

SERVICE VENDOR PROFILES

THIRD - PARTY MAINTENANCE - TPM

INPUT

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SERVICE VENDOR PROFILES THIRD-PARTY MAINTENANCE (TPM)

ABSTRACT

This directory is intended as a reference manual of the top 100 U.S. suppliers of third-party maintenance (TPM) services.

Specific information on the top 20 TPM vendors provided in this directory includes an extensive analysis of the company's overall business base, including contract coverage, service delivery methods, and pricing examples. In addition, each vendor's operations in areas such as dispatching and inventory management are analyzed, including the degree of automation and integration of these controls. Finally, each vendor's service strategies are explored, specifically in the areas of pricing, target markets, companies' perceived strengths, and evaluation of competition.

The remaining 80 vendors are analyzed in one-page profiles in order to provide quick access to information about these key TPM vendors. Special attention is paid to service delivery modes (on-site, depot, remote) and sources of revenue (markets/products served).

This report contains 158 pages, including 6 exhibits.



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**SERVICE VENDOR PROFILES
THIRD-PARTY MAINTENANCE (TPM)**

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SERVICE VENDOR PROFILES
THIRD-PARTY MAINTENANCE (TPM)

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I INTRODUCTION

I INTRODUCTION

- This directory, Service Vendor Profiles--Third-Party Maintenance (TPM), was produced by INPUT as part of the 1985 Customer Service Program in the U.S. for clients of that program. The directory contains information on the top 100 TPM vendors in the U.S., including size of company, types and brands of computer equipment serviced, geographic coverage provided, and types of services provided.
- This report on third-party maintenance vendor profiles is one of three reports on the TPM market to be produced by INPUT in 1985. Other reports include an analysis of user requirements for TPM service and an overall review of the U.S. TPM marketplace.
- The largest 20 vendors in this report are analyzed in-depth, with special attention paid to the structure of the vendor service revenues, the markets targeted, and the strategies employed in maximizing service coverage.
- The remaining 80 vendors are analyzed in one page profiles in order to provide quick access to information about these key TPM vendors. Special attention is paid to service delivery modes (on-site, depot, remote) and sources of revenue (markets/products served).
- INPUT estimates that the top 100 vendors listed in this report dominate the third-party maintenance market, controlling 85% of all TPM revenues in the U.S.

- Specific information on the top 20 TPM vendors provided in this directory includes an extensive analysis of the company's overall business base, including contract coverage, service delivery methods, and pricing examples. In addition, each vendor's operations in areas such as dispatching and inventory management are analyzed, including the degree of automation and integration of these controls. Finally, each vendor's service strategies are explored, specifically in the areas of pricing, target markets, companies' perceived strengths, and evaluation of competition.

- This directory should prove invaluable to a variety of decision-making functions, including:
 - Third-party maintenance (TPM) organizations who will be able to use this as a competitive guide, especially in the establishment of unexploited target markets and the implementation of strategic and operational plans.

 - Equipment manufacturers' customer services organizations who will be able to compare the operational strategies of competitive TPM firms with their own service strategies.

 - Manufacturers' product marketing organizations who will be able to evaluate and select TPM vendors for providing service and support of their own equipment.

 - Large-scale user organizations who will be able to evaluate the viability of TPM vendors as a service alternative to their present maintenance plans.

A. STUDY METHODOLOGY

- The primary research for this report was conducted between March and June 1985 and included both in-depth telephone interviews and mail interviews of vendors that participated in INPUT's 1984 TPM survey.
- The top 20 TPM vendors listed in Exhibit I-1 were surveyed by telephone. The interviews averaged 30 minutes and were conducted with high level service and planning executives such as the Vice President of Field Service or the Director of Service Marketing.
- The remaining 80 vendors in this directory were surveyed either by telephone or mail. These vendors were identified on the basis of INPUT's 1984 TPM study (Third-Party Maintenance Vendor Directory) and continuing research in this service market. Over 350 TPM vendors were contacted, and of these, the top 80 (based on revenue and size of operation) were included in this directory.
- The Appendix contains a list of definitions of terms used in this report.

B. DEMOGRAPHICS

- Revenues and growth rates for the top 20 TPM vendors are shown in Exhibit I-1. In most cases, the revenue was reported as TPM revenue by the service vendor. In selected cases, specifically when the TPM vendors would not provide revenue information, INPUT estimated TPM revenue based on the number of field engineers, products served, and market traits.
- The average growth rate for the top TPM vendors is 38% in 1985, but there is a wide variation in reported growth ranging from 10-100% per year. Some of

EXHIBIT I-1

TOP 20 TPM VENDOR REVENUES

RANK	VENDOR	ESTIMATED 1985 TPM REVENUES (\$ Millions)	OVERALL MARKET SHARE (Percent)
1	TRW*	\$232	17.4%
2	SORBUS*	202	15.2
3	CONTROL DATA*	110	8.3
4	RCA	86	6.5
5	GENERAL ELECTRIC (GE)	68	5.1
6	BELL & HOWELL	38	2.9
7	GRUMMAN*	30	2.3
8	McDONNELL DOUGLAS (TYMSHARE)*	22	1.7
9	FIRST DATA RESOURCES*	22	1.7
10	TOTAL TECHNICAL SERVICES	21	1.6
11	XEROX	20	1.5
12	DATASERV	19	1.4
13	CMLC	16	1.2
14	DECISION DATA	16	1.2
15	DOW JONES	13	1.0
16	ADP/MTTR*	7	0.5
17	KALBRO	6	0.5
18	SYSTEC	5	0.4
19	BRAEGEN	4	0.3
20	SPERRY	2	0.2
	TOTAL		70.9%

* These companies either were acquired or made acquisitions in 1984 which, in many cases, affected revenues.

the expected growth is attributed to the service of additional product lines, such as personal computers and telecommunications products. Some is attributed to the service of new products, such as the service of satellite earth stations by RCA and Bell & Howell. However, much of the expected growth is attributed to new acquisitions that fit directly into the TPM vendor's competitive strategy.

- For example, one of the markets Control Data Corporation targets is the DEC market. The company made two DEC-related acquisitions this year, including Total Tec and Computer Marketing Association. Other examples include Grumman's acquisition of Computer Systems Support Corporation, the acquisition of Tymshare by McDonnell Douglas, ADP's acquisition of MTTR, and First Data Resources' forming of Planus.
- The continuing consolidation of the third-party maintenance market was predicted by INPUT in 1984 and is expected to continue through the remainder of 1985 and into 1986. The entry of major manufacturers such as NCR, Sperry, Honeywell, and NAS will increase TPM competition considerably. It is too soon to tell if manufacturer-supplied TPM service will be readily accepted by users and what effect this new service will have in the manufacturer's current installed base, but there is no doubt that this increased competition will alter the 1986 top 20 TPM vendor listing.

II TOP 20 TPM VENDORS

TRW
Customer Service Division
15 Law Drive
Fairfield, NJ 07006
(201) 575-7110

Chief Operations Officer:
Stanley C. Pace
Vice President and General Manager,
Customer Service Division:
Joseph Borman
Years Active in TPM: 9

COMPANY

TRW's tremendous success in the TPM market is due in large part to its strategy of obtaining exclusive service management contracts from manufacturers. For example, TRW has exclusive service contracts with Altos, Cromemco, Docutel-Olivetti, Esprit, Fujitsu, Hazeltine, Rexon, and Televideo. TRW does not sell any products that would put the company into direct competition with these manufacturing clients.

The company has selected specific vertical markets, such as the banking industry and the point-of-sale terminal market. To reach small businesses, TRW obtains agreements with VARs that have visibility, developed sales channels, and an established user base. TRW's own salesforce works to get corporate accounts through direct sales.

In the past, TRW's many acquisitions have facilitated the company's rapid growth. Two acquisitions were made this year, including Ultimate Computer Services, the New Jersey-based supplier of reconditioning and refurbishing services for used IBM equipment, and GDC Medical Electronics, a firm which maintains and repairs medical electronics equipment. The company's organizational structure is shown in Exhibit II-1.

REVENUE

TRW's 1984 TPM revenue is estimated to be \$198 million. Growth is expected to be approximately 17%.

SERVICE LOCATIONS

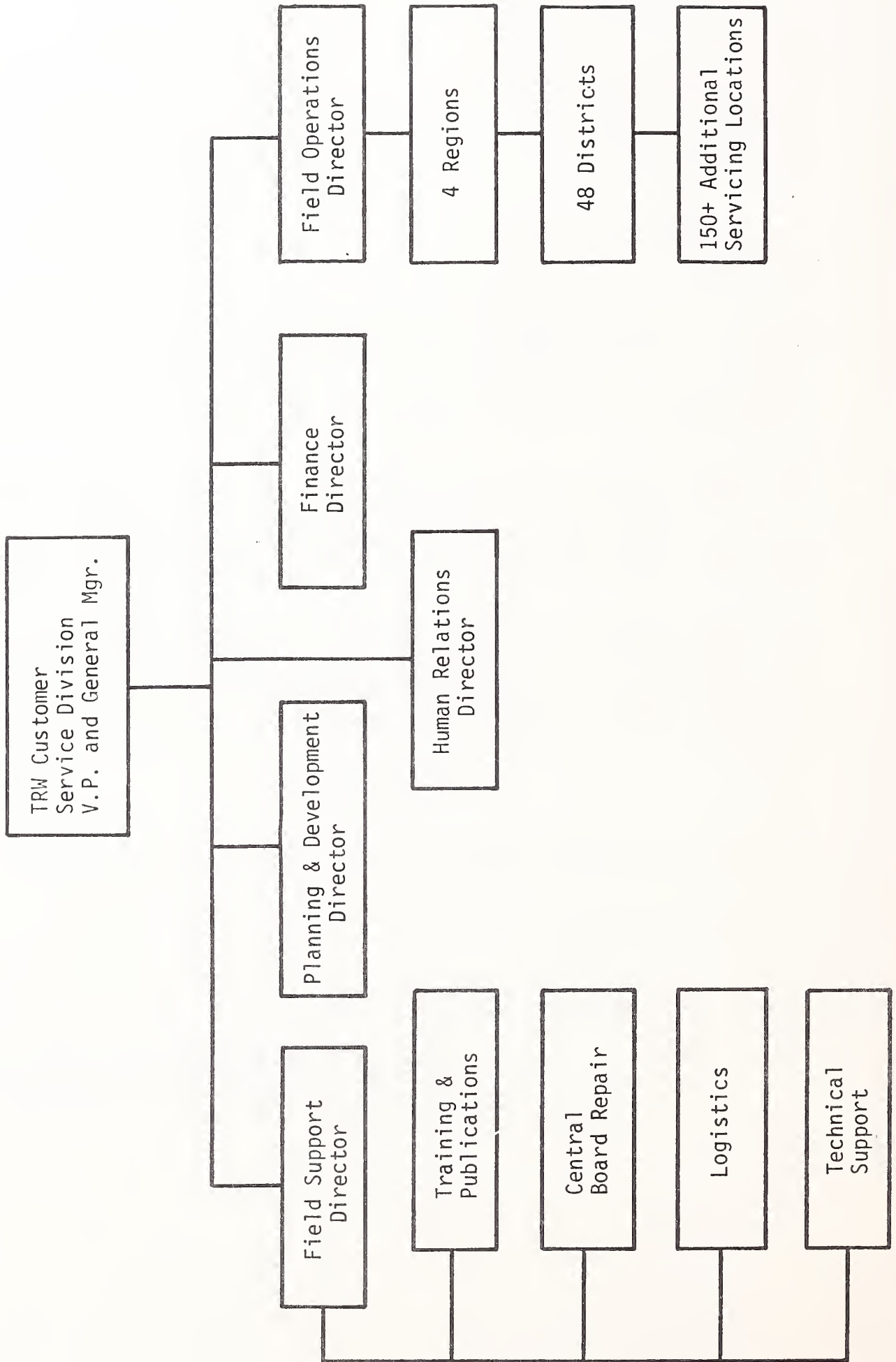
Service Locations:	216
Geographic Coverage:	Entire U.S.
Repair Depots:	150
Parts Locations:	Four distribution centers for entire field organization and two reconstruction/refurbishment sites for IBM equipment only

EMPLOYEES

Customer Service Division	3,000
Technical Support	2,660

EXHIBIT II-1

TRW CUSTOMER SERVICES DIVISION ORGANIZATION



PRODUCTS SERVICED

- Mainframes
- Minicomputers/SBS
- Microcomputers
- Peripherals
- Office Products
- Telecommunications

BRANDS SERVICED

ADDS, Altos, AMF, Ampex, Anadex, BDS, Commodore, Copystatics, Cromemco, CTI, Dataproducts, Datasystems, DEC, Diablo, Docutel/Olivetti, Esprit, Fujitsu, Hazeltine, IBM, Lear-Siegler, Micromation, Mosler, NEC, Okidata, Pitney Bowes/Alpex, Printer Systems, QMS, REXON, Singer, Southern Systems, Standard Logic, Televideo, Texas Instruments, U.S. Design, Vector Graphic, Wiltek, and Wyse Technologies.

SERVICES PROVIDED

- Manufacturer Warranty
- Remedial Maintenance
- Preventive Maintenance
- Engineering Changes
- Refurbishment
- Installation
- Relocation/Deinstallation
- Conversion/Upgrade
- Supplies/Accessories
- Training

SERVICE DELIVERY MODES

Approximately 85% of TRW's service is provided on-site, with the remaining 15% provided at depot locations. Remote support including telephone support, remote diagnostics, and remote fixes is used in conjunction with on-site or depot service.

CONTRACT VERSUS TIME AND MATERIAL

Approximately 70% of TRW's service is provided through contract, with the remaining 30% provided on a time and material basis. Service provided consists of covered maintenance and billable call maintenance. Covered maintenance is the periodic and remedial (on-call) maintenance that TRW deems reasonably appropriate and necessary to keep the customer's equipment operating during normal working hours on all non-holiday weekdays. Service performed outside of the hours specified in the service agreement is billable call maintenance. On the billable calls, the customer pays a minimum charge equal to two hours plus travel charges, which consists of travel time and travel expense.

Standard Zone limits for maintenance rates have been established to cover costs of travel time and travel expense.

<u>Zone</u>	<u>Miles from Location Providing the Service</u>	<u>Charge</u>
1	0 to 25	none
2	26 to 50	18.5% additional
3	51 to 75	37.0% additional
4	76 to 100 over 100	55.5% additional negotiated

Surcharge: Add to applicable maintenance and/or billable call rate.

Hawaii	25%
Puerto Rico	37.5%
Alaska	negotiated

DISPATCHING AND ESCALATION

Dispatching is performed locally from 46 of the service locations. Escalation is carried out through an automatic computerized system that begins with notification to the district manager that the field engineer has been unable to solve the problem within the allotted time. Next, the regional manager is notified and, if the problem is still unresolved the next day, corporate headquarters is notified. Escalation time intervals vary depending on the customer and product type.

INVENTORY

Tied into the computerized dispatching and escalation system is the inventory tracking system. The system takes into consideration parts usage, distribution of products to be serviced, and service requirements forecasts.

TRW buys parts from the manufacturers, sometimes under exclusive long-term contract, thereby obtaining the best possible price for the parts. Without a contract, the company is often able to get volume discounts, due to the size of its business.

PRICING

TRW stated that when setting service prices, several factors are considered, including manufacturers' or other TPM vendors' pricing, the cost of parts, equipment failure rates, and repair time. The company's goal in setting prices is to offer competitive rates on service of like products while maintaining profitability. To achieve this goal, TRW is selective in the service business it accepts and services whole systems available in high volumes.

Examples of TRW's basic monthly maintenance charge for service follow:

IBM 30XX, 31XX series	Approximately 15% off IBM's BMMC price; varies depending on configuration and features/options
IBM PC-XT with 160K floppy disk	\$55/month
Altos 10726 (8000-12) 20 MB hard disk	\$151/month
ALT-5 8" Quantum 2020 20 MB hard disk	\$58/month
Dataproducts DA50 Daisy wheel printer	\$60/month

USER MAINTENANCE

Depending on the product, TRW sometimes encourages user involvement in maintenance. For example, the company encourages users to be involved in maintaining products in the banking industry. In exchange, users are sometimes offered discounts.

TARGET MARKET

TRW targets Fortune 500 companies and the federal government, as well as concentrating very heavily on the banking industry. TRW's Customer Service Division is segmented into the following markets: medical electronics (computer-driven), point-of-sale devices, mainframes, minicomputers, microcomputers, banking industry products (including teller terminals and automated teller machines), and office products.

COMPANY STRENGTHS

TRW reported its strengths to be its reputation as a corporation, quality service, high tech capabilities, geographic coverage, employee experience in the industry, and the company's experience in different markets.

MAIN COMPETITOR

Sorbus

SORBUS
A Subsidiary of Bell Atlantic
50 E. Swedesford Road
Frazer, PA 19355
(215) 296-6000

President: Ron Wallace
Vice President, Field Service
Operations: Mike Chamberlain
Years Active in TPM: 14

COMPANY

In 1984 Management Assistance, Inc. (MAI) sold Sorbus to Philadelphia-based Bell Atlantic for \$175 million. By acquiring Sorbus, Bell Atlantic hopes to position itself nationally as a provider of quality maintenance services for computer and telecommunications equipment. Bell Atlantic does not expect to make any significant changes in Sorbus' structure or personnel. The company's organizational structure is displayed in Exhibit II-2.

In the past, Sorbus provided service primarily in the mainframe and minicomputer markets. Sorbus now services almost every brand of personal computer, including Apple, Tandy, and IBM, in addition to larger computer systems. After originally concentrating on the IBM market, the company has grown rapidly in non-IBM markets and has obtained exclusive service contracts with manufacturers such as Magnuson, General Automation, Four-Phase, and Zilog.

REVENUE

Total TPM revenue for 1984 was \$170 million. This revenue figure includes the service on MAI equipment, now considered third-party maintenance since Sorbus is now a subsidiary of Bell Atlantic. The expected growth rate for 1985 is 19%.

SERVICE LOCATIONS

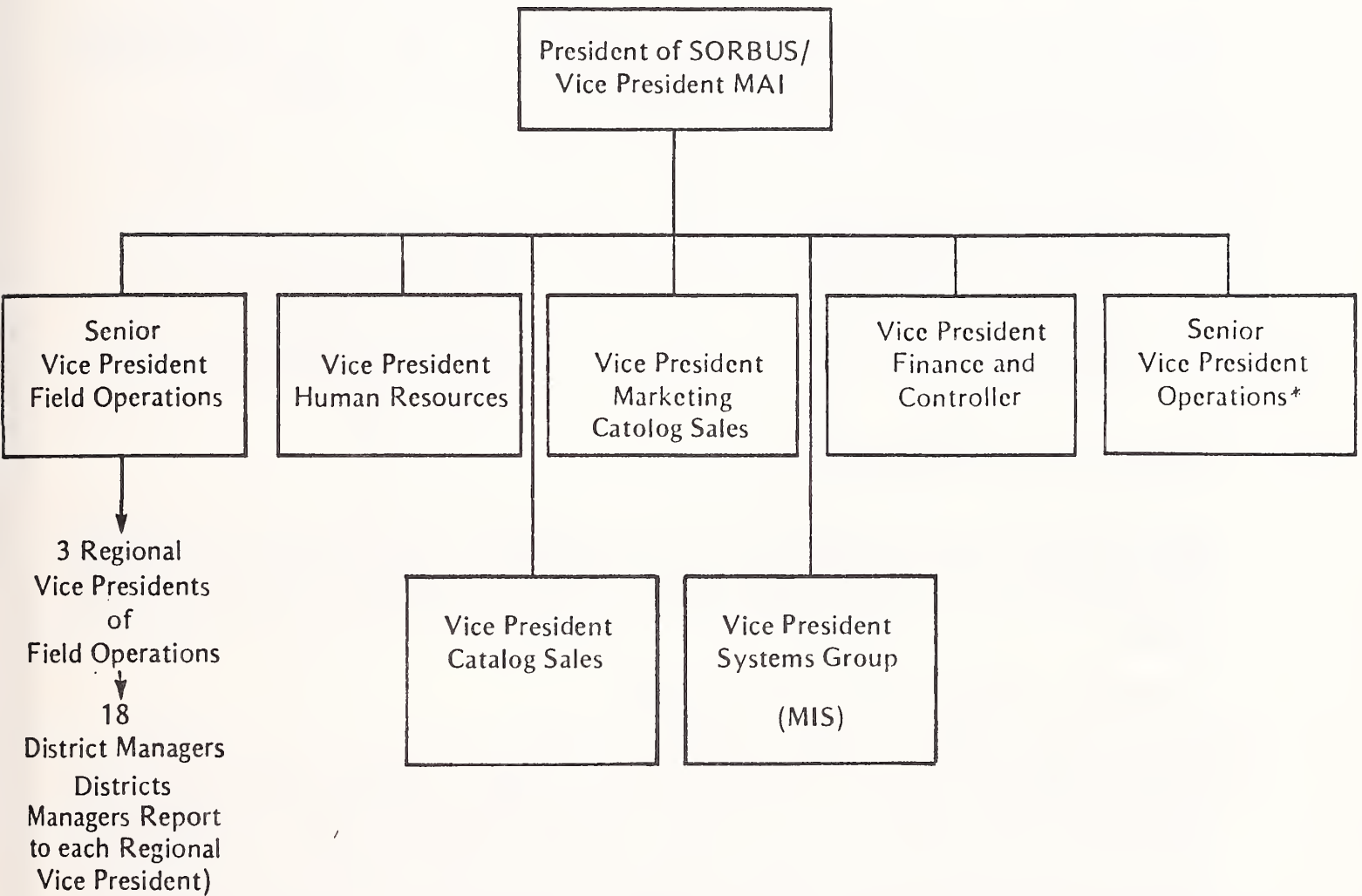
Service Locations:	170 primary locations in major cities. (The company has secondary locations with one or two field engineers in additional sites throughout the U.S.)
Geographic Coverage:	Entire U.S.
Repair Depots:	18
Centralized Parts Locations:	Cupertino (CA) and Valley Forge (PA)

EMPLOYEES

Total Service Employees (dedicated to TPM)	1,800
Service Engineers and Technical Support	1,540

EXHIBIT II-2

SORBUS ORGANIZATIONAL CHART



*Note: There is also a Senior Vice President of Basic Four Relations who handles all contacts with Basic Four.

PRODUCTS SERVICED

- Mainframes
- Minicomputers
- Peripherals
- Microcomputers
- Office Products
- Telecommunications

BRANDS SERVICED

Apple, Basic Four, Compaq, Dataproducts, Datasouth, Davong, DEC, Diablo, Epson, General Automation, Hewlett-Packard, IBM, Kaypro, NEC, Northstar, Okidata, Tallgrass, Tandy, Televideo, Texas Instruments, and Visual Technology.

SERVICES PROVIDED

- Manufacturer Warranty
- Remedial Maintenance
- Preventive Maintenance
- Engineering Changes
- Refurbishment
- Application Software Maintenance
- Training
- Installation
- Relocation/Deinstallation
- Conversion Upgrade
- Equipment Sale/Lease
- Supplies/Accessories
- Documentation

SERVICE DELIVERY MODES

An estimated 80% of the company's service is provided on-site, with the remaining 20% provided at depot locations. Of all depot service, 90% is carried into the depot by customers, 5% is mailed in, and 5% is brought in by courier. Remote support in the form of telephone support is sometimes used in conjunction with on-site or depot service.

CONTRACT VERSUS TIME AND MATERIAL

Approximately 95% of Sorbus' service is provided through contract, with the remaining 5% provided on a time and material basis. Normal hours of service for non-IBM equipment are 8 a.m. to 5 p.m., Monday through Friday. For IBM equipment, Sorbus provides 11 hours per day coverage (7 a.m. to 6 p.m., Monday through Friday). Extended coverage under contract is offered at an additional percentage of the basic monthly maintenance charge (BMMC), based on the class of equipment and the hours and days for which extended coverage is required.

DISPATCHING AND ESCALATION

Dispatching is an automatic computerized process that takes into consideration a field engineer's certification to work on the equipment and the parts available. Escalation procedures are part of this computerized system and begin with automatic notification to the district manager that the field engineer has not completed servicing the equipment. If the problem persists, the escalation continues with notification to the regional sales manager, the regional vice president and, eventually, to headquarters.

INVENTORY

The dispatching system ties into a computerized inventory tracking system. The company is currently working on ways to use this dispatching/inventory system to ensure that spare parts are always available when and where they are needed. Sorbus has established sources of spare parts available at a discount, some of which are guaranteed by long-term contracts. In addition, the company sometimes coordinates parts acquisitions through users.

PRICING

Sorbus reported that in setting pricing, each situation is different. Factors considered include the product serviced, the market, and the type of company requiring maintenance. Pricing is generally set below manufacturer's pricing; however, the company does not get involved in price wars. Sorbus believes that the quality of service is more important than low prices and that TPM vendors that become involved in price wars will not be around for long.

Examples of the company's basic monthly maintenance charge for servicing IBM equipment follow:

IBM 3880	\$140-\$568/month
IBM S/36	\$76-\$167/month
IBM 3350 disk drive	\$136-\$184/month
IBM 5150 PC	\$348/year

TARGET MARKET

No specific industries are targeted. Instead, Sorbus considers system population density. The company concentrates on the IBM market, which represents the largest part of its business.

COMPANY STRENGTHS

Sorbus identified its strengths as follows: service as good or better than the manufacturer's, better pricing, no risk, a sophisticated inventory control and dispatching system, and experienced field engineers.

MAIN COMPETITOR

IBM

CONTROL DATA CORPORATION
Engineering Services Division
5720 Smetana Drive
Minnetonka, MN 55343
(612) 853-8100

Vice President, Engineering Services:
Gerry Gilbert
Vice President, Operations:
Harvey Devries
Years Active in TPM: 12

COMPANY

As of January 1985, third-party maintenance is the responsibility of a new marketing group under the Field Services Division of CDC. The three areas of responsibility for the group are: microcomputers, OEM (specifically DEC), and COMMA. The company's organization is outlined in Exhibit II-3.

In the past, CDC has serviced IBM equipment through its COMMA division. COMMA was started by two former IBM engineers in 1969 and was sold to CDC in 1973. This division continues to provide service for IBM mainframes and peripherals.

In 1984 CDC entered the TPM market for IBM PCs and XT's. The company offers on-site maintenance of these products to major corporations only, stating that it is not after the single computer user. The program offers four-hour turnaround for failed equipment. Their philosophy is to swap failed equipment with new or rebuilt units, not loaning the swapped equipment, but rather permanently replacing it.

CDC also services DEC equipment. Two acquisitions that CDC made this year, Computer Marketing Associates (CMA) and Total Tec, were related to servicing DEC equipment. CMA of Sunnyvale (CA) provides maintenance for DEC PDP systems. Total Tec of Hopelawn (NJ) has a base of 600 DEC computer users.

REVENUE

Revenue generated from third-party maintenance in 1984 was approximately \$100 million. Expected growth for 1985 is 10%.

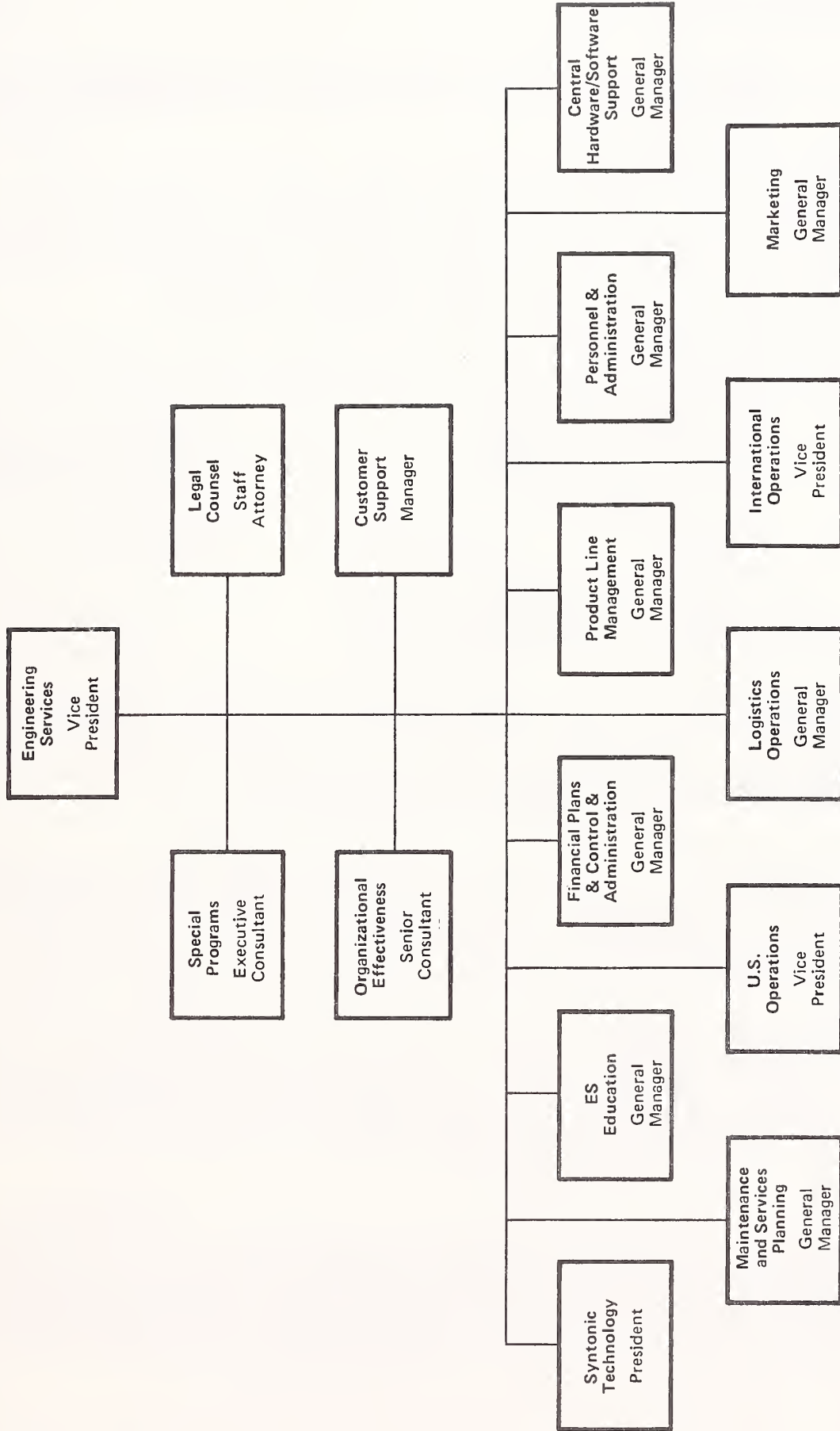
SERVICE LOCATIONS

Service Locations:	300 (50 dedicated to TPM)
Geographic Coverage:	Entire U.S.
Repair Depots:	2
Parts Locations:	One central parts facility Eight regional distribution centers

EMPLOYEES

Total Field Engineers (not dedicated to TPM)	2,200
---	-------

CDC ENGINEERING SERVICES



PRODUCTS SERVICED

- Mainframes
- Minicomputers
- Microcomputers
- Peripherals
- Telecommunications

BRANDS SERVICED

Britton Lee, Centronics, Cipher, Data General, Dataproducts, Davox, DEC, Emulex, IBM, Kennedy, Keytronics, MDB, National Semiconductor, Printronix, Scientific Microsystems, Spectra Logic, STC, Tallgrass, and Zenith.

SERVICES PROVIDED

- Manufacturer Warranty
- Remedial Maintenance
- Preventive Maintenance
- Engineering Changes
- Refurbishment
- Training
- Supplies/Accessories
- Installation
- Relocation/Deinstallation
- Conversion/Upgrade
- Custom Programming
- Consulting
- Planning

SERVICE DELIVERY MODES

Approximately 98% of CDC's TPM service is provided on-site. The remaining 2% is provided at one of the company's two depot locations, located in California and Minnesota. All equipment is mailed in for service at the depot locations.

CONTRACT VERSUS TIME AND MATERIAL

Approximately 90-95% of CDC's TPM service is provided under contract and 5-10% is provided on a time and material basis. These figures are dependent upon the market being serviced. For example, in the personal computer market, the percentage of service provided on a time and material basis is higher than that for large systems.

For service provided under contract, travel charges during the maintenance period are included within a 50-mile radius of a CDC service center. For each 25 miles beyond the 50-mile radius, a zone charge of 10% is added to the BMMC. Hours covered under a basic service agreement are between 7 a.m. and 6 p.m. These hours may be extended for an additional charge.

DISPATCHING AND ESCALATION

Dispatching is done from the company's eight regional service locations, utilizing a computerized system that is also used for escalation. During escalation, the system automatically notifies each successive level of management and technical support (branch, district, and regional levels), typically at two hours, four hours, and eight hours. These time intervals vary between products.

INVENTORY

Tied into the computerized dispatching/escalation system is the company's inventory tracking system, which is used to maintain appropriate inventory levels at all of the service locations.

CDC has established sources of spare parts available at a discount, some of which are guaranteed by contract. The company does not coordinate parts acquisitions through its customers.

PRICING

CDC's pricing is set at a discount below the manufacturer's pricing. For example, CDC reported that its pricing on the service of DEC equipment is approximately 12% lower than DEC's pricing and on IBM equipment, its pricing is about 10% lower than IBM's pricing.

The following are examples of CDC's service pricing:

IBM-XT hard disk	Ship-in repair	\$504
IBM-XT CPU	On-site exchange	\$300
Most other CPUs	On-site exchange	\$250-\$300
Keytronics printer	On-site exchange	\$316
Tallgrass hard disk	On-site repair	\$618

USER MAINTENANCE

CDC sometimes encourages users to become involved in maintenance. For example, field engineers may ask customers to run diagnostic tests on their personal computers.

TARGET MARKET

The company provides service to the banking industry as well as the manufacturing industry; however, it does not specifically target any particular industries. The company's goal is to provide engineering services for all data processing at a particular site.

The company targets the IBM and DEC product markets. CDC has stipulated that they will service selected peripherals only if they are connected to a DEC or IBM system. The company has elected not to service these peripherals on a standalone basis.

COMPANY STRENGTHS

CDC identified its strengths as follows: overall quality of maintenance, quick response time, ability to provide service for multiple vendor products, and flexibility to work on the variety of products customers use.

MAIN COMPETITORS

Sorbus, McDonnell-Douglas, RCA, GE, and Computerland

RCA SERVICES COMPANY
Data Services Division
Route 38, Building 204-2
Cherry Hill, NJ 08358
(609) 338-4400

President: Donald M. Cook
Vice President, Field Service
Operations: A. G. Chumley
Years Active in TPM: 9

COMPANY

RCA Service Company's business is divided into three divisions: government services, consumer and commercial services, and data services, as shown in the company's organizational chart in Exhibit II-4. Examples of RCA's third-party maintenance business are outlined below.

The company is entering a new area of service--providing maintenance for satellite earth stations. This market represents an excellent growth opportunity for RCA because of the inherent high profitability of service on this type of equipment and the relatively low level of competition.

RCA provides on-site service to Ungermann-Bass for its local area network product line. Ungermann-Bass continues to service its customers through its field service staff within a 50-mile radius of its regional offices. RCA, through its 200 national offices, provides hardware installation and maintenance on an annual contract basis.

RCA provides third-party on-site repairs and preventive maintenance for Pertec's System 3200 and 4200 series and the Pertec MC 68000 product line, as well as Onyx microcomputer systems.

RCA's exclusive contract with Apple to provide third-party on-site maintenance to Apple's OEMs and VARs and their customers ended March 31, 1985. RCA will still service Apple microcomputers, and Apple will continue to provide parts to RCA. This agreement will last one year, at which time it will have to be renewed.

REVENUE

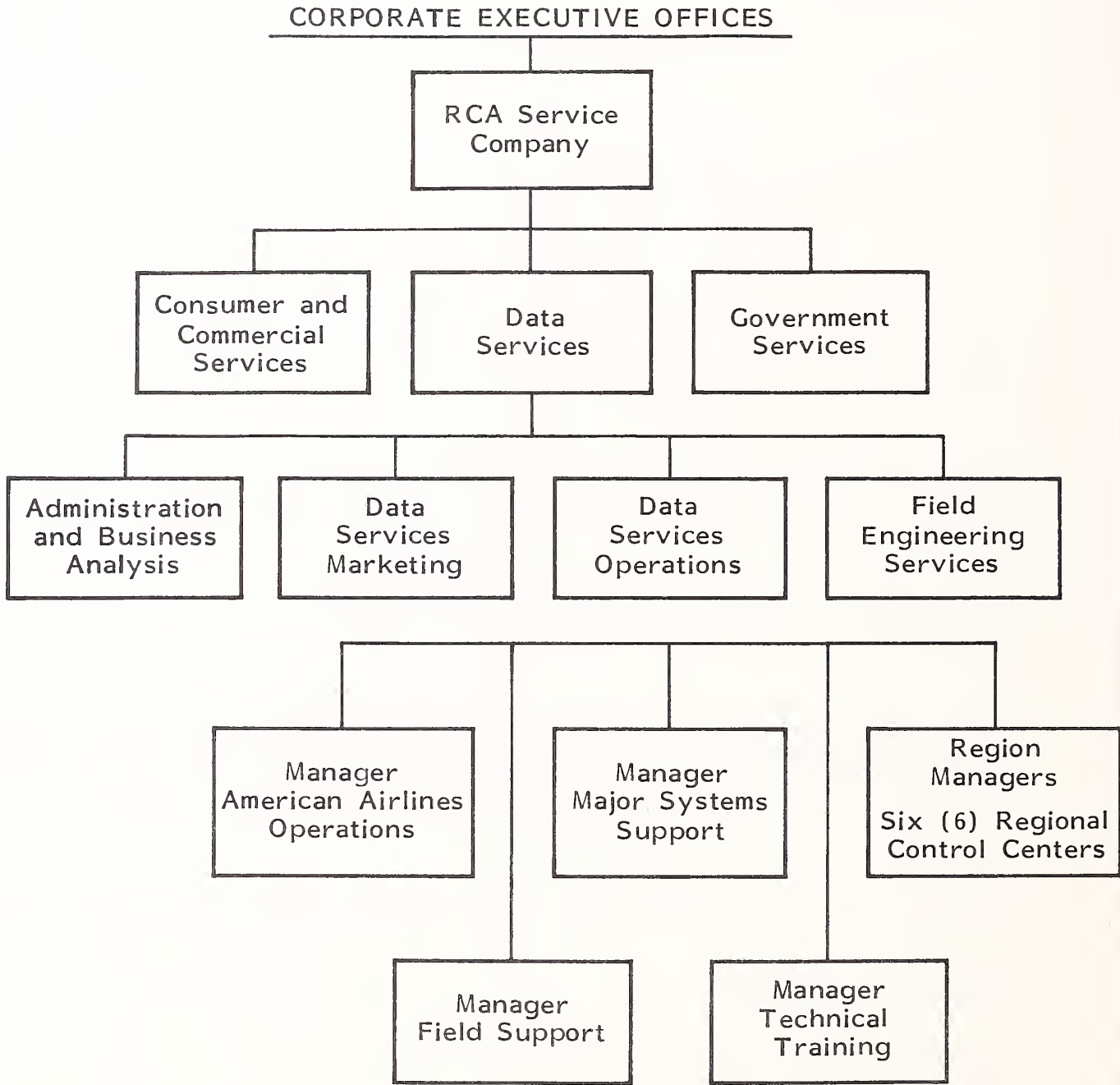
Estimated revenue for RCA's Data Services Division in 1984 is \$68 million. Expected growth for 1985 is 27%.

SERVICE LOCATIONS

Service Locations:	200
Geographic Coverage:	Entire U.S.
Repair Depots:	12
Parts Locations:	Six regional One national

EXHIBIT II-4

RCA SERVICES COMPANY ORGANIZATIONAL STRUCTURE



EMPLOYEES

Total Service Employees (all dedicated to TPM)	700
Field Engineers	450
Technical Support	75

PRODUCTS SERVICED

- Mainframes	- Satellite Earth Stations
- Minicomputers	- Telecommunications
- Microcomputers	- Peripherals
- Office Products	

BRANDS SERVICED

Apple, Applied Digital Data Systems, Data Measurements, Datamedia, Dataproducts, Datatronix, DEC, DI/AN Controls, Edge Technology, Epson America, Equatorial Communications, Extel, Facit/Dataroyal, Falco Data Products, General Electric, Hazeltine, Henriksen Data Systems, IBM, Icot, Kimtron, Mannesmann-Tally, Market Data Systems, Nestar Systems, Norand, Okidata, Onyx Systems, OSM, Pertec, Printronix, Rixon, Scott Systems, Siemens Communications, Teletype, Ungermann-Bass, Westinghouse, and Zentec.

SERVICES PROVIDED

- Manufacturer Warranty	- Installation
- Remedial Maintenance	- Relocation/Deinstallation
- Preventive Maintenance	- Conversion/Upgrade
- Engineering Changes	- Consulting
- Refurbishment	- Planning
- Equipment Sale/Lease	- Training
- Supplies/Accessories	

SERVICE DELIVERY MODES

Approximately 75% of the company's service is provided on-site and 25% is provided at depot locations. Of all depot service, 80% is mailed into the depot and 20% is brought in by courier. Remote support, provided through telephone support and remote diagnostics, is used by field engineers in conjunction with on-site maintenance.

CONTRACT VERSUS TIME AND MATERIAL

Approximately 95% of RCA's service is provided under contract; the remaining 5% is provided on a time and material basis. At a customer's request, RCA will perform work not covered by contract such as additional training, relocation of equipment, and reinstallations, and charge RCA's current demand service rates.

Response time for an on-site call is dependent upon the following categories:

Category 1 (0-100 miles from multiple representative service centers) - If the service request is received before noon, the field engineer will respond on-site the same day. If the request is received after noon but before the close of business, the field engineer will respond on-site before noon the next business day.

Category 2 (0-100 miles from single representative service centers) - The field engineer will respond to service requests on-site before the close of business the next working day.

Outside Categories 1 and 2 (over 100 miles from service centers) - Response will be at best effort.

DISPATCHING AND ESCALATION

Dispatching utilizes a computerized system and is carried out from six regional offices. Escalation is also handled by this computerized system, automatically notifying each successive level of support when a problem persists for a certain length of time. After the field engineer, the next level of support is the regional service manager; the following level is the home office engineering staff. The time intervals vary for different products. If critical, these intervals can be as short as 30 minutes, but are typically one hour or more.

INVENTORY

Tied into the computerized dispatching/escalation system is the company's inventory tracking system, which keeps track of parts and ensures that parts are available when needed. RCA has established sources of spare parts available at a discount, although they are not guaranteed by any long-term contracts. The company stated that occasionally users supply parts they are holding in inventory.

PRICING

RCA stated that in order to establish pricing, a thorough technical and financial analysis is performed. The analysis includes examining the following criteria: the estimated number of service calls per year that will be required for the product, the cost of spare parts, and competitor's pricing.

Examples of RCA's on-site third-party maintenance charges follow:

Altos 586-40	\$98/month
Apple IIe	\$180/year
Profile Disk Drive	\$360/year

TARGET MARKET

RCA is not currently targeting any specific industries for its service.

COMPANY STRENGTHS

RCA identified its main strengths to be experience and reliability.

MAIN COMPETITORS

TRW and Sorbus

GENERAL ELECTRIC COMPANY
Integrated Communication Services
P.O. Box 105625
5775 Peachtree Dunwoody Road
Suite 500 G
Atlanta, GA 30348
(404) 843-6200

President: John F. Welch
Vice President and General Manager,
Integrated Communication Services:
Rex L. Flint
Years Active in TPM: 21

COMPANY

General Electric provides third-party maintenance for mainframes, minicomputers, printers, storage devices, terminals, telephones, PBXs, storage controllers, instrumentation systems, and process control equipment.

In 1984, General Electric began offering third-party maintenance for personal computers from vendors such as IBM, Apple, Hewlett-Packard, and Compaq. Service on personal computers is provided through 60 service centers that were established to service minicomputers, PBXs, and other data communications equipment. In addition to standard on-site and depot service, depot service with a "loaner" is available. Since General Electric rents personal computers, the PCs and parts necessary for the "loaner" operation are in inventory.

REVENUE

1984 revenue generated from the service of computer, data communication, and PBX equipment was \$63 million. TPM revenue was \$57 million. The expected growth rate for 1985 is 19%.

SERVICE LOCATIONS

Service Locations:	65
Geographic Coverage:	Entire U.S.
Repair Depots:	7

EMPLOYEES

Total Service Employees	576
Total Field Engineers	440
TPM Field Engineers	130
Technical Support	9

PRODUCTS SERVICED

- Mainframes	- Office Products
- Minicomputers	- Peripherals
- Microcomputers	- Telecommunications

BRANDS SERVICED

Data General, DEC, IBM, Point Four, and Texas Instruments. In addition to servicing these manufacturers' products, the company also services disk drives, magnetic tapes, printers, terminals, modems, controllers, memories, CRTs, multiplexers, and concentrators manufactured by 45 other vendors.

SERVICES PROVIDED

- | | | | |
|---|------------------------|---|---------------------------|
| - | Manufacturer Warranty | - | Installation |
| - | Remedial Maintenance | - | Relocation/Deinstallation |
| - | Preventive Maintenance | - | Conversion/Upgrade |
| - | Engineering Changes | - | Custom Programming |
| - | Refurbishment | - | Equipment Sale/Lease |
| - | Training | - | Supplies/Accessories |

SERVICE DELIVERY MODES

Approximately 90% of General Electric's third-party maintenance is provided on-site and 10% is provided through repair depots.

CONTRACT VERSUS TIME AND MATERIAL

Approximately 75% of General Electric's third-party maintenance is provided under contract, with the remaining 25% provided on a time and material basis.

General Electric's service contracts are negotiated individually to meet the customer's needs. Additional coverage is available for a percentage over the basic service contract price. For example, 24 hours/day, 7 days/week coverage costs about 45% more than the basic service contract price. For occasional after-hours service, customers who have the basic service contract will be charged the normal time and material rates.

DISPATCHING AND ESCALATION

Dispatching is done from each of the company's 10 territory locations. The territory service manager or supervisor assigns personnel at the service centers in each territory. The service manager or supervisor is also responsible for escalation.

INVENTORY

General Electric utilizes a computerized inventory tracking system that is tied into its dispatching system. The company does not coordinate parts acquisitions through users; it has established sources of spare parts available at a discount, which are guaranteed by long-term contracts.

PRICING

General Electric reported that when setting service prices, in addition to looking at the manufacturer's pricing, other TPM vendors' pricing, and costs, it also examines

these factors: the type of equipment and service involved, the amount of service required, the attractiveness of the potential business, and the company's competitive strategy.

Examples of General Electric's TPM pricing follow:

DEC VAX 780	Approximately \$2,000/month (depending on configuration)
DEC VAX 750	\$1,200-\$1,500/month
DEC PDP 11/34	\$500/month
Printers*	
Genacom 3404	\$45/month
Diablo	\$32/month
DEC LA120	\$32/month
Epson	\$6/month

*Volume discounts available

TARGET MARKET

General Electric targets the manufacturing industry. In addition, the company seeks national accounts, such as Fortune 1000 industrial companies and Fortune 500 service companies, and regional accounts representing a wide variety of businesses.

General Electric has segmented its service into the following areas: computer and data communications equipment service, rental and leasing, electronic test instrument service, PBX service, and shared tenant services (PBX systems).

COMPANY STRENGTHS

General Electric identified its strengths in the following way: well positioned service locations, which provide good geographic coverage; strong technical capability and experience; ability to meet a wide range of customer needs; and a long established reputation with customers for dependability, quality, and customer-oriented service.

MAIN COMPETITORS

TRW, CDC, RCA, Sorbus, and OEM vendors

BELL & HOWELL SERVICE COMPANY
7100 N. McCormick Road
Chicago, IL 60645
(312) 675-7600

President: Dennis J. McCarthy
Vice President, Field Service
Operations: Frank Rocks
Years Active in TPM: 6

COMPANY

Bell & Howell provides service for minicomputers, microcomputers, peripherals, point-of-sale equipment, terminals, printers, and modems. In addition, Bell & Howell is one of only two major TPM vendors maintaining satellite earth stations. This newly developed service market strengthens Bell & Howell's potential for long-term growth and profitability. The market currently has relatively little competition and yields high profit margins. An organizational chart for Bell & Howell Service Company is shown in Exhibit II-5.

Because of rumors that Eagle Computer may be forced into Chapter 11, the company licensed Bell & Howell to provide repair and technical support for Eagle products through 1989, even if it goes under. Bell & Howell will continue its on-site and carry-in repair services and will provide module sale, exchange, and repair for all of Eagle's products.

Bell & Howell purchased the Data Group's customer service management system, which runs on DEC VAX hardware in as many as 40 decentralized service locations. The contract is worth over \$500,000, making it Data Group's largest sale.

REVENUE

Estimated revenue for Bell & Howell in 1984 is \$32.4 million. Expected growth rate for 1985 is 16%, based primarily on the satellite earth station service market.

SERVICE LOCATIONS

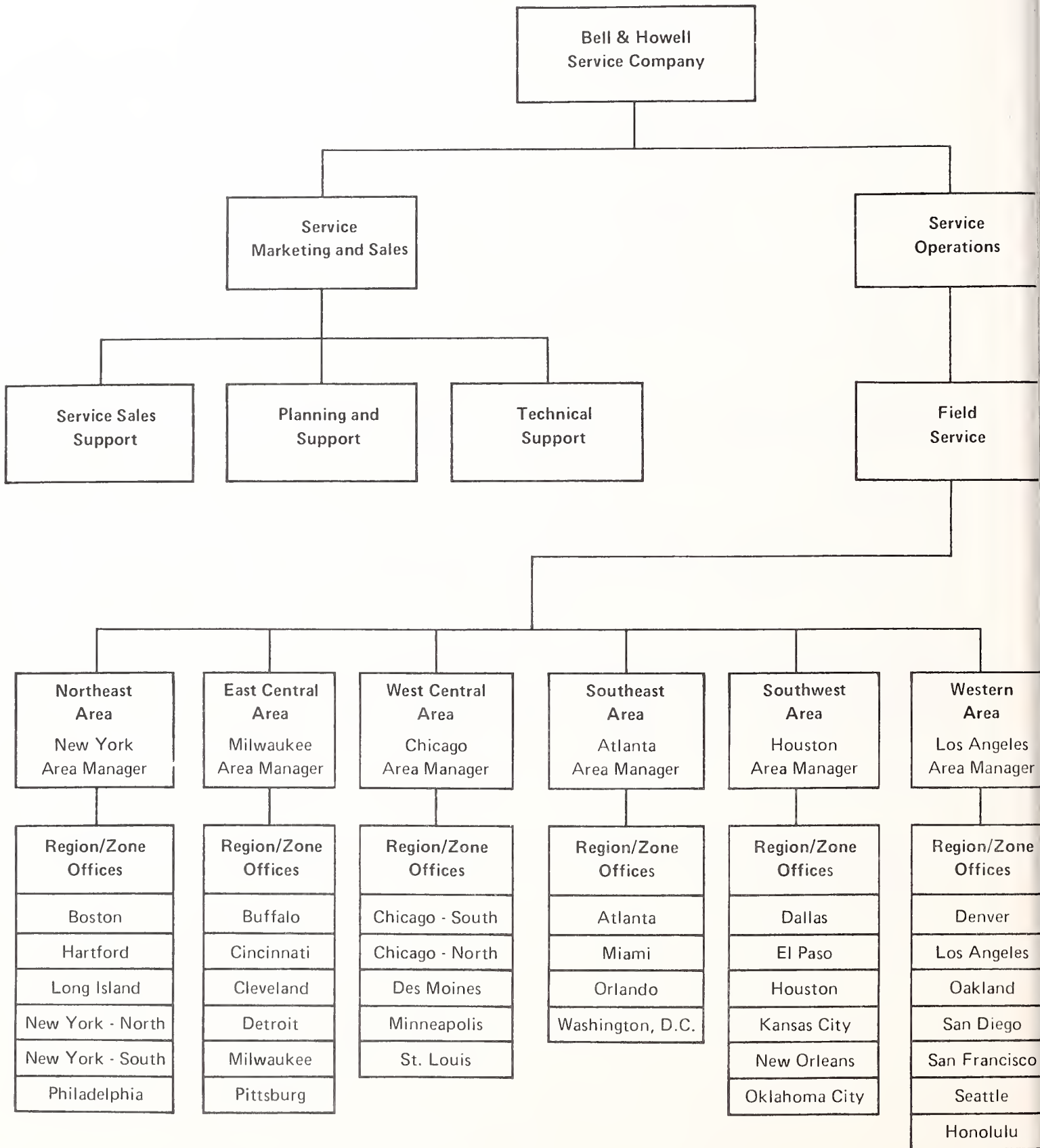
Service Locations:	182
Geographic Coverage:	Entire U.S.
Repair Depots:	40
Centralized Parts Location:	Chicago (IL)

EMPLOYEES

Total Service Employees (all dedicated to TPM)	1,000
Field Engineers	800
Technical Support	80

EXHIBIT II-5

BELL & HOWELL
FIELD SERVICE ORGANIZATION



PRODUCTS SERVICED

- Minicomputers
- Microcomputers
- Office Products
- Satellite Earth Stations
- Peripherals

BRANDS SERVICED

Action, Actrix, Anadex, Apple, Centronics, Columbia Data, Compaq, Daisy Systems, Datasouth, DEC, Eagle, Epson, Equatorial Communications, Franklin Computer, IBM, Integral Data Systems, Micro Peripherals, Okidata, Panasonic, Princeton Graphic Ssystems, Printek, Sanyo, Sony, U.S. JVC, and Zenith.

SERVICES PROVIDED

- Manufacturer Warranty
- Remedial Maintenance
- Preventive Maintenance
- Engineering Changes
- Installation
- Relocation/Deinstallation
- Conversion/Upgrade
- Planning
- Training
- Equipment Sale/Lease
- Supplies/Accessories

SERVICE DELIVERY MODES

Approximately 60% of Bell & Howell's service is provided on-site, 35% is provided at depot locations, and 5% is provided through remote support, including telephone support and remote diagnostics. Of the service provided at depot locations, 70% is carried in, 25% is mailed in, and 5% is brought in by courier.

CONTRACT VERSUS TIME AND MATERIAL

Approximately 20% of Bell & Howell's service is provided under contract; the remaining 80% is provided on a time and material basis.

Bell & Howell's response time on a standard contract is four hours, which the company stated is met just about 100% of the time. Faster response times can be negotiated, as can after-hours service. Charges are based on a percentage over the standard maintenance charge.

DISPATCHING AND ESCALATION

Dispatching is done at the company's 40 regional offices utilizing the computerized system ACCESS. Escalation procedures begin after the field engineer has been on-site two to three hours. The following levels of support are notified in succession during escalation: group leader, supervisor, regional manager (all located at each of the 40 regional offices), and the vice president of field service.

INVENTORY

Tied to the computerized dispatching system is the company's computerized parts inventory tracking system as well as the company's billing system. Inventory is the responsibility of an inventory management group whose objective is to ensure that the necessary parts are available when required.

Bell & Howell does not acquire parts through its customers, reporting that problems obtaining spare parts have been solved in the past few years. There are more sources available now, including more responsive manufacturers, independent parts houses, and used parts distribution.

PRICING

Bell & Howell stated that when setting pricing many factors are considered, such as acceptable levels of units to be serviced at certain prices, accessibility of these units, costs, and the price the market will bear.

USER MAINTENANCE

Although the company does not encourage users to become involved with maintenance directly, it does sell spare parts to users.

TARGET MARKET

Bell & Howell targets the federal government, the banking and financial industries, and selected products in the manufacturing industry. Considered more important than which industries are targeted is the company's strategy of looking for newly introduced products to service that will provide steady growth on a long-term basis. An example of this strategy is the company's involvement in the servicing of satellite earth stations.

COMPANY STRENGTHS

Bell & Howell identified its strengths as its broad service line, quality service (with Fortune 500 references), good reputation, and 80 years experience in business. In addition, the company stated that because it is one of the largest service organizations, it is financially strong and can guarantee fast response time and the latest technology.

MAIN COMPETITOR

RCA

GRUMMAN SYSTEMS SUPPORT
CORPORATION
90 Crossways Park Drive
Woodbury, NY 11797
(516) 349-5304

President: Alan Andrus
Vice President, Eastern Region:
Joseph Mulderig
Vice President, Southern Region:
Lloyd Root
Years Active in TPM: 15

COMPANY

Grumman Data Systems, the parent company of Grumman Systems Support Corporation, manufactures and services computer systems for customers in government, manufacturing, and a variety of other industries. The company started third-party maintenance in 1970, and in 1977 expanded its maintenance operation with its Systems Maintenance Services organization.

In 1984, Grumman acquired Computer Systems Support Corporation (CSSC) of Gaithersburg (MD). This maintenance supplier fits into Grumman's expansion plans, providing the company with a large field staff in the geographic markets of Washington, D.C. and Chicago. CSSC also serves customer in Baltimore, Cincinnati, Cleveland, Philadelphia, Pittsburgh, Richmond, San Francisco, and Seattle.

REVENUE

Total service revenue of Grumman Systems Support Corporation, generated entirely from third-party maintenance, was \$20 million in 1984. The company expects the 1985 growth rate for TPM to be 50%.

SERVICE LOCATIONS

Service Locations:	17
Geographic Coverage:	Eastern U.S.
Repair Depots:	3
Centralized Parts Location:	Woodbury (NY)

EMPLOYEES

Total Service Employees (all dedicated to TPM)	300
Field Engineers	230
Technical Support	50

PRODUCTS SERVICED

- Mainframes	- Office Products
- Minicomputers	- Peripherals
- Microcomputers	- Telecommunications

BRANDS SERVICED

CDC, Data General, Data Products, DEC, Emulex, IBM, Kennedy, Modcon, Perkin-Elmer, and SEL.

SERVICES PROVIDED

- | | |
|--------------------------|------------------------|
| - Manufacturer Warranty | - Installation |
| - Remedial Maintenance | - Relocation |
| - Preventive Maintenance | - Conversion/Upgrade |
| - Engineering Changes | - Planning |
| - Refurbishment | - Equipment Sale/Lease |
| - Training | |

SERVICE DELIVERY MODES

Approximately 90% of Grumman's maintenance is provided on-site and 10% is provided through depot locations. Remote diagnostics and telephone support is being introduced but has not yet been applied extensively to the user base.

CONTRACT VERSUS TIME AND MATERIAL

Approximately 90% of maintenance is provided under contract agreements and 10% is provided on a time and material basis.

DISPATCHING AND ESCALATION

Centralized dispatching is done from Woodbury (NY) for the Northeastern region of the U.S. and from Washington (DC) for the Southeastern region. Escalation procedures vary between product lines. Generally, after four hours, second level support personnel are notified. As escalation increases, the regional and national technical support levels are notified.

INVENTORY

The company has a computerized parts inventory tracking system that is separate from the dispatching process. Inventory techniques used in planning inventory include economic order quantity and min-max analysis, the object of which is to establish minimum acceptable inventory levels while maintaining maximum parts availability. The company does not buy parts through its customers and has discounted sources of spare parts available.

PRICING

Grumman reported that when setting service prices, each case is evaluated on the basis of costs and the competitive situation. Competitors include OEMs and other TPM vendors.

TARGET MARKET

Grumman targets the federal government, the banking industry, and the manufacturing industry for its TPM service.

COMPANY STRENGTHS

Grumman identified its strengths to be improved performance and lower prices. Improves performance was defined as quality service and fast response times.

MAIN COMPETITORS

OEMs, TRW, Sorbus, and other leading TPM companies

MCDONNELL DOUGLAS FIELD SERVICE
COMPANY
Computer Support Services
39100 Liberty Avenue
Fremont, CA 94538

President: Vern Hart
Vice President, Computer Support
Services: John Swarblick
Years Active in TPM: 12

COMPANY

In 1984, McDonnell Douglas acquired Tymshare, a third-party maintenance organization servicing DEC equipment and attached peripherals as well as other equipment. Tymshare has now been incorporated into the McDonnell Douglas Field Service Company (MDFSC), which comprises other service organizations as well, such as Microdata's service organization and the Tymnet service organization. MDFSC has also acquired Production Control Services for its depot maintenance.

The new organization, MDFSC, provides service on equipment ranging from mainframes to peripherals from a wide distribution of manufacturers.

REVENUE

In 1984, TPM revenue for McDonnell Douglas was approximately \$11 million and total service revenue was approximately \$80 million. Total service revenue for Tymshare in 1984 was approximately \$18 million. Expected growth in total service revenue and TPM revenue for the newly consolidated company is 22%.

SERVICE LOCATIONS

Service Locations:	150
Geographic Coverage:	Entire U.S.
Repair Depots:	2
Centralized Parts Location:	Fremont (CA)

EMPLOYEES

Total Service Employees	1,150
Total Field Engineers (not dedicated solely to TPM)	800
Technical Support	200
Percentage TPM Business	15%

PRODUCTS SERVICED

- Mainframes	- Microcomputers
- Minicomputers	- Peripherals

BRANDS SERVICES

Able, Ampex, Control Data, Cypher, Data Products, DEC, IBM, Emulex, Fujitsu, Kennedy, Printronix, Prime, Systems Industries, Western Peripherals, and Xerox.

SERVICES PROVIDED

- | | |
|-----------------------------|------------------------|
| - Remedial Maintenance | - Conversion/Upgrade |
| - Preventive Maintenance | - Consulting |
| - Engineering Changes | - Planning |
| - Refurbishment | - Training |
| - Installation | - Supplies/Accessories |
| - Relocation/Deinstallation | |

SERVICE DELIVERY MODES

Approximately 75% of the company's service is provided on-site, 15% is provided at depot locations, and 10% is provided through remote support, including telephone support, remote diagnostics, and remote fixes. All of the service provided at depot locations is mailed in.

CONTRACT VERSUS TIME AND MATERIAL

Approximately 99% of the company's service is provided through contract charges. Only about 1% of service revenue is derived from time and material charges.

Hours covered under the standard maintenance contract are from 8 a.m. to 5 p.m., Monday through Friday, excluding holidays. The contract outlines the responsibilities of McDonnell Douglas Field Service Company. These include keeping the equipment in good working order through remedial and preventive maintenance, providing the customer with a description of the service provided, and installing mandatory engineering change order kits released by the manufacturer.

Responsibilities of the customer outlined in the contract include providing adequate space to work and store parts, providing operator maintenance, assuring that the equipment be operated by competent personnel only, maintaining and debugging software used with the hardware, and providing documentation and diagnostics available for multi-vendor equipment. The agreement also stipulates that the customer cannot disclose any pricing information. If required, the customer can request maintenance outside the principal period of maintenance on a per call basis.

DISPATCHING AND ESCALATION

Dispatching is done locally, utilizing a computerized dispatching system. Escalation procedures occur at intervals of every two hours. After two hours, if the field engineer has not completed servicing the equipment, first level management is notified; after four hours the next level is notified; and after six hours there is a technical review.

INVENTORY

The company has a computerized inventory tracking system that is tied to its dispatching system. Its material support organization buys spare parts, monitors inventory, and establishes sources of discounted spare parts. These sources are guaranteed by long-term contracts, typically one year long. The company does not make parts acquisitions through its customers.

PRICING

The company reported that its service pricing is set by offering a discount off manufacturer's pricing, except in the case of government contracts where pricing is based on a percentage over costs.

TARGET MARKET

McDonnell Douglas targets education, government, and commercial markets for its third-party service.

The company concentrates on providing service on systems like DEC's business systems, personal computers, terminals, and peripherals.

COMPANY STRENGTHS

McDonnell Douglas identified its strengths in its critical applications coverage, with one to two hour response time, and its systems knowledge.

FIRST DATA RESOURCES SERVICE
COMPANY
2942 Dow Avenue
Tustin, CA 92680

Director: Oscar Schwalick
Years Active in TPM: 12

COMPANY

First Data Resources Inc., a subsidiary of American Express Company and the largest third-party processor of bank credit cards, has recently restructured its organization, placing its service companies into a division called First Data Resources Service Company. Three third-party maintenance organizations are now part of this division--Indeserv, Planus, and the field service operation of ATV Systems.

Acquired in 1983, Indeserv is a national network of local, independent service companies providing field service and depot repair for data processing and communications equipment. Indeserv provides service for manufacturers and end users of hardware ranging from minicomputers to point-of-sale equipment. The company seeks contracts with smaller vendors that do not want to establish their own maintenance organizations. Indeserv provides service for Facit, Dynax, and Bausch & Lomb, among others.

Planus, formed in early 1985, provides walk-in repair service for microcomputers. Currently, there are three company-owned service locations and franchises are also being set up.

In 1984, First Data Resources acquired the field service operation of ATV Systems, Inc., located in Santa Ana (CA). ATV develops, manufactures, and markets micro-processor-based point-of-sale and multi-function office information systems. First Data Resources agreed to provide the required maintenance to ATV's customers.

REVENUE

First Data Resources reported that revenue generated from TPM in 1984 was approximately \$16 million. The company expects revenue to grow 40% in 1985.

SERVICE LOCATIONS

Service Locations:	350
Geographic Coverage:	Entire U.S.
Repair Depots:	5
Parts Locations:	Atlanta (GA), Chicago (IL), and Dallas (TX)

EMPLOYEES

Total Service Employees (all dedicated to TPM)	500
TPM Field Engineers	250
Technical Support	9

PRODUCTS SERVICED

- Minicomputers
- Microcomputers
- Office Products
- Peripherals
- Telecommunications

BRANDS SERVICED

All major brands.

SERVICES PROVIDED

- Manufacturer Warranty
- Remedial Maintenance
- Preventive Maintenance
- Engineering Changes
- Refurbishment
- Installation
- Relocation/Deinstallation
- Conversion/Upgrade
- Training
- Supplies/Accessories

SERVICE DELIVERY MODES

Approximately 85% of FDR Service Company's maintenance is provided on-site, with the remaining 15% provided at depot locations.

Indeserv's depot service for smaller systems and peripherals includes pick-up and delivery, with a normal turnaround time of three to five days. Planus' service locations provide walk-in service for microcomputers and peripherals.

CONTRACT VERSUS TIME AND MATERIAL

Approximately 85% of the company's maintenance is provided under contract; the other 15% is provided on a time and material basis.

Customers can contract for Indeserv's field service on an hourly, monthly, or yearly basis. Normal hours of service are between 8 a.m. and 5 p.m., Monday through Friday, excluding holidays. A two-hour minimum applies to all hourly (T&M) contracts.

DISPATCHING AND ESCALATION

The company's computerized dispatching system allows the field engineer to enter the customer I.D. when a service call is made and obtain a complete service history on the company. If the field engineer is unable to resolve the problem alone within a specified time interval, the first person notified in the escalation process is the field engineer's supervisor; the next person notified is the regional manager.

INVENTORY

FDR Field Service Company has a computerized inventory tracking system tied into the dispatching system. The company's inventory planners set reorder levels on the basis of parts usage and service requirement forecasts. It has established sources of spare parts and, in fact, has long-term contracts for the discounted parts with some of the manufacturers. The company does not acquire parts through its customers--the end users of the equipment.

PRICING

In establishing services prices, FDR Service Company considers manufacturer's pricing, other TPM pricing, and costs.

USER MAINTENANCE

The company encourages user maintenance by getting them involved in self-replacement programs.

TARGET MARKET

The company is currently working to establish target markets, realizing the need for a more specific focus.

COMPANY STRENGTHS

FDR Service Company identified its strengths as the company's inventory tracking system, well-trained field engineers, and the fact that it is independent and not tied to any specific products--its loyalties are to the end users.

MAIN COMPETITORS

Sorbus and TRW

TOTAL TECHNICAL SERVICES
13405 York Road
North Royalton, OH 44133
(216) 237-8363

President: George Stackfletch
Vice President, Field Service
Operations: Tom Cobb
Years Active in TPM: 16

COMPANY

Prior to its forming in 1978, Total Technical Services (TTS) provided maintenance as part of a computer investment marketing group. The company is a service reseller or broker and coordinates service from such manufacturers as CDC, IBM, and STC, in addition to providing service through its technical support staff. Services offered include IBM on-site maintenance (through a TTS per-call contract with IBM), terminal and terminal network depot repair with courier pick up and delivery, and on-site service of large/multi-mainframe users.

REVENUE

Total Technical Services revenue generated from TPM was \$12.6 million in 1984. Growth rate expected in 1985 is 67%, bringing the 1985 estimated revenue to \$21 million.

SERVICE LOCATIONS

Service Locations:	6
Geographic Coverage:	Entire U.S.
Repair Depots:	4
Centralized Parts Location:	Cleveland (OH)

EMPLOYEES

Total Employees	126
Total Service Employees (all dedicated to TPM)	76
Field Engineers	35
Technical Support	5

PRODUCTS SERVICED

- Mainframes	- Office Products
- Minicomputers	- Peripherals

BRANDS SERVICED

CDC, Courier, Datapoint, Decision Data, IBM, Intel, Memorex, Okidata, STC, and Texas Instruments.

SERVICES PROVIDED

- Manufacturer Warranty
- Remedial Maintenance
- Preventive Maintenance
- Engineering Changes
- Refurbishment
- Equipment Sale/Lease
- Supplies/Accessories
- Installation
- Relocation/Deinstallation
- Conversion/Upgrade
- Consulting
- Planning
- Training

SERVICE DELIVERY MODES

Approximately 95% of Total Technical Services' third-party maintenance is provided on-site, 2.5% is provided at depot locations, and 2.5% is provided by remote support--mainly telephone support.

CONTRACT VERSUS TIME AND MATERIAL

Approximately 80% of Total Technical Services' maintenance is provided under contract; the other 20% is performed on a time and material basis.

Hours covered under the standard maintenance contract are between 7 a.m. and 6 p.m., Monday through Friday, excluding holidays. Service includes preventive maintenance, engineering changes, parts replacement, equipment recertification, and other maintenance. No travel expense will be charged, unless location is not accessible by automobile or other public transportation.

DISPATCHING AND ESCALATION

Generally, within two hours after a customer places a service call, the field engineer reports on-site. Two hours later, if the field engineer has been unable to resolve the problem, he phones his office for advisement. After an additional two hours pass and the problem still exists, he calls for national level advisement.

INVENTORY

Total Technical Services buys some of its parts directly from manufacturers, such as IBM; other times, the company buys used IBM machines whole to obtain the spare parts. When purchasing machines from users who are also TTS customers, the company sometimes exchanges its services in payment.

PRICING

Pricing is based on a percent discount off the manufacturer's pricing. Typically, the discount is between 15% and 30%.

USER MAINTENANCE

Total Technical Services encourages users to become involved in maintenance through informal training conducted by field engineers.

TARGET MARKET

Total Technical Services targets the following markets for its services: the banking industry, the manufacturing industry, state and county governments, schools, and hospitals.

TTS feels that the industries listed above are cash positive and are not nearly as problematic as other industries.

COMPANY STRENGTHS

The company identified its strengths to be offering a quality service, with faster response times and better service, at a cheaper price.

MAIN COMPETITORS

Sorbus, IBM, and Dataserv

XEROX CORPORATION
Xerox Square, 025
Rochester, NY 14644
(800) 833-4567

President: David T. Kearns
Executive Vice President, Field
Service Organizations:
Ronald Mercer
Years Active in TPM: 2

COMPANY

Xerox Corporation entered the third-party maintenance business in 1983 with its Xerox Americare unit. Xerox Americare, specializing in microcomputers, provides on-site, carry-in, and pick-up and delivery service for dealers and corporate customers carrying IBM computers. The organization also services computers made by Epson, Corona, Kaypro, and Osborne, and several brands of printers.

Under its dealer program, Xerox Americare provides dealers a one-year warranty on all parts and labor and a 20% commission on all units Xerox repairs. Xerox expects dealers to generate at least \$1,000 worth of business per month. In return, the affiliation with Xerox better equips dealers to compete for national account business.

In addition to the dealer program, Xerox has a major accounts program, which attempts to meet the needs of corporate data processing managers. Xerox views this program as one for those not serviced directly by dealers. Dealers may perceive it as a competitive program, which could affect their support of Americare.

REVENUE

Total revenue generated from Xerox Corporation's third-party maintenance is estimated to be \$18 million. Expected growth rate for 1985 is 10-12%.

SERVICE LOCATIONS

Service Locations:	91
Geographic Coverage:	Entire U.S.
Repair Depots:	91

EMPLOYEES

Total Field Engineers (not dedicated solely to TPM)	13,500
Estimated TPM Field Engineers	400

PRODUCTS SERVICED

- Personal Computers
- Peripherals

BRANDS SERVICED

Amdek, Applied Computer Sciences, Compupro, Corona, Data South, DEC, Diablo, Epson, IBM, Liberty Electronics, Morrow Designs, Okidata, Osborne, Shugart, and STM.

SERVICES PROVIDED

- | | |
|--------------------------|-----------------------------|
| - Manufacturer Warranty | - Relocation/Deinstallation |
| - Remedial Maintenance | - Conversion/Upgrade |
| - Preventive Maintenance | - Consulting |
| - Engineering Changes | - Training |
| - Refurbishment | - Documentation |
| - Installation | |

SERVICE DELIVERY MODES

Approximately 50% of Xerox's service is provided on-site and 50% is provided at depot locations. Of those products serviced at depot locations, 80% are carried in, 10% are mailed in, and 10% are brought in by courier.

CONTRACT VERSUS TIME AND MATERIAL

Approximately 50% of Xerox's third-party maintenance is provided through contracts and 50% is provided on a time and material basis.

Xerox offers the following types of contracts: full service maintenance agreements for on-site service at customer locations; service center maintenance agreements where the customer can carry in or mail in equipment and Xerox will pick up and deliver equipment, or Xerox can pick up and deliver equipment and provide a loaner; and time and materials service agreements for on-site or service center maintenance paid on a per call basis.

On-site maintenance covers hours between 8 a.m. and 5 p.m., Monday through Friday, excluding holidays, for a fixed annual maintenance fee. For service center maintenance, there are weight restrictions, and for pick-up and delivery by Xerox, the customer must be within the local pick-up and delivery area, normally 15 miles. With a time and materials maintenance agreement, the customer receives services at the current labor and material rates. This service is not available for mail-in or delivery service.

DISPATCHING AND ESCALATION

Xerox utilizes a computerized system for dispatching. The company's escalation procedures are to call in a technical specialist (located at that service location and specializing in that product), request assistance from one of ten technical centers, and notify the national level.

INVENTORY

The company has a computerized inventory tracking system that ties into its dispatching system. To plan inventory levels, minimum and maximum acceptable levels are established for each part, and the economic order quantity is calculated. Xerox does not obtain parts through users. It has discounted sources of spare parts available, some guaranteed by long-term contracts of up to five years long.

PRICING

Xerox's pricing is based upon an analysis of several factors. These factors include the market being serviced, the particular product being serviced, competitors' pricing, and profitability.

TARGET MARKET

Xerox targets the banking industry and the manufacturing industry.

COMPANY STRENGTHS

Xerox identified strengths in its size, experience, and name, which has a reputation for quality.

DATASERV COMPUTER MAINTENANCE
509 2nd Avenue, South
Hopkins, MN 55343
(612) 933-2575

President: James A. Myers
Vice President, Field Service
Operations: Ivars Wagner
Years Active in TPM: 6

COMPANY

Dataserv Computer Maintenance, Inc. (DCMI), a subsidiary of Dataserv, provides maintenance contracts for systems from IBM and other manufacturers. Dataserv provides on-site maintenance for large installations and direct maintenance of point-of-sale electronic cash registers and other remote terminal systems. The company also services controllers, display units, and printers. In 1984, Dataserv formed a new division called Dataserv Parts to furnish IBM parts for Dataserv customers and act as a repair center for IBM parts.

Dataserv can also broker customers' maintenance agreements with the original equipment manufacturer to reduce the customers' costs. For a fixed monthly fee, less than what the customer would pay the manufacturer for service, the customer can receive the same service from the manufacturer.

REVENUE

Dataserv's total revenue for 1984, generated entirely from TPM services, was approximately \$11 million. Expected growth for 1985 is 70%.

SERVICE LOCATIONS

Service Locations:	70 (includes customer sites)
Geographic Coverage:	Entire U.S.
Repair Depots:	4

EMPLOYEES

Total Service Employees (all dedicated to TPM)	200
Field Engineers	160
Technical Support	10

PRODUCTS SERVICED

- Minicomputers	- Peripherals
- Microcomputers	- Telecommunications

BRANDS SERVICED

Datachecker, IBM, Memorex, and STC.

SERVICES PROVIDED

- Manufacturer Warranty
- Remedial Maintenance
- Preventive Maintenance
- Engineering Changes
- Refurbishment
- Installation
- Relocation/Deinstallation
- Conversion/Upgrade
- System Software Maintenance (personal computers)
- Custom Programming
- Planning
- Training
- Equipment Sale/Lease

SERVICE DELIVERY MODES

Approximately 50% of Dataserv's maintenance is provided on-site and 50% is provided through depot locations. Of the service provided at depot locations, 75% is mailed in and 25% is brought in by courier. In approximately 10% of cases, remote support, in the form of telephone support, is used in conjunction with depot or on-site maintenance.

CONTRACT VERSUS TIME AND MATERIAL

Approximately 95% of Dataserv's maintenance is provided through contracts and 5% is provided on a time and material basis.

DISPATCHING AND ESCALATION

Dispatching and escalation procedures vary depending upon customer, type of equipment, and contractual obligation. The company has a centralized dispatching facility, but it is not used for everyone; there are some field engineers on-site full time.

INVENTORY

The company's computerized inventory tracking system is tied into the dispatching system. Automated inventory reports are analyzed to make the most efficient use of parts and to plan reorder levels. The company does not purchase parts through its customers, stating that it can purchase whatever is needed, due to the fact that the parent company is a hardware dealer.

PRICING

Dataserv's pricing reflects costs and the competitive arena. However, the company stated that its prices are not always discounted from the manufacturer's and are, in fact, higher in some cases--a situation referred to as value-added pricing.

TARGET MARKET

Dataserv targets the insurance, banking, manufacturing, retail, and grocery industries.

COMPANY STRENGTHS

Dataserv reported that its strengths lie in the fact that the company is structured for product and customer specialization. For example, one channel deals only in point-of-sale equipment all the way from the field engineer to the national manager. The company also has a data base on machine performance to assist in setting competitive, yet profitable, pricing. Dataserv has a professional maintenance marketing group, company employees have input to management decisions and are provided with incentives to work hard, and the parent company provides financial strength.

MAIN COMPETITOR

IBM

COMPUTER MAINTENANCE AND
LEASING CORPORATION
15350 31st Avenue, North
Plymouth, MN 55447
(612) 559-5636

President: Richard Johnson
Vice President, Field Service
Operations: Blaine Knowles
Years Active in TPM: 9

COMPANY

As a service broker, Computer Maintenance & Leasing Corporation (CMLC) offers its customers IBM service for a fixed monthly fee that is lower than what IBM would charge for its maintenance agreement. IBM performs all the necessary maintenance, billing CMLC at per-call rates. CMLC can spread the per-call risk over its customer base.

In addition, CMLC offers services such as extended hours of coverage and a maintenance management program, which includes preventive maintenance, engineering changes, and replacement of problem machines.

REVENUE

Estimated revenue for CMLC in 1984 is \$13.5 million. Expected growth rate for the company in 1985 is 15%.

SERVICE LOCATIONS

Service Locations:	9
Geographic Coverage:	Eastern U.S.
Parts Locations:	Minneapolis (MN)

EMPLOYEES

Total Service Employees (all dedicated to TPM)	50
Field Engineers	23
Technical Support	2

PRODUCTS SERVICED

- Mainframes	- Microcomputers
- Minicomputers	- Peripherals

BRANDS SERVICED

IBM.

SERVICES PROVIDED

- Remedial Maintenance
- Preventive Maintenance
- Engineering Changes
- Refurbishment
- Training
- Installation
- Relocation/Deinstallation
- Conversion/Upgrade
- Supplies/Accessories

SERVICE DELIVERY MODES

All of CMLC's maintenance is provided on-site.

CONTRACT VERSUS TIME AND MATERIAL

Approximately 95% of CMLC's maintenance is provided through contracts and 5% is provided on a time and materials basis.

Hours covered under the basic contract agreement are between 7 a.m. and 6 p.m., Monday through Friday. CMLC provides customers with a preventive maintenance schedule, engineering changes as they are released, and replacement of problem equipment. Time and material calls are billed at IBM rates. The customer is also billed for travel expenses.

DISPATCHING AND ESCALATION

CMLC has centralized dispatching through Minneapolis (MN). Escalation progresses through the following levels: field engineer, branch manager, vice president of engineering, vice president of marketing, and president.

INVENTORY

The company has a computerized inventory tracking system. Plans are being made to tie the system into the company's dispatching system. CMLC buys its parts only from IBM and has contracts for parts, but not at a discount.

PRICING

CMLC's service pricing is set by discounting the manufacturer's (IBM's) pricing. The company reported the discounts are more than 20%.

USER MAINTENANCE

CMLC reported that it encourages users to be involved in maintenance.

TARGET MARKET

CMLC targets users of IBM equipment in the region east of Chicago (IL).

COMPANY STRENGTHS

CMLC identified its strengths as providing quality maintenance and using IBM parts only.

COMPETITORS

Sorbus, CDC, and other TPM vendors servicing IBM equipment

DECISION DATA SERVICE INC.
400 Horsham Road
Horsham, PA 19044
(215) 956-5801

President, Decision Data Computer
Corporation: Richard Schineller
President, Decision Data Service Inc.:
William A. Catania
Years Active in TPM: 11

COMPANY

Decision Data Computer Corporation is a manufacturer of computer peripherals for small- and medium-sized computer systems, data communications equipment, and data entry equipment. The company expanded its third-party maintenance operations in 1980 after selecting Richard Schineller, the former president of Sorbus, as president.

In 1981, Decision Data acquired the Maintenance Division of Computer Usage Corporation, which broadened its service base of mainframe and minicomputer customers. In 1982, Decision Data acquired the field service business of International MICOR Systems Inc., which provides maintenance for systems installed in major hotel chains. The acquisition substantially increased Decision Data's service revenue base.

Decision Data Service Inc., a subsidiary of Decision Data Computer Corporation, was established in early 1985 and provides nationwide service for Decision Data equipment and other third-party computer products. These products include IBM Ssystems 34/36, IBM PCs, TI Business Systems 300/600/800/990, and DEC Systems PDP-8/PDP-11.

Decision Data has introduced "performance coupons" service for IBM personal computers. With this service, customers purchase two performance coupons to use during a 12-month period. The coupons cover all parts and labor costs for one service call. If the coupons are not used during the year, the customer receives 25% off the following year's coupons.

REVENUE

Total service revenue for 1984 was \$33 million. Of that, total TPM revenue was approximately \$12 million. Expected growth for 1985 is 30%.

SERVICE LOCATIONS

Service Locations:	75
Geographic Coverage:	Entire U.S.
Repair Depots:	3
Parts Locations:	Atlanta (GA), Phoenix (AZ), and Horsham (PA)

EMPLOYEES

Total Company Employees (all dedicated to service)	530
Percentage of Employees Dedicated to TPM	40%
Total Field Engineers (not dedicated solely to TPM)	320
Total Field Support (not dedicated solely to TPM)	40

PRODUCTS SERVICED

- Minicomputers
- Small Business Systems
- Office Products
- Peripherals

BRANDS SERVICED

DEC, IBM, Sony, Texas Instruments, and Wang. Peripherals include Centronics, Corvus, Data Printer, Dataproducts, Epson, Florida Data, Intercolor, Mannesman Tally, Okidata, Printronix, and Vision Equipment.

SERVICES PROVIDED

- Manufacturer Warranty
- Remedial Maintenance
- Preventive Maintenance
- Engineering Changes
- Refurbishment
- Training
- Installation
- Relocation/Deinstallation
- Conversion/Upgrade
- Consulting
- Planning
- Supplies/Accessories

SERVICE DELIVERY MODES

Approximately 85% of Decision Data's TPM service is provided on-site and 15% is provided at depot locations. Approximately 2% of TPM service is provided through a combination of depot service and remote support, including telephone support, remote diagnostics, and remote fixes.

CONTRACT VERSUS TIME AND MATERIAL

Approximately 95% of Decision Data's third-party service is provided under contract, with the remaining 5% provided on a time and material basis. The company's current prime time per call rate is \$86/hour.

DISPATCHING AND ESCALATION

Dispatching is conducted locally at each of the 100 service locations. If the field engineer is unable to resolve the problem within two hours after he arrives on-site,

he informs a first level manager. After eight hours, the problem is escalated to corporate technical support personnel.

INVENTORY

Decision Data has a computerized parts inventory tracking system. Two objectives in using this system are to minimize the occurrence of a field engineer not having the parts he needs and to maximize the number of service calls that can be made by a field engineer without running out of parts. The company can obtain spare parts at a discount and does not coordinate parts acquisitions through users.

PRICING

Decision Data reported that when determining service prices a number of factors are considered, including the manufacturer's prices, other TPM vendors' prices, and costs. In addition, the company also evaluates the volume and profitability of business at certain price levels.

TARGET MARKET

Decision Data targets the manufacturing industry for its TPM services. In addition, 70% of its service is provided on equipment used for business applications. The company described itself as end-user oriented, stating that it has contracts with users of equipment as well as dealers that sell the equipment.

STRENGTHS

The company identified its strengths in quick response time, spare parts availability, training provided to its field engineers, and logistics--knowing where technicians and parts are, knowing what level of training is required, and knowing where customers are.

MAIN COMPETITORS

IBM and Sorbus

DOW JONES & COMPANY
P.O. Box 300
Princeton, NJ 08540
(800) 922-0358

Director, Communications & Field
Service: Richard Langford
National Field Service Manager:
David Davis
Years Active in TPM: 12

COMPANY

Dow Jones & Company's Communications and Field Service organization provides maintenance for Dow Jones' own equipment and provides third-party maintenance on equipment such as teleprinters, video display terminals, and small business computers. The company also provides service on equipment leased by Teleprinter Leasing, a joint venture of Dow Jones and Extel.

Approximately 50% of its service is on its own equipment and 50% is third-party maintenance. Clients include Centronics, Computer Transceiver Systems, Data Terminals and Communications, Durango Systems, ElectroHome of Canada, Falco Data Products, Infotron, Intertel, Knights News Service, Lear Siegler, Merrill Lynch, NEC America, NEC Information Services, P.R. Newswire, and United Press International (Canada).

REVENUE

Dow Jones & Company's 1984 revenue generated from third-party maintenance was \$10.2 million. Expected growth for 1985 is 25%.

SERVICE LOCATIONS

Service Locations:	76
Geographic Coverage:	Entire U.S.
Repair Depots:	38
Parts Locations:	Use manufacturer's parts facilities

EMPLOYEES

Total Service Employees	300
Percentage Dedicated to TPM	70%
Field Engineers (not dedicated solely to TPM)	225
Technical Support	5

PRODUCTS SERVICED

- Minicomputers	- Peripherals
- Microcomputers	- Telecommunications
- Office Products	

BRANDS SERVICES

Apple, Avery, Commex, Data Stream, Durango, Electrohome, Extel, Falco, Henriksen Data Systems, Graphic Devices, IBM, Information Systems, Lear Siegler, and NEC.

SERVICES PROVIDED

- | | |
|--------------------------|-----------------------------|
| - Manufacturer Warranty | - Installation |
| - Remedial Maintenance | - Relocation/Deinstallation |
| - Preventive Maintenance | - Conversion/Upgrade |
| - Engineering Changes | - Training |
| - Refurbishment | |

SERVICE DELIVERY MODES

Approximately 80% of Dow's third-party maintenance is provided on-site. Approximately 10% is provided at depot locations (with 70% of the products carried in for service and 30% mailed in). The remaining 10% of Dow's third-party maintenance is provided through remote support, consisting of telephone support.

CONTRACT VERSUS TIME AND MATERIAL

Approximately 70% of the company's third-party service is provided under contract and 30% is provided on a time and material basis.

DISPATCHING AND ESCALATION

Dow Jones has cooperative arrangements with certain manufacturers that enable Dow Jones' field engineers to be dispatched through the manufacturers' dispatching facilities. The company is currently installing its own centralized dispatching, which it said should be running by the end of the year. Then, the manufacturer's dispatching system will communicate with Dow's system.

Since escalation now occurs automatically through manufacturers, escalation procedures depend on the manufacturer. Dow plans to eventually take over escalation along with dispatching.

INVENTORY

The company purchases most of its parts on a consignment basis from manufacturers. For IBM PC parts, since Dow contracts with the end user, it buys parts and bills the end user. The company has a computerized inventory tracking system which it uses for the IBM parts. Parts are replaced when used. The company has set up a priority schedule: Priority A, the system is down and there are no parts; Priority B, the last part is used; Priority C, replacement of defective spare part. When the company buys parts from IBM, it sometimes gets volume discounts, as well as being able to get discounts at places like Computerland.

PRICING

Dow's third-party maintenance pricing is based upon costs and takes into consideration work time and equipment failure rates.

The company's current prime time per call rate is \$60 per hour. The rate is expected to increase 20% in 1985.

USER MAINTENANCE

Dow stated that one of the manufacturers for which it provides service encourages users to be involved in operator maintenance and offers discounts for the maintenance as part of the contract price.

TARGET MARKET

Dow Jones' field service organization targets users of peripherals, including printers, VDTs, small business computers, and modems.

COMPANY STRENGTHS

The company identified its strengths as quality service (fast response times, training, etc.), professional personnel, and good geographic coverage.

MAIN COMPETITORS

RCA and Sorbus

ADP FINANCIAL SERVICES GROUP
MTTR Division
2540 Metropolitan Drive
Trevose, PA 19047
(215) 364-3737

General Manager: Rudolf Haydu
Vice President, Field Service
Operations: Mike Ferguson
Years Active in TPM: 2

COMPANY

MTTR, formerly the Field Service Division of GTE Telenet Information Systems, entered the independent service market in April 1983. In 1984, Automatic Data Processing (ADP) acquired MTTR, making MTTR a division under the company's Financial Services Group.

In 1984, MTTR agreed to provide on-site service for Digilog Network Control Division's telecommunications equipment. Digilog's systems are used in medium to large communications centers to monitor remote centers while the systems are on-line. The banking industry is one area where Digilog equipment is used: automatic teller machines are checked for problems so that repairs can be made quickly.

MTTR also signed agreements in 1984 to service the SGS advanced virtual memory system, Samson, and the Dynapac line of packet switching equipment for the next several years. In addition, MTTR has service agreements with Paine Webber, Jackson & Curtis, E.F. Hutton, Navy Federal Credit Union, Prudential Bache Security, Votrax, Inc., and many others.

REVENUE

Total service revenue for MTTR in 1984 was approximately \$15 million. Total TPM revenue dropped to \$5 million in 1980 as a result of the company's acquisition by ADP, a major TPM customer previously. Expected growth for 1985 is 35%.

SERVICE LOCATIONS

Service Locations:	110
Geographic Coverage:	Entire U.S.
Repair Depots:	2
Parts Locations:	12

EMPLOYEES

Total Service Employees	225
TPM Employees	80

PRODUCTS SERVICED

- Minicomputers	- Peripherals
- Microcomputers	- Telecommunications

BRANDS SERVICED

Arete, Codex, Convergent, Technologies, Darome Data, Digilog, Dynatech, GTE, IBM, Paradyne, T-Bar, and Teletype.

SERVICES PROVIDED

- | | | | |
|---|------------------------|---|--------------------|
| - | Manufacturer Warranty | - | Installation |
| - | Remedial Maintenance | - | Conversion/Upgrade |
| - | Preventive Maintenance | - | Planning |
| - | Engineering Changes | - | Training |
| - | Refurbishment | - | Documentation |

SERVICE DELIVERY MODES

Approximately 98% of MTTR's service is provided on-site and 2% is provided through remote support.

CONTRACT VERSUS TIME AND MATERIAL

Approximately 90% of MTTR's service is provided under contract and 10% is provided on a time and material basis.

DISPATCHING AND ESCALATION

MTTR has an automated dispatching system that tracks the status of all calls and personnel. Information from this system is used for monthly and quarterly reports on parts usage, response times, and service calls.

The successive levels notified during escalation are field engineer, manager, technical professional called for advisement, and the technical professional reporting on-site.

INVENTORY

MTTR has a computerized inventory tracking system to handle parts logistics that is separate from its dispatching system. The company continually analyzes costs and inventory levels to decide whether to store or ship to depots or other locations. It has established discounted sources of spare parts, which are guaranteed by long-term contracts, and does not coordinate parts acquisitions through users.

PRICING

To establish its pricing for service, MTTR looks at expected repair costs by forecasting the quantity and type of units to be serviced while also considering competitive rates.

USER MAINTENANCE

The company reported that it encourages users to be involved in operator maintenance, but not remedial maintenance.

TARGET MARKET

The company primarily targets the banking, brokerage, and financial industries for its third-party services.

COMPANY STRENGTHS

The company identified its strengths as experience in the industry and a reputation for quick response time.

KALBRO CORPORATION
101 Foster Road
Morristown, NJ 08057
(609) 778-1800

President: Berdj Kalustyan
Vice President, Field Service
Operations: Ben Taratore
Years Active in TPM: 11

COMPANY

Incorporated in 1974, Kalbro was bought in 1982 by International Aeradio Limited (IAL), a transaction which was to launch a multi-phase agreement between the two companies. In 1984, IAL sold the company back to the original owners due to lack of profitability and internal conflict.

Kalbro maintains equipment from small terminals to large on-line multi-site computer networks, servicing the products of small systems houses in addition to those of major manufacturers. In the past, Kalbro's repair strategy was to swap boards or subsystems on-site and to repair most of them in the depot or send them back to the manufacturer. No repair beyond the initial swap was performed on-site. Now, approximately 85% of the company's maintenance is on-site. In order to control costs, Kalbro attempts to isolate the problem over the phone before traveling to the site. The field engineers can then bring the necessary parts when and if they proceed to the on-site location.

The company sees a change in the maintenance of microcomputers--essentially, the personal computer is no longer primarily used by hobbyists. Due to these changes, the company, once carving a market niche by going after the mixed vendor market, is now marketing its services toward microcomputer users as well.

REVENUE

Kalbro's total service revenue in 1984, all of which was third-party maintenance revenue, was approximately \$5 million. Expected growth in 1985 is 14%.

SERVICE LOCATIONS

Service Locations:	47
Geographic Coverage:	Entire U.S.
Repair Depot:	Morristown (NJ)

EMPLOYEES

Total Employees	150-175
Total Service Employees (all dedicated to TPM)	100
Field Engineers	50
Technical Support	4

PRODUCTS SERVICED

- Minicomputers
- Microcomputers
- Office Products
- Peripherals

BRANDS SERVICED

ADDS, Ampex, CDC, Centronics, Data General, Data Printer, Data Products, Data Systems Design, DEC, Diablo, Emulex, Fujitsu, Hazeltine, Hewlett-Packard, IBM, Kennedy, Lear Siegler, Micro Data, Mitsubishi, National Semiconductor, Okidata, Pertec, Printronix, Quantum, Qume, Scientific Micro Systems, Shugart, Storage Technology, Tandem, Tecstor, Texas Instruments, Teletype, Televideo, Tektronics, Verbatim, Xebec, and others.

SERVICES PROVIDED

- Manufacturer Warranty
- Remedial Maintenance
- Preventive Maintenance
- Engineering Changes
- Refurbishment
- Installation
- Relocation/Deinstallation
- Conversion/Upgrade

SERVICE DELIVERY MODES

Approximately 85% of Kalbro's third-party maintenance is provided on-site and 15% is provided at depot locations. For depot service, equipment is brought in by courier.

CONTRACT VERSUS TIME AND MATERIAL

Approximately 80% of the company's service is provided under contract and 20% is provided on a time and material basis.

Time and material service during normal working hours (8:30 a.m. to 5:00 p.m.) is \$89 per hour with a two-hour minimum. Travel charges are also \$89 per hour. Lodging and commercial transportation are charged at cost, and transportation with employee or company vehicle is charged at \$0.30 per mile plus parking and toll fees. Overtime service for service continuing after normal hours is \$105 per hours. Overtime service for service started after normal hours is \$126 per hour.

DISPATCHING AND ESCALATION

Customers use an 800 number to place a service request. Dispatching is centralized from the company's New Jersey office.

INVENTORY

Kalbro utilizes a computerized parts inventory tracking system. The company has established discounted sources of spare parts, although they are not guaranteed by long-term contracts. The company does not coordinate parts acquisitions through users.

PRICING

Kalbro bases its service pricing on the manufacturers, reporting that it discounts the manufacturer's prices approximately 10%.

TARGET MARKET

The company does not target any specific industries, but targets users of certain equipment, such as DEC and DEC-compatible equipment.

COMPANY STRENGTHS

Kalbro identified its strengths as the flexibility to service mixed vendor configurations, the ability to maintain a wide variety of equipment, and nationwide distribution.

MAIN COMPETITORS

Manufacturers such as DEC and Data General

SYSTEC, INC.
2715 Navigator Avenue
Box J
Sanford, FL 32772-0750
(305) 323-0230

President: George P. Fletcher
Vice President, Field Service
Operations: Benjamin O. Randolph
Years Active in TPM: 8

COMPANY

Systec, an independent computer maintenance company providing hardware maintenance services for large and small computer installations, has grown significantly since its founding in 1977. The company maintains IBM mainframes, IBM compatibles, and the peripherals attached to them, including those from CDC, STC, and Telex. Systec also services Data General, DEC, Hewlett-Packard, and Perkin-Elmer minicomputers. Recently, the company began servicing microcomputers.

A large segment of Systec's service, approximately 60%, is provided to federal government agencies, including the Internal Revenue Service, General Services Administration, Defense Logistics Agency, Defense Communications Agency, U.S. Army, U.S. Navy, and U.S. Air Force.

REVENUE

Total service revenue for Systec in 1984, generated entirely from third-party maintenance, was approximately \$3.8 million. Expected growth in 1985 is 35%.

SERVICE LOCATIONS

Service Locations:	19
Geographic Coverage:	Entire U.S.
Repair Depots:	Washington (DC)
Parts Locations:	Washington (DC) and Sanford (FL)

EMPLOYEES

Total Service Employees (all dedicated to TPM)	60
Field Engineers	43
Technical Support	5

PRODUCTS SERVICED

- Mainframes	- Office Products
- Minicomputers	- Peripherals
- Microcomputers	

BRANDS SERVICED

Amdahl, Calcomp, CDC, IBM, IPL, Intel, Perkin-Elmer, Memorex, NAS, STC, and Telex.

SERVICES PROVIDED

- | | |
|-----------------------------|------------------------|
| - Remedial Maintenance | - Custom Programming |
| - Preventive Maintenance | - Consulting |
| - Engineering Changes | - Planning |
| - Refurbishment | - Training |
| - Installation | - Documentation |
| - Relocation/Deinstallation | - Equipment Sale/Lease |
| - Conversion/Upgrade | |

Note: The company also offers limited software maintenance through its subsidiary, Systec Information Management Systems (SIMS).

SERVICE DELIVERY MODES

Approximately 90% of Systec's third-party maintenance is provided on-site, 8% is provided at depot locations, and 2% is provided remotely through telephone support. Of the depot service, approximately 50% is mailed in and 50% is brought in by courier.

CONTRACT VERSUS TIME AND MATERIAL

Approximately 80% of Systec's third-party maintenance is provided under contract and 20% is provided on a time and material basis.

DISPATCHING AND ESCALATION

Dispatching is handled locally at the regional service locations. Escalation procedures depend upon the type of equipment being serviced. For example, on a CPU, escalation occurs every two hours, going up one level per escalation, eventually to the president. On a peripheral device, the time interval is every four hours.

INVENTORY

Systec has a computerized inventory dispatching system. The company does not coordinate parts acquisition through users. On new equipment, if the manufacturer will not sell parts to Systec, the company arranges for a systems integrator to include parts as part of a bid. For IBM equipment, the company uses IBM-supplied parts. For STC equipment, it takes advantage of volume discounts. In addition, the company has established sources of spare parts that are guaranteed by long-term contracts.

PRICING

When setting service prices, Systec considers the manufacturer's prices, other TPM vendors' prices, and costs. The company reported that typically its prices are 20% below the manufacturers.

TARGET MARKET

Systec targets the federal government (representing approximately 60% of its business), the banking industry, the manufacturing industry, and educational institutions for its services. In addition, the company targets users of specific products. The company's objective is to provide full service on all equipment at mixed vendor sites.

COMPANY STRENGTHS

Strengths identified by Systec include excellent management, excellent field service personnel with an average of 15 years experience, mixed vendor support, financial stability, and eight years experience in third-party maintenance.

MAIN COMPETITORS

Control Data, IBM, and STC

THE BRAEGEN CORPORATION
3340 E. La Palma
Anaheim, CA 92806
(800) 854-8744

President: James Charnes
Vice President, Field Service
Operations: John Walsh
Years Active in TPM: 3

COMPANY

In 1983, this manufacturer generated no revenues from third-party maintenance. However, in 1985, the company is expected to generate approximately 25% of its service revenue from third-party maintenance. The company entered the market by servicing DEC CPUs and peripherals and equipment from other manufacturers such as Dual, Maxicom, and Tecstor. The cash flow received from the company's service operation is considered to be critical to the company's internal financing of new product development.

Braegen has been able to reduce its operating costs by automating its dispatching and reporting functions. In addition, the company has invested in a complete video studio for preparing training films. It was set up by Maxicom and Braegen as a way to reduce training costs and as a selling tool for Maxicom. The studio is used by Braegen and third-party accounts, providing another source of income.

REVENUE

Braegen's total service revenue in 1984 was over \$8 million. Total TPM revenue for the company was approximately \$2.4 million. The company expects total revenues to increase by 25% in 1985, with revenues reaching approximately \$10 million. INPUT estimates that Braegen's TPM revenues will exceed \$4 million in 1985, representing over 40% of the company's total revenue.

SERVICE LOCATIONS

Service Locations:	46
Geographic Coverage:	Entire U.S.
Repair Depots:	1
Centralized Parts Location	

EMPLOYEES

Total Service Employees	175
Percentage TPM Business	30%
Field Engineers (not dedicated solely to TPM)	125
Technical Support	10

PRODUCTS SERVICED

- Microcomputers	- Peripherals
- Office Products	- Telecommunications

BRANDS SERVICED

Able, Calcomp, CDC, Century Data, Cipher, C. ITOH, Data Printer, Data Products, DEC, Documation, Dual Systems, Emulex, Fujitsu, Kennedy, Maxicom, Microterm, Monolithic, Motorola, National Semiconductor, Netcom Products, Plessey, Printronix, RICOH, Tally, Tecstor, Trendata, True Data, and Western Peripherals.

SERVICES PROVIDED

- Manufacturer Warranty
- Remedial Maintenance
- Preventive Maintenance
- Engineering Changes
- Refurbishment
- Installation
- Relocation/Deinstallation
- Conversion/Upgrade
- Custom Programming
- Planning
- Training
- Equipment Sale/Lease
- Supplies/Accessories

SERVICE DELIVERY MODES

Approximately 95% of Braegen's third-party service is provided on-site and 5% is provided at depot locations. For depot service, products are mailed in.

CONTRACT VERSUS TIME AND MATERIAL

Approximately 95% of Braegen's third-party service is provided through contracts and 5% is provided on a time and material basis.

DISPATCHING AND ESCALATION

Braegen has an automatic centralized dispatching facility in its Anaheim office, utilizing a Honeywell CPU. Escalation procedures vary between products. For example, service for a computer is escalated from field engineer to technical support after four hours. In another four hours, service is escalated to the district manager. Eventually, service is escalated to the vice president of field service. For a product that is not so critical, the escalation intervals are longer.

INVENTORY

The company's computerized parts inventory tracking system is tied into its dispatching system. The system makes it possible to automatically restock parts when they are used. When planning inventory, factors considered include the city, site, and product to be serviced, whether or not a part is expendable or repairable, and if repairable, the repair time.

Braegen has agreements with manufacturers to obtain discounted spare parts--some in the form of long-term contracts. The company also shops around for machines that can be torn down for spare parts. The company does not make parts acquisitions through its customers.

PRICING

When asked about pricing, Braegen said that it sometimes charges a percentage of what the manufacturer is charging. Competitive pressures exert a strong influence on Braegen's pricing decisions, but the company indicated that service profitability was a major goal.

USER MAINTENANCE

Braegen encourages users to be involved in maintenance either through a write-up or a customer orientation.

TARGET MARKET

The company would like to target hospitals for its services. Another goal is to provide single-source maintenance at large customer sites--subcontracting work they do not ordinarily provide.

COMPANY STRENGTHS

Braegen identified its strengths as specialized service, 46 locations, having been in business since 1974, and an in-house videotape facility for training.

MAIN COMPETITORS

CDC, McDonnell-Douglas Field Service, and Sorbus

SPERRY CORPORATION
Computer Systems Operations
P.O. Box 500
Blue Bell, PA 19424
(215) 542-4011

President: Joseph J. Kroger
Director, Customer Services:
Jerry W. Dryden
Years Active in TPM: Currently in
First Year

COMPANY

Sperry announced its plan to offer third-party maintenance in early 1985, stating that the time was right to get into this market. With its 3,500 field engineers and 200 product support centers, the company believes it is well equipped to service equipment supplied by other vendors as well as its own. Products serviced range from personal computers and peripherals to selected mainframes.

To sell its third-party service, Sperry has created a separate marketing organization within its custom services division. The company will provide services at mixed-vendor sites and plans to secure service contracts with companies too small to service all of their own equipment. Revenues are expected to increase significantly as a result of this move.

REVENUE

Sperry generated approximately \$1.5 million in third-party service revenues in 1984. The expected growth rate for 1985 is 17-19%. Third-party maintenance revenues are expected to be almost \$2 million in 1985.

SERVICE LOCATIONS

Service Locations:	200
Geographic Coverage:	Entire U.S.
Repair Depots:	62
Parts Locations:	Sperry stores parts at user sites for use at those and other sites

EMPLOYEES

Total Service Employees (not dedicated solely to TPM)	5,000
Field Engineers (includes Technical Support and Managers)	3,500

PRODUCTS SERVICED

- Mainframes	- Office Products
- Minicomputers	- Peripherals
- Microcomputers	- Telecommunications

BRANDS SERVICED

Amdek, AST, CDC, Centronics, Codex, Corona, CTS, Cypher, Data Products, Documation, Epson, Fujitsu, Hayes, Hewlett-Packard, IBM, Mitsubishi, NEC, Okidata, Pertec, Quadram, QUME, Shugart, Siemens, Storage Technology, Sysgen, Tallgrass, Tally, Tecmar, Televideo, Texas Instruments, and Wyse.

SERVICES PROVIDED

- | | |
|--------------------------|-----------------------------|
| - Manufacturer Warranty | - Installation |
| - Remedial Maintenance | - Relocation/Deinstallation |
| - Preventive Maintenance | - Conversion/Upgrade |
| - Engineering Changes | - Consulting |
| - Refurbishment | - Planning |
| - Software Maintenance* | - Equipment Sale/Lease |
| - Documentation | - Supplies/Accessories |
| - Training | |

*Provided selectively

SERVICE DELIVERY MODES

Approximately 90% of Sperry's service is provided on-site and 10% is provided at depot locations. Approximately two-thirds of the equipment receiving depot repair is carried in and one-third is mailed in.

CONTRACT VERSUS TIME AND MATERIAL

Approximately 90% of Sperry's service is provided under contract and 10% is provided on a time and material basis.

DISPATCHING AND ESCALATION

Dispatching is done from each of the 46 branch offices and from some field offices. Service calls are placed using a local telephone number. Sperry is starting to use a system that forwards calls to a national dispatching center in Minnesota during off-hours. This system maintains customer profiles on equipment and other information.

Escalation procedures involve the field engineer, group leader, field manager, branch manager, and the Operations Customer Service division.

INVENTORY

Sperry has a computerized inventory tracking system that is not tied to dispatching. When the company is planning inventory, it considers failure rates, lead times, volume discounts, and other factors. Sperry has discounted sources of spare parts, some of which are guaranteed by long-term contracts. The company has not, as yet, acquired parts through users, but stated that it would if necessary.

PRICING

Sperry bases its service pricing on manufacturers' pricing and on other TPM vendors' pricing. The company also compares geographic coverage and quality of service and sometimes charges more than the manufacturer.

USER MAINTENANCE

Sperry encourages users to be involved in maintenance by offering customers set-up products and making what the customer wants available.

TARGET MARKET

Sperry targets federal, state, and local governments, as well as the manufacturing, energy, and transportation industries.

Sperry describes itself as a full-line provider of information processing service for both hardware and software.

COMPANY STRENGTHS

Sperry identified its strengths as geographic coverage, 30 years experience, experienced personnel, people who care, flexibility to work on mixed vendor configurations, and quick response time.

III TPM VENDORS RANKED 21-100

AFI/DATATROL
 Brent Drive
 Hudson, MA 02154
 (617) 568-1411

President: Ed Olson

Years Active in TPM: 10

THE COMPANY

Service Locations:	67	Total Service Employees:	160-199
Geographic Coverage:	Entire U.S.	Field Engineers:	160-199
Repair Depots:	4	Field Support Specialists:	20-59

PRODUCTS SERVICED

- | | |
|---|-----------------|
| - Mainframes | - Modems |
| - Terminals (dumb, intelligent, graphics) | - Minicomputers |

BRANDS SERVICED

DataTrol, Addressograph, all CRTs, and DEC PDP-8 1104.

SERVICES PROVIDED

<u> x </u> Manufacturer Warranty	<u> x </u> Installation	<u> x </u> Relocation
<u> x </u> Preventive Maintenance	<u> x </u> Remedial Maintenance	<u> x </u> Refurbishment
<u> x </u> Engineering Changes	<u> x </u> Conversion/Upgrade	_____ Training
<u> x </u> Software Maintenance	_____ Programming/Consulting	_____ Supplies/Accessories
_____ Equipment Sale/Lease	_____ Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	65%	80%
Depot Repair	35%	20%
Remote Support Services	-	-

Prime time hourly per call rate is \$55 (two hour minimum).

ASJ SUPPORT SERVICES
 3950 Dow Road
 Melbourne, FL 32935
 (305) 242-2002

President: John W. Banko

Years Active in TPM: 5

THE COMPANY

Service Locations:	10	Total Service Employees:	20-59
Geographic Coverage:	Entire U.S. and Canada	Field Engineers:	20-59
Repair Depots:	2	Field Support Specialists:	1-19

PRODUCTS SERVICED

- | | |
|---|---|
| - Minicomputers | - Networks |
| - Systems Software | - Minicomputer-based Turnkey Systems |
| - Applications Software | - CAD/CAM Turnkey Systems |
| - Workstations | - Terminals (dumb, intelligent, graphics) |
| - Peripherals (disks, tapes, printers, other) | |

BRANDS SERVICED

Data General, Control Data, Versatec, Calcomp, Cipher, DEC, and Calma.

SERVICES PROVIDED

<u> </u> Manufacturer Warranty	<u> x </u>	Installation	<u> x </u>	Relocation
<u> x </u> Preventive Maintenance	<u> x </u>	Remedial Maintenance	<u> x </u>	Refurbishment
<u> </u> Engineering Changes	<u> x </u>	Conversion/Upgrade	<u> x </u>	Training
<u> </u> Software Maintenance	<u> x </u>	Programming/Consulting	<u> x </u>	Supplies/Accessories
<u> x </u> Equipment Sale/Lease	<u> </u>	Other	<u> </u>	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	95%	95%
Depot Repair	5%	5%
Remote Support Services	-	-

Prime time hourly per call rate is \$75.

ARROW ELECTRONICS INC.
 22 A Street
 Burlington, MA 01803
 (617) 938-8700

President: Steve Goodwin

Years Active in TPM: 10

THE COMPANY

Service Locations: 25
Geographic Coverage: Entire U.S.
Repair Depots: 25

Total Service Employees: 20-59
Field Engineers: 20-59
Field Support Specialists: 1-19

PRODUCTS SERVICED

- Small Business Systems
- Workstations
- Modems
- Front-End Processors
- Networks
- Peripherals (disks, tapes, printers, other)
- Terminals (dumb, intelligent, graphics)

BRANDS SERVICED

DEC, Adds, C. ITOH, Corvis, Franklin, TI Anderson-Jacobson, Corona, Diablo, Hayes, Data Products, NEC, Okidata, Onix, Rixon, and Televideo - most major brands.

SERVICES PROVIDED

<u> x </u> Manufacturer Warranty	<u> x </u> Installation	<u> x </u> Relocation
<u> x </u> Preventive Maintenance	<u> x </u> Remedial Maintenance	<u> x </u> Refurbishment
<u> x </u> Engineering Changes	<u> x </u> Conversion/Upgrade	<u> x </u> Training
<u> </u> Software Maintenance	<u> </u> Programming/Consulting	<u> x </u> Supplies/Accessories
<u> x </u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	60	65
Depot Repair	30	25
Remote Support Services	10	10

Prime time hourly per call rate is \$72.

**BUSINESS EQUIPMENT & SUPPLY
COMPANY**

Highway 45 North
Columbus, MS 39701
(601) 328-6860

President: Irwin Tate

Years Active in TPM: 29

THE COMPANY

Service Locations:	2	Total Service Employees:	20-59
Geographic Coverage:	Southeastern U.S.	Field Engineers:	20-59
Repair Depots:	2	Field Support Specialists:	1-19

PRODUCTS SERVICED

- | | |
|---|--------------------------------------|
| - Minicomputers | - Modems |
| - Small Business Systems | - Word Processors |
| - Peripherals | - Personal Computers |
| - Terminals | - Copiers |
| - Systems Software | - Workstations |
| - Applications Software | - Minicomputer-based Turnkey Systems |
| - Personal Computer-Based Turnkey Systems | |

BRANDS SERVICED

Point 4, TI, Apple, Tally, Data General, Corvus, and Epson.

SERVICES PROVIDED

<u> x </u> Manufacturer Warranty	<u> x </u> Installation	<u> </u> Relocation
<u> x </u> Preventive Maintenance	<u> x </u> Remedial Maintenance	<u> x </u> Refurbishment
<u> </u> Engineering Changes	<u> x </u> Conversion/Upgrade	<u> x </u> Training
<u> x </u> Software Maintenance	<u> x </u> Programming/Consulting	<u> x </u> Supplies/Accessories
<u> x </u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is not available.

C & L TERMINALS, INC.
 1215 S.E. Ivon
 Portland, OR 97202
 (503) 231-0333

President: Ken Landgraver

Years Active in TPM: 13

THE COMPANY

Service Locations:	5	Total Service Employees:	20-59
Geographic Coverage:	West Coast	Field Engineers:	20-59
Repair Depots:	5	Field Support Specialists:	1-19

PRODUCTS SERVICED

- Modems
- Personal Computers
- Terminals (dumb, intelligent, graphics)

BRANDS SERVICED

Lear Siegler, DEC, Televideo, Teletype, Adds, Perkin-Elmer, C. ITOH, TI, Diablo, IBM, Okidata, Decmate, and Epson.

SERVICES PROVIDED

<u> </u> Manufacturer Warranty	<u> x </u>	Installation	<u> x </u>	Relocation
<u> x </u> Preventive Maintenance	<u> x </u>	Remedial Maintenance	<u> x </u>	Refurbishment
<u> x </u> Engineering Changes	<u> x </u>	Conversion/Upgrade	<u> </u>	Training
<u> </u> Software Maintenance	<u> x </u>	Programming/Consulting	<u> x </u>	Supplies/Accessories
<u> x </u> Equipment Sale/Lease	<u> </u>	Other	<u> </u>	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is \$40.

CAP-INFO SYSTEMS INC.
 521 5th Avenue
 New York, NY 10175
 (212) 599-7000

President: Jeffrey Jenner

Years Active in TPM: 10

THE COMPANY

Service Locations: 1
Geographic Coverage: East Coast
Repair Depots: 20

Total Service Employees: 35
Field Engineers: 20
Field Support Specialists: 1-19

PRODUCTS SERVICED

- Systems Software
- Applications Software

- Turnkey Systems Software

BRANDS SERVICED

IBM System 36/38, DEC, VAX.

SERVICES PROVIDED

<u> x </u> Manufacturer Warranty	<u> x </u> Installation	<u> </u> Relocation
<u> x </u> Preventive Maintenance	<u> x </u> Remedial Maintenance	<u> </u> Refurbishment
<u> </u> Engineering Changes	<u> x </u> Conversion/Upgrade	<u> x </u> Training
<u> x </u> Software Maintenance	<u> x </u> Programming/Consulting	<u> </u> Supplies/Accessories
<u> </u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	50%	-
Depot Repair	50%	-
Remote Support Services	-	-

Prime time hourly per call rate is \$60-100.

CARTERPHONE COMMUNICATIONS CORPORATION

1341 W. Mockingbird, Suite 1100W
 Dallas, TX 75247
 (214) 630-9700

President: Tom Brady

Years Active in TPM: 10

THE COMPANY

Service Locations:	42	Total Service Employees:	200-499
Geographic Coverage:	Entire U.S.	Field Engineers:	200-499
Repair Depots:	4	Field Support Specialists:	100-159

PRODUCTS SERVICED

- Terminals (dumb, intelligent)
- Word Processors
- Personal Computers
- Modems
- Front-End Processors

BRANDS SERVICED

Any major manufacturer.

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	<u>x</u> Training
<u> </u> Software Maintenance	<u>x</u> Programming/Consulting	<u>x</u> Supplies/Accessories
<u>x</u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	93%	93%
Depot Repair	5%	5%
Remote Support Services	2%	2%

Prime time hourly per call rate is \$75.

CENTRAL COMPUTER SERVICES CORPORATION
 640 Trolley Blvd.
 Rochester, NY 14606
 (716) 225-8824

President: Vernon L. Goodrich

Years Active in TPM: 8

THE COMPANY

Service Locations:	12	Total Service Employees:	40-50
Geographic Coverage:	East Coast	Field Engineers:	35
Repair Depots:	21	Field Support Specialists:	4

PRODUCTS SERVICED

- | | |
|-----------------|--------------------------------------|
| - Mainframes | - Minicomputer-based Turnkey Systems |
| - Minicomputers | - Modems |
| - Peripherals | - Front-End Processors |
| - Terminals | - Microcomputers |

BRANDS SERVICED

Data General.

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u> </u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	<u> </u> Training
<u>x</u> Software Maintenance	<u>x</u> Programming/Consulting	<u> </u> Supplies/Accessories
<u>x</u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	90%	90%
Depot Repair	10%	10%
Remote Support Services	-	-

Prime time hourly per call rate is \$80.

CIRCLE COMPUTER SERVICES, INC.
 920 Remington Road
 Schaumburg, IL 60195
 (312) 884-2424

President: Joe Conroy

Years Active in TPM: 11

THE COMPANY

Service Locations:	2	Total Service Employees:	45-50
Geographic Coverage:	Midwest	Field Engineers:	20-25
Repair Depots:	1	Field Support Specialists:	5-7

PRODUCTS SERVICED

- | | |
|------------------------|---|
| - Mainframes | - Networks |
| - Modem | - Peripherals (disks, printers, tapes) |
| - Front-End Processors | - Terminals (dumb, intelligent, graphics) |

BRANDS SERVICED

IBM.

SERVICES PROVIDED

<u> </u> Manufacturer Warranty	<u> x </u>	Installation	<u> x </u>	Relocation
<u> x </u> Preventive Maintenance	<u> x </u>	Remedial Maintenance	<u> x </u>	Refurbishment
<u> x </u> Engineering Changes	<u> x </u>	Conversion/Upgrade	<u> </u>	Training
<u> x </u> Software Maintenance	<u> x </u>	Programming/Consulting	<u> </u>	Supplies/Accessories
<u> x </u> Equipment Sale/Lease	<u> </u>	Other	<u> </u>	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	90-95%	90-95%
Depot Repair	5-10%	5-10%
Remote Support Services	-	-

Prime time hourly per call rate is not available.

CIRCUIT TEST INC.
 12749 W. Hillsborough Avenue
 Tampa, FL 33615
 (813) 855-6685/6686

President: Allen S. Braswell

Years Active in TPM: N/A

THE COMPANY

Service Locations:	1	Total Service Employees:	26
Geographic Coverage:	U.S. & Europe	Field Engineers:	0
Repair Depots:	1	Field Support Specialists:	0

PRODUCTS SERVICED

- Disk Drives

BRANDS SERVICED

CDC.

SERVICES PROVIDED

<input type="checkbox"/> Manufacturer Warranty	<input type="checkbox"/> Installation	<input type="checkbox"/> Relocation
<input type="checkbox"/> Preventive Maintenance	<input checked="" type="checkbox"/> Remedial Maintenance	<input type="checkbox"/> Refurbishment
<input type="checkbox"/> Engineering Changes	<input type="checkbox"/> Conversion/Upgrade	<input type="checkbox"/> Training
<input type="checkbox"/> Software Maintenance	<input type="checkbox"/> Programming/Consulting	<input type="checkbox"/> Supplies/Accessories
<input type="checkbox"/> Equipment Sale/Lease	<input type="checkbox"/> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	100%	100%
Remote Support Services	-	-

Prime time hourly per call rate is not available.

COMPUTER BOARD REPAIR DEPOT

177 Idema Road
 Markham, Ontario L3R 1A9
 Canada
 (416) 475-7590/495-9228

President: Mrs. R.M. Tessier

Years Active in TPM: 3

THE COMPANY

Service Locations:	N/A	Total Service Employees:	20
Geographic Coverage:	Canada & U.S.	Field Engineers:	3
Repair Depots:	Canada & U.S.	Technicians:	10

PRODUCTS SERVICED

Independent Depot Repair

BRANDS SERVICED**SERVICES PROVIDED**

<input type="checkbox"/> Manufacturer Warranty	<input type="checkbox"/> Installation	<input type="checkbox"/> Relocation
<input checked="" type="checkbox"/> Preventive Maintenance	<input checked="" type="checkbox"/> Remedial Maintenance	<input checked="" type="checkbox"/> Refurbishment
<input checked="" type="checkbox"/> Engineering Changes	<input checked="" type="checkbox"/> Conversion/Upgrade	<input type="checkbox"/> Training
<input type="checkbox"/> Software Maintenance	<input type="checkbox"/> Programming/Consulting	<input type="checkbox"/> Supplies/Accessories
<input type="checkbox"/> Equipment Sale/Lease	<input checked="" type="checkbox"/> Other: Hard Test Development, R&D (ATE, DTE)	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	20%
Depot Repair	100%	80%
Remote Support Services	-	-

Prime time hourly per call rate varies.

THE COMPUTER FACTORY, INC.
 805 Third Avenue
 New York, NY 10022
 (212) 980-1700

President: Jay Gottlieb

Years Active in TPM: 7

THE COMPANY

Service Locations:	21	Total Service Employees:	39
Geographic Coverage:	Northeast Coast	Field Engineers:	26
Repair Depots:	21	Field Support Specialists:	6

PRODUCTS SERVICED

- | | |
|--------------------------|---|
| - Small Business Systems | - Networks |
| - Word Processors | - Peripherals (disks, printers, tapes, other) |
| - Personal Computers | - Terminals (dumb, intelligent, graphics) |
| - Workstations | - Personal Computer-based Turnkey System |
| - Modems | |

BRANDS SERVICED

IBM, Apple, AT&T, Compaq, and Panasonic.

SERVICES PROVIDED

<u> x </u> Manufacturer Warranty	<u> x </u> Installation	<u> x </u> Relocation
<u> x </u> Preventive Maintenance	<u> x </u> Remedial Maintenance	<u> x </u> Refurbishment
<u> x </u> Engineering Changes	<u> x </u> Conversion/Upgrade	<u> x </u> Training
<u> x </u> Software Maintenance	<u> x </u> Programming/Consulting	<u> x </u> Supplies/Accessories
<u> x </u> Equipment Sale/Lease	<u> x </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is not available.

**COMPUTER HARDWARE MAINTENANCE
COMPANY, INC.**

528 Street Road
Southampton, PA 18966
(215) 364-4444

President: Jack Haring

Years Active in TPM: 3

THE COMPANY

Service Locations: 1
Geographic Coverage: East Coast
Repair Depots: 2

Total Service Employees: 20-59
Field Engineers: 20-59
Field Support Specialists: 1-19

PRODUCTS SERVICED

- Mainframes
- Small Business Systems
- Word Processors
- Personal Computers
- Modems
- Peripherals (disks, printers, tapes)
- Terminals (dumb, intelligent, graphics)
- Personal Computer-based Turnkey Systems
- CAD/CAM Turnkey Systems

BRANDS SERVICED

IBM, mixed vendor.

SERVICES PROVIDED

<u> x </u> Manufacturer Warranty	<u> x </u> Installation	<u> x </u> Relocation
<u> x </u> Preventive Maintenance	<u> x </u> Remedial Maintenance	<u> x </u> Refurbishment
<u> x </u> Engineering Changes	<u> x </u> Conversion/Upgrade	<u> x </u> Training
<u> </u> Software Maintenance	<u> x </u> Programming/Consulting	<u> </u> Supplies/Accessories
<u> x </u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is not available.

**COMPUTER HARDWARE SERVICE
COMPANY**

11 Vincent Circle
Ivyland, PA 18974
(215) 443-9220

President: Joseph Colyar

Years Active in TPM: N/A

THE COMPANY

Service Locations:	1	Total Service Employees:	20-59
Geographic Coverage:	Entire U.S./ Europe, Canada	Field Engineers:	20-59
Repair Depots:	1	Field Support Specialists:	1-19

PRODUCTS SERVICED

- Mainframes
- Terminals (dumb, intelligent, graphics)
- Peripherals (disks, tapes, printers)

BRANDS SERVICED

IBM only.

SERVICES PROVIDED

<u> </u> Manufacturer Warranty	<u> x </u>	Installation	<u> x </u>	Relocation
<u> </u> Preventive Maintenance	<u> </u>	Remedial Maintenance	<u> x </u>	Refurbishment
<u> x </u> Engineering Changes	<u> x </u>	Conversion/Upgrade	<u> </u>	Training
<u> </u> Software Maintenance	<u> </u>	Programming/Consulting	<u> </u>	Supplies/Accessories
<u> x </u> Equipment Sale/Lease	<u> </u>	Other	<u> </u>	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is not available.

COMPUTER MAINTENANCE CORPORATION

405 Murray Hill Parkway
E. Rutherford, NJ 07073
(201) 896-0707

President: Robert Weber

Years Active in TPM: 8

THE COMPANY

Service Locations: 7
Geographic Coverage: East Coast
Repair Depots: 1

Total Service Employees: 20-59
Field Engineers: 20-59
Field Support Specialists: 1-19

PRODUCTS SERVICED

- Minicomputers
- Small Business Systems
- Personal Computers
- Terminals (dumb, intelligent graphics)
- Workstations
- Modems
- Peripherals (disks, tapes, printers, others)

BRANDS SERVICED

IBM, DEC, Apple, Pertec, Data General, Control Data, Compac, and WYSE.

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	<u>x</u> Training
___ Software Maintenance	___ Programming/Consulting	<u>x</u> Supplies/Accessories
___ Equipment Sale/Lease	___ Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	80%	75%
Depot Repair	20%	25%
Remote Support Services	-	-

Prime time hourly per call rate is \$80 (minicomputers).

COMPUTER REPAIR CENTER, THE
 490 W. Main Street
 Avon, MA 02322
 (617) 583-6460

President: Blaise Leeber

Years Active in TPM: 5

THE COMPANY

Service Locations:	3	Total Service Employees:	20-59
Geographic Coverage:	Entire U.S.	Field Engineers:	1-19
Repair Depots:	1	Field Support Specialists:	1-19

PRODUCTS SERVICED

- | | |
|--------------------------|--|
| - Mainframes | - Minicomputer-based Turnkey Systems |
| - Minicomputers | - Personal Computer-based Turnkey System |
| - Small Business Systems | - CAD/CAM Turnkey Systems |
| - Peripherals | - Systems Software |
| - Terminals | - Applications Software |

BRANDS SERVICED

Data General

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	<u>x</u> Training
<u>x</u> Software Maintenance	<u>x</u> Programming/Consulting	___ Supplies/Accessories
<u>x</u> Equipment Sale/Lease	___ Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	60%	45%
Depot Repair	30%	45%
Remote Support Services	10%	10%

Prime time hourly per call rate is not available.

CUSTOM COMPUTER SPECIALIST INC.
 300 Vanderbilt
 Hauppauge, NY 11788
 (516) 231-1155

President: Gregory G. Goldi

Years Active in TPM: 7

THE COMPANY

Service Locations: 1
 Geographic Coverage: East Coast
 Repair Depots: 1

Total Service Employees: 20-59
 Field Engineers: 1-19
 Field Support Specialists: 1-19

PRODUCTS SERVICED

- Minicomputers
- Small Business Systems
- Personal Computers
- Workstations
- Modems
- Front-End Processors
- Networks
- Systems Software
- Applications Software
- Peripherals (disks, tapes, printers)
- Terminals (dumb, intelligent, graphics)
- Personal Computer-based Turnkey Systems
- CAD/CAM Turnkey Systems

BRANDS SERVICED

Apple, Cromemco, Hewlett-Packard, IBM, and Seiko.

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
Engineering Changes	<u>x</u> Conversion/Upgrade	<u>x</u> Training
<u>x</u> Software Maintenance	<u>x</u> Programming/Consulting	<u>x</u> Supplies/Accessories
<u>x</u> Equipment Sale/Lease	Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	50%	50%
Depot Repair	50%	50%
Remote Support Services	-	-

Prime time hourly per call rate is \$75.

DATA ACCESS SYSTEMS, INC.
P.O. Box 1230
Blackwood, NJ 08012
(609) 228-0700

President: Howard Crystal

Years Active in TPM: 16

THE COMPANY

Service Locations: 23
Geographic Coverage: Entire U.S.
Repair Depots: 1

Total Service Employees: 130
Field Engineers: 80
Field Support Specialists: 6

PRODUCTS SERVICED

- Mainframes
- Minicomputers
- Word Processors
- Personal Computers
- Modems
- Front-End Processors
- Networks
- Peripherals (disks, tapes, printers, others)
- Terminals (dumb, intelligent, graphics)

BRANDS SERVICED

TI, Diablo, Rixon, Selanar, IBM, Digital, Eagle, and Case-Rixon.

SERVICES PROVIDED

<u> x </u> Manufacturer Warranty	<u> x </u> Installation	<u> x </u> Relocation
<u> x </u> Preventive Maintenance	<u> x </u> Remedial Maintenance	<u> x </u> Refurbishment
<u> x </u> Engineering Changes	<u> x </u> Conversion/Upgrade	<u> x </u> Training
<u> </u> Software Maintenance	<u> </u> Programming/Consulting	<u> x </u> Supplies/Accessories
<u> x </u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	90%	90%
Depot Repair	10%	10%
Remote Support Services	-	-

Prime time hourly per call rate is \$75.

DATA CARD CORPORATION

P.O. Box 9355
 11111 Brewd Road, W.
 Minneapolis, MN 55440
 (612) 933-1223

President: Gary Holland

Years Active in TPM: 16

THE COMPANY

Service Locations:	20	Total Service Employees:	200-499
Geographic Coverage:	Entire U.S. and Europe	Field Engineers:	200-499
Repair Depots:	3	Field Support Specialists:	20-59

PRODUCTS SERVICED

- | | |
|--------------------------------------|---|
| - Minicomputers | - Peripherals (disks, printers, tapes) |
| - Small Business Systems | - Terminals (dumb, intelligent, graphics) |
| - Minicomputer-based Turnkey Systems | |

BRANDS SERVICED

Data Card, Bowe, Troy, Arbitron, and Lee Data.

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u> </u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	<u>x</u> Training
<u> </u> Software Maintenance	<u>x</u> Programming/Consulting	<u>x</u> Supplies/Accessories
<u> </u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is \$85.

DATA COLLECTION SYSTEMS, INC.
 1740 W. Ogden Avenue
 Downers Grove, IL 60515

President: Ron Bothe

Years Active in TPM: 9

THE COMPANY

Service Locations: 7
 Geographic Coverage: Entire U.S.
 Repair Depots: 3

Total Service Employees: 60-99
 Field Engineers: 20-59
 Field Support Specialists: 1-19

PRODUCTS SERVICED

- Small Business Systems
- Personal Computers
- Modems
- Front-End Processors
- Networks
- Peripherals (disks, printers, tapes)
- Terminals (dumb, intelligent, graphics)
- Personal Computer-based Turnkey System

BRANDS SERVICED

TI, DEC, 3M, Mier, Multitech, C. ITOH, and Teletype.

SERVICES PROVIDED

<u> x </u> Manufacturer Warranty	<u> x </u> Installation	<u> x </u> Relocation
<u> x </u> Preventive Maintenance	<u> x </u> Remedial Maintenance	<u> x </u> Refurbishment
<u> x </u> Engineering Changes	<u> x </u> Conversion/Upgrade	<u> x </u> Training
<u> </u> Software Maintenance	<u> x </u> Programming/Consulting	<u> x </u> Supplies/Accessories
<u> x </u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is not available.

DATA ENTRY, INC.
 400 S. Northlake Blvd.
 Altamonte Springs, FL 32701
 (305) 339-5044

President: Jim Walton

Years Active in TPM: 11

THE COMPANY

Service Locations:	5	Total Service Employees:	20-59
Geographic Coverage:	South Florida	Field Engineers:	1-19
Repair Depots:	5	Field Support Specialists:	1-19

PRODUCTS SERVICED

- | | |
|--------------------------|---|
| - Mainframes | - Front-End Processors |
| - Minicomputers | - Networks |
| - Small Business Systems | - Systems Software |
| - Terminals (dumb) | - Applications Software |
| - Word Processors | - Peripherals (disks, printers, tapes) |
| - Personal Computers | - Minicomputer-based Turnkey Systems |
| - Modems | - Personal Computer-based Turnkey Systems |

BRANDS SERVICED

Data General, DEC, General Automation, Computer Automation, Northstar, Horizon, Point 4, and Ampex.

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	<u>x</u> Training
<u>x</u> Software Maintenance	<u>x</u> Programming/Consulting	___ Supplies/Accessories
<u>x</u> Equipment Sale/Lease	___ Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is not available.

DATA SYSTEMS SERVICES
 271 Schilling Circle
 Hunt Valley, MD 21031
 (301) 683-5910

President: Mr. G. Wolley

Years Active in TPM: 3

THE COMPANY

Service Locations:	180	Total Service Employees:	500-999
Geographic Coverage:	Entire U.S./ Canada	Field Engineers:	200-499
Repair Depots:	1	Field Support Specialists:	60-99

PRODUCTS SERVICED

- | | |
|--------------------------|---|
| - Mainframes | - Minicomputer-based Turnkey Systems |
| - Minicomputers | - Personal Computer-based Turnkey Systems |
| - Small Business Systems | - Peripherals (disks, tapes, printers) |
| - Modems | - Terminals (dumb, intelligent, graphics) |
| - Networks | |

BRANDS SERVICED

DEC, DG, and Sytek - most major brands.

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	<u>x</u> Training
<u> </u> Software Maintenance	<u>x</u> Programming/Consulting	<u>x</u> Supplies/Accessories
<u>x</u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	75%	75%
Depot Repair	20%	20%
Remote Support Services	5%	5%

Prime time hourly per call rate is \$75.

THE DAVID JAMISON CARLYLE CORPORATION

5700 Buckingham Parkway
Culver City, CA 90231
(213) 410-9250

President: Peter J. Rickard

Years Active in TPM: 7

THE COMPANY

Service Locations: 4
Geographic Coverage: Entire U.S.
Repair Depots: 4

Total Service Employees: 29
Field Engineers: 12
Field Support Specialists: 7

PRODUCTS SERVICED

- Peripherals (disk, tapes, printers)

- Terminals (dumb, intelligent, graphics)
- Personal Computers

BRANDS SERVICED

SERVICES PROVIDED

<u>x</u>	Manufacturer Warranty	<u>x</u>	Installation	<u>x</u>	Relocation
<u>x</u>	Preventive Maintenance	<u>x</u>	Remedial Maintenance	<u>x</u>	Refurbishment
---	Engineering Changes	<u>x</u>	Conversion/Upgrade	<u>x</u>	Training
---	Software Maintenance	<u>x</u>	Programming/Consulting	---	Supplies/Accessories
<u>x</u>	Equipment Sale/Lease	---	Other	---	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	90%	90%
Depot Repair	5%	5%
Remote Support Services	5%	5%

Prime time hourly per call rate is \$90.

DELTA DATA SYSTEMS CORPORATION
 2595 Metropolitan Drive
 Trevoese, PA 9047
 (215) 322-5400

President: Robert Smallacombe

Years Active in TPM: 4

THE COMPANY

Service Locations:	175	Total Service Employees:	100-159
Geographic Coverage:	Entire U.S./ Europe, Canada, Puerto Rico	Field Engineers:	100-159
Repair Depots:	5	Field Support Specialists:	1-19

PRODUCTS SERVICED

- | | |
|--------------------------|---|
| - Minicomputers | - Systems Software |
| - Small Business Systems | - Applications Software |
| - Word Processors | - Peripherals (disks, printers, tapes) |
| - Personal Computers | - Terminals (dumb, intelligent, graphics) |
| - Workstations | - Minicomputer-based Turnkey Systems |

BRANDS SERVICED

IBM PC, SRI, Beehive, Okidata, Dextel, DEC, Burroughs, C. ITOH, Data South, Qume, Univac, Incoterm, Honeywell, Lear Siegler, Datamaxx, Datasaab, and Data Royal.

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	<u>x</u> Training
<u>x</u> Software Maintenance	<u>x</u> Programming/Consulting	<u>x</u> Supplies/Accessories
<u> </u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	80%	80%
Depot Repair	20%	20%
Remote Support Services	-	-

Prime time hourly per call rate is \$85.

E. F. INDUSTRIES
 12624 Daphne Avenue
 Hawthorne, CA 90250
 (213) 777-4070

President: Chuck Williams

Years Active in TPM: 13

THE COMPANY

Service Locations:	20	Total Service Employees:	63
Geographic Coverage:	East Coast	Field Engineers:	1-19
Repair Depots:	1	Field Support Specialists:	1-19

PRODUCTS SERVICED

- | | |
|--------------------------|--|
| - Minicomputers | - Minicomputer-based Turnkey Systems |
| - Small Business Systems | - Personal Computer-based Turnkey Systems |
| - Word Processors | - CAD/CAM Turnkey Systems |
| - Personal Computers | - Peripherals (disks, tapes, printers, others) |
| - Workstations | - Terminals (dumb, intelligent, graphics) |
| - Networks | |

BRANDS SERVICED

G.E., Sci Data System, Diablo, CMI, Tally, Winchester, IBM, Shugart, and Data General - CAD/CAM.

SERVICES PROVIDED

<u> x </u> Manufacturer Warranty	<u> x </u> Installation	<u> x </u> Relocation
<u> x </u> Preventive Maintenance	<u> x </u> Remedial Maintenance	<u> x </u> Refurbishment
<u> x </u> Engineering Changes	<u> x </u> Conversion/Upgrade	<u> x </u> Training
<u> </u> Software Maintenance	<u> x </u> Programming/Consulting	<u> x </u> Supplies/Accessories
<u> x </u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	30%	30%
Depot Repair	70%	70%
Remote Support Services	-	-

Prime time hourly per call rate is \$85.

E. O. DATA
 534 Fellowship Road
 Mt. Lauren, NJ 08201
 (609) 234-0600

President: Mario Caponegro

Years Active in TPM: 3

THE COMPANY

Service Locations:	26	Total Service Employees:	100-159
Geographic Coverage:	Entire U.S.	Field Engineers:	60-99
Repair Depots:	15	Field Support Specialists:	1-19

PRODUCTS SERVICED

- | | |
|--------------------------|---|
| - Peripherals (printers) | - Modems |
| - Personal Computers | - Terminals (dumb, intelligent, graphics) |

BRANDS SERVICED

IBM, TI, Hewlett-Packard, Apple, Lear Siegler, and Compaq.

SERVICES PROVIDED

<u> </u> Manufacturer Warranty	<u> x </u>	Installation	<u> x </u>	Relocation
<u> x </u> Preventive Maintenance	<u> x </u>	Remedial Maintenance	<u> x </u>	Refurbishment
<u> x </u> Engineering Changes	<u> x </u>	Conversion/Upgrade	<u> </u>	Training
<u> </u> Software Maintenance	<u> </u>	Programming/Consulting	<u> x </u>	Supplies/Accessories
<u> x </u> Equipment Sale/Lease	<u> </u>	Other	<u> </u>	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	70%	70%
Depot Repair	20%	20%
Remote Support Services	10%	10%

Prime time hourly per call rate is \$75 (two hour minimum).

EATON CORPORATION
 Data Systems Service Division
 5875 Green Valley Circle
 Culver City, CA 90230
 (213) 215-0853

President: Fred Adams

Years Active in TPM: 20

THE COMPANY

Service Locations:	70	Total Service Employees:	200-499
Geographic Coverage:	Entire U.S./ Europe, Far East	Field Engineers:	200-499
Repair Depots:	11	Field Support Specialists:	60-99

PRODUCTS SERVICED

- | | |
|--------------------------|---|
| - Mainframes | - Front-End Processors |
| - Minicomputers | - Peripherals (disks, tapes, printers) |
| - Small Business Systems | - Terminals (dumb, intelligent, graphics) |
| - Personal Computers | - Minicomputer-based Turnkey Systems |
| - Workstations | - Personal Computer-based Turnkey Systems |
| - Modems | |

BRANDS SERVICED

DEC-based systems and all compatible products.

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	<u>x</u> Training
— Software Maintenance	— Programming/Consulting	— Supplies/Accessories
— Equipment Sale/Lease	— Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	90%	90%
Depot Repair	10%	10%
Remote Support Services	-	-

Prime time hourly per call rate is \$85.

ELECTRONIC ENGINEERING COMPANY
 6896 West Snowville Road
 Breeksville, OH 44141
 (216) 526-4350

President: Martin Leibowitz

Years Active in TPM: N/A

THE COMPANY

Service Locations: 7
 Geographic Coverage: Entire U.S.
 Repair Depots: 7

Total Service Employees: 160-199
 Field Engineers: 100-159
 Field Support Specialists: 20-59

PRODUCTS SERVICED

- Small Business Systems
- Peripherals
- Word Processors
- Personal Computers
- Copiers
- Workstations
- PBX/PABX (main)
- Modems
- Front-End Processors
- Networks
- Telephone Key Systems
- Systems Software
- Applications Software
- Terminals (dumb, intelligent, graphics)
- Personal Computer-based Turnkey Systems

BRANDS SERVICED

Rolm, Isotech, IBM PC, TI, Epson, and Data Tech (most major brands, peripherals).

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	<u>x</u> Training
<u>x</u> Software Maintenance	<u>x</u> Programming/Consulting	<u>x</u> Supplies/Accessories
<u>x</u> Equipment Sale/Lease	Other _____	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is \$85 (1st hour), \$55 (2nd hour).

FISHER SCIENTIFIC COMPANY
 145 Delta Drive
 Pittsburgh, PA 15238
 (412) 963-1669

General Manager: Richard Wilson

Years Active in TPM: 59

THE COMPANY

Service Locations: 35
Geographic Coverage: Entire U.S.
Repair Depots: 17

Total Service Employees: 100-159
Field Engineers: 100-159
Field Support Specialists: 1-19

PRODUCTS SERVICED

- Minicomputers
- Small Business Systems
- Peripherals (disks, tapes, printers, other)

BRANDS SERVICED

Commodore, Franklin, Fisher, IBM, and Southwest Technical.

SERVICES PROVIDED

<u> x </u> Manufacturer Warranty	<u> x </u> Installation	<u> x </u> Relocation
<u> x </u> Preventive Maintenance	<u> x </u> Remedial Maintenance	<u> x </u> Refurbishment
<u> x </u> Engineering Changes	<u> x </u> Conversion/Upgrade	_____ Training
_____ Software Maintenance	_____ Programming/Consulting	<u> x </u> Supplies/Accessories
_____ Equipment Sale/Lease	_____ Other	_____

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	70%	70%
Depot Repair	25%	25%
Remote Support Services	5%	5%

Prime time hourly per call rate is \$80.

FORMATION, INC.
 4319 Covington Highway
 Decatur, GA 30035
 (404) 288-7511

Vice President: William Rennie

Years Active in TPM: 14

THE COMPANY

Service Locations:	14	Total Service Employees:	60-99
Geographic Coverage:	U.S.	Field Engineers:	60-99
Repair Depots:	1	Field Support Specialists:	1-19

PRODUCTS SERVICED

- | | |
|--------------------------|--|
| - Mainframes | - Front-End Processors |
| - Minicomputers | - Peripherals (disks, printers, tapes) |
| - Small Business Systems | - Personal Computers |

BRANDS SERVICED

IBM, Formation, and DEC.

SERVICES PROVIDED

<u> </u> Manufacturer Warranty	<u> x </u>	Installation	<u> x </u>	Relocation
<u> x </u> Preventive Maintenance	<u> x </u>	Remedial Maintenance	<u> x </u>	Refurbishment
<u> </u> Engineering Changes	<u> </u>	Conversion/Upgrade	<u> x </u>	Training
<u> </u> Software Maintenance	<u> </u>	Programming/Consulting	<u> </u>	Supplies/Accessories
<u> </u> Equipment Sale/Lease	<u> </u>	Other	<u> </u>	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	98%	96%
Depot Repair	2%	4%
Remote Support Services	-	-

Prime time hourly per call rate is \$80.

GENERAL DIAGNOSTICS, INC.
 1308 Mahalo Place
 Compton, CA 90220
 (213) 639-5080

President: Pat Lydon

Years Active in TPM: 5

THE COMPANY

Service Locations:	4	Total Service Employees:	89
Geographic Coverage:	Entire U.S.	Field Engineers:	68
Repair Depots:	4	Field Support Specialists:	4

PRODUCTS SERVICED

- | | |
|--------------------------|---|
| - Mainframes | - Peripherals (disks, tapes, printers) |
| - Minicomputers | - Terminals (dumb, intelligent, graphics) |
| - Small Business Systems | - Minicomputer-based Turnkey Systems |
| - Modems | - Personal Computer-based Turnkey Systems |
| - Front-End Processors | - CAD/CAM Turnkey Systems |
| - Networks | |

BRANDS SERVICED

Most major brands.

SERVICES PROVIDED

<u> x </u> Manufacturer Warranty	<u> </u>	Installation	<u> </u>	Relocation
<u> </u> Preventive Maintenance	<u> </u>	Remedial Maintenance	<u> x </u>	Refurbishment
<u> x </u> Engineering Changes	<u> x </u>	Conversion/Upgrade	<u> x </u>	Training
<u> </u> Software Maintenance	<u> </u>	Programming/Consulting	<u> </u>	Supplies/Accessories
<u> </u> Equipment Sale/Lease	<u> </u>	Other	<u> </u>	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	100%	100%
Remote Support Services	-	-

Prime time hourly per call rate is \$55.

GENERAL INSTRUMENT CORPORATION
 271 Shilling Circle
 Hunt Valley, MD 21031
 (301) 683-5900

President: (not known)

Years Active in TPM: 8

THE COMPANY

Service Locations:	250	Total Service Employees:	100+
Geographic Coverage:	U.S. and Canada	Field Engineers:	60+
Repair Depots:		Field Support Specialists:	N/A

PRODUCTS SERVICED

BRANDS SERVICED

Ampex, Calcomp, Centronics, Century Data, Control Data, Dataflex, DEC, Panasonic, Pertec, Quantex, STC, Shugart, and Sytek.

SERVICES PROVIDED

<u> x </u> Manufacturer Warranty	<u> x </u> Installation	<u> </u> Relocation
<u> x </u> Preventive Maintenance	<u> x </u> Remedial Maintenance	<u> </u> Refurbishment
<u> </u> Engineering Changes	<u> </u> Conversion/Upgrade	<u> </u> Training
<u> </u> Software Maintenance	<u> </u> Programming/Consulting	<u> </u> Supplies/Accessories
<u> </u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is not available.

GENTRY ASSOCIATES, INC.
 2447 Orlando Central Parkway
 Orlando, FL 32809
 (305) 859-7450

President: Bob Theodore

Years Active in TPM: 5

THE COMPANY

Service Locations: 15
Geographic Coverage: South
Repair Depots: 2

Total Service Employees: 20-59
Field Engineers: 20-59
Field Support Specialists: 1-19

PRODUCTS SERVICED

- Personal Computers
- Terminals (dumb, graphics, intelligent)
- Peripherals (disks, tapes, printers)

BRANDS SERVICED

Direct, Data Printers, Printronix, Sony, IDS, Juki, Televideo, and Quality Micro Systems.

SERVICES PROVIDED

<u> x </u> Manufacturer Warranty	<u> x </u> Installation	<u> x </u> Relocation
<u> x </u> Preventive Maintenance	<u> x </u> Remedial Maintenance	<u> x </u> Refurbishment
<u> x </u> Engineering Changes	<u> x </u> Conversion/Upgrade	<u> x </u> Training
<u> </u> Software Maintenance	<u> </u> Programming/Consulting	<u> </u> Supplies/Accessories
<u> </u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	95%	90%
Depot Repair	5%	10%
Remote Support Services	-	-

Prime time hourly per call rate is \$85.

GRANADA DATA SYSTEMS
 2323 Industrial Parkway West
 Hayward, CA 94544
 (415) 487-40425

President: John Lange

Years Active in TPM: 5

THE COMPANY

Service Locations:	1	Total Service Employees:	70
Geographic Coverage:	Entire U.S./ Europe, and Canada	Field Engineers:	60
Repair Depots:	1	Field Support Specialists:	20-59

PRODUCTS SERVICED

- | | |
|--------------------------|---|
| - Mainframes | - Peripherals (disks, printers, tapes, other) |
| - Minicomputers | - Terminals (dumb, intelligent, graphics) |
| - Small Business Systems | - Word Processors |

BRANDS SERVICED

DEC, Centronics, Ampex, CDC, Data General, Kennedy, Epson, ISS, and Century Data.

SERVICES PROVIDED

<input type="checkbox"/> Manufacturer Warranty	<input type="checkbox"/> Installation	<input type="checkbox"/> Relocation
<input type="checkbox"/> Preventive Maintenance <u>x</u>	<input type="checkbox"/> Remedial Maintenance <u>x</u>	<input type="checkbox"/> Refurbishment
<input type="checkbox"/> Engineering Changes <u>x</u>	<input type="checkbox"/> Conversion/Upgrade	<input type="checkbox"/> Training
<input type="checkbox"/> Software Maintenance	<input type="checkbox"/> Programming/Consulting	<input type="checkbox"/> Supplies/Accessories
<input type="checkbox"/> Equipment Sale/Lease	<input type="checkbox"/> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	100%	100%
Remote Support Services	-	-

Prime time hourly per call rate is not available.

GREYHOUND CAPITAL CORPORATION
 Greyhound Tower
 Phoenix, AZ 85077
 (602) 222-8200

Manager, Maintenance Service: Bill Lahti

Years Active in TPM: 3

THE COMPANY

Service Locations:	10	Total Service Employees:	22
Geographic Coverage:	Entire U.S.	Field Engineers:	11
Repair Depots:	1	Field Support Specialists:	1

PRODUCTS SERVICED

- | | |
|-----------------------|----------------------------------|
| - All Data Processing | - Data Communications Terminals |
| - Personal Computers | - Tubes, Controllers, Processors |

BRANDS SERVICED

IBM.

SERVICES PROVIDED

<u> </u> Manufacturer Warranty	<u> x </u>	Installation	<u> x </u>	Relocation
<u> x </u> Preventive Maintenance	<u> x </u>	Remedial Maintenance	<u> x </u>	Refurbishment
<u> x </u> Engineering Changes	<u> x </u>	Conversion/Upgrade	<u> x </u>	Training
<u> </u> Software Maintenance	<u> </u>	Programming/Consulting	<u> </u>	Supplies/Accessories
<u> x </u> Equipment Sale/Lease	<u> </u>	Other	<u> </u>	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	90%	90%
Depot Repair	10%	10%
Remote Support Services	-	-

Prime time hourly per call rate is \$85.

HALTRONICS CORPORATION
 9741 Canoga Avenue
 Chatsworth, CA 91311
 (818) 341-9303

President: Joseph Hallman

Years Active in TPM: 8

THE COMPANY

Service Locations:		Total Service Employees:	20-60
Geographic Coverage:	Entire U.S.	Field Engineers:	N/A
Repair Depots:		Field Support Specialists:	N/A

PRODUCTS SERVICED

- | | |
|--------------------------|-------------------|
| - Mainframes | - Peripherals |
| - Microcomputers | - Terminals |
| - Minicomputers | - Word Processors |
| - Small Business Systems | |

BRANDS SERVICED

NCR, Honeywell, IBM, DEC, Sperry Univac, and Apple.

SERVICES PROVIDED

<u> x </u> Manufacturer Warranty	<u> </u> Installation	<u> </u> Relocation
<u> </u> Preventive Maintenance	<u> x </u> Remedial Maintenance	<u> </u> Refurbishment
<u> x </u> Engineering Changes	<u> x </u> Conversion/Upgrade	<u> </u> Training
<u> </u> Software Maintenance	<u> </u> Programming/Consulting	<u> x </u> Supplies/Accessories
<u> x </u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is not available.

HANSON DATA SYSTEMS, INC.
 60 Brigham Street
 Marlboro, MA 01752
 (617) 481-3901

President: Howard Hanson

Years Active in TPM: 4

THE COMPANY

Service Locations:	1	Total Service Employees:	20-60
Geographic Coverage:	Entire U.S.	Field Engineers:	1-19
Repair Depots:	1	Field Support Specialists:	1-19

PRODUCTS SERVICED

- | | |
|--------------------------------------|---|
| - Minicomputers | - Peripherals (disks, tapes, printers) |
| - Small Business Systems | - Terminals (dumb, intelligent, graphics) |
| - Minicomputer-based Turnkey Systems | - Mainframes |
| - Disk Drives | - Disk Drives |
| - Modems | - Systems Software |
| - Workstations | - Personal Computers |

BRANDS SERVICED

Data General, Televideo, Fujitsu, CDC, Facit, Diablo, Digidata, Printronix, Kennedy, Centron - all compatible peripherals.

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	<u>x</u> Training
<u>x</u> Software Maintenance	<u>x</u> Programming/Consulting	<u>x</u> Supplies/Accessories
<u>x</u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is \$80.

HEALTHDYNE PRODUCTS SERVICE GROUP President: Adam Koneski
 505 Mason Mill Business Center
 Huntington Valley, PA 19006
 (215) 657-6060

Years Active in TPM: 6

THE COMPANY

Service Locations:	30	Total Service Employees:	67
Geographic Coverage:	Entire U.S.	Field Engineers:	20
Repair Depots:	2	Field Support Specialists:	3

PRODUCTS SERVICED

- Medical Products

BRANDS SERVICED

Healthdyne and IPCO.

SERVICES PROVIDED

<u> x </u> Manufacturer Warranty	<u> x </u> Installation	<u> </u> Relocation
<u> x </u> Preventive Maintenance	<u> x </u> Remedial Maintenance	<u> x </u> Refurbishment
<u> x </u> Engineering Changes	<u> </u> Conversion/Upgrade	<u> x </u> Training
<u> </u> Software Maintenance	<u> </u> Programming/Consulting	<u> x </u> Supplies/Accessories
<u> </u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	40%	35%
Depot Repair	40%	45%
Remote Support Services	20%	20%

Prime time hourly per call rate is \$75.

HONEYWELL
 Customer Service Division
 165 Needham Street
 Newton Highland, MA 02164
 (617) 552-5411

Vice President and General Manager:
 Sy Kraut

Years Active in TPM: 2

THE COMPANY

Service Locations:	250	Total Service Employees:	3,700
Geographic Coverage:	Entire U.S.	Field Engineers:	N/A
Repair Depots:	30	Field Support Specialists:	N/A

PRODUCTS SERVICED

- | | |
|------------------|----------------------|
| - Mainframes | - Office Products |
| - Minicomputers | - Telecommunications |
| - Microcomputers | - Peripherals |

BRANDS SERVICED

Brother International, Coleco, Columbia Data Products, Computers International, Ericsson Programatic, Formative Technologies, Graphon, Hayes, Hazeltine, IBM, Apple, Printronics, TI, Zenith, and Zentec.

SERVICES PROVIDED

<u> </u> Manufacturer Warranty	<u> x </u>	Installation	<u> x </u>	Relocation
<u> x </u> Preventive Maintenance	<u> x </u>	Remedial Maintenance	<u> </u>	Refurbishment
<u> x </u> Engineering Changes	<u> x </u>	Conversion/Upgrade	<u> </u>	Training
<u> x </u> Software Maintenance	<u> </u>	Programming/Consulting	<u> x </u>	Supplies/Accessories
<u> </u> Equipment Sale/Lease	<u> </u>	Other	<u> </u>	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is not available.

INACOMP COMPUTER CENTERS, INC.
 1824 W. Maple
 Troy, MI 48084
 (313) 649-0910

President: Ken Schbloher

Years Active in TPM: 9

THE COMPANY

Service Locations: 53
 Geographic Coverage: Entire U.S.
 Repair Depots: 5

Total Service Employees: 100-150
 Field Engineers: 100-150
 Field Support Specialists: 20-60

PRODUCTS SERVICED

- Small Business Systems
- Word Processors
- Personal Computers
- Workstations
- Data Communications
- Modems
- Peripherals (disks, tapes, printers, others)
- Terminals (dumb, intelligent, graphics)
- Personal Computer-based Turnkey Systems
- CAD/CAM Turnkey Systems

BRANDS SERVICED

IBM, Apple-compatible peripherals, Compaq, and AT&T.

SERVICES PROVIDED

<u> x </u> Manufacturer Warranty	<u> x </u> Installation	<u> x </u> Relocation
<u> x </u> Preventive Maintenance	<u> x </u> Remedial Maintenance	<u> x </u> Refurbishment
<u> x </u> Engineering Changes	<u> x </u> Conversion/Upgrade	<u> x </u> Training
<u> </u> Software Maintenance	<u> x </u> Programming/Consulting	<u> x </u> Supplies/Accessories
<u> x </u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	40%	55%
Depot Repair	58%	43%
Remote Support Services	2%	2%

Prime time hourly per call rate is \$75.

INTEGRATED AUTOMATION, INC.
 1745 Tullie Circle, Northeast
 Atlanta, GA 30329
 (404) 325-8100

President: Huey Duncan

Years Active in TPM: 9

THE COMPANY

Service Locations:	200	Total Service Employees:	200-249
Geographic Coverage:	Entire U.S.	Field Engineers:	180
Repair Depots:	1	Field Support Specialists:	1-19

PRODUCTS SERVICED

- Mainframes	- Workstations
- Minicomputers	- Modems
- Small Business Systems	- Front-End Processors
- Word Processors	- Peripherals (disks, printers, tapes)
- Personal Computers	- Terminals (dumb, intelligent, graphics)

BRANDS SERVICED

IBM, Radio Shack, and most major brands.

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	<u>x</u> Training
<u> </u> Software Maintenance	<u>x</u> Programming/Consulting	<u>x</u> Supplies/Accessories
<u>x</u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	80%	80%
Depot Repair	20%	20%
Remote Support Services	-	-

Prime time hourly per call rate is \$72.

INTEGRATED SYSTEMS GROUP, INC.
 920 E. Broadway
 Glendale, CA 91205
 (818) 502-1414

President: Charles Archer

Years Active in TPM: 12

THE COMPANY

Service Locations: 3
Geographic Coverage: West Coast
Repair Depots: 1

Total Service Employees: 20-59
Field Engineers: 20-59
Field Support Specialists: 1-19

PRODUCTS SERVICED

- | | |
|--------------------------|--|
| - Minicomputers | - Minicomputer-based Turnkey Systems |
| - Small Business Systems | - Modems |
| - Systems Software | - Peripherals (disks, tapes, printers, others) |
| - Applications Software | - Terminals (dumb, intelligent, graphics) |

BRANDS SERVICED

DEC, Applied Digital (most compatibles), CDC, General Automation, Point 4, and Star Technology

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	<u>x</u> Training
<u>x</u> Software Maintenance	<u>x</u> Programming/Consulting	<u>x</u> Supplies/Accessories
<u>x</u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	70%	70%
Depot Repair	28%	28%
Remote Support Services	2%	2%

Prime time hourly per call rate is \$80.

LOGICAL SOLUTIONS COMPANY, INC.
 Box 308
 East Holden, ME 04429
 (207) 989-3863

President: Tom Russell

Years Active in TPM: 7

THE COMPANY

Service Locations:	12	Total Service Employees:	20-59
Geographic Coverage:	Northeast Dallas, Seattle	Field Engineers:	20-59
Repair Depots:	3	Field Support Specialists:	1-19

PRODUCTS SERVICED

- | | |
|--------------------------|---|
| - Minicomputer | - Minicomputer-based Turnkey Systems |
| - Small Business Systems | - Personal Computer-based Turnkey Systems |
| - Word Processors | - Modems |
| - Personal Computers | - Peripherals (disks, tapes, printers, other) |
| - Workstations | - Terminals (dumb, intelligent, graphics) |

BRANDS SERVICED

Data General, Altos, Nova, Hazeltine, Printronix, Diablo, and Onyx.

SERVICES PROVIDED

<u> x </u> Manufacturer Warranty	<u> x </u> Installation	<u> x </u> Relocation
<u> x </u> Preventive Maintenance	<u> x </u> Remedial Maintenance	<u> x </u> Refurbishment
<u> x </u> Engineering Changes	<u> x </u> Conversion/Upgrade	<u> x </u> Training
<u> — </u> Software Maintenance	<u> — </u> Programming/Consulting	<u> x </u> Supplies/Accessories
<u> — </u> Equipment Sale/Lease	<u> — </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	90%	90%
Depot Repair	10%	10%
Remote Support Services	-	-

Prime time hourly per call rate is \$60.

LOONAM COMPUTER PRODUCTS
 7720 Bush Lake Road
 Minneapolis, MN 55435
 (612) 831-1616

President: Dennis Pelletier

 Years Active in TPM: 15

THE COMPANY

Service Locations:	23	Total Service Employees:	60-99
Geographic Coverage:	Entire U.S. Canada	Field Engineers:	20-59
Repair Depots:	3	Field Support Specialists:	1-19

PRODUCTS SERVICED

- Small Business Systems
- Peripherals (printers)
- Terminals (dumb, intelligent, graphics)
- Personal Computers

BRANDS SERVICED

Altos, TI, Professional Series, WYSE, Adds, Espirit, Digital, Televideo, Diablo, Data South Okidata, and Fujitsu line printers.

SERVICES PROVIDED

<input checked="" type="checkbox"/> Manufacturer Warranty	<input checked="" type="checkbox"/> Installation	<input type="checkbox"/> Relocation
<input checked="" type="checkbox"/> Preventive Maintenance	<input checked="" type="checkbox"/> Remedial Maintenance	<input checked="" type="checkbox"/> Refurbishment
<input type="checkbox"/> Engineering Changes	<input type="checkbox"/> Conversion/Upgrade	<input type="checkbox"/> Training
<input type="checkbox"/> Software Maintenance	<input type="checkbox"/> Programming/Consulting	<input type="checkbox"/> Supplies/Accessories
<input checked="" type="checkbox"/> Equipment Sale/Lease	<input type="checkbox"/> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	80%	80%
Depot Repair	20%	20%
Remote Support Services	-	-

Prime time hourly per call rate is \$70.

M/A-COM ALANTHUS DATA, INC.
 6011 Executive Boulevard
 Rockville, MD 20852
 (301) 770-1150

President: Carl English

Years Active in TPM: 17

THE COMPANY

Service Locations:	70	Total Service Employees:	250
Geographic Coverage:	Entire U.S.	Field Engineers:	150
Repair Depots:	8	Field Support Specialists:	40

PRODUCTS SERVICED

- CRTs
- Personal Computers
- Printers

BRANDS SERVICED

DEC, Lear Siegler, Falco, Conn Tech, IBM, and TI.

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	<u>x</u> Training
<u>x</u> Software Maintenance	<u>x</u> Programming/Consulting	<u>x</u> Supplies/Accessories
<u>x</u> Equipment Sale/Lease	Other _____	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	90%	85%
Depot Repair	8%	12%
Remote Support Services	2%	3%

Prime time hourly per call rate is \$70.

MSC COMPUTER STORES
 1455 S. State Street
 Orem, UT 84057
 (801) 224-1169

President: Bill West

Years Active in TPM: 11

THE COMPANY

Service Locations:	1	Total Service Employees:	100-159
Geographic Coverage:	Entire U.S.	Field Engineers:	1-19
Repair Depots:	1	Field Support Specialists:	1-19

PRODUCTS SERVICED

- | | |
|--------------------------|--|
| - Mainframes | - Word Processors |
| - Minicomputers | - Personal Computers |
| - Small Business Systems | - Minicomputer-based Turnkey Systems |
| - Modems | - CAD/CAM Turnkey Systems |
| - Systems Software | - Peripherals (disks, tapes, printers) |
| - Applications Software | |

BRANDS SERVICED

Apple, Corvus, Micro Data, IBM, and Prime.

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	<u>x</u> Training
<u>x</u> Software Maintenance	<u>x</u> Programming/Consulting	<u>x</u> Supplies/Accessories
<u>x</u> Equipment Sale/Lease	Other _____	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	80%	80%
Depot Repair	20%	20%
Remote Support Services	-	-

Prime time hourly per call rate is not available.

MSI DATA CORPORATION
 300 Fischer
 Costa Mesa, CA 92626
 (714) 549-6000

President: Charles Strauch

Years Active in TPM: 15

THE COMPANY

Service Locations:	110	Total Service Employees:	160-999
Geographic Coverage:	Entire U.S./ Canada	Field Engineers:	100-159
Repair Depots:	7	Field Support Specialists:	1-19

PRODUCTS SERVICED

- | | |
|----------------------|---|
| - Minicomputers | - Applications Software |
| - Personal Computers | - Peripherals (disks, tapes, printers, other) |
| - Modems | - Terminals (dumb, intelligent, graphics) |

BRANDS SERVICED

IDT, Franchise Manual Systems, IBM, Raytheon, Ultra Phase, Data South, and Data Cap.

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	<u>x</u> Training
<u>x</u> Software Maintenance	<u>x</u> Programming/Consulting	<u>x</u> Supplies/Accessories
<u>x</u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	45%	45%
Depot Repair	55%	55%
Remote Support Services	-	-

Prime time hourly per call rate is \$75.

MAGNETIC RECOVERY TECHNOLOGIES, INC.
 25431 Rye Canyon Road
 Valencia, CA 91355
 (805) 257-2262

President: Frank Chiaverini

Years Active in TPM: 11

THE COMPANY

Service Locations:	1	Total Service Employees:	20-59
Geographic Coverage:	Entire U.S./ Worldwide	Field Engineers:	N/A
Repair Depots:	1	Field Support Specialists:	20-59

PRODUCTS SERVICED

- Peripherals

BRANDS SERVICED

All brands.

SERVICES PROVIDED

<input checked="" type="checkbox"/> Manufacturer Warranty	<input type="checkbox"/> Installation	<input type="checkbox"/> Relocation
<input type="checkbox"/> Preventive Maintenance	<input checked="" type="checkbox"/> Remedial Maintenance	<input checked="" type="checkbox"/> Refurbishment
<input checked="" type="checkbox"/> Engineering Changes	<input type="checkbox"/> Conversion/Upgrade	<input type="checkbox"/> Training
<input type="checkbox"/> Software Maintenance	<input type="checkbox"/> Programming/Consulting	<input type="checkbox"/> Supplies/Accessories
<input type="checkbox"/> Equipment Sale/Lease	<input type="checkbox"/> Other _____	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	100%	100%
Remote Support Services	-	-

Prime time per call rate is \$135-375 per job.

MCINTYRE'S MINICOMPUTER
 Sales Group
 32050 Edward Avenue
 Madison Heights, MI 48071
 (313) 583-4100

President: Michael McIntyre

Years Active in TPM: 6

THE COMPANY

Service Locations:	1	Total Service Employees:	60-99
Geographic Coverage:	Midwest	Field Engineers:	20-59
Repair Depots:	1	Field Support Specialists:	1-19

PRODUCTS SERVICED

- | | |
|--------------------------|---|
| - Mainframes | - Copiers |
| - Minicomputers | - Workstations |
| - Small Business Systems | - Peripherals (disks, tapes, printers) |
| - Modems | - Terminals (dumb, intelligent, graphics) |
| - Front-End Processors | - Minicomputer-based Turnkey Systems |
| - Word Processors | - Personal Computer-based Turnkey Systems |
| - Personal Computers | |

BRANDS SERVICED

Data General (most compatible peripherals).

SERVICES PROVIDED

<u> </u> Manufacturer Warranty	<u> x </u>	Installation	<u> x </u>	Relocation
<u> x </u> Preventive Maintenance	<u> x </u>	Remedial Maintenance	<u> x </u>	Refurbishment
<u> x </u> Engineering Changes	<u> x </u>	Conversion/Upgrade	<u> x </u>	Training
<u> </u> Software Maintenance	<u> </u>	Programming/Consulting	<u> </u>	Supplies/Accessories
<u> x </u> Equipment Sale/Lease	<u> </u>	Other	<u> </u>	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is not available.

NCR CORPORATION
 1700 S. Patterson Boulevard
 Dayton, OH 45479
 (513) 439-8600

President: (not known)

Years Active in TPM: 12

THE COMPANY

Service Locations:	70-80	Total Service Employees:	9,100
Geographic Coverage:	Entire U.S.	Field Engineers:	6,200
Repair Depots:	20-30	Field Support Specialists:	N/A

PRODUCTS SERVICED

- | | |
|-----------------|----------------------|
| - Minicomputers | - Microcomputers |
| - Peripherals | - Personal Computers |

BRANDS SERVICED

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	<u>x</u> Training
<u>x</u> Software Maintenance	<u> </u> Programming/Consulting	<u>x</u> Supplies/Accessories
<u>x</u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is not available.

NATIONAL ADVANCED SYSTEMS
 800 East Middlefield Road
 P.O. Box 7300
 Mountain View, CA 94042
 (415) 962-6100

President: David Martin

Years Active in TPM: 1

THE COMPANY

Service Locations:	30	Total Service Employees:	450
Geographic Coverage:	Nationwide	Field Engineers:	325
Repair Depots:	3	Field Support Specialists:	N/A

PRODUCTS SERVICED

- | | |
|--------------------|-----------------|
| - Mainframes | - Peripherals |
| - Systems Software | - Networks |
| - Microcomputers | - Minicomputers |

BRANDS SERVICED

IBM, Magnuson, IPL, CDC, STC, Lencom, and Protronics.

SERVICES PROVIDED

<u> </u> Manufacturer Warranty	<u> </u> x	Installation	<u> </u>	Relocation
<u> </u> Preventive Maintenance	<u> </u> x	Remedial Maintenance	<u> </u>	Refurbishment
<u> </u> Engineering Changes	<u> </u> x	Conversion/Upgrade	<u> </u>	Training
<u> </u> Software Maintenance	<u> </u> x	Programming/Consulting	<u> </u>	Supplies/Accessories
<u> </u> Equipment Sale/Lease	<u> </u> x	Other: Computer Room Design, Capacity Management		

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	85%	85%
Depot Repair	15%	15%
Remote Support Services	-	-

Prime time hourly per call rate is \$140 (mainframes).

NATIONAL COMPUTER COMMUNICATIONS President: (not known)
 260 West Avenue
 P.O. Box 602
 Stamford, CT 06904
 (203) 357-0004

Years Active in TPM: 9

THE COMPANY

Service Locations:	7	Total Service Employees:	20-59
Geographic Coverage:	Midwest/ East Coast	Field Engineers:	20-59
Repair Depots:	2	Field Support Specialists:	1-19

PRODUCTS SERVICED

- | | |
|--------------------------|---|
| - Minicomputers | - Modems |
| - Small Business Systems | - Peripherals (disks, tapes, printers, other) |
| - Word Processors | - Terminals (dumb, intelligent, graphics) |
| - Personal Computers | - Workstations |

BRANDS SERVICED

DEC, Data Media, Racal Vadic, Diablo, Okidata, Epson, Televideo, TI, Teletype, Digital Engineering, IBM, Corona, C. ITOH, CIE, Hewlett-Packard, Epson, Data Products, Micom, and CTI.

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	<u>x</u> Training
_____ Software Maintenance	_____ Programming/Consulting	<u>x</u> Supplies/Accessories
<u>x</u> Equipment Sale/Lease	_____ Other _____	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is \$45 (two hour minimum).

NATIONAL COMPUTER SYSTEMS
 4444 West 76th Street
 Minneapolis, MN 55435
 (612) 830-7600

President: David Malmberg

Years Active in TPM: 4

THE COMPANY

Service Locations:	80	Total Service Employees:	265
Geographic Coverage:	Entire U.S.	Field Engineers:	189
Repair Depots:	1	Field Support Specialists:	29

PRODUCTS SERVICED

- | | |
|---|---|
| - Minicomputers | - Front-End Processors |
| - Small Business Systems | - Peripherals (disks, printers, tapes, other) |
| - Word Processors | - Terminals (dumb, intelligent) |
| - Personal Computers | - Minicomputer-based Turnkey Systems |
| - Personal Computer-based Turnkey Systems | |

BRANDS SERVICED

TI, Stearns, Televideo, IBM, Diablo, DEC, Zebeck, Genicom, Fujitsu, and Tecstar.

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	Training
Software Maintenance	Programming/Consulting	<u>x</u> Supplies/Accessories
<u>x</u> Equipment Sale/Lease	Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	98%	98%
Depot Repair	2%	2%
Remote Support Services	-	-

Prime time hourly per call rate is \$80.

PRECISION METHODS, INC.
 8825 Telegraph Road
 Lorton, VA 22079
 (703) 339-7050

President: John Cooper

Years Active in TPM: 14

THE COMPANY

Service Locations:	9	Total Service Employees:	100-159
Geographic Coverage:	Entire U.S.	Field Engineers:	60-99
Repair Depots:	5	Field Support Specialists:	20-59

PRODUCTS SERVICED

- | | |
|-----------------|--------------------------|
| - Mainframes | - Small Business Systems |
| - Minicomputers | - Peripherals (disks) |

BRANDS SERVICED

IBM, Memorex, Dysan, Nashua, CDC, NCR, Burroughs, Athana, and all major brands.

SERVICES PROVIDED

<u> </u> Manufacturer Warranty	<u> </u> Installation	<u> </u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u> </u> Engineering Changes	<u> </u> Conversion/Upgrade	<u>x</u> Training
<u> </u> Software Maintenance	<u> </u> Programming/Consulting	<u>x</u> Supplies/Accessories
<u>x</u> Equipment Sale/Lease	<u> </u> Other _____	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is not available.

R & M ASSOCIATES
 Electronic Data Products Inc.
 52 Park Avenue
 Park Ridge, NJ 07656
 (201) 391-0446

Office Manager: Kathy Pignatello

Years Active in TPM: 13

THE COMPANY

Service Locations: 1
Geographic Coverage: Tri-state/
 Washington (DC), Pennsylvania,
 New Jersey, Connecticut,
 Maryland, and New York
Repair Depots: 1

Total Service Employees: 45
Field Engineers: 20+

Field Support Specialists: 5+

PRODUCTS SERVICED

- Minicomputers
- Small Business Systems
- Peripherals
- Mainframes
- Modems
- Microcomputers

BRANDS SERVICED

DEC, Data General, Nova, Printronix, Imagen, Western Peripherals, Emulex, TI, Kennedy, Pertec, Cipher, Centronics, Fujitsu, and Hazeltine.

SERVICES PROVIDED

<u> </u>	Manufacturer Warranty	<u> x </u>	Installation	<u> x </u>	Relocation
<u> x </u>	Preventive Maintenance	<u> x </u>	Remedial Maintenance	<u> x </u>	Refurbishment
<u> x </u>	Engineering Changes	<u> x </u>	Conversion/Upgrade	<u> x </u>	Training
<u> </u>	Software Maintenance	<u> </u>	Programming/Consulting	<u> x </u>	Supplies/Accessories
<u> x </u>	Equipment Sale/Lease	<u> </u>	Other	<u> </u>	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is \$75-85.

RADIAN CORPORATION
 United Products Division
 8501 MoPac Boulevard
 Austin, TX 78766
 (512) 454-4797

President: James L. Grey

Years Active in TPM: 16

THE COMPANY

Service Locations:	21	Total Service Employees:	30
Geographic Coverage:	Entire U.S.	Field Engineers:	23
Repair Depots:	1	Field Support Specialists:	3

PRODUCTS SERVICED

- | | |
|--------------------------|---|
| - Minicomputers | - Applications Software |
| - Small Business Systems | - Peripherals (disks, tapes, printers, other) |
| - Systems Software | - Terminals (dumb, intelligent, graphics) |

BRANDS SERVICED

TI (most compatibles) and Data General.

SERVICES PROVIDED

<u> </u> Manufacturer Warranty	<u> x </u>	Installation	<u> x </u>	Relocation
<u> x </u> Preventive Maintenance	<u> x </u>	Remedial Maintenance	<u> x </u>	Refurbishment
<u> x </u> Engineering Changes	<u> </u>	Conversion/Upgrade	<u> </u>	Training
<u> x </u> Software Maintenance	<u> x </u>	Programming/Consulting	<u> </u>	Supplies/Accessories
<u> x </u> Equipment Sale/Lease	<u> </u>	Other	<u> </u>	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is \$72.

REYNOLDS AND REYNOLDS
 800 Germantown Street
 P.O. Box 1005
 Dayton, OH 45401
 (513) 443-2394

President: Terry Carder

Years Active in TPM: 15

THE COMPANY

Service Locations:	93	Total Service Employees:	200-499
Geographic Coverage:	Entire U.S./ Europe, Canada, Australia, South Africa	Field Engineers:	160-199
Repair Depots:	1	Field Support Specialists:	160-199

PRODUCTS SERVICED

- | | |
|---------------------------------|--|
| - Minicomputers | - Systems Software |
| - Small Business Systems | - Applications Software |
| - Terminals (dumb, intelligent) | - Peripherals (disks, tapes, printers, others) |
| - Personal Computers | - Minicomputer-based Turnkey Systems |
| - Modems | - Personal Computer-based Turnkey Systems |

BRANDS SERVICED

TI, IBM PC XT, AT, Onyx, BTI, and NCR Tower.

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	<u>x</u> Training
<u>x</u> Software Maintenance	<u>x</u> Programming/Consulting	<u>x</u> Supplies/Accessories
<u>x</u> Equipment Sale/Lease	<u>x</u> Other: Financing, Program Duplication	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	71%	70%
Depot Repair	1%	2%
Remote Support Services	28%	28%

Prime time hourly per call rate is \$70.

RICOH CORPORATION
 2661 Gates Avenue
 Irvine, CA 92714

President: H. Kupo

Years Active in TPM: 12

THE COMPANY

Service Locations:	95	Total Service Employees:	300
Geographic Coverage:	Entire U.S./ Canada	Field Engineers:	240
Repair Depots:	22	Field Support Specialists:	30-35

PRODUCTS SERVICED

- | | |
|----------------------|---------------|
| - Personal Computers | - Modems |
| - Office Products | - Peripherals |
| - Workstations | |

BRANDS SERVICED

Ricoh, OEMs printer, CBT, Amdec, Hamilton, CPT, NBI, Lanier, and Tandy.

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u> </u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u> </u> Conversion/Upgrade	<u> </u> Training
<u> </u> Software Maintenance	<u> </u> Programming/Consulting	<u>x</u> Supplies/Accessories
<u> </u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is \$80.

S & S ELECTRONICS
 150 Industrial Avenue, E.
 Lowell, MA 01852
 (617) 458-8033

President: Thomas Donegan

Years Active in TPM: 12

THE COMPANY

Service Locations: 4
 Geographic Coverage: East Coast
 Repair Depots: 3

Total Service Employees: 20-59
 Field Engineers: 20-59
 Field Support Specialists: 1-19

PRODUCTS SERVICED

- Mainframes
- Small Business Systems
- Modems
- Systems Software
- Applications Software
- Peripherals (disks, printers, tapes, other)
- Terminals (dumb, intelligent, graphics)
- Minicomputer-based Turnkey Systems

BRANDS SERVICED

Printronix Printers, Fujitsu Disk Drive, Cipher Tape D, and Imagen Laser Printers.

SERVICES PROVIDED

<u>x</u>	Manufacturer Warranty	<u>x</u>	Installation	<u> </u>	Relocation
<u>x</u>	Preventive Maintenance	<u>x</u>	Remedial Maintenance	<u> </u>	Refurbishment
<u>x</u>	Engineering Changes	<u>x</u>	Conversion/Upgrade	<u>x</u>	Training
<u>x</u>	Software Maintenance	<u>x</u>	Programming/Consulting	<u>x</u>	Supplies/Accessories
<u>x</u>	Equipment Sale/Lease	<u> </u>	Other	<u> </u>	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	80%	80%
Depot Repair	10%	10%
Remote Support Services	10%	10%

Prime time hourly per call rate is \$82.

SCOPUS CORPORATION
 333 Aiken Street
 P.O. Box 1437
 Lowell, MA 01853
 (800) 225-0893

President: James Armstrong, Sr.

Years Active in TPM: 13

THE COMPANY

Service Locations:	20	Total Service Employees:	100-159
Geographic Coverage:	Entire U.S./ Canada, and Bermuda	Field Engineers:	60-99
Repair Depots:	1	Field Support Specialists:	20-59

PRODUCTS SERVICED

- Peripherals (disks, tapes)

BRANDS SERVICED

IBM, DEC, and most major brands.

SERVICES PROVIDED

<u>x</u>	Manufacturer Warranty	<u> </u>	Installation	<u> </u>	Relocation
<u>x</u>	Preventive Maintenance	<u>x</u>	Remedial Maintenance	<u>x</u>	Refurbishment
<u> </u>	Engineering Changes	<u> </u>	Conversion/Upgrade	<u> </u>	Training
<u> </u>	Software Maintenance	<u> </u>	Programming/Consulting	<u>x</u>	Supplies/Accessories
<u> </u>	Equipment Sale/Lease	<u> </u>	Other	<u> </u>	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	50%	45%
Depot Repair	50%	55%
Remote Support Services	-	-

Prime time hourly per call rate is not available.

SERVICELAND, INC.
 5565 Lindero Canyon Road, Suite 325
 Westlake Village, CA 91362
 (805) 495-8045

President & CEO: Mike Pordg

Years Active in TPM: 2

THE COMPANY

Service Locations:	1	Total Service Employees:	100-150
Geographic Coverage:	Entire U.S.	Field Engineers:	100-150
Repair Depots:	1	Field Support Specialists:	20-50

PRODUCTS SERVICED

- Minicomputers

BRANDS SERVICED

IBM, Apple, Corona, UniData, and Qume Printer Boards.

SERVICES PROVIDED

<u>x</u>	Manufacturer Warranty	<u> </u>	Installation	<u>x</u>	Relocation
<u>x</u>	Preventive Maintenance	<u>x</u>	Remedial Maintenance	<u>x</u>	Refurbishment
<u>x</u>	Engineering Changes	<u>x</u>	Conversion/Upgrade	<u> </u>	Training
<u>x</u>	Software Maintenance	<u> </u>	Programming/Consulting	<u>x</u>	Supplies/Accessories
<u> </u>	Equipment Sale/Lease	<u> </u>	Other	<u> </u>	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	70%	70%
Depot Repair	20%	20%
Remote Support Services	5%	5%

Prime time hourly per call rate is \$65.

SERVITECH, INC.
 1409 Centro Circle Drive
 Downers Grove, IL 60515
 (312) 620-8750

President: S. Michael Smith

Years Active in TPM: 13

THE COMPANY

Service Locations:	1	Total Service Employees:	70
Geographic Coverage:	Midwest	Field Engineers:	25
Repair Depots:	1	Field Support Specialists:	10

PRODUCTS SERVICED

- | | |
|--------------------------|---|
| - Minicomputers | - Minicomputer-based Turnkey Systems |
| - Small Business Systems | - Personal Computer-based Turnkey Systems |
| - Terminals | - Modems |
| - Word Processors | - Front-End Processors |
| - Personal Computers | - Peripherals (disks, tapes, printers, other) |
| - Workstations | |

BRANDS SERVICED

AlphaMicro, DCC, Digidyne, Startech, Point 4, DG, DEC, General Automation, Nixdorf, Radio Shack, Randall, Royal, IBM PCs, and Commodore.

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	<u>x</u> Training
<u>x</u> Software Maintenance	<u>x</u> Programming/Consulting	<u>x</u> Supplies/Accessories
<u> </u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	67%	50%
Depot Repair	33%	50%
Remote Support Services	-	-

Prime time hourly per call rate is \$78.

SHIELDS BUSINESS MACHINES, INC.
 410 North 8th Street
 Philadelphia, PA 19123
 (212) 922-6161

President: William J. Shields

Years Active in TPM: 20

THE COMPANY

Service Locations: 5
Geographic Coverage: East Coast/
 South and
 Southwest
Repair Depots: 5

Total Service Employees: 20-59
Field Engineers: 20-59
Field Support Specialists: 1-19

PRODUCTS SERVICED

- Minicomputers
- Small Business Systems
- Word Processors
- Personal Computers
- Workstations
- Modems
- Networks
- Peripherals (disks, tapes, printers, other)
- Terminals (dumb, intelligent, graphics)
- Minicomputer-based Turnkey Systems
- Personal Computer-based Turnkey Systems

BRANDS SERVICED

IBM, Xerox and other major manufacturers.

SERVICES PROVIDED

<u> x </u> Manufacturer Warranty	<u> x </u> Installation	<u> </u> Relocation
<u> x </u> Preventive Maintenance	<u> x </u> Remedial Maintenance	<u> x </u> Refurbishment
<u> x </u> Engineering Changes	<u> x </u> Conversion/Upgrade	<u> x </u> Training
<u> </u> Software Maintenance	<u> x </u> Programming/Consulting	<u> x </u> Supplies/Accessories
<u> x </u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is \$100.

SIRIUS COMPUTER
 14600 Golden West Street, Suite A-101
 Westminster, CA 92683
 (714) 895-2229

President: Mel Knutsen

Years Active in TPM: 4

THE COMPANY

Service Locations:	1	Total Service Employees:	20-59
Geographic Coverage:	West Coast	Field Engineers:	1-19
Repair Depots:	1	Field Support Specialists:	1-19

PRODUCTS SERVICED

- | | |
|--------------------------|---|
| - Minicomputers | - Minicomputer-based Turnkey Systems |
| - Small Business Systems | - Peripherals (disks, printers, tapes, other) |
| - Word Processors | - Terminals (dumb, intelligent, graphics) |
| - Workstations | |

BRANDS SERVICED

Data General (most compatible terminals and peripherals), Wang Processors, and Kennedy Disk Drives.

SERVICES PROVIDED

<input type="checkbox"/> Manufacturer Warranty	<input checked="" type="checkbox"/>	Installation	<input checked="" type="checkbox"/>	Relocation
<input checked="" type="checkbox"/> Preventive Maintenance	<input checked="" type="checkbox"/>	Remedial Maintenance	<input type="checkbox"/>	Refurbishment
<input type="checkbox"/> Engineering Changes	<input checked="" type="checkbox"/>	Conversion/Upgrade	<input type="checkbox"/>	Training
<input type="checkbox"/> Software Maintenance	<input type="checkbox"/>	Programming/Consulting	<input type="checkbox"/>	Supplies/Accessories
<input type="checkbox"/> Equipment Sale/Lease	<input type="checkbox"/>	Other		

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	95%	95%
Depot Repair	5%	5%
Remote Support Services	-	-

Prime time hourly per call rate is \$75.

**3M/EQUIPMENT SERVICE SUPPORT
DIVISION**

515-3N, 3M Center
St. Paul, MN 55144
(612) 731-6586
(612) 731-6582

General Manager: Ed Guertin

Years Active in TPM: 2

THE COMPANY

Service Locations:	14	Total Service Employees:	999+
Geographic Coverage:	Entire U.S., Canada, and Australia	Field Engineers:	999+
Repair Depots:	14	Field Support Specialists:	200-499

PRODUCTS SERVICED

- Small Business Systems
- Peripherals (disks, printers)
- Terminals (dumb, intelligent)
- Personal Computer-based Turnkey Systems
- Statistical Multiplexers
- CAD/CAM Turnkey Systems
- Modems
- Networks
- Microcomputers

BRANDS SERVICED

Tellabs, IBM PC and XT, Lear Siegler, Cable Share, TI, Televideo, Data Storage, DEC, Topas 2, Hayes, and Racal Vadic.

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	<u>x</u> Training
___ Software Maintenance	<u>x</u> Programming/Consulting	<u>x</u> Supplies/Accessories
___ Equipment Sale/Lease	___ Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	80%	80%
Depot Repair	2%	2%
Remote Support Services	18%	18%

Prime time hourly per call rate is \$58-92.

TEL-TEX
 2825 W. 11th Street
 Houston, TX 77008
 (713) 868-6000

President: Thomas W. Moore

Years Active in TPM: 16

THE COMPANY

Service Locations:	5	Total Service Employees:	100-159
Geographic Coverage:	South	Field Engineers:	20-59
Repair Depots:	5	Field Support Specialists:	20-59

PRODUCTS SERVICED

- Personal Computers
- Modems
- Peripherals (disks, tapes, printers, others)
- Terminals (dumb, intelligent, graphics)

BRANDS SERVICED

Prentice, Anderson Jacobson, TI, Data Products, Ventel, DEC, C. ITOH, Visual Technologies, Televideo, and Data Products.

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	Training
Software Maintenance	Programming/Consulting	<u>x</u> Supplies/Accessories
<u>x</u> Equipment Sale/Lease	Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	60%	60%
Depot Repair	40%	40%
Remote Support Services	-	-

Prime time hourly per call rate is \$65.

TERMINALS UNLIMITED INC.
 350 S. Washington Street
 Falls Church, VA 22046
 (703) 237-8666

President: Paul Turner

Years Active in TPM: 4

THE COMPANY

Service Locations:	40	Total Service Employees:	110
Geographic Coverage:	Entire U.S./ Europe	Field Engineers:	85
Repair Depots:	3	Field Support Specialists:	5

PRODUCTS SERVICED

- | | |
|--------------------------|---|
| - Small Business Systems | - Networks |
| - Word Processors | - Systems Software |
| - Personal Computers | - Applications Software |
| - Modems | - Peripherals (disks, printers, tapes, other) |
| - Front-End Processors | - Terminals (dumb, intelligent, graphics) |

BRANDS SERVICED

Agile, Ampex, Anderson Jacobson, Beehive, Datasouth, Diablo, Gume, Renex, Soroc, Corona, IBM, Seequa, C. ITOH, General Optronics, Qantex, OPE/Olivetti, Star Micronics, Texas Instruments, and Hayes.

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	<u>x</u> Training
<u>x</u> Software Maintenance	<u>x</u> Programming/Consulting	<u>x</u> Supplies/Accessories
<u>x</u> Equipment Sale/Lease	<u>x</u> Other: Turn-in/Staging	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	95%	90%
Depot Repair	5%	10%
Remote Support Services	-	-

Prime time hourly per call rate is \$80.

THREE DELTA CORPORATION
 1038 Kiel Court
 Sunnyvale, CA 94089
 (408) 945-4200

President: Mike Amanatulha

Years Active in TPM: 12

THE COMPANY

Service Locations:	1	Total Service Employees:	30
Geographic Coverage:	Entire U.S./ Europe, Canada, and Australia	Field Engineers:	23
Repair Depots:	1	Field Support Specialists:	0

PRODUCTS SERVICED

- Minicomputers
- Terminals (dumb)
- Peripherals (disks, tapes, printers)

BRANDS SERVICED

DEC, Data General, and compatible peripherals.

SERVICES PROVIDED

___ Manufacturer Warranty	___ Installation	___ Relocation
___ Preventive Maintenance <u> x </u>	___ Remedial Maintenance <u> x </u>	___ Refurbishment
___ Engineering Changes <u> x </u>	___ Conversion/Upgrade	___ Training
___ Software Maintenance	___ Programming/Consulting	___ Supplies/Accessories
___ Equipment Sale/Lease	___ Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is not available.

URS CORPORATION
 One Pope Street
 Wakefield, MA 01880
 (617) 438-4300

President: Thomas McHugh

Years Active in TPM: 16

THE COMPANY

Service Locations: 1
 Geographic Coverage: East Coast
 Repair Depots: 1

Total Service Employees: 20-59
 Field Engineers: 20-59
 Field Support Specialists: 1-19

PRODUCTS SERVICED

- Small Business Systems
- Personal Computers
- Peripherals (disks, printers, tapes, other)
- Terminals (dumb, intelligent, graphics)

BRANDS SERVICED

IBM.

SERVICES PROVIDED

<u> </u> Manufacturer Warranty	<u> x </u>	Installation	<u> x </u>	Relocation
<u> x </u> Preventive Maintenance	<u> x </u>	Remedial Maintenance	<u> x </u>	Refurbishment
<u> x </u> Engineering Changes	<u> x </u>	Conversion/Upgrade	<u> </u>	Training
<u> </u> Software Maintenance	<u> </u>	Programming/Consulting	<u> x </u>	Supplies/Accessories
<u> x </u> Equipment Sale/Lease	<u> </u>	Other	<u> </u>	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	95%	95%
Depot Repair	5%	5%
Remote Support Services	-	-

Prime time hourly per call rate is \$60.

ULTIMATE COMPUTER SERVICES
 Field Engineering Division
 30 Broad Street
 Denville, NJ 07834
 (201) 625-8700

Director, Recon Services: Bob LoRocca

Years Active in TPM: 12

THE COMPANY

Service Locations:	2	Total Service Employees:	100
Geographic Coverage:	Northeast U.S.	Field Engineers:	40
Repair Depots:	2	Field Support Specialists:	N/A

PRODUCTS SERVICED

- | | |
|----------------------|------------------|
| - Mainframes | - Terminals |
| - Peripherals | - Microcomputers |
| - Personal Computers | |

BRANDS SERVICED

IBM, STC, Intel, and Memorex.

SERVICES PROVIDED

<input type="checkbox"/> Manufacturer Warranty	<input checked="" type="checkbox"/>	Installation	<input checked="" type="checkbox"/>	Relocation
<input type="checkbox"/> Preventive Maintenance	<input type="checkbox"/>	Remedial Maintenance	<input checked="" type="checkbox"/>	Refurbishment
<input type="checkbox"/> Engineering Changes	<input checked="" type="checkbox"/>	Conversion/Upgrade	<input checked="" type="checkbox"/>	Training
<input type="checkbox"/> Software Maintenance	<input type="checkbox"/>	Programming/Consulting	<input type="checkbox"/>	Supplies/Accessories
<input type="checkbox"/> Equipment Sale/Lease	<input type="checkbox"/>	Other	<input type="checkbox"/>	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is \$120.

UNITED COMPUTER SYSTEMS, INC.
 10564 Progress Way
 Cypress, CA 90630

President: Robert Mowry

Years Active in TPM: 8

THE COMPANY

Service Locations:	1	Total Service Employees:	20-59
Geographic Coverage:	Entire U.S.	Field Engineers:	1-19
Repair Depots:	1	Field Support Specialists:	1-19

PRODUCTS SERVICED

- | | |
|--------------------------|---|
| - Minicomputers | - Networks |
| - Small Business Systems | - Word Processors |
| - Systems Software | - Peripherals (disks, printers, tapes) |
| - Applications Software | - Terminals (dumb, intelligent, graphics) |
| - Modem | - Minicomputer-based Turnkey Systems |
| - Front-End Processors | |

BRANDS SERVICED

Perkin-Elmer.

SERVICES PROVIDED

<u>x</u> Manufacturer Warranty	<u>x</u> Installation	<u>x</u> Relocation
<u>x</u> Preventive Maintenance	<u>x</u> Remedial Maintenance	<u>x</u> Refurbishment
<u>x</u> Engineering Changes	<u>x</u> Conversion/Upgrade	<u>x</u> Training
<u>x</u> Software Maintenance	<u>x</u> Programming/Consulting	<u> </u> Supplies/Accessories
<u> </u> Equipment Sale/Lease	<u> </u> Other	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	90%	85%
Depot Repair	10%	15%
Remote Support Services	-	-

Prime time hourly per call rate is \$90.

UNITRACE, INC.
 3350 Scott Boulevard, #20
 Santa Clara, CA 95054
 (408) 727-7573

President: Jack Lang

Years Active in TPM: 8

THE COMPANY

Service Locations:	1	Total Service Employees:	40
Geographic Coverage:	International	Field Engineers:	N/A
Repair Depots:	1	Field Support Specialists:	N/A

PRODUCTS SERVICED

- | | |
|--|--------------------------|
| - Peripherals (disks and printers) | - Microcomputers |
| - Mainframes and Minicomputers (disks and peripherals) | - Small Business Systems |

BRANDS SERVICED

Ampex, CDC, Memorex, ISS/Sperry, IBM, Diablo, Data Products, and Compaq.

SERVICES PROVIDED

<input type="checkbox"/> Manufacturer Warranty	<input type="checkbox"/> Installation	<input type="checkbox"/> Relocation
<input type="checkbox"/> Preventive Maintenance	<input type="checkbox"/> Remedial Maintenance	<input type="checkbox"/> Refurbishment
<input type="checkbox"/> Engineering Changes	<input checked="" type="checkbox"/> Conversion/Upgrade	<input type="checkbox"/> Training
<input type="checkbox"/> Software Maintenance	<input type="checkbox"/> Programming/Consulting	<input type="checkbox"/> Supplies/Accessories
<input type="checkbox"/> Equipment Sale/Lease	<input checked="" type="checkbox"/> Other: Circuit-Board-Level Repair	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	100%	100%
Remote Support Services	-	-

Prime time hourly per call rate is not available.

WILLIAM MARION COMPANY
 84 Kennedy Street
 Hackensack, NJ 07601
 (201) 343-4554

President: William Marion

Years Active in TPM: 35

THE COMPANY

Service Locations: 3
 Geographic Coverage: East Coast
 Repair Depots: 3

Total Service Employees: 20-59
 Field Engineers: 20-59
 Field Support Specialists: 1-19

PRODUCTS SERVICED

- Mainframes
- Minicomputers
- Personal Computers
- Peripherals (disks, tapes, printers)
- Word Processors
- Workstations

BRANDS SERVICED

IBM, Memorex, Decision Data, Datasouth, Epson, and Emerald Technology.

SERVICES PROVIDED

<u> </u>	Manufacturer Warranty	<u> x </u>	Installation	<u> x </u>	Relocation
<u> x </u>	Preventive Maintenance	<u> x </u>	Remedial Maintenance	<u> x </u>	Refurbishment
<u> x </u>	Engineering Changes	<u> x </u>	Conversion/Upgrade	<u> x </u>	Training
<u> </u>	Software Maintenance	<u> </u>	Programming/Consulting	<u> </u>	Supplies/Accessories
<u> x </u>	Equipment Sale/Lease	<u> </u>	Other	<u> </u>	

SERVICE DELIVERY MODES

	<u>1984</u>	<u>1985</u>
On-Site Service	-	-
Depot Repair	-	-
Remote Support Services	-	-

Prime time hourly per call rate is \$125.

APPENDIX: DEFINITIONS

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- APPLICATION SOFTWARE - Software that performs processing to service user functions.
- CONSULTING - Includes analysis of user requirements and the development of a specific action plan to meet user service and support needs.
- DISPATCHING - The process of allocating service resources to solve a support-related problem.
- DOCUMENTATION - All manuals, newsletters, and text designed to serve as reference material for the ongoing operation of hardware or software.
- END USER - May buy a system from the hardware supplier(s) and do his own programming, interfacing and installation. Alternatively, he may buy a turnkey system from a systems house or hardware integrator.
- ENGINEERING CHANGE NOTICE (ECN) - Product changes to improve the product after it has been released to production.
- ENGINEERING CHANGE ORDER (ECO) - The follow-up to ECNs which include parts and a bill of material to effect the change in hardware.
- ESCALATION - The process of increasing the level of support when and if the field engineer cannot correct a hardware or software problem within a prescribed amount of time, usually two to four hours for hardware.

- FIELD ENGINEER (FE) - For the purpose of this study, field engineer, customer engineer, serviceperson, and maintenance person were used interchangeably and refer to the individual who responds to a user's service call to repair a device or system.
- HARDWARE INTEGRATOR - Develops system interface electronics and controllers for the CPU, sensors, peripherals and all other ancillary hardware components. He may also develop control system software in addition to installing the entire system at the end user site.
- LARGE SYSTEM - Refers to traditional mainframes including at the low end IBM 4300-like machines and at the high end IBM 308X-like machines. Large systems have a maximum word length of 32 bits and a standard configuration price of \$350,000 and higher.
- MEAN TIME BETWEEN FAILURES (MTBF) - The elapsed time between hardware failures on a device or a system.
- MEAN TIME TO REPAIR - The elapsed time from the arrival of the field engineer on the user's site until the device is repaired and returned to the user for his utilization.
- MEAN TIME TO RESPOND - The elapsed time between the user placement of a service call and the arrival at the user's location of a field engineer.
- MICROCOMPUTER - A computer whose basic element is a single integrated circuit with a limited basic instruction set.
- MINICOMPUTER - See Small System.
- OPERATING SYSTEM SOFTWARE (SYSTEMS SOFTWARE) - Software that enables the computer system to perform basic functions. System software,

for the purposes of this report, does not include utilities or program development tools.

- PERIPHERALS - Includes all input, output, and storage devices, other than main memory, which are locally connected to the main processor and are not generally included in other categories, such as terminals.
- PLANNING - Includes the development of procedures, distribution, organization, and configuration of support services. For example, capacity planning, "installation" planning.
- PLUG-COMPATIBLE MAINFRAME (PCM) - Mainframe computers that are compatible with and can execute programs on an equivalent IBM mainframe. The two major PCM vendors at this time are Amdahl and National Advanced Systems.
- SMALL BUSINESS COMPUTER - For the purpose of this study, a system which is built around a Central Processing Unit (CPU), has the ability to utilize at least 20M bytes of disk capacity, provides multiple CRT workstations, and offers business-oriented system software support.
- SMALL SYSTEM - Refers to traditional minicomputer and superminicomputer systems ranging from a small multiuser, 16-bit system at the low end to a sophisticated 32-bit machine at the high end.
- SOFTWARE ENGINEER (SE) - The individual that responds (either on-site or via remote support) to a user's service call to repair or patch operating system and/or applications software.
- SOFTWARE PRODUCTS - Systems and applications packages, which are sold to computer users by equipment manufacturers, independent vendors and others. Also included are fees for work performed by the vendor to implement a package at the user's site.

- SUPERMINICOMPUTER - See Small System.
- SYSTEM INTERRUPTION - Any system downtime requiring an Initial Program Load (IPL).
- SYSTEMS HOUSE - Integrates hardware and software into a total turnkey system to satisfy the data processing requirements of the end user. May also develop system software products for license to end users.
- THIRD-PARTY MAINTENANCE (TPM) - The provision of maintenance and support services for other manufacturers' products.
- TRAINING - All audio, visual, and computer based documentation, materials, and live instruction designed to educate users and support personnel in the ongoing operation or repair of hardware and software.
- TURNKEY SYSTEM - Composed of hardware and software integrated into a total system designed to completely fulfill the processing requirements of a single application.

