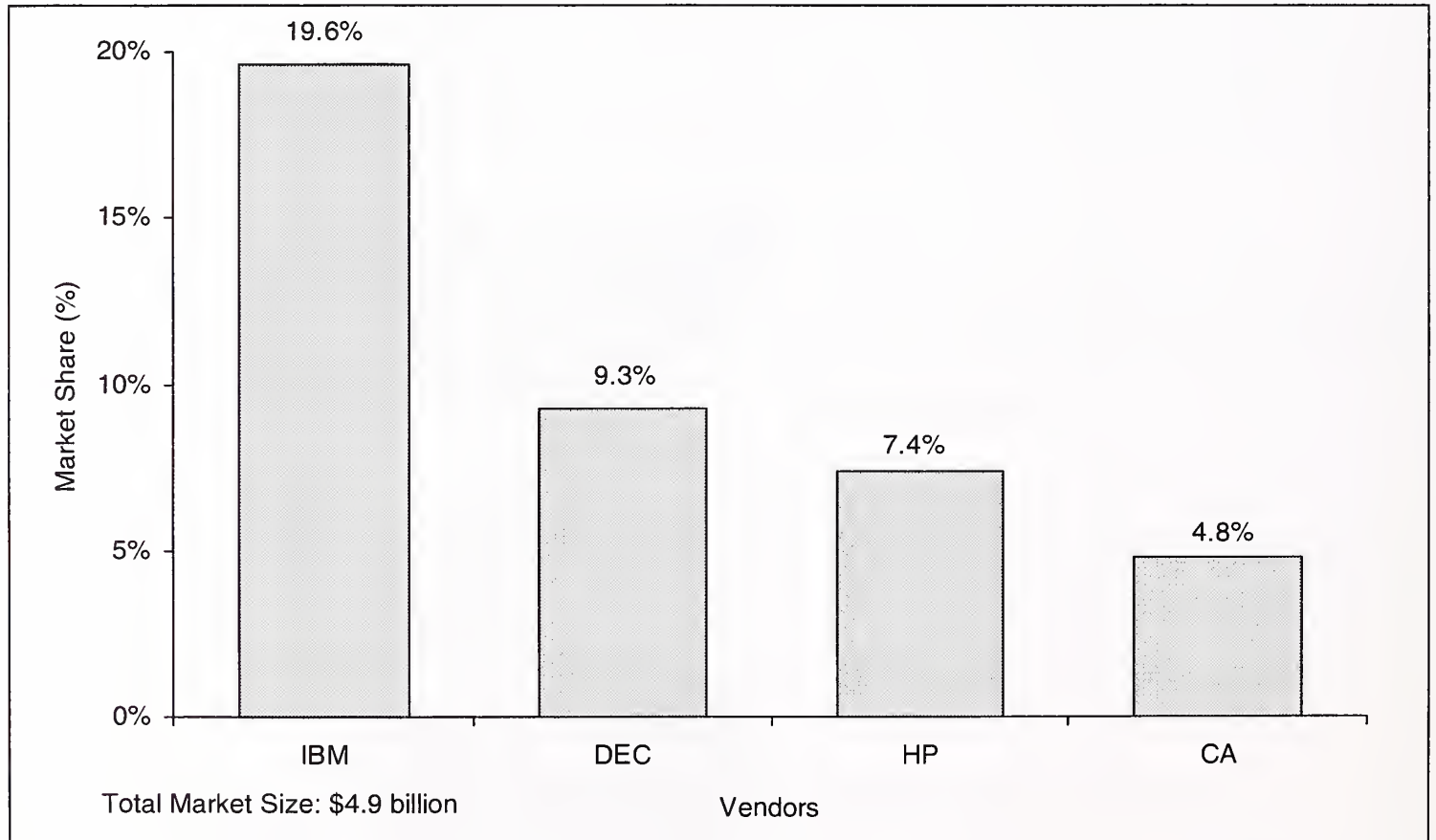
Source: INPUT

Computer Associates is among the leading five software product support vendors. It does not offer third-party, multivendor software product support. Instead, it focuses on providing high quality support offerings to its product customers and views the provision of support that meets customer needs as a means of enhancing its competitive positions in the product market.

Given that neither Computer Associates nor other leading ISV support vendors such as Oracle show any indication of competing in the support market independently, INPUT believes that they will account for a progressively smaller share of the market over the next few years. It is also likely that these companies will respond to customer demand for single source, multivendor support by outsourcing elements of their support to systems vendors and independent services vendors.

INPUT believes that by the year 2001, no software product vendors will be in the top ten support vendors in terms of revenue.

B

Vendors Extend the Market for Support

One way in which support vendors are increasing their revenues is by opening up markets that were previously unable to afford the on-going software support services.

As the shift to multivendor client/server environments and the unbundling of support prices from product prices have precipitated an increase in the cost and ultimately the price of support, many smaller organizations have been priced out of the market. Many vendors target their services at the enterprise and have little or no provision for smaller organizations or business units that fall into SOHO, SME, workgroup and departmental market segments.

However, some vendors have responded to this relatively untapped demand by offering cheap support options. One of the most popular is the introduction of per-incident pricing whereby, the user pays for support each time it is required. For example, Sybase have introduced per-incident pricing. The company charges $175 per incident and the offering is targeted squarely at the departmental/workgroup market. Microsoft's *AnswerPoint* range of support offerings also includes per-incident options.

The Internet provides an ideal vehicle for the provision of low cost support offerings to smaller organizations. For example Stream International now has an electronic 'store' on the Web where customers can browse, purchase and download the latest version of the software of their choice. Additionally,

Stream is charging users very low prices for support. Via the Web, users can send a message to a technical specialist a receive a response within 24 hours for $9.95. Users can enter a 'live chat' session with a specialist for $19.95 and receive a telephone call from a technician for $29.95 after requesting it via the Web.

Downloads of bug fixes and upgrades can also be offered cheaply, or free in the case of Microsoft via the Web. Other Internet support offerings include Microsoft's on-line support, Oracle*Mercury* and Sybase's *SupportPlus Online*.

C
Vendors Promote Higher Value Services

Vendors are heavily promoting higher value services such as consultancy, software management and other proactive services as profits on reactive support services fall.

Help desk automation and the use of the Internet are exerting pressure on revenues generated from the provision of reactive support services. ISVs are keen to contain the costs of reactive support services given that the cost of support is increasingly influencing user selection of relatively undifferentiated software products.

For example, Oracle, Sybase and Informix all offer proactive support services.

Sybase's proactive *SupportPlus Preferred Plan* includes:

- Service planning and reviews in which an account manager provides proactive planning and project reviews to assist users to identify potential service and productivity improvements. Additionally, account managers review user projects and offer advice on ways of reducing development times and increasing productivity.

- Advanced application services which are designed to optimize application performance and to plan for emerging technologies and product trends.

- Elective services which are designed to increase the effectiveness of user planning when it is centered around Sybase products. This includes global support planning, migration planning, and backup and restore planning.

Oracle's *Gold* and Informix's *Regency* support options provide similar proactive services.

The trend towards offering such proactive support services to enterprises at a premium price is transforming the support business. Proactive support services are becoming more akin to consultancy services that are also offered by most ISVs. As the market for reactive support services stagnates, INPUT expects support services to increasingly be offered as consultancy services. ISVs will increasingly use support, consultancy and education and training services as means of differentiating themselves.

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VI

U.S. Market Forecast

This chapter provides forecasts of the U.S. software product support market.

The market is segmented by hardware platform and software product type.

1.   Hardware Platform Segmentation

Hardware platforms analyzed are:

- Mainframe

- Server

- Client

2.   Software Product Type Segmentation

Software product types analyzed are:

- System Software which is further segmented by:

    - Operating Software

    - RDBMSs

    - Application Development Tools

    - Application Software

Exhibit VI-1

U.S. Client/Server Software Product Support Revenues
by Product Type ($ Millions)

	1995	1995-1996 Growth (%)	1996	1997	1998	1999	2000	2001	CAGR 96-01
Application Development Tools	445	12.5%	500	596	710	845	1,007	1,200	19%
RDBMS (database and info. mgmt.)	585	19.4%	700	815	950	1,106	1,288	1,500	16%
Operations Management	1,360	17.6%	1,600	1,931	2,331	2,814	3,397	4,100	21%
Operating Environment	550	8.3%	600	651	706	765	830	900	8%
Application Software	1,200	25.0%	1,500	1,893	2,389	3,014	3,804	4,800	26%
Total Software Product Support	4,140	16.0%	4,900	5,886	7,086	8,544	10,326	12,500	21%

Source: INPUT

Exhibit VI-2

Worldwide Client/Server Software Product Support Revenues
by Product Type ($ Millions)

	1995	1995-1996 Growth (%)	1996	1997	1998	1999	2000	2001	CAGR 96-01
Application Development Tools	1,000	19.7%	1,200	1,519	1,923	2,434	3,081	3,900	27%
RDBMS (database and info. mgmt.)	1,290	24.3%	1,600	1,912	2,285	2,731	3,263	3,900	20%
Operations Management	2,440	22.8%	3,000	3,786	4,777	6,030	7,607	9,600	26%
Operating Environment	1,050	14.0%	1,200	1,355	1,529	1,726	1,950	2,200	13%
Application Software	4,240	25.0%	5,300	6,660	8,368	10,514	13,211	16,600	26%
Total Software Product Support	10,020	22.8%	12,300	15,232	18,882	23,435	29,112	36,200	24%

Source: INPUT

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