USER SERVICE REQUIREMENTS-OFFICE PRODUCTS

INPUT

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The company carries out continuous and in-depth research. Working closely with clients on important issues, INPUT's staff members analyze and interpret the research data, then develop recommendations and innovative ideas to meet clients' needs.

Clients receive reports, presentations, access to data on which analyses are based, and continuous consulting.

Many of INPUT's professional staff members have nearly 20 years' experience in their areas of specialization. Most have held senior management positions in operations, marketing, or planning. This expertise enables INPUT to supply practical solutions to complex business problems.

Formed in 1974, INPUT has become a leading international planning services firm. Clients include over 100 of the world's largest and most technically advanced companies.

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INPUT
Planning Services For Management

USER SERVICE REQUIREMENTS - OFFICE PRODUCTS

MAY 1984

USER SERVICE REQUIREMENTS - OFFICE PRODUCTS

CONTENTS

USER SERVICE REQUIREMENTS - OFFICE PRODUCTS

EXHIBITS

USER SERVICE REQUIREMENTS - OFFICE PRODUCTS

EXHIBITS

1 INTRODUCTION

I INTRODUCTION

- This report, developed by INPUT, is part of the 1984 Customer Service Program for the United States. It has been produced for clients of that program and deals exclusively with office systems. Major vendors are treated separately so that data from each user base may be compared with data from competitors' users.

- The importance of satisfying user requirements becomes even more crucial as the introduction of such concepts as third-party maintenance and single-source service creates an increasingly competitive marketplace.

- In addition, the profitability of customer service has prompted vendors to search for additional ways to increase service revenues while keeping maintenance prices down. Increased user involvement in the maintenance process is one example of this effort.

- For these reasons, INPUT has scheduled the user requirement series of reports as the first deliverables of the Customer Service Program. The series is broken down into three reports - Large Systems, Small Systems, and Office Systems.

A. DEMOGRAPHICS

- A total of 334 office system users were interviewed, as indicated in Exhibit I-1 (displayed by vendor) and Exhibit I-2 (displayed by industry sector). Those persons interviewed are classified by title, as follows:

-	President/Vice President/Owner	28
-	Director/Assistant Director	25
-	Manager	37
-	Data Processing Manager	77
-	Operations Manager	26
-	Office Services/Purchasing Manager	22
-	Systems Analyst/Programmer	23
-	Word Processing Manager	22
-	Other	74
		334

B. METHODOLOGY

- The basis of the interview was the questionnaire shown in Appendix B. The data obtained was entered on dBASE II's relational data base management system and analyzed using ABSTAT. The results were summarized to produce the exhibits that are part of this report.

- The data base format is shown in Appendix A.

- The list of users to be interviewed was selected from a variety of public and nonpublic sources:

  - Client-provided user lists.

  - Publicly available subscription sources.

EXHIBIT I-1

OFFICE SYSTEMS USER SAMPLE BY PRODUCT TYPE AND VENDOR

PRODUCT TYPE	VENDOR	USER INTERVIEWS
Personal Computers	Apple	29
	DEC	10
	Hewlett-Packard	19
	IBM	28
	Xerox	11
Subtotal		97
Word Processors	CPT	12
	IBM	23
	NBI	8
	Wang	29
	Xerox	8
Subtotal		80
Workstations	Burroughs	22
	Datapoint	24
	IBM	23
	Wang	19
Subtotal		88
Printers/Terminals	Centronics	14
	Decision Data	15
	Xerox	11
	ITT/Courier	20
	Telex	9
Subtotal		69
Total		334

EXHIBIT I-2

OFFICE SYSTEMS USER SAMPLE BY INDUSTRY SECTOR

SECTOR	USER INTERVIEWS
Process Manufacturing	55
Discrete Manufacturing	66
Transportation	10
Utilities	13
Banking and Finance	14
Insurance	31
Medical	7
Education	18
Retail	14
Wholesale	11
Federal Government	12
State and Local Government	18
Services	54
Other	11
Total	334

- INPUT files.

- INPUT data base listings.

- Approximately 35% of the respondents in the 1984 large-systems survey also participated in the 1983 survey.

C. USERS INTERVIEWED

- This report does not disclose the identities of respondents. However, their anonymous responses are provided (in raw data printouts) to clients, and a list of the companies represented by respondents (without the associated responses) is provided in Appendix C.

II EXECUTIVE SUMMARY

II EXECUTIVE SUMMARY

A. INTRODUCTION

- This Executive Summary is designed to help the busy reader quickly review the research findings of this report without having to read each section, while ensuring that the key points are not missed. Each main point is summarized as an exhibit, and an accompanying script is given on the facing page.

- When examining the user satisfaction levels for office products, it is necessary to bear in mind that these figures indicate satisfaction based on the current level of user needs, as opposed to the levels that may be expected in future years. For example, on the surface it would appear that personal computer users are satisfied with the service received; this is only true, however, because their service requirements are currently very low. It is highly likely that the level of requirements will rapidly increase, outstripping vendors' abilities to respond.

- Within the scope defined above, office products service met or exceeded most users' requirements in 1984. Office products service is the only category of equipment service to perform so well.

- One of the key issues that this report raises is the setting and satisfying of user service expectations: each vendor's user base has a different set of user requirements, largely influenced by the vendor itself (i.e., by its sales force). User satisfaction is directly related to ensuring that users' expectations are not set above the service level that the vendor is capable of providing.

B. PERSONAL COMPUTER USER SATISFACTION

- It is important to place current user satisfaction measurements in the following market context:

  - Sixty-five percent of business personal computer users who are outside the warranty period have no service contract; these users depend on the personal computers' reliability and on ad hoc servicing to satisfy their availability needs.

  - The personal computer service market is in turmoil, with no clear industry guidelines established on service pricing (which ranges from free service to contracts costing $550 per year for on-site service) or quality (which ranges from poor to excellent).

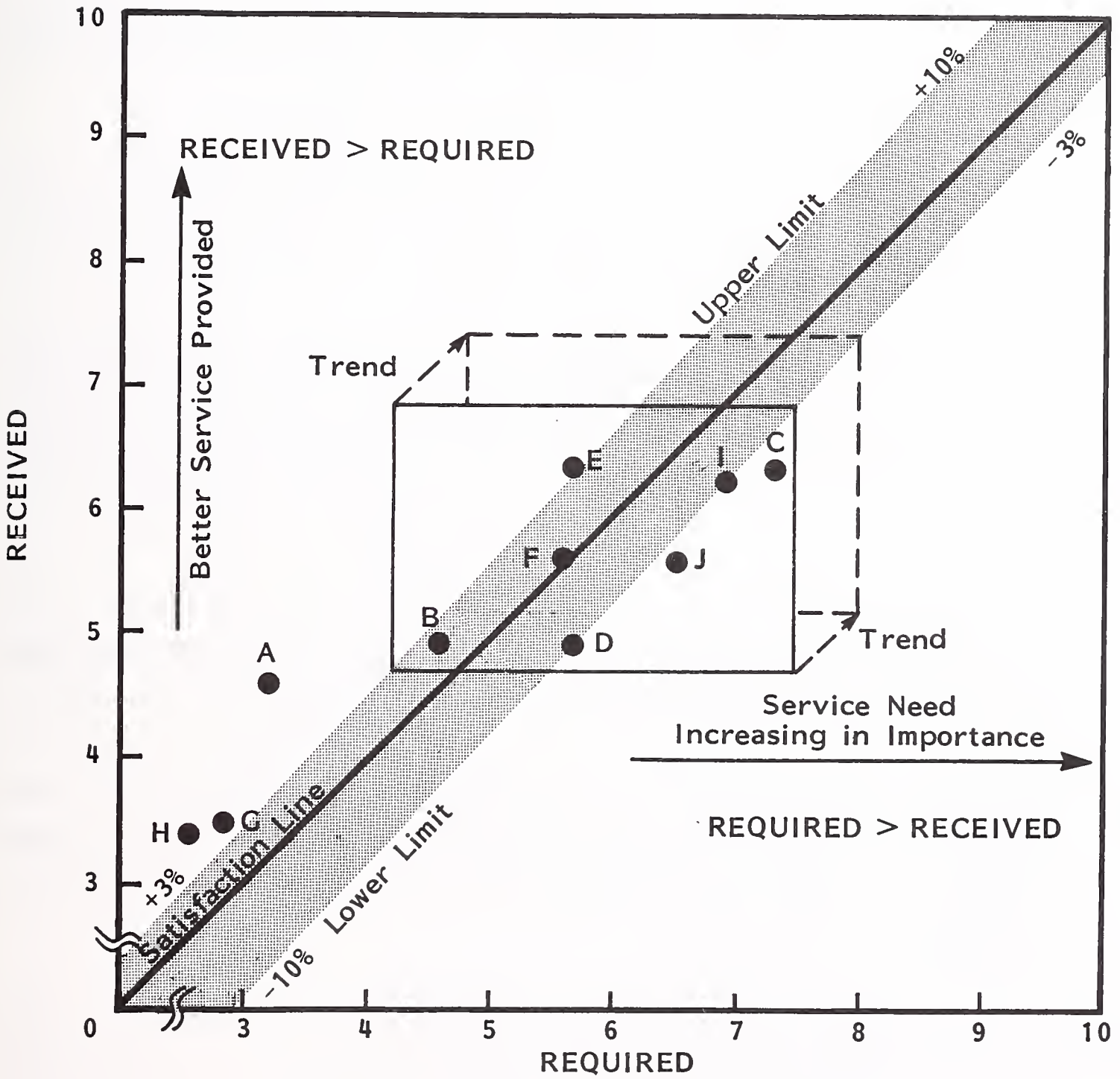
  - User dependence on the personal computer as a business tool for information processing has not reached a critical level in most cases (system availability required averages 80%); if the personal computer fails, the user is inconvenienced but not functionally incapacitated.

- None of these conditions will last. The percentage of business personal computers without service contracts will decline rapidly as the business users' dependence on the product increases (and the units begin to fail due to use). This will also mean that users will put greater pressure on the service vendors to reduce response time and standardize their service prices.

- These trends are indicated in Exhibit II-1, where current user satisfaction levels are shown to be quite high. INPUT suggests that vendors accurately target user needs by keeping service performance as close as possible to the SATISFACTION LINE. Ideally, user needs should not be exceeded by more than 3% at the lower end (where noncritical service needs are grouped) or by 10% at the upper end (where critical service needs are grouped). Similarly, vendor service should not be more than 3% below user requirements for critical service needs (upper end) or 10% below for noncritical service needs.

EXHIBIT II-1

PERSONAL COMPUTER USER SATISFACTION*



A = Planning
B = Consulting
C = Documentation
D = Training
E = Hardware Maintenance
F = Software Support
G = Sale of Supplies
H = Add-On Sales
I = Site Audits
J = Relocation/Deinstallation

*Rating: 1 = Low, 10 = High

C. WORD PROCESSOR USER SATISFACTION

- The picture for word processor user satisfaction with service is entirely different from that for the personal computer user, as shown in Exhibit II-2.

  - All of the user service requirement levels are higher than those for personal computers (all dots are higher up the SATISFACTION LINE, indicating the increased importance of service).

  - All of the major post-sales services provided by word processor vendors meet or beat the current user requirements, and there is no evidence of any impending change in that situation.

  - User dependence on the word processor is high (system availability requirements average in excess of 90%, which is equivalent to requirements for minicomputers), and product performance matches it in most cases.

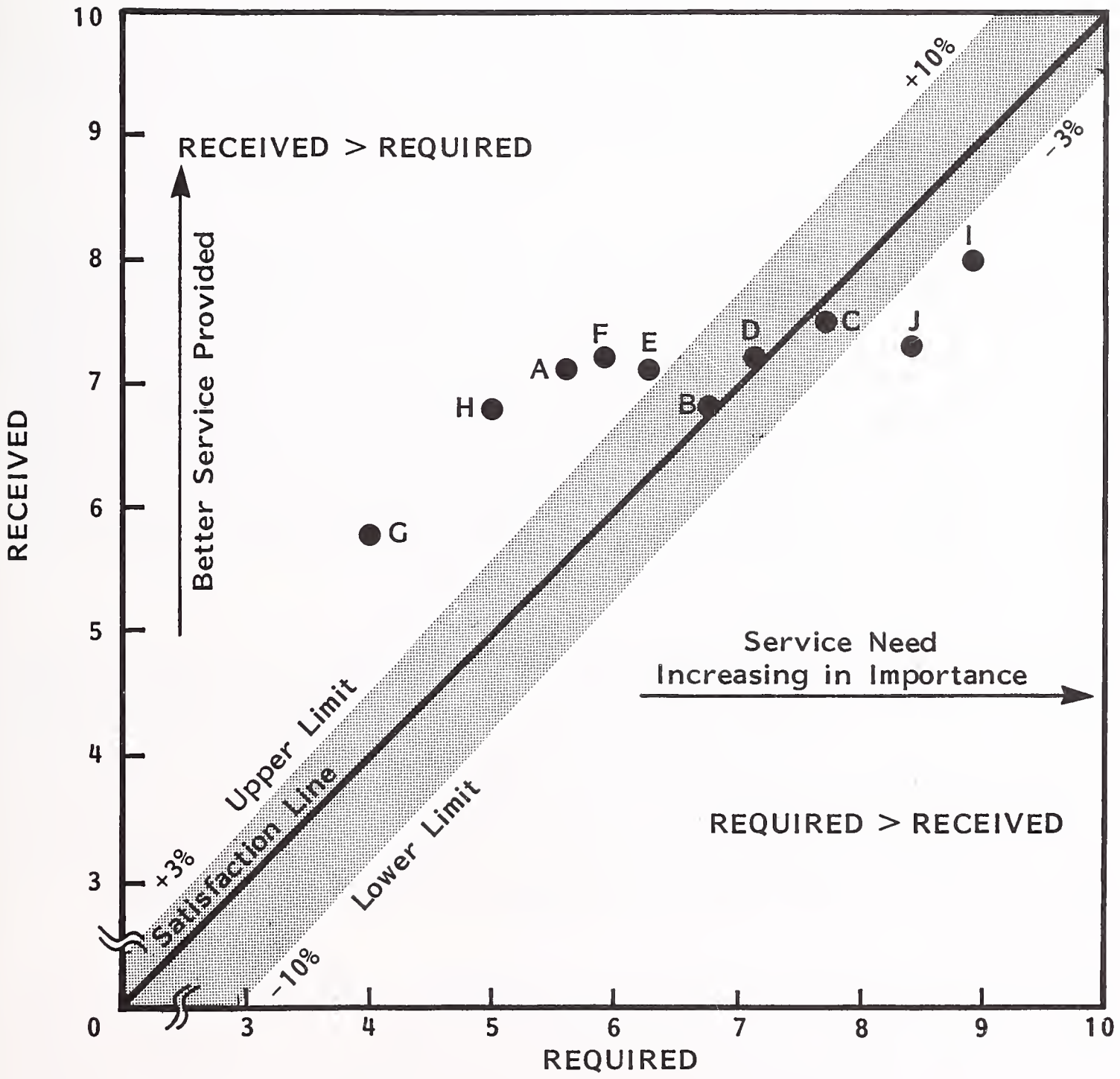
- As a result, vendor service pricing has stabilized and is in a narrower range (9%-11% of purchase price per annum). Generally, service quality also is high; poor quality service would immediately affect vendor image and reputation.

- Word processor user service requirements appear to have stabilized to some degree, and there is no apparent need to plan for dramatically increased service performance in the immediate future. (This situation is unlike that for personal computers.)

- Word processing is being affected by the introduction of personal computers into the office environment with limited but accessible text editing/word processing capabilities and store and forward/electronic mail computing services networks that provide corporate-wide information distribution. The trend is toward multistation word processing systems and the use of mini/microcomputer-based technology, with increasing emphasis on both local and remote networking.

EXHIBIT II-2

WORD PROCESSOR USER SATISFACTION*



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D. OFFICE PRODUCT USER SATISFACTION WITH HARDWARE MAINTENANCE

- To emphasize the need to review user satisfaction levels within the context of expected trends as well as on the basis of current user needs, Exhibit II-3 shows how INPUT believes the picture will change over the next three years.

- Hardware maintenance requirements for the four office product equipment categories are substantially different from one another, as are the abilities of the vendor community to respond to rapid shifts in user needs.

  - The personal computer vendor community is largely dependent on the hardware service capabilities of distributors and other third-party retail outlets; these are difficult to control and difficult to improve rapidly. The hardware service needs of personal computer users are expected to increase rapidly over the next three years while service quality is expected to remain fairly constant. The result is that personal computer users' satisfaction with hardware service will decrease sharply.

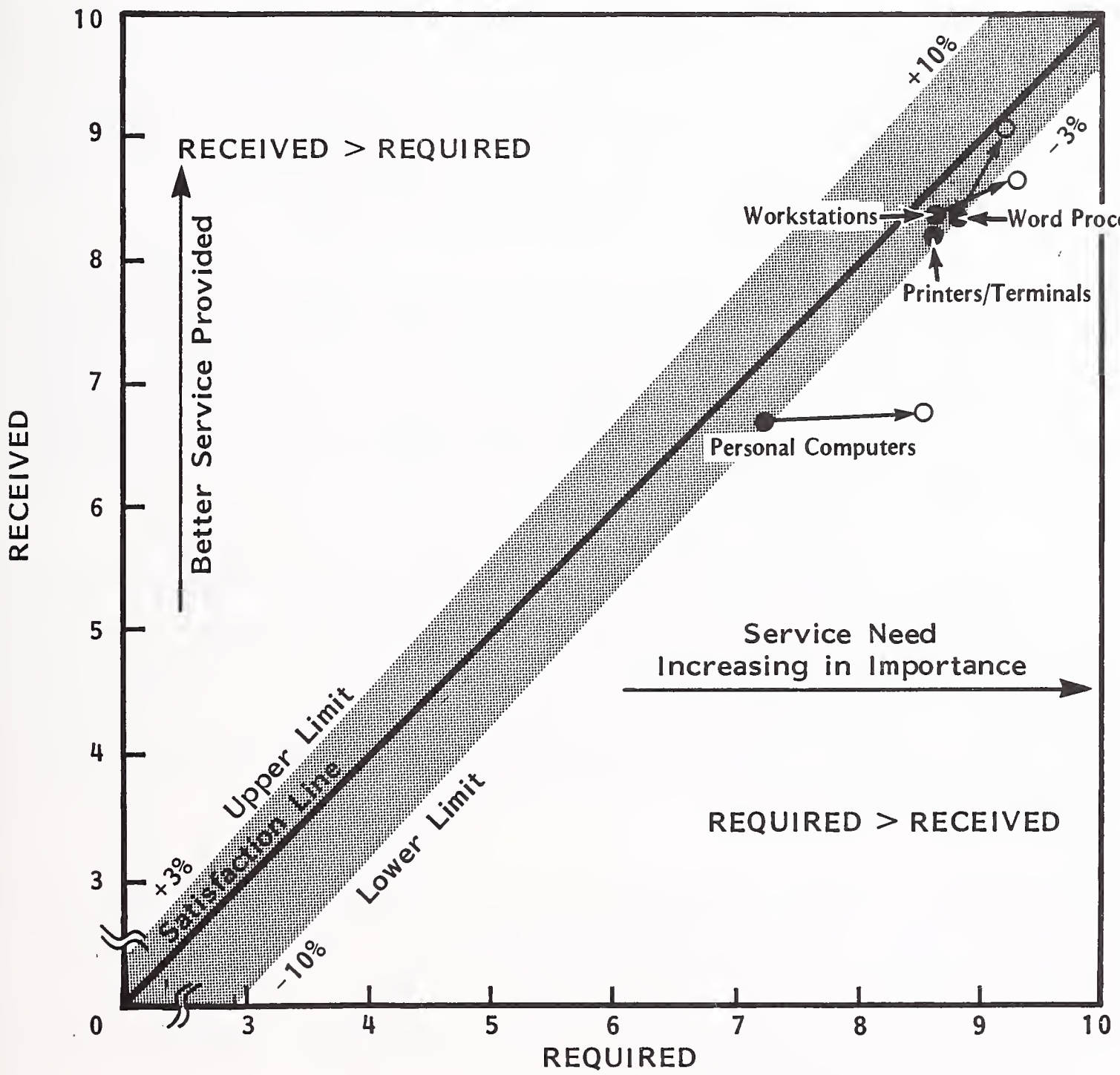
  - Word processor vendors service their user base to a greater extent directly through their own customer service locations and personnel; as a result, it is possible for word processor vendors to raise their service response levels as user needs dictate. The result is that, while user hardware service requirements are expected to increase slightly over the next three years, the satisfaction level will remain constant.

  - Printer/terminal users currently receive a satisfactory level of hardware service so that vendors can continue service at current levels over the next few years without significantly affecting user satisfaction.

  - Workstation users' hardware service needs are expected to increase slightly over the next few years, with some degradation of user satisfaction due to the same kind of problem PC vendors have had with their distributors.

EXHIBIT II-3

OFFICE PRODUCT USER SATISFACTION WITH HARDWARE MAINTENANCE*
CURRENT (●) AND EXPECTED (o)



*Rating: 1 = Low, 10 = High

E. OFFICE PRODUCT USER SATISFACTION WITH SOFTWARE MAINTENANCE

- The predominant change in software maintenance satisfaction levels will be brought about by a rapid increase in user requirements and a slow improvement in vendor service, which translates into lower user satisfaction.

- Exhibit II-4 examines the software maintenance picture in view of the expected trends in user requirements. It is evident from the chart that the anomalous position of personal computer user requirements with respect to the other office products will not continue and should be expected to increase to a point in line with that of word processor users today.

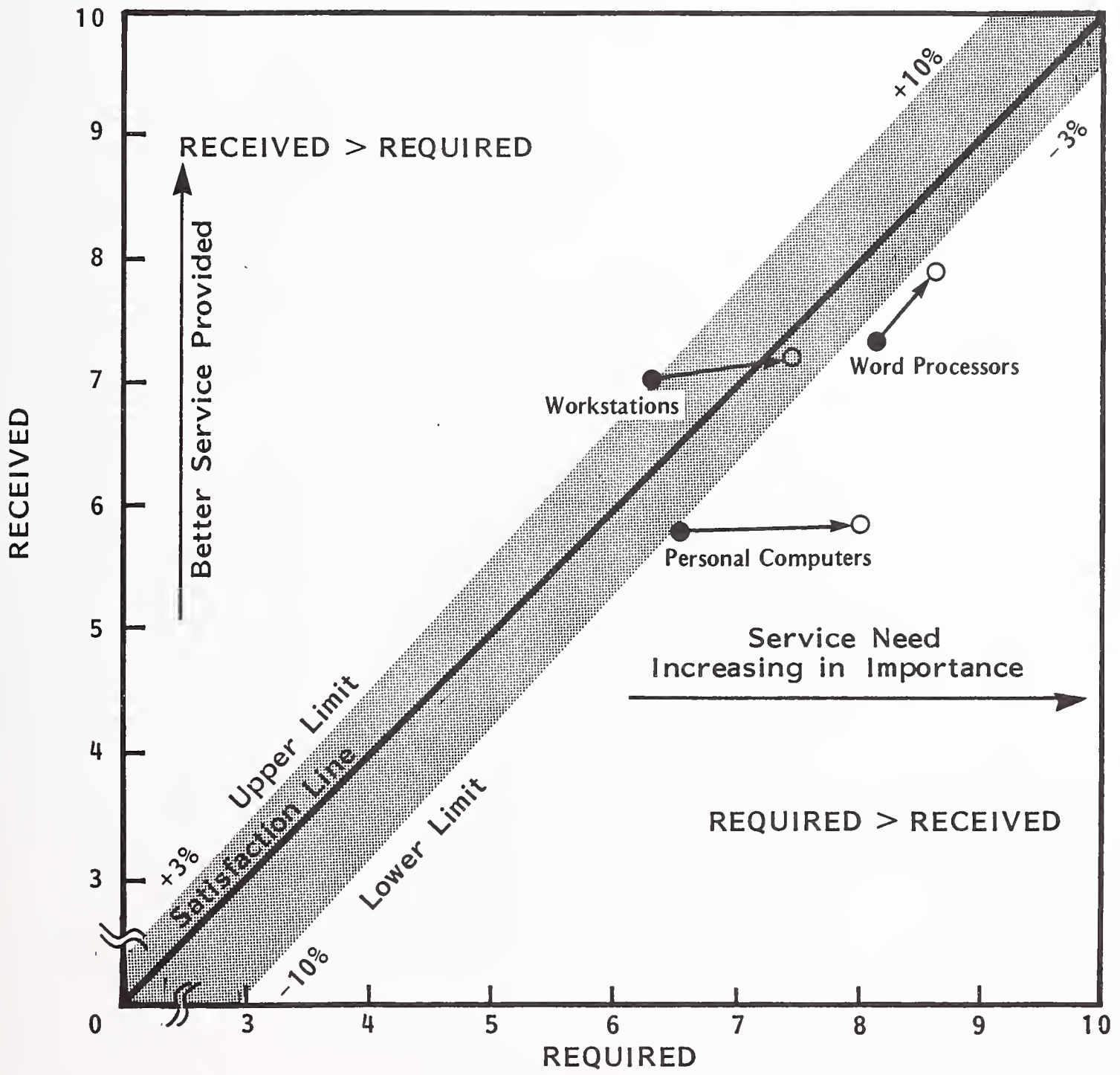
- At that point, the service provided will be largely outside the lower limit of satisfaction, and a great deal of customer unrest may be expected. It is hard to see how this can be changed since so much of the personal computer software is generated by companies depending on software publishing houses that have little support capability.

- Word processor vendors must expect a steady increase in software support requirements, even if the level of service provided is already the best for any office product. This, paradoxically, is due mainly to the substantial gains made in hardware reliability: if the hardware failures become few and far between, attention is concentrated on anything else that can make the system fail.

- Workstation vendors, who provide a software maintenance service level equivalent to that of the word processor vendors, have a distribution channel akin to that of the personal computer vendor. Shifts in user requirements are correspondingly more difficult to accommodate, which translates into lower levels of user satisfaction.

EXHIBIT II-4

OFFICE PRODUCT USER SATISFACTION WITH SOFTWARE MAINTENANCE*
CURRENT (●) AND EXPECTED (o)



*Rating: 1 = Low, 10 = High

III VENDOR PERFORMANCE ANALYSIS

III VENDOR PERFORMANCE ANALYSIS

A. INTRODUCTION

- This section analyzes how each vendor within the respective product types performs in meeting the users' requirements for both principal and secondary services. Each analysis compares the average level of service required by users to the average level of services received, thus deriving the percentage of users who are satisfied by the services they receive.

- The exhibits comparing average level of service required versus received not only help determine the level of satisfaction each group of users receives, but they also indicate the degree of importance that the users assign to each service. In addition, a comparatively low requirement level suggests a low user awareness of the availability of certain services.

- In isolated cases, the exhibits presenting user requirements versus services received do not reflect the overall percentage of users satisfied with their service, due to extraordinarily low or high ratings. This is a result of individual users having received a level of service far below or above their stated requirements. The exhibits presenting satisfaction percentage levels actually reflect a truer picture of overall satisfaction than do the rating level exhibits.

- The following performance analyses are based upon reported requirement levels of each vendor's users. Therefore, they should be studied as measure-

ments of that particular vendor's ability to satisfy user requirements. They should not be used as absolute measures that would allow comparison between vendors.

B. PERSONAL COMPUTER USERS

- As a group, personal computer users received a degree of service greater than or equal to their requirements in such components as planning, consulting, and sales support. They received less than the required levels of service in more necessary components, such as hardware maintenance, software support, training, and documentation. Considering that personal computer users are often first-time computer users, the showing of dissatisfaction in the areas of documentation and training becomes even more important.

- Exhibit III-1 presents average ratings for personal computer user service requirements versus actual service received. Exhibit III-2 provides the percentage of satisfied and dissatisfied personal computer users.

1. APPLE USERS

- As shown in Exhibits III-3 and III-4, Apple users were very satisfied with planning, sales of supplies and add-ons, site audits, and relocation/deinstallation services.

- Services in which 40% or more of the Apple users received unsatisfactory levels included hardware maintenance, software support, training, and documentation. For over half the Apple users interviewed, software support and documentation service levels were below required levels.

EXHIBIT III-1

PERSONAL COMPUTER USER SERVICE REQUIREMENTS
VERSUS LEVEL OF SERVICE RECEIVED
ALL VENDORS

SERVICE PROVIDED	AVERAGE LEVEL OF SERVICE*	
	REQUIRED	RECEIVED
Planning	3.2	4.6
Consulting	4.6	4.9
Documentation	7.3	6.3
Training	5.7	4.9
Sales of Supplies	5.7	6.3
Add-On Sales	5.6	5.6
Site Audits	2.8	3.5
Relocation and Deinstallation	2.5	3.4
Hardware Maintenance	6.9	6.2
Software Support	6.5	5.6

*Rating: 1 = Low, 10 = High

EXHIBIT III-2

PERSONAL COMPUTER USER SERVICE REQUIREMENT SATISFACTION LEVEL
ALL VENDORS

SERVICE PROVIDED	SATISFIED* User receives equal to/or greater than the required level of service	DISSATISFIED* User receives less than the required level of service	NUMBER OF RESPONSES
Planning	74.3%	25.7%	70
Consulting	60.0	40.0	80
Documentation	48.3	51.7	95
Training	65.1	34.9	84
Sales of Supplies	80.9	19.1	89
Add-On Sales	79.5	20.5	79
Site Audits	69.1	30.9	58
Relocation/ Deinstallation	86.5	13.5	52
Hardware Maintenance	55.2	44.8	87
Software Support	49.4	50.6	78

*Percentage

EXHIBIT III-3

PERSONAL COMPUTER USER SERVICE REQUIREMENTS
VERSUS LEVEL OF SERVICE RECEIVED
VENDOR: APPLE

SERVICE PROVIDED	AVERAGE LEVEL OF SERVICE*	
	REQUIRED	RECEIVED
Planning	3.5	4.4
Consulting	5.1	4.5
Documentation	7.1	6.0
Training	6.0	4.4
Sales of Supplies	6.3	6.4
Add-On Sales	6.3	6.0
Site Audits	2.9	3.5
Relocation and Deinstallation	2.1	3.5
Hardware Maintenance	6.3	5.7
Software Support	6.8	5.2

* Rating: 1 = Low, 10 = High

EXHIBIT III-4

PERSONAL COMPUTER USER SERVICE REQUIREMENT SATISFACTION LEVEL
VENDOR: APPLE

SERVICE PROVIDED	SATISFIED* User receives equal to/or greater than the required level of service	DISSATISFIED* User receives less than the required level of service	NUMBER OF RESPONSES
Planning	76.0%	24.0%	25
Consulting	66.7	33.3	27
Documentation	42.9	57.1	28
Training	53.6	46.4	28
Sales of Supplies	71.4	28.6	28
Add-On Sales	76.0	24.0	25
Site Audits	76.2	23.8	21
Relocation/ Deinstallation	90.0	10.0	20
Hardware Maintenance	60.0	40.0	25
Software Support	45.8	54.2	24

*Percentage

2. DIGITAL EQUIPMENT CORPORATION USERS

- DEC users gave high marks in almost all service component areas, including hardware maintenance and documentation. Surprisingly, the service area receiving the lowest marks by DEC users is sales of supplies, with 66.7% of the DEC users receiving less than their required level of service in this area.

- Software support was another area in which over 40% of the users surveyed received less than their required level of service required.

- Exhibits III-5 and III-6 provide full details on the service requirements and levels received reported by DEC users.

3. HEWLETT-PACKARD USERS

- As with other personal computer users, HP users reported satisfactory service in such areas as planning, consulting, sales, site audits, and relocations/deinstallations. HP users reported unsatisfactory service in documentation, training, and hardware maintenance.

- Unlike the other personal computer users, HP users reported satisfactory service in the area of software support, with over 64% receiving a service level equal to or greater than the required level of service.

- Exhibits III-7 and III-8 provide complete responses from HP users.

4. IBM USERS

- IBM users, of all personal computer users, are the most satisfied with their service received, as shown in Exhibits III-9 and III-10.

- A high percentage of IBM users receive equal to or greater than their required level of service in all except three areas of service:

EXHIBIT III-5

PERSONAL COMPUTER USER SERVICE REQUIREMENTS
VERSUS LEVEL OF SERVICE RECEIVED
VENDOR: DIGITAL EQUIPMENT CORPORATION

SERVICE PROVIDED	AVERAGE LEVEL OF SERVICE*	
	REQUIRED	RECEIVED
Planning	2.6	2.6
Consulting	3.2	4.0
Documentation	7.2	7.0
Training	4.9	4.1
Sales of Supplies	6.4	4.9
Add-On Sales	4.6	4.3
Site Audits	2.2	2.4
Relocation and Deinstallation	2.3	2.9
Hardware Maintenance	6.4	6.1
Software Support	6.7	5.7

* Rating: 1 = Low, 10 = High

EXHIBIT III-6

PERSONAL COMPUTER USER SERVICE REQUIREMENT SATISFACTION LEVEL
VENDOR: DIGITAL EQUIPMENT CORPORATION

SERVICE PROVIDED	SATISFIED* User receives equal to/or greater than the required level of service	DISSATISFIED* User receives less than the required level of service	NUMBER OF RESPONSES
Planning	66.7%	33.3%	8
Consulting	88.9	11.1	8
Documentation	66.7	33.3	9
Training	62.5	37.5	8
Sales of Supplies	33.3	66.7	9
Add-On Sales	88.9	11.1	9
Site Audits	100.0	0.0	8
Relocation/ Deinstallation	87.5	12.5	11
Hardware Maintenance	66.7	33.3	9
Software Support	55.6	44.4	9

*Percentage

EXHIBIT III-7

PERSONAL COMPUTER USER SERVICE REQUIREMENTS
VERSUS LEVEL OF SERVICE RECEIVED
VENDOR: HEWLETT-PACKARD

SERVICE PROVIDED	AVERAGE LEVEL OF SERVICE*	
	REQUIRED	RECEIVED
Planning	3.6	5.1
Consulting	4.5	5.1
Documentation	7.5	6.1
Training	6.0	5.0
Sales of Supplies	5.4	6.6
Add-On Sales	5.2	5.7
Site Audits	2.4	3.6
Relocation and Deinstallation	2.7	3.9
Hardware Maintenance	7.7	6.5
Software Support	6.2	5.7

* Rating: 1 = Low, 10 = High

EXHIBIT III-8

PERSONAL COMPUTER USER SERVICE REQUIREMENT SATISFACTION LEVEL
VENDOR: HEWLETT-PACKARD

SERVICE PROVIDED	SATISFIED* User receives equal to/or greater than the required level of service	DISSATISFIED* User receives less than the required level of service	NUMBER OF RESPONSES
Planning	69.2%	30.8%	13
Consulting	71.4	28.6	14
Documentation	38.9	61.1	18
Training	58.8	41.2	17
Sales of Supplies	78.9	21.1	17
Add-On Sales	78.6	21.4	14
Site Audits	88.9	11.1	9
Relocation/ Deinstallation	77.8	22.2	9
Hardware Maintenance	36.8	63.2	17
Software Support	64.3	35.7	14

*Percentage

EXHIBIT III-9

PERSONAL COMPUTER USER SERVICE REQUIREMENTS
VERSUS LEVEL OF SERVICE RECEIVED
VENDOR: IBM

SERVICE PROVIDED	AVERAGE LEVEL OF SERVICE*	
	REQUIRED	RECEIVED
Planning	2.4	5.6
Consulting	3.9	5.5
Documentation	7.1	6.5
Training	4.9	5.7
Sales of Supplies	5.0	6.6
Add-On Sales	5.9	5.8
Site Audits	2.8	3.7
Relocation and Deinstallation	2.7	3.2
Hardware Maintenance	6.5	6.5
Software Support	6.1	5.8

* Rating: 1 = Low, 10 = High

EXHIBIT III-10

PERSONAL COMPUTER USER SERVICE REQUIREMENT SATISFACTION LEVEL
VENDOR: IBM

SERVICE PROVIDED	SATISFIED* User receives equal to/or greater than the required level of service	DISSATISFIED* User receives less than the required level of service	NUMBER OF RESPONSES
Planning	84.2%	15.8%	19
Consulting	80.0	20.0	25
Documentation	46.2	53.8	26
Training	83.3	16.7	24
Sales of Supplies	88.5	11.5	26
Add-On Sales	76.0	24.0	25
Site Audits	80.0	20.0	15
Relocation/ Deinstallation	91.7	8.3	12
Hardware Maintenance	53.8	46.2	26
Software Support	42.9	57.1	21

*Percentage

- Documentation, with 53.8% dissatisfied.

- Hardware maintenance, with 46.2% dissatisfied.

- Software support, with 57.1% dissatisfied.

- IBM users reported especially high satisfaction with training, an area that IBM has concentrated on during the past year by utilizing independent training firms through IBM Product Centers.

5. XEROX USERS

- Xerox personal computer users reported general dissatisfaction with service. A glaring deficiency is in the area of consulting, with 100% of the users receiving unsatisfactory levels of service.

- Other problem areas include documentation (92.9% dissatisfied), hardware maintenance (70% dissatisfied), and software support (70% dissatisfied).

- Xerox users received satisfactory levels of service in only three areas: add-on sales, sales of supplies, and site audits.

- One key problem for Xerox users is the unavailability of service, whether actual or perceived, as indicated by the low number of responses in the areas of planning, consulting, add-on sales, site audits, relocations/deinstallations, and training.

- Exhibits III-11 and III-12 summarize the Xerox users' responses.

EXHIBIT III-11

PERSONAL COMPUTER USER SERVICE REQUIREMENTS
VERSUS LEVEL OF SERVICE RECEIVED
VENDOR: XEROX

SERVICE PROVIDED	AVERAGE LEVEL OF SERVICE*	
	REQUIRED	RECEIVED
Planning	4.1	4.4
Consulting	6.2	5.5
Documentation	7.9	6.3
Training	6.6	4.1
Sales of Supplies	6.0	5.7
Add-On Sales	4.1	4.7
Site Audits	3.7	4.6
Relocation and Deinstallation	3.6	4.0
Hardware Maintenance	8.6	6.6
Software Support	7.6	5.6

* Rating: 1 = Low, 10 = High

EXHIBIT III-12

PERSONAL COMPUTER USER SERVICE REQUIREMENT SATISFACTION LEVEL
VENDOR: XEROX

SERVICE PROVIDED	SATISFIED* User receives equal to/or greater than the required level of service	DISSATISFIED* User receives less than the required level of service	NUMBER OF RESPONSES
Planning	20.0%	80.0%	5
Consulting	0.0	100.0	6
Documentation	7.1	92.9	14
Training	42.9	57.1	7
Sales of Supplies	77.8	22.2	9
Add-On Sales	83.3	16.7	6
Site Audits	60.0	40.0	5
Relocation/ Deinstallation	INSUFFICIENT RESPONSE		
Hardware Maintenance	30.0	70.0	10
Software Support	30.0	70.0	10

*Percentage

C. WORD PROCESSOR USERS

- Word processor users, as a group, were more satisfied with the service that they received than were personal computer users. This is true even though users' requirement levels were much higher than those of personal computer users. This is due to two factors: word processor service organizations are more mature, and word processor service is performed predominantly on-site while personal computer vendors have only recently moved into that delivery mode of service.

- Still, word processor users, as a whole, were dissatisfied with the level of hardware maintenance and software support that they received.

- Exhibits III-13 and III-14 present word processor users' responses in detail.

1. CPT USERS

- CPT users reported high levels of satisfaction for all services except hardware maintenance, where only one-half the users received a level of service equal to their level required.

- Software support is an area where CPT excelled, with almost 64% of the users receiving satisfactory support.

- In all other areas, CPT was satisfying over 80% of their users.

- CPT's performance is noteworthy considering the relatively high maintenance requirements their users report, as shown in Exhibit III-15.

- Exhibits III-15 and III-16 provide full details of CPT user responses.

EXHIBIT III-13

WORD PROCESSOR USER SERVICE REQUIREMENTS
VERSUS LEVEL OF SERVICE RECEIVED
ALL VENDORS

SERVICE PROVIDED	AVERAGE LEVEL OF SERVICE*	
	REQUIRED	RECEIVED
Planning	5.6	7.1
Consulting	6.8	6.8
Documentation	7.7	7.5
Training	7.1	7.2
Sales of Supplies	6.3	7.1
Add-On Sales	5.9	7.2
Site Audits	4.0	5.8
Relocation and Deinstallation	5.0	6.8
Hardware Maintenance	9.0	8.0
Software Support	8.4	7.3

* Rating: 1 = Low, 10 = High

EXHIBIT III-14

WORD PROCESSOR USER SERVICE REQUIREMENT SATISFACTION LEVEL ALL VENDORS

SERVICE PROVIDED	SATISFIED* User receives equal to/or greater than the required level of service	DISSATISFIED* User receives less than the required level of service	NUMBER OF RESPONSES
Planning	57.6%	42.4%	62
Consulting	61.9	38.1	67
Documentation	61.0	39.0	75
Training	60.6	39.4	70
Sales of Supplies	67.1	32.9	71
Add-On Sales	74.6	25.4	66
Site Audits	67.4	32.6	39
Relocation/ Deinstallation	77.1	22.9	43
Hardware Maintenance	46.9	53.1	78
Software Support	50.0	50.0	73

*Percentage

EXHIBIT III-15

WORD PROCESSOR USER SERVICE REQUIREMENTS
VERSUS LEVEL OF SERVICE RECEIVED
VENDOR: CPT

SERVICE PROVIDED	AVERAGE LEVEL OF SERVICE*	
	REQUIRED	RECEIVED
Planning	5.9	6.8
Consulting	7.3	7.6
Documentation	7.7	8.1
Training	7.2	8.3
Sales of Supplies	5.8	7.2
Add-On Sales	6.4	7.8
Site Audits	3.9	6.6
Relocation and Deinstallation	4.8	7.5
Hardware Maintenance	8.7	7.2
Software Support	7.3	7.1

* Rating: 1 = Low, 10 = High

EXHIBIT III-16

WORD PROCESSOR USER SERVICE REQUIREMENT SATISFACTION LEVEL
VENDOR: CPT

SERVICE PROVIDED	SATISFIED* User receives equal to/or greater than the required level of service	DISSATISFIED* User receives less than the required level of service	NUMBER OF RESPONSES
Planning	81.8%	18.2%	11
Consulting	81.8	18.2	11
Documentation	81.8	18.2	11
Training	81.8	18.2	11
Sales of Supplies	81.8	18.2	11
Add-On Sales	80.0	20.0	10
Site Audits	85.7	14.3	7
Relocation/ Deinstallation	87.5	12.5	8
Hardware Maintenance	50.0	50.0	12
Software Support	63.6	36.4	11

*Percentage

2. IBM USERS

- IBM service, as reported by their word processor users, can best be described as uneven. IBM equals or betters the service requirements of more than 60% of their users in only two areas, yet come close in a number of areas, including planning, sales of supplies, and site audits.

- IBM word processor users express dissatisfaction with documentation (59.1% dissatisfied), hardware maintenance (54.5% dissatisfied), and software support 55% dissatisfied). This is due in part to relatively high user requirements for these services, as shown in Exhibit III-17.

- Exhibits III-17 and III-18 provide full survey results for IBM word processor users.

3. NBI USERS

- NBI received very high marks from their users, especially in the areas of sales of supplies, add-on sales, and relocation/deinstallation.

- Of greater importance is NBI's performance in consulting, hardware maintenance, and software support, providing satisfactory service to over 62% of their users in these areas.

- Documentation and training are two key areas where NBI should improve, with at least 50% of their users dissatisfied with their service in these areas.

- Exhibits III-19 and III-20 present NBI user responses.

4. WANG USERS

- Wang users report that in most areas Wang satisfies their requirements. Exceptions include hardware maintenance, software support, consulting, and documentation.

EXHIBIT III-17

WORD PROCESSOR USER SERVICE REQUIREMENTS
VERSUS LEVEL OF SERVICE RECEIVED
VENDOR: IBM

SERVICE PROVIDED	AVERAGE LEVEL OF SERVICE*	
	REQUIRED	RECEIVED
Planning	6.4	7.1
Consulting	7.4	6.8
Documentation	8.7	7.6
Training	7.8	6.3
Sales of Supplies	6.4	6.8
Add-On Sales	5.9	6.6
Site Audits	4.0	5.4
Relocation and Deinstallation	4.4	6.8
Hardware Maintenance	8.7	8.3
Software Support	8.9	7.7

* Rating: 1 = Low, 10 = High

EXHIBIT III-18

WORD PROCESSOR USER SERVICE REQUIREMENT SATISFACTION LEVEL
VENDOR: IBM

SERVICE PROVIDED	SATISFIED* User receives equal to/or greater than the required level of service	DISSATISFIED* User receives less than the required level of service	NUMBER OF RESPONSES
Planning	59.1%	40.9%	22
Consulting	50.0	50.0	22
Documentation	40.9	59.1	22
Training	52.4	47.6	21
Sales of Supplies	57.9	42.1	19
Add-On Sales	65.0	35.0	20
Site Audits	58.3	41.7	12
Relocation/ Deinstallation	90.9	9.1	11
Hardware Maintenance	45.5	54.5	22
Software Support	45.0	55.0	20

*Percentage

EXHIBIT III-19

WORD PROCESSOR USER SERVICE REQUIREMENTS
VERSUS LEVEL OF SERVICE RECEIVED
VENDOR: NBI

SERVICE PROVIDED	AVERAGE LEVEL OF SERVICE*	
	REQUIRED	RECEIVED
Planning	6.4	8.6
Consulting	7.9	8.0
Documentation	9.0	8.1
Training	8.6	8.0
Sales of Supplies	6.5	8.1
Add-On Sales	5.9	8.5
Site Audits	3.5	5.3
Relocation and Deinstallation	5.6	7.0
Hardware Maintenance	9.4	8.6
Software Support	8.8	8.6

* Rating: 1 = Low, 10 = High

EXHIBIT III-20

WOF PROCESSOR USER SERVICE REQUIREMENT SATISFACTION LEVEL
VENDOR: NBI

SERVICE PROVIDED	SATISFIED* User receives equal to/or greater than the required level of service	DISSATISFIED* User receives less than the required level of service	NUMBER OF RESPONSES
Planning	57.1%	42.9%	7
Consulting	62.5	37.5	8
Documentation	45.3	54.7	8
Training	50.0	50.0	8
Sales of Supplies	85.7	14.3	7
Add-On Sales	83.3	16.7	6
Site Audits	INSUFFICIENT RESPONSE		
Relocation/ Deinstallation	100.0	0.0	5
Hardware Maintenance	62.5	37.5	8
Software Support	62.5	37.5	8

*Percentage

- Hardware maintenance and software support received the lowest marks, with only 31% and 32.1% of Wang users satisfied with these services, respectively.

- Consulting and documentation receive better marks, yet show room for improvement.

- Exhibits III-21 and III-22 provide full Wang word processor user responses.

5. XEROX USERS

- Xerox word processor users reported general satisfaction with all areas of service, with the exception of software support, which satisfied only one-half of the Xerox users, and documentation, which satisfied only 57.1% of the users.

- Hardware maintenance was a bright spot for Xerox, with almost 86% of their users receiving equal to or better than the required level of service.

- As with Xerox personal computer service, user awareness of service contributed to the low number of responses in certain service areas.

- Exhibits III-23 and III-24 provide complete Xerox word processor user responses.

D. WORKSTATION USERS

- As may be expected, workstation users required low levels of service in most areas, with the exception of hardware maintenance. This led to relatively high satisfaction marks in most areas.

EXHIBIT III-21

WORD PROCESSOR USER SERVICE REQUIREMENTS
VERSUS LEVEL OF SERVICE RECEIVED
VENDOR: WANG

SERVICE PROVIDED	AVERAGE LEVEL OF SERVICE*	
	REQUIRED	RECEIVED
Planning	5.1	6.9
Consulting	6.1	6.1
Documentation	6.5	6.7
Training	6.2	7.1
Sales of Supplies	6.3	7.1
Add-On Sales	6.1	6.9
Site Audits	4.2	5.8
Relocation and Deinstallation	5.7	6.5
Hardware Maintenance	9.1	7.8
Software Support	8.6	6.8

* Rating: 1 = Low, 10 = High

EXHIBIT III-22

WORD PROCESSOR USER SERVICE REQUIREMENT SATISFACTION LEVEL
VENDOR: WANG

SERVICE PROVIDED	SATISFIED* User receives equal to/or greater than the required level of service	DISSATISFIED* User receives less than the required level of service	NUMBER OF RESPONSES
Planning	68.2%	31.8%	22
Consulting	53.8	46.2	26
Documentation	55.6	44.4	27
Training	62.5	37.5	24
Sales of Supplies	70.4	29.6	27
Add-On Sales	68.0	32.0	25
Site Audits	65.0	35.0	20
Relocation/ Deinstallation	63.2	36.8	19
Hardware Maintenance	31.0	69.0	29
Software Support	32.1	67.9	28

*Percentage

EXHIBIT III-23

WORD PROCESSOR USER SERVICE REQUIREMENTS
VERSUS LEVEL OF SERVICE RECEIVED
VENDOR: XEROX

SERVICE PROVIDED	AVERAGE LEVEL OF SERVICE*	
	REQUIRED	RECEIVED
Planning	4.6	4.7
Consulting	6.6	5.3
Documentation	7.5	7.9
Training	7.0	7.5
Sales of Supplies	5.8	6.9
Add-On Sales	5.5	7.2
Site Audits	3.9	7.0
Relocation and Deinstallation	4.9	5.7
Hardware Maintenance	9.3	8.4
Software Support	7.9	6.7

* Rating: 1 = Low, 10 = High

EXHIBIT III-24

WORD PROCESSOR USER SERVICE REQUIREMENT SATISFACTION LEVEL
VENDOR: XEROX

SERVICE PROVIDED	SATISFIED* User receives equal to/or greater than the required level of service	DISSATISFIED* User receives less than the required level of service	NUMBER OF RESPONSES
Planning	INSUFFICIENT RESPONSE		
Consulting	INSUFFICIENT RESPONSE		
Documentation	57.1%	42.9%	7
Training	66.7	33.3	6
Sales of Supplies	71.4	28.6	7
Add-On Sales	60.0	40.0	5
Site Audits	INSUFFICIENT RESPONSE		
Relocation/ Deinstallation	INSUFFICIENT RESPONSE		
Hardware Maintenance	85.7	14.3	7
Software Support	50.0	50.0	6

*Percentage

- On the whole, users gave very high marks to planning, sales of supplies and add-ons, relocation/deinstallation, and site audits. Also receiving satisfactory marks was consulting.

- Training and documentation were reported to be a problem, with over 50% of workstation users dissatisfied with training as a service, and over 45% dissatisfied with documentation.

- Hardware maintenance also has room for improvement, with over 43% dissatisfied with the level of service that they receive. Software support also has room for improvement, with over 41% dissatisfied with the service received.

- Exhibits III-25 and III-26 provide all workstation user responses.

1. BURROUGHS USERS

- Training is an immediate area requiring improvement by Burroughs, with 61.1% of their workstation users dissatisfied with the level of service that they receive in this area. Software support is another area that needs improvement, since 55% of users reportedly were dissatisfied with service received.

- Consulting, on the other hand, received very high marks, along with sales of supplies, add-on sales, relocations/deinstallations, and site audits.

- Exhibits III-27 and III-28 provide Burroughs workstation user survey results.

2. DATAPOINT USERS

- Datapoint users had very low user requirements, with the exception of hardware maintenance requirements, as shown in Exhibit III-29. This contributed to high marks in virtually all service components and suggests that a certain amount of overkill might be present, especially in areas such as consulting, planning, and site audits.

EXHIBIT III-25

WORKSTATION USER SERVICE REQUIREMENTS
VERSUS LEVEL OF SERVICE RECEIVED
ALL VENDORS

SERVICE PROVIDED	AVERAGE LEVEL OF SERVICE*	
	REQUIRED	RECEIVED
Planning	4.0	6.6
Consulting	4.6	6.6
Documentation	6.6	6.5
Training	5.9	6.2
Sales of Supplies	4.7	6.5
Add-On Sales	5.0	6.7
Site Audits	3.0	4.5
Relocation and Deinstallation	3.9	6.2
Hardware Maintenance	8.6	8.0
Software Support	6.5	6.9

* Rating: 1 = Low, 10 = High

EXHIBIT III-26

WORKSTATION USER SERVICE REQUIREMENT SATISFACTION LEVEL
ALL VENDORS

SERVICE PROVIDED	SATISFIED* User receives equal to/or greater than the required level of service	DISSATISFIED* User receives less than the required level of service	NUMBER OF RESPONSES
Planning	81.0%	19.0%	58
Consulting	69.7	30.3	65
Documentation	54.6	45.4	74
Training	49.2	50.8	65
Sales of Supplies	86.8	13.2	67
Add-On Sales	83.3	16.7	65
Site Audits	82.2	17.8	45
Relocation/ Deinstallation	95.6	4.4	44
Hardware Maintenance	56.9	43.1	85
Software Support	58.7	41.3	61

*Percentage

EXHIBIT III-27

WORKSTATION USER SERVICE REQUIREMENTS
VERSUS LEVEL OF SERVICE RECEIVED
VENDOR: BURROUGHS

SERVICE PROVIDED	AVERAGE LEVEL OF SERVICE*	
	REQUIRED	RECEIVED
Planning	4.6	7.1
Consulting	5.1	6.9
Documentation	7.0	6.4
Training	6.0	5.9
Sales of Supplies	5.5	6.8
Add-On Sales	5.0	6.5
Site Audits	2.5	4.5
Relocation and Deinstallation	4.0	6.8
Hardware Maintenance	8.5	7.9
Software Support	6.5	6.8

* Rating: 1 = Low, 10 = High

EXHIBIT III-28

WORKSTATION USER SERVICE REQUIREMENT SATISFACTION LEVEL
VENDOR: BURROUGHS

SERVICE PROVIDED	SATISFIED* User receives equal to/or greater than the required level of service	DISSATISFIED* User receives less than the required level of service	NUMBER OF RESPONSES
Planning	58.8%	41.2%	17
Consulting	85.7	14.3	21
Documentation	52.4	47.6	21
Training	38.9	61.1	18
Sales of Supplies	71,4	28.6	21
Add-On Sales	83.3	16.7	18
Site Audits	81.8	18.2	11
Relocation/ Deinstallation	90.0	10.0	10
Hardware Maintenance	54.5	45.5	22
Software Support	44.4	55.6	18

*Percentage

EXHIBIT III-29

WORKSTATION USER REQUIREMENTS VERSUS LEVEL OF SERVICE RECEIVED
VENDOR: DATAPOINT

SERVICE PROVIDED	AVERAGE LEVEL OF SERVICE*	
	REQUIRED	RECEIVED
Planning	2.7	6.0
Consulting	3.6	6.2
Documentation	5.2	5.4
Training	4.7	5.6
Sales of Supplies	3.5	6.1
Add-On Sales	4.7	6.7
Site Audits	2.6	4.6
Relocation and Deinstallation	3.6	6.7
Hardware Maintenance	8.5	8.3
Software Support	6.4	6.5

* Rating: 1 = Low, 10 = High

- Some attention could be redirected to training and documentation, which received the lowest marks. However, users' current requirements are satisfied sufficiently in these areas.

- Exhibits III-29 and III-30 present Datapoint user responses in detail.

3. IBM USERS

- IBM workstation users required a higher level of service than did most workstation users; yet, users still reported very high satisfaction levels in all service areas, with the exception of training. In this service area, nearly 53% of the users received less than the required level of service.

- IBM users reported high levels of service in even the most critical areas, such as hardware maintenance (65.2% satisfied) and documentation (75% satisfied).

- Exhibits III-31 and III-32 provide complete details of IBM workstation user responses.

4. WANG USERS

- Wang users also have moderately high service requirements, as shown in Exhibit III-33. Unlike IBM, though, they often fail to meet their users' needs, especially in the areas of hardware maintenance, software support, documentation, and training.

- Exhibit III-34 demonstrates that at least 60% of Wang workstation users are dissatisfied with training, hardware maintenance, and software support, and over 45% of the users are dissatisfied with consulting and documentation.

- Wang users report higher satisfaction levels in sales of supplies, add-on sales, and planning, with over 70% of their users receiving equal to or greater than the levels of service they require.

EXHIBIT III-30

WORKSTATION USER SERVICE REQUIREMENT SATISFACTION LEVEL
VENDOR: DATAPOINT

SERVICE PROVIDED	SATISFIED* User receives equal to/or greater than the required level of service	DISSATISFIED* User receives less than the required level of service	NUMBER OF RESPONSES
Planning	90.0%	10.0%	10
Consulting	84.6	15.4	13
Documentation	68.8	31.2	16
Training	61.5	38.5	13
Sales of Supplies	78.6	21.4	14
Add-On Sales	81.3	18.7	16
Site Audits	90.9	9.1	11
Relocation/ Deinstallation	100.0	0.0	12
Hardware Maintenance	69.6	30.4	22
Software Support	73.3	26.7	13

*Percentage

EXHIBIT III-31

WORKSTATION USER REQUIREMENTS VERSUS LEVEL OF SERVICE RECEIVED
VENDOR: IBM

SERVICE PROVIDED	AVERAGE LEVEL OF SERVICE*	
	REQUIRED	RECEIVED
Planning	4.5	7.0
Consulting	4.7	6.9
Documentation	6.7	7.7
Training	6.3	7.1
Sales of Supplies	4.7	6.9
Add-On Sales	4.5	6.9
Site Audits	3.4	5.0
Relocation and Deinstallation	3.7	5.9
Hardware Maintenance	8.4	8.1
Software Support	6.0	7.4

* Rating: 1 = Low, 10 = High

EXHIBIT III-32

WORKSTATION USER SERVICE REQUIREMENT SATISFACTION LEVEL
VENDOR: IBM

SERVICE PROVIDED	SATISFIED* User receives equal to/or greater than the required level of service	DISSATISFIED* User receives less than the required level of service	NUMBER OF RESPONSES
Planning	76.5%	23.5%	17
Consulting	75.0	25.0	16
Documentation	75.0	25.0	20
Training	47.4	52.6	19
Sales of Supplies	94.1	5.9	17
Add-On Sales	92.3	7.7	13
Site Audits	72.7	27.3	11
Relocation/ Deinstallation	90.0	10.0	10
Hardware Maintenance	65.2	34.8	23
Software Support	75.0	25.0	16

*Percentage

EXHIBIT III-33

WORKSTATION USER SERVICE REQUIREMENTS
VERSUS LEVEL OF SERVICE RECEIVED
VENDOR: WANG

SERVICE PROVIDED	AVERAGE LEVEL OF SERVICE*	
	REQUIRED	RECEIVED
Planning	4.1	5.9
Consulting	5.1	6.0
Documentation	7.4	6.2
Training	6.7	6.0
Sales of Supplies	5.4	6.1
Add-On Sales	5.9	6.7
Site Audits	3.5	4.0
Relocation and Deinstallation	4.5	5.3
Hardware Maintenance	9.0	7.4
Software Support	7.4	6.7

* Rating: 1 = Low, 10 = High

EXHIBIT III-34

WORKSTATION USER SERVICE REQUIREMENT SATISFACTION LEVEL
VENDOR: WANG

SERVICE PROVIDED	SATISFIED* User receives equal to/or greater than the required level of service	DISSATISFIED* User receives less than their less than the of service	NUMBER OF RESPONSES
Planning	71.4%	28.6%	14
Consulting	53.3	46.7	15
Documentation	52.9	47.1	17
Training	40.0	60.0	15
Sales of Supplies	86.7	13.3	15
Add-On Sales	77.8	22.2	18
Site Audits	83.3	16.7	12
Relocation/ Deinstallation	83.3	16.7	12
Hardware Maintenance	33.3	66.7	18
Software Support	28.6	71.4	14

*Percentage

- Exhibits III-33 and III-34 provide complete details of Wang workstation user responses.

E. PRINTER/TERMINAL USERS

- Taken as a whole, printer/terminal users received higher levels of service than they required. Certain areas, such as planning and consulting, received much higher levels of service than the users required. Yet, in the area of software support, the level of service received was lower than the level required, since only 35.5% of the users were satisfied. In addition, only 52.2% of the users reported being satisfied with hardware maintenance. These figures suggest that vendors should redirect some of their efforts toward improving software support and hardware maintenance services.

- Exhibits III-35 and III-36 provide full survey response for printer/terminal users.

1. CENTRONICS USERS

- Centronics users report high satisfaction with secondary service, such as planning, consulting, and sales support, but are dissatisfied with primary service areas, such as documentation (55.6% dissatisfied) and hardware maintenance (66.7% dissatisfied). This demonstrates an urgent need to redirect attention toward improving hardware maintenance.

- Many service areas received an insufficient number of responses to analyze performance, suggesting that user awareness or experience with service performed in these service areas is lacking.

- Exhibits III-37 and III-38 provide complete Centronics user responses.

EXHIBIT III-35

PRINTER/TERMINAL USER SERVICE REQUIREMENTS
VERSUS LEVEL OF SERVICE RECEIVED
ALL VENDORS

SERVICE PROVIDED	AVERAGE LEVEL OF SERVICE*	
	REQUIRED	RECEIVED
Planning	4.0	7.6
Consulting	4.4	7.0
Documentation	5.4	7.0
Training	4.4	7.0
Sales of Supplies	4.9	7.3
Add-On Sales	4.2	6.6
Site Audits	3.3	5.7
Relocation and Deinstallation	4.3	7.2
Hardware Maintenance	8.6	7.9
Software Support	6.3	7.1

* Rating: 1 = Low, 10 = High

EXHIBIT III-36

PRINTER/TERMINAL USER SERVICE REQUIREMENT SATISFACTION LEVEL
ALL VENDORS

SERVICE PROVIDED	SATISFIED* User receives equal to/or greater than the required level of service	DISSATISFIED* User receives less than the required level of service	NUMBER OF RESPONSES
Planning	88.1%	11.9%	42
Consulting	93.0	7.0	43
Documentation	62.0	38.0	50
Training	67.4	32.6	39
Sales of Supplies	76.0	24.0	50
Add-On Sales	70.0	30.0	37
Site Audits	65.6	34.4	26
Relocation/ Deinstallation	88.9	11.1	34
Hardware Maintenance	52.2	47.8	64
Software Support	35.5	64.5	26

*Percentage

EXHIBIT III-37

PRINTER/TERMINAL USER SERVICE REQUIREMENTS
VERSUS LEVEL OF SERVICE RECEIVED
VENDOR: CENTRONICS

SERVICE PROVIDED	AVERAGE LEVEL OF SERVICE*	
	REQUIRED	RECEIVED
Planning	3.6	7.4
Consulting	3.4	6.5
Documentation	4.8	5.9
Training	3.2	6.3
Sales of Supplies	4.9	7.6
Add-On Sales	2.4	6.0
Site Audits	2.7	7.3
Relocation and Deinstallation	3.2	8.5
Hardware Maintenance	8.5	7.4
Software Support	4.8	4.5

* Rating: 1 = Low, 10 = High

EXHIBIT III-38

PRINTER/TERMINAL USER SERVICE REQUIREMENT SATISFACTION LEVEL
VENDOR: CENTRONICS

SERVICE PROVIDED	SATISFIED* User receives equal to/or greater than the required level of service	DISSATISFIED* User receives less than the required level of service	NUMBER OF RESPONSES
Planning	71.4%	28.6%	7
Consulting	83.3	16.7	6
Documentation	44.4	55.6	9
Training	INSUFFICIENT RESPONSE		
Sales of Supplies	62.5	37.5	8
Add-On Sales	INSUFFICIENT RESPONSE		
Site Audits	INSUFFICIENT RESPONSE		
Relocation/ Deinstallation	INSUFFICIENT RESPONSE		
Hardware Maintenance	33.3	66.7	12
Software Support	INSUFFICIENT RESPONSE		

*Percentage

2. DECISION DATA USERS

- As shown in Exhibit III-39, Decision Data users have fairly low service requirements in all areas other than hardware maintenance. Users reported that they received much higher levels in these areas than they required, which is reflected in the high satisfaction levels presented in Exhibit III-40.

- Hardware maintenance requires increased attention, since only 38.5% of Decision Data users received satisfactory service levels.

- Exhibits III-39 and III-40 provide complete details of Decision Data user responses.

3. XEROX USERS

- Xerox printer users reported having higher service requirements than the other printer users have. In more secondary services, such as planning, sales of supplies, and relocation/deinstallation, user requirements were more than satisfied. Yet, in service areas of greater importance, users reported general dissatisfaction, with over 45% dissatisfied with training, 60% dissatisfied with hardware maintenance, and almost 67% dissatisfied with documentation.

- Exhibits III-41 and III-42 provide complete Xerox printer user responses.

4. ITT USERS

- ITT terminal users reported overall satisfaction with the service they received, since no less than 65% of ITT users received a service level equal to or surpassing their requirements.

- ITT users receive satisfactory service in even the most important areas, such as hardware maintenance (65% satisfied), documentation (66.7% satisfied), and training (75% satisfied).

EXHIBIT III-39

PRINTER/TERMINAL USER SERVICE REQUIREMENTS
VERSUS LEVEL OF SERVICE RECEIVED
VENDOR: DECISION DATA

SERVICE PROVIDED	AVERAGE LEVEL OF SERVICE*	
	REQUIRED	RECEIVED
Planning	3.7	8.8
Consulting	3.2	8.2
Documentation	3.8	7.3
Training	3.1	7.8
Sales of Supplies	3.7	7.7
Add-On Sales	2.9	6.2
Site Audits	2.1	6.3
Relocation and Deinstallation	4.3	8.0
Hardware Maintenance	9.1	7.5
Software Support	0.0	0.0

* Rating: 1 = Low, 10 = High

EXHIBIT III-40

PRINTER/TERMINAL USER SERVICE REQUIREMENT SATISFACTION LEVEL
VENDOR: DECISION DATA

SERVICE PROVIDED	SATISFIED* User receives equal to/or greater than the required level of service	DISSATISFIED* User receives less than the required level of service	NUMBER OF RESPONSES
Planning	83.3%	16.7%	6
Consulting	100.0	0.0	5
Documentation	83.3	16.7	6
Training	80.0	20.0	5
Sales of Supplies	75.0	25.0	7
Add-On Sales	60.0	40.0	5
Site Audits	INSUFFICIENT RESPONSE		
Relocation/ Deinstallation	80.0	20.0	5
Hardware Maintenance	38.5	61.5	13
Software Support	INSUFFICIENT RESPONSE		

*Percentage

EXHIBIT III-41

PRINTER/TERMINAL USER SERVICE REQUIREMENTS
VERSUS LEVEL OF SERVICE RECEIVED
VENDOR: XEROX

SERVICE PROVIDED	AVERAGE LEVEL OF SERVICE*	
	REQUIRED	RECEIVED
Planning	3.2	7.1
Consulting	5.6	7.1
Documentation	7.0	6.9
Training	7.1	7.2
Sales of Supplies	5.6	6.1
Add-On Sales	5.4	6.0
Site Audits	4.4	4.8
Relocation and Deinstallation	3.6	5.2
Hardware Maintenance	9.0	7.8
Software Support	8.5	7.4

* Rating: 1 = Low, 10 = High

EXHIBIT III-42

PRINTER/TERMINAL USER SERVICE REQUIREMENT SATISFACTION LEVEL
VENDOR: XEROX

SERVICE PROVIDED	SATISFIED* User receives equal to/or greater than the required level of service	DISSATISFIED* User receives less than the required level of service	NUMBER OF RESPONSES
Planning	100.0%	0.0%	7
Consulting	100.0	0.0	9
Documentation	33.3	66.7	9
Training	54.5	45.5	11
Sales of Supplies	88.9	11.1	9
Add-On Sales	57.1	42.9	7
Site Audits	50.0	50.0	6
Relocation/ Deinstallation	83.3	16.7	6
Hardware Maintenance	40.0	60.0	10
Software Support	20.0	80.0	10

*Percentage

- Exhibits III-43 and III-44 provide complete responses from ITT users.

5. TELEX USERS

- As shown in Exhibit III-45, Telex terminal users require a lower level of service than they receive in all service areas, leading to high satisfaction levels for all services. Exhibit III-46 demonstrates that the vast majority of Telex users receive a level of service meeting or exceeding the level required. It demonstrates, more specifically, that:

  - All the respondents receive satisfactory or better hardware maintenance.

  - Over 87% receive satisfactory service in planning, consulting, documentation, and relocation/deinstallation.

  - Over 71% receive satisfactory service in training, sales of supplies, add-on sales, and site audits.

- Exhibits III-45 and III-46 provide full results of Telex user responses.

EXHIBIT III-43

PRINTER/TERMINAL USER REQUIREMENTS
VERSUS LEVEL OF SERVICE RECEIVED
VENDOR: ITT

SERVICE PROVIDED	AVERAGE LEVEL OF SERVICE*	
	REQUIRED	RECEIVED
Planning	4.6	7.4
Consulting	5.3	7.5
Documentation	6.2	7.4
Training	4.9	7.1
Sales of Supplies	5.5	8.0
Add-On Sales	5.9	7.5
Site Audits	3.9	6.3
Relocation and Deinstallation	4.8	8.0
Hardware Maintenance	8.6	8.0
Software Support	6.7	7.6

* Rating: 1 = Low, 10 = High

EXHIBIT III-44

PRINTER/TERMINAL USER SERVICE REQUIREMENT SATISFACTION LEVEL
VENDOR: ITT

SERVICE PROVIDED	SATISFIED* User receives equal to/or greater than the required level of service	DISSATISFIED* User receives less than the required level of service	NUMBER OF RESPONSES
Planning	85.7%	14.3%	14
Consulting	93.3	6.7	15
Documentation	66.7	33.3	18
Training	75.0	25.0	16
Sales of Supplies	76.5	23.5	17
Add-On Sales	83.3	16.7	18
Site Audits	76.9	23.1	13
Relocation/ Deinstallation	100.0	0.0	15
Hardware Maintenance	65.0	35.0	20
Software Support	50.0	50.0	16

*Percentage

EXHIBIT III-45

PRINTER/TERMINAL USER SERVICE REQUIREMENTS
VERSUS LEVEL OF SERVICE RECEIVED
VENDOR: TELEX

SERVICE PROVIDED	AVERAGE LEVEL OF SERVICE*	
	REQUIRED	RECEIVED
Planning	4.7	7.0
Consulting	4.3	5.6
Documentation	5.1	7.3
Training	4.1	6.3
Sales of Supplies	4.7	6.3
Add-On Sales	4.4	5.6
Site Audits	3.7	4.3
Relocation and Deinstallation	5.0	6.4
Hardware Maintenance	7.9	8.4
Software Support	3.7	5.7

* Rating: 1 = Low, 10 = High

EXHIBIT III-46

PRINTER/TERMINAL USER SERVICE REQUIREMENT SATISFACTION LEVEL
VENDOR: \ TELEX

SERVICE PROVIDED	SATISFIED* User receives equal to/or greater than the required level of service	DISSATISFIED* User receives less than the required level of service	NUMBER OF RESPONSES
Planning	87.5%	12.5%	8
Consulting	87.5	12.5	8
Documentation	87.5	12.5	8
Training	71.4	28.6	7
Sales of Supplies	77.7	22.3	9
Add-On Sales	71.4	28.6	7
Site Audits	71.4	28.6	7
Relocation/ Deinstallation	87.5	12.5	8
Hardware Maintenance	100.0	0.0	9
Software Support	INSUFFICIENT RESPONSE		

*Percentage

IV OFFICE SYSTEM CUSTOMER SERVICE REQUIREMENTS

IV OFFICE SYSTEM CUSTOMER SERVICE REQUIREMENTS

A. INTRODUCTION

- Traditionally, the quality of vendor service is judged by the amount of time that elapses between the point when the machine breaks down to the point when the machine is up and running again. This period of time, known as downtime, can be reduced by improved product design and production; however, the customer service organization has the most responsibility for reducing downtime once the machine is at the user's site.

- The measure of time that the machine is available to the user is known as the system availability, defined as:

$$\frac{\text{Scheduled Use}}{\text{Actual Use + Downtime + Recovery Time}}$$

- A point of disagreement between user and vendor lies within the definition of system availability. Vendors consider recovery time to be out of their control; therefore, they remove it from their definition of system availability. Furthermore, vendors prefer to define downtime as starting at the point of contact between the user and the service organization, whereas the user considers the initial discovery of an interruption as the start of downtime. The vendor's definition of system availability increases the amount of system availability that can be claimed, while the user's definition decreases the system availability.

- Downtime is made up of three components: response time, repair time, and system interruption frequency.

B. PERSONAL COMPUTER USERS

- Overall, personal computer users' system availability requirements were being met, as indicated in Exhibit IV-1. Of all the vendors, only Xerox users required higher system availability (82.9%) than they received (79.4%). One vendor, Digital Equipment Corporation, far exceeded its users' requirements; users received almost 97% systems availability versus the required 72%. IBM users also reported high (94.8%) system availability levels.

- A key factor in Xerox's failure to meet users' system availability requirements is seen in Exhibit IV-4, which reveals a comparatively higher rate of system interruptions. In addition, Exhibits IV-2 and IV-3 show that Xerox's hardware and software response times do not meet user requirements.

- The infrequency of system interruption offsets the poor response and repair times reported by all personal computer users. In the area of hardware response time, as shown in Exhibit IV-2, only Digital and Hewlett-Packard come even close to satisfying their users' requirements, while Apple users report hardware response times that more than triple their requirements.

- Apple users' overall displeasure with the responsiveness of their vendor is further demonstrated in Exhibit IV-5, rating dispatching and escalation procedures well below the overall mean of personal computer users. In contrast, Digital, Hewlett-Packard, and IBM users rated their vendors relatively high in these functions.

EXHIBIT IV-1

SYSTEM AVAILABILITY REQUIREMENTS VERSUS ACTUALS
PERSONAL COMPUTERS

VENDOR	SYSTEM AVAILABLITY (Percent)	
	REQUIRED	ACTUAL
All Vendors	81.7%	86.0%
Apple	67.6	72.8
DEC	72.0	96.8
Hewlett-Packard	88.7	88.8
IBM	89.3	94.8
Xerox	82.9	79.4

EXHIBIT IV-2

HARDWARE RESPONSE AND REPAIR TIME REQUIREMENTS VERSUS ACTUALS - PERSONAL COMPUTERS

VENDOR	MEAN RESPONSE TIME (Hours)		MEAN REPAIR TIME (Hours)	
	REQUIRED	ACTUAL	REQUIRED	ACTUAL
All Vendors	13.8	24.7	15.7	21.8
Apple	17.2	61.4	22.5	46.0
DEC	13.1	13.3	10.9	5.4
Hewlett-Packard	13.1	13.4	11.8	11.6
IBM	12.7	16.3	16.4	18.8
Xerox	11.6	19.4	7.6	10.9

EXHIBIT IV-3

SOFTWARE RESPONSE AND REPAIR TIME REQUIREMENTS
VERSUS ACTUALS - PERSONAL COMPUTERS

VENDOR	MEAN RESPONSE TIME (Hours)		MEAN REPAIR TIME (Hours)	
	REQUIRED	ACTUAL	REQUIRED	ACTUAL
All Vendors	20.4	24.6	39.6	59.0
Apple	21.7	16.1	46.5	30.4
DEC	14.7	33.6	34.7	129.6
Hewlett-Packard	20.4	20.3	31.4	38.8
IBM	20.8	23.1	47.7	77.7
Xerox	21.1	38.3	17.6	27.8

EXHIBIT IV-4

SYSTEM INTERRUPTIONS PER MONTH
PERSONAL COMPUTERS

VENDOR	MEAN NUMBER OF SYSTEM INTERRUPTIONS PER MONTH	NATURE OF INTERRUPTION (Percent)		
		HARDWARE	SOFTWARE	OTHER
All Vendors	1.0	43.8%	13.0%	43.2%
Apple	1.0	33.3	10.1	56.6
DEC	0.8	61.7	5.0	33.3
Hewlett-Packard	0.8	37.6	15.0	47.4
IBM	0.9	52.1	15.7	32.2
Xerox	1.7	46.4	17.3	36.3

EXHIBIT IV-5

PERSONAL COMPUTER USER RATINGS OF VENDORS' DISPATCHING AND ESCALATION PROCEDURES

VENDOR	DISPATCHING*	ESCALATION PROCEDURE*
All Vendors	6.5	6.7
Apple	4.9	5.0
DEC	7.3	7.4
Hewlett-Packard	7.1	8.2
IBM	7.2	6.8
Xerox	6.4	7.1

* Rating: 1 = Low, 10 = High

- The large proportion of interruptions caused by "other" factors - problems caused by the environment (i.e., power supply) and by the user - shows a need for more attention in planning services, training, documentation, and consulting.

C. WORD PROCESSOR USERS

- Exhibit IV-6 demonstrates that word processor users receive availability that satisfies their overall requirements. Xerox is the only vendor that does not come close to providing adequate system availability.

- As with personal computer users, hardware response time is still a problem with most word processor users. Exhibit IV-7 shows that of all the word processor vendors, only IBM came close to meeting their users' hardware response time requirements. Two vendors, CPT and Xerox, had hardware response times that nearly doubled or tripled user requirements.

- Actual repair times reported by word processor users, overall, were lower than the overall requirement, aided by the excellent repair times of IBM (1.7 hours) and CPT (2.7 hours). Xerox had the slowest repair times, averaging almost nine hours on actual repair.

- Software response and repair times for word processors varied widely, as shown in Exhibit IV-8. Xerox and NBI demonstrated the best software response and repair times, with both vendors easily exceeding user requirements for actual repair times and coming closest to meeting their users' response time requirements.

- Exhibit IV-9 details user responses for system interruptions and displays the large number of interruptions reported by Wang users. The high proportion of hardware-caused interruptions, combined with slow hardware response and

EXHIBIT IV-6

SYSTEM AVAILABILITY REQUIREMENTS VERSUS ACTUALS
WORD PROCESSORS

VENDOR	SYSTEM AVAILABILITY (Percent)	
	REQUIRED	ACTUAL
All Vendors	91.5%	91.0%
CPT	92.5	91.9
IBM	93.8	95.8
NBI	86.0	87.6
Wang	90.8	90.5
Xerox	90.2	87.2

EXHIBIT IV-7

HARDWARE RESPONSE AND REPAIR TIME REQUIREMENTS VERSUS ACTUALS - WORD PROCESSORS

VENDOR	MEAN RESPONSE TIME (Hours)		MEAN REPAIR TIME (Hours)	
	REQUIRED	ACTUAL	REQUIRED	ACTUAL
All Vendors	4.4	6.9	4.5	3.3
CPT	4.3	8.3	3.2	2.7
IBM	2.8	3.2	5.6	1.7
NBI	3.6	4.6	3.9	5.2
Wang	6.0	8.3	2.3	3.0
Xerox	4.5	13.9	11.1	8.8

EXHIBIT IV-8

SOFTWARE RESPONSE AND REPAIR TIME REQUIREMENTS VERSUS ACTUALS - WORD PROCESSORS

VENDOR	MEAN RESPONSE TIME (Hours)		MEAN REPAIR TIME (Hours)	
	REQUIRED	ACTUAL	REQUIRED	ACTUAL
All Vendors	9.8	19.4	15.6	16.9
CPT	9.8	14.1	9.0	24.4
IBM	11.6	12.6	14.1	17.9
NBI	5.0	5.5	29.0	7.1
Wang	11.1	35.4	16.6	19.7
Xerox	3.8	4.2	6.8	1.6

EXHIBIT IV-9

SYSTEM INTERRUPTIONS PER MONTH
WORD PROCESSORS

VENDOR	MEAN NUMBER OF SYSTEM INTERRUPTIONS PER MONTH	NATURE OF INTERRUPTION (Percent)		
		HARDWARE	SOFTWARE	OTHER
All Vendors	2.6	52.0%	19.5%	28.5%
CPT	1.4	44.6	19.5	35.9
IBM	1.7	53.1	20.8	26.1
NBI	1.3	45.6	18.8	35.6
Wang	4.3	64.3	14.8	20.9
Xerox	2.3	35.0	26.3	38.7

repair times, contributes to Wang's low hardware maintenance satisfaction rates.

- Exhibit IV-10 presents word processor user ratings of their vendors' dispatching and escalation procedures. This exhibit highlights the dissatisfaction of CPT users with their hardware and software response times.

D. WORKSTATION USERS

- Exhibit IV-11 demonstrates that all workstation vendors meet their users' system availability requirements. These figures are aided by quick hardware repair times, as shown in Exhibit IV-12, and by relatively few system interruptions, as shown in Exhibit IV-14. Three vendors, Burroughs, IBM, and Wang, exhibited system availabilities of at least 90%; the fourth vendor, Datapoint, reported 86.6% system availability.

- Hardware response times ranged from a low of 2.7 hours for IBM to 8.9 hours for Wang, as shown in Exhibit IV-12. Not surprisingly, IBM was one of two vendors who met their users' requirements; the other vendor was Burroughs.

- Exhibit IV-12 also shows that average repair times for workstation users were acceptable and, in some cases, far exceeded user requirements.

- Total hardware maintenance (consisting of response time plus repair time) on IBM workstations came to just over 4 1/2 hours, compared to a requirement of over 9 1/2 hours total service time.

- Exhibit IV-13 indicates that some vendors, especially IBM, falter at software response and repair times. IBM's high mean software response and repair times were affected by reports of response and repair times approaching two working weeks.

EXHIBIT IV-10

WORD PROCESSOR USER RATINGS OF VENDORS' DISPATCHING AND ESCALATION PROCEDURES

VENDOR	DISPATCHING*	ESCALATION PROCEDURE*
All Vendors	7.8	7.6
CPT	6.8	7.1
IBM	8.0	8.1
NBI	8.3	7.7
Wang	7.9	7.6
Xerox	7.6	6.0

* Rating: 1 = Low, 10 = High

EXHIBIT IV-11

SYSTEM AVAILABILITY REQUIREMENTS VERSUS ACTUALS - WORKSTATIONS

VENDOR	SYSTEM AVAILABILITY (Percent)	
	REQUIRED	ACTUAL
All Vendors	89.7%	92.4%
Burroughs	90.3	93.5
Datapoint	86.6	89.1
IBM	92.2	93.0
Wang	90.0	94.6

EXHIBIT IV-12

HARDWARE RESPONSE AND REPAIR TIME REQUIREMENTS VERSUS ACTUALS - WORKSTATIONS

VENDOR	MEAN RESPONSE TIME (Hours)		MEAN REPAIR TIME (Hours)	
	REQUIRED	ACTUAL	REQUIRED	ACTUAL
All Vendors	5.5	5.3	3.5	2.8
Burroughs	5.6	4.8	3.7	2.6
Datapoint	3.2	5.6	2.8	3.1
IBM	6.8	2.7	2.9	1.9
Wang	6.8	8.9	4.8	3.6

EXHIBIT IV-13

SOFTWARE RESPONSE AND REPAIR TIME REQUIREMENTS VERSUS ACTUALS - WORKSTATIONS

VENDOR	MEAN RESPONSE TIME (Hours)		MEAN REPAIR TIME (Hours)	
	REQUIRED	ACTUAL	REQUIRED	ACTUAL
All Vendors	12.0	17.1	14.1	30.5
Burroughs	11.1	10.0	27.6	27.6
Datapoint	10.9	11.9	11.5	30.7
IBM	18.1	38.2	8.5	45.5
Wang	4.3	3.5	9.6	14.3

EXHIBIT IV-14

SYSTEM INTERRUPTIONS PER MONTH
WORKSTATIONS

VENDOR	MEAN NUMBER OF SYSTEM INTERRUPTIONS PER MONTH	NATURE OF INTERRUPTION (Percent)		
		HARDWARE	SOFTWARE	OTHER
All Vendors	2.0	67.2%	17.9%	14.9%
Burroughs	1.5	70.5	21.3	8.2
Datapoint	1.7	59.1	20.1	20.8
IBM	1.9	64.7	15.5	19.8
Wang	3.1	76.1	14.5	9.4

- Although software service is inadequate, the infrequency of system interruption (especially software related) contributes to a high system availability.

- Overall, workstation users were relatively satisfied with the responsiveness displayed by their vendors in dispatching and escalation procedures, as shown in Exhibit IV-15.

E. PRINTER/TERMINAL USERS

- Overall, printer/terminal vendors come close to satisfying their users' system availability requirements, as shown in Exhibit IV-16. Only one vendor, ITT, fails to come close to meeting its users' requirements.

- Exhibit IV-17 helps explain the ability of printer/terminal vendors to satisfy their users' uptime requirements. Four of the five vendors (the exception being Centronics) meet their users' requirements for hardware response time, and all vendors easily satisfy or come very close to satisfying their users' hardware repair time requirements.

- Software response and repair times, where applicable, are presented in Exhibit IV-18.

- Exhibit IV-19 indicates that there is a wide disparity in the number of system interruptions ranging from a low of 1.1 interruptions per month from Centronics printers to a high of 11.9 interruptions per month from Xerox printers. The two terminal vendors also differed greatly, with ITT users reporting 5.2 interruptions per month and Telex users reporting 11.4 interruptions per month.

EXHIBIT IV-15

WORKSTATION USER RATINGS OF VENDORS' DISPATCHING AND ESCALATION PROCEDURES

VENDOR	DISPATCHING*	ESCALATION PROCEDURE*
All Vendors	7.8	7.6
Burroughs	7.7	7.6
Datapoint	7.8	7.9
IBM	7.8	7.6
Wang	7.8	7.3

* Rating: 1 = Low, 10 = High

EXHIBIT IV-16

SYSTEM AVAILABILITY REQUIREMENTS VERSUS ACTUALS
PRINTERS/TERMINALS

VENDOR	SYSTEM AVAILABILITY (Percent)	
	REQUIRED	ACTUAL
All Vendors	92.4%	91.2%
Centronics	90.6	90.7
Decision Data	90.4	89.5
Xerox	94.6	93.7
ITT	93.3	89.1
Telex	94.9	96.3

EXHIBIT IV-17

HARDWARE RESPONSE AND REPAIR TIME REQUIREMENTS VERSUS ACTUALS - PRINTERS/TERMINALS

VENDOR	MEAN RESPONSE TIME (Hours)		MEAN REPAIR TIME (Hours)	
	REQUIRED	ACTUAL	REQUIRED	ACTUAL
All Vendors	4.1	4.8	5.6	3.0
Centronics	7.5	11.6	7.8	6.6
Decision Data	2.6	2.6	1.8	1.9
Xerox	1.6	1.8	1.7	1.6
ITT	2.3	2.4	5.5	2.1
Telex	8.3	7.2	14.3	2.9

EXHIBIT IV-18

SOFTWARE RESPONSE AND REPAIR TIME REQUIREMENTS VERSUS ACTUALS - PRINTERS/TERMINALS

VENDOR	MEAN RESPONSE TIME (Hours)		MEAN REPAIR TIME (Hours)	
	REQUIRED	ACTUAL	REQUIRED	ACTUAL
All Vendors	8.6	13.7	30.0	42.0
Centronics	12.0	*	72.0	72.0
Decision Data	*	*	*	*
Xerox	5.3	11.3	*	*
ITT	7.8	8.3	36.0	25.5
Telex	20.7	48.0	36.0	*

* Insufficient Response

EXHIBIT IV-19

SYSTEM INTERRUPTIONS PER MONTH
PRINTERS/TERMINALS

VENDOR	MEAN NUMBER OF SYSTEM INTERRUPTIONS PER MONTH	NATURE OF INTERRUPTION (Percent)		
		HARDWARE	SOFTWARE	OTHER
All Vendors	5.4	77.5%	14.2%	8.3%
Centronics	1.1	86.1	3.2	10.7
Decision Data	1.2	89.3	2.7	8.0
Xerox	11.9	88.3	7.1	4.6
ITT	5.2	59.4	28.1	12.5
Telex	11.4	71.6	28.3	0.1

- An interesting occurrence is shown in Exhibit IV-20. Vendors such as Telex and Centronics, whose hardware response times are relatively long, have dispatching ratings that are higher than those of most vendors whose response times are short.

F. LOCAL AREA NETWORK MAINTENANCE

- The rapidly increasing office automation marketplace fuels the growth in Local Area Network (LAN) usage as office systems users see the opportunities and advantages of networking office information processing, output, and communications equipment.

- Exhibits IV-21 through IV-23 provide LAN usage information for personal computer users, word processor users, and workstation users by vendor.

- As may be expected, Digital Equipment Corporation, IBM, and Xerox personal computer users report the greatest experience with LANs. Apple users, limited in the past to the availability of LANs, demonstrate the greatest interest in using LANs in the future.

- Just under 18% of the word processor users surveyed are currently using LANs, with an additional 56.9% planning to in the next two years. Wang and Xerox word processor users reported the greatest experience with LANs.

- Of all workstation users surveyed, almost 55% of the Datapoint users utilized LANs. Expected future usage is limited by users' desire to view workstations as independent information processing devices.

EXHIBIT IV-20

PRINTER/TERMINAL USER RATINGS OF VENDORS' DISPATCHING AND ESCALATION PROCEDURES

VENDOR	DISPATCHING*	ESCALATION PROCEDURE*
All Vendors	7.4	7.1
Centronics	7.3	5.9
Decision Data	6.9	6.4
Xerox	6.6	7.1
ITT	8.0	7.8
Telex	8.3	8.3

* Rating: 1 = Low, 10 = High

EXHIBIT IV-21

PERSONAL COMPUTER USERS' LOCAL AREA NETWORK USAGE

VENDOR	CURRENTLY USE A LAN (Percent)	PLAN TO USE A LAN IN NEXT 2 YEARS (Percent)
All Vendors	15.9%	36.7%
Apple	9.5	63.6
DEC	33.3	0.0
Hewlett-Packard	5.3	25.0
IBM	21.4	40.0
Xerox	18.2	37.5

EXHIBIT IV-22

WORD PROCESSOR USERS' LOCAL AREA NETWORK USAGE

VENDOR	CURRENTLY USE A LAN (Percent)	PLAN TO USE A LAN IN NEXT 2 YEARS (Percent)
All Vendors	17.9%	56.9%
CPT	10.0	42.9
IBM	9.5	56.2
NBI	0.0	66.7
Wang	27.6	56.2
Xerox	37.5	75.0

EXHIBIT IV-23

WORKSTATION USERS' LOCAL AREA NETWORK USAGE

VENDOR	CURRENTLY USE A LAN (Percent)	PLAN TO USE A LAN IN NEXT 2 YEARS (Percent)
All Vendors	23.8	16.7
Burroughs	14.3	20.0
Datapoint	54.5	37.5
IBM	4.3	10.0
Wang	17.6	9.1

G. SOURCE OF LAN MAINTENANCE

- A key issue in Local Area Network usage is the availability of maintenance and support. The LAN user is faced with a major problem - the usual LAN is composed of equipment from different vendors. This mixed-shop environment results in multiple maintenance vendor support, which leads to confusion, uncoordinated support, and conflicts in fault determination.

- Multiple maintenance vendor support often involves contacting more than one local service vendor, which requires that the user must make a number of telephone calls in the event of a system interruption. In addition, the multiple vendor environment leads to a lack of uniformity between diagnostic and repair procedures, which also adds to the "finger-pointing" that LAN users endure.

- The lack of coordinated single-source support has forced many users to avoid the entire problem by either purchasing all equipment from one vendor or providing their own LAN support. Exhibit IV-24 reveals that over 40% of all personal computer and word processor users surveyed provide their own service.

H. LOCAL AREA NETWORK MAINTENANCE RECOMMENDATIONS

- As the use of LANs by office system users continues to rise, vendors will need to satisfy the LAN users' need for single-source service. Vendors will need to address a number of key maintenance objectives.

  - Vendors should move toward a standardization of network monitoring and trouble-reporting technology, which will aid in the diagnosis of system interruptions within a network.

EXHIBIT IV-24

SOURCE OF LOCAL AREA NETWORK MAINTENANCE

PRODUCT TYPE	SOURCE OF MAINTENANCE		
	HARDWARE VENDOR	USER	OTHER
Personal Computer	50.0%	40.0%	10.0%
Word Processor	42.9	42.9	14.2
Workstation	90.5	4.8	4.7

- Vendors should continue to automate network performance equipment within the network, which aids in network monitoring and fault determination.

- Vendors should consider subcontracting maintenance on competitive equipment, providing single-source service to users while requiring additional training and parts inventories.

- Vendors should continue to aid the LAN user who opts for self-maintenance by continuing to provide maintenance aids built into the hardware and/or software.

V SINGLE-SOURCE AND THIRD-PARTY MAINTENANCE

V SINGLE-SOURCE AND THIRD-PARTY MAINTENANCE

A. INTRODUCTION

- Third-party maintenance (TPM) is receiving a dramatic increase in interest from both computer users and vendors. Users are looking at TPM as an alternative source of service, due to more competitive pricing and increased flexibility and accessibility that these firms offer. Vendors are considering providing third-party maintenance as a method of bringing in new revenue while securing established customers.

- In the office systems area, third-party maintenance was frequently the only avenue for some products, especially personal computers, workstations, and printers/terminals.

- As the office systems market continues to grow rapidly, equipment vendors will need to compete with TPM firms for the office system users' service dollar.

B. PERSONAL COMPUTER USER EXPERIENCE WITH THIRD-PARTY MAINTENANCE

- As previously stated, personal computer users frequently had to rely on dealers and third-party maintenance as their sole source of hardware support. Exhibit V-1 reinforces this, demonstrating that 24% of all personal computer users surveyed were currently using TPM and another 20.3% were currently considering using TPM.

- IBM personal computer users had the greatest experience with TPM service, which is not surprising since IBM entered late in the on-site support of their product. With another 35% of its users considering TPM, IBM has a large base of users who for price or convenience are looking elsewhere for service. IBM users most frequently listed Computerland and Sorbus as their sources of TPM. IBM users who utilized TPM also reported the greatest satisfaction with their service, with an 8.6 overall rating.

- Apple users also reported they relied on TPM service, as just over 24% were currently using TPM. RCA Data Services received the most mentions as an Apple TPM. Apple users who utilized TPM service were also satisfied with the support they received, giving their service an overall rating of 8.

- Just over 21% of Hewlett-Packard personal computer users reported using TPM, while another 20% were considering using TPM. Sorbus was the only TPM used by HP user respondents.

- Xerox and DEC personal computer users reported having limited TPM experience. The survey indicates 18.2% and 11.1% of the users currently utilizing TPM, respectively. In addition, only a small percentage of these users are considering using TPM in the future.

EXHIBIT V-1

PERSONAL COMPUTER USERS' ATTITUDES
TOWARD THIRD-PARTY MAINTENANCE

VENDOR	CURRENTLY USING TPM (Percent)	CONSIDERED USING TPM (Percent)	OVERALL SATISFACTION WITH TPM*
All Vendors	24.0%	20.3%	7.8
Apple	24.1	18.2	8.0
DEC	11.1	0.0	3.0
Hewlett-Packard	21.1	20.0	7.7
IBM	32.1	35.0	8.6
Xerox	18.2	11.1	7.0

* Rating: 1 = Low, 10 = High

C. WORD PROCESSOR USER EXPERIENCE WITH THIRD-PARTY MAINTENANCE

- Word processor users as a group reported having very limited experience with TPM service, as shown in Exhibit V-2. With only 7.4% of the word processor users surveyed currently using TPM, and only another 10.7% considering using it, third-party maintenance seems not to have affected word processor service. The high satisfaction rating reported by word processor TPM users is insignificant due to the users' lack of experience with TPM service.

- Of all word processor users, NBI and Xerox users had the greatest experience with TPM service, with 12.5% of each vendor's users currently utilizing TPM. An additional 14.3% of Xerox users surveyed are considering using TPM on their word processors.

- CPT, Wang, and IBM word processor users had virtually no experience with TPM; only a small percentage are currently considering using TPM service in the future.

D. WORKSTATION USER EXPERIENCE WITH THIRD-PARTY MAINTENANCE

- Workstation user experience was similar to that of personal computer users, with almost 21% of all workstation users currently using TPM and another 18.6% considering using TPM. These figures are reflected in Exhibit V-3.

- Datapoint users, of all workstation users, reported having the greatest experience with TPM; almost 32% of Datapoint users reported they were currently using TPM, and an additional 33.3% were considering TPM in the future. This should be of major concern to Datapoint since almost two-thirds of their users are already using or considering using alternative maintenance sources. TPM

EXHIBIT V-2

WORD PROCESSOR USERS' ATTITUDES
TOWARD THIRD-PARTY MAINTENANCE

VENDOR	CURRENTLY USING TPM (Percent)	CONSIDERED USING TPM (Percent)	OVERALL SATISFACTION WITH TPM*
All Vendors	7.4%	10.7%	8.4
CPT	8.3	9.1	9.0
IBM	4.3	9.5	8.0
NBI	12.5	0.0	8.0
Wang	7.1	14.8	8.5
Xerox	12.5	14.3	8.0

* Rating: 1 = Low, 10 = High

EXHIBIT V-3

WORKSTATION USERS' ATTITUDES TOWARD THIRD-PARTY MAINTENANCE

VENDOR	CURRENTLY USING TPM (Percent)	CONSIDERED USING TPM (Percent)	OVERALL SATISFACTION WITH TPM*
All Vendors	20.9%	18.6%	8.3
Burroughs	18.2	16.7	9.0
Datapoint	31.8	33.3	8.3
IBM	8.7	9.5	8.5
Wang	22.2	18.7	7.7

* Rating: 1 = Low, 10 = High

firms mentioned by Datapoint users include Scopus, TRW, Magnacom, and Hal Systems & Services.

- Over 22% of Wang workstation users reported utilizing TPM currently, and an additional 18.7% reported they were considering using TPM in the future. Wang users also used Scopus as a TPM.

- Over 18% of Burroughs workstation users used TPM, and another 16.7% are considering using TPM in the future. Burroughs users mentioned local independent TPM vendors as their maintenance sources.

- IBM workstation users reported having very limited experience with TPM service and do not seem likely to utilize them in the future.

E. PRINTER/TERMINAL USER EXPERIENCE WITH THIRD-PARTY MAINTENANCE

- Printer/terminal users, of all the office systems users, reported having the most experience with third-party maintenance. As shown in Exhibit V-4, over 26% of all printer/terminal users were using TPM, and another 23.5% were considering TPM as their maintenance source.

- TPM use by printer/terminal users is complicated by the number of vendors that act already as both vendor and TPM provider. Decision Data and ITT/Courier are two examples of this situation.

- Centronics users reported having the greatest TPM experience of all users, with nearly 43% already using TPM and another 12.5% considering using TPM. Sorbus, Logical Solutions, and Servitech were listed by Centronics printer users as sources of TPM.

EXHIBIT V-4

PRINTER/TERMINAL USERS' ATTITUDES TOWARD THIRD-PARTY MAINTENANCE

VENDOR	CURRENTLY USING TPM (Percent)	CONSIDERED USING TPM (Percent)	OVERALL SATISFACTION WITH TPM*
All Vendors	26.1%	23.5%	8.1
Centronics	42.9	12.5	7.7
Decision Data	20.0	41.7	10.0
Xerox	9.1	10.0	7.0
ITT	25.0	13.3	9.0
Telex	33.3	50.0	6.3

* Rating: 1 = Low, 10 = High

- Telex users not only use TPM extensively (over 33% currently using TPM), but an additional 50% of their users are considering TPM service. Sorbus was frequently mentioned by Telex users as a source of TPM.

- Decision Data printer users also reported having an interest in using TPM service, with almost 42% considering utilizing TPM in the future.

F. THIRD-PARTY MAINTENANCE BUSINESS BASE

- As shown in Exhibit V-5, printer/terminal users are most locked into their TPM service, with over 83.3% of the printer/terminal users contracted to their TPM vendors.

- Personal computer users, on the other hand, receive their TPM service predominantly on a per call basis, with over 62% receiving their maintenance on a time and materials basis.

- Exhibit V-5 also indicates that a significant percentage of workstation and printer/terminal users require service coverage that extends beyond Monday through Friday. This suggests that office systems vendors should likewise offer extended coverages to their users of these product types.

G. USER CONSIDERATION CONCERNING THIRD-PARTY MAINTENANCE

- As previously stated, price, flexibility, and accessibility are important factors in deciding whether or not to use TPM service. Exhibit V-6 presents user responses to the relative importance of certain TPM considerations.

EXHIBIT V-5

THIRD-PARTY MAINTENANCE BUSINESS BASE BY PRODUCT TYPE

PRODUCT TYPE	PERCENT BY TYPE TPM SERVICE		IF CONTRACT						
			PERCENT RECEIVING			PERCENT BY RESPONSE TIME			
	Per Call	Contract	Monday-Friday	Monday-Saturday	Monday-Sunday	2 Hours	4 Hours	8 Hours	Other
Personal Computer	62.5%	37.5%	94.4%	5.6%	0.0%	11.1%	66.7%	0.0%	22.2%
Word Processor	28.6	71.4	100.0	0.0	0.0	20.0	60.0	20.0	0.0
Workstation	26.3	73.7	71.4	14.3	14.3	18.2	27.3	18.2	36.3
Printer/Terminal	16.7	83.3	85.7	9.5	4.8	56.3	31.3	12.4	0.0

EXHIBIT V-6

RELATIVE IMPORTANCE OF THIRD-PARTY MAINTENANCE CONSIDERATIONS BY PRODUCT TYPE

RELATIVE IMPORTANCE OF TPM CONSIDERATIONS*	PERSONAL COMPUTER USERS	WORD PROCESSOR USERS	WORK STATION USERS	PRINTER/ TERMINAL USERS
Price of Third-Party Maintenance	7.7	7.7	7.0	8.0
Improved Response Time	7.6	8.3	8.2	7.8
Third-Party Vendor Reputation	7.7	7.9	8.2	7.8
Hardware Support	8.1	9.3	8.8	8.5
Software Support Provided by the Third-Party Vendor	6.3	8.8	6.8	6.9
Overall System Uptime Guarantee Availability	7.4	8.4	7.2	7.5
Geographic Accessibility	8.3	8.7	8.2	7.9
Other Features (Spares, Diagnostics)	7.0	8.1	7.1	7.4

* Rating: 1 = Low, 10 = High

- As may be expected, all users placed great importance on the availability and quality of hardware support offered, rated most important by all users except personal computer users who felt geographic accessibility was most important. Personal computer users' desire for accessibility may be explained by the common use of TPM vendors' carry-to delivery method.

- Word processor users placed software support as the second most important factor, due to the importance placed upon software for word processing.

- Printer/terminal users cited price as the second most important consideration when deciding to use TPM.

H. SINGLE-SOURCE MAINTENANCE

- Office systems users, particularly personal computer and printer/terminal users (per Exhibits V-1 and V-4), reported having substantial experience with third-party maintenance, due in part to such factors as price, convenience, accessibility, and, in many cases, lack of service available through the equipment vendor. These users represent a large potential service market for vendors offering third-party maintenance.

- A growing trend in both large and small system customer service is the entrance of equipment vendors into the third-party maintenance industry. These vendors - NAS and DEC, for example - have begun offering service on other vendors' equipment. This is advantageous for many reasons: it opens up a new service market, it further locks in existing customers, and it provides users the convenience and coordination of service that they require.

- Office systems vendors also can benefit from providing single-source maintenance. Office systems often are made up of equipment from many different vendors. In addition, users already are experienced with independent third-

party maintenance and would be less resistant to using any TPM to maintain their equipment.

- One vendor who has already entered the TPM market is Decision Data. Beginning TPM service in early 1980, Decision Data has seen maintenance revenue rise 20% from 1980 to 1981 and 43% from 1981 to 1982.

- With the increasing use of LAN within office systems, vendors will need to address their users' building need for flexible, coordinated service. Currently, the lack of such service has driven LAN users to provide their own service.

- Exhibit V-7 measures the relative importance of single-source maintenance features by product type. Most users felt that fault determination, or "finger pointing," would be the most important problem solved by single-source service. This supports the importance of coordinated service that users would benefit from through single-source maintenance.

EXHIBIT V-7

RELATIVE IMPORTANCE OF SINGLE-SOURCE MAINTENANCE CONTRACT FEATURES BY PRODUCT TYPE

RELATIVE IMPORTANCE OF SINGLE-SOURCE CONTRACT FEATURES*	PERSONAL COMPUTER USERS	WORD PROCESSOR USERS	WORK-STATION USERS	PRINTER/ TERMINAL USERS
Overall Importance of Single Source	6.6	8.4	7.9	6.2
Improved Convenience	7.5	8.6	7.9	6.9
Improved Response Time	7.4	8.7	8.0	7.5
Knowledge of Site	6.5	8.4	7.8	7.1
Reputation of Single-Source Vendor	7.5	8.7	8.0	7.4
Avoids "Finger Pointing"	7.3	8.9	8.4	8.2

* Rating: 1 = Low, 10 = High

VI CUSTOMER SERVICE PRICING

VI CUSTOMER SERVICE PRICING

A. INTRODUCTION

- In the past, office systems users had limited choices concerning service on their equipment. Users rarely could choose the type of service (i.e., on-site or depot); the extent of their involvement (with appropriate discounts); or, in many cases, the service dealer they used. The limited choices caused a reduction in price sensitivity in users who required maintenance, since, if they wanted service, the users had to pay whatever was charged. This also kept a number of users from buying maintenance contracts; they simply felt that the costs of such contracts were much too high in relation to the purchase price paid.

- A number of trends have increased the price sensitivity of office system users.

  - Vendors are now offering service options, such as alternative delivery methods and increased service coverages, which allow the user to choose the amount of service that they receive.

  - An increased number of third-party maintenance firms and TPM offered by equipment vendors have expanded the availability of service.

- An increased sophistication of office systems encourages users to put more attention on service and support of their systems.

- Increased resistance to price increases will encourage vendors to look at other sources of new revenue. Two examples of such sources are extended services with premiums attached and reduced service offerings (i.e., user self-maintenance) with appropriate discounts.

B. USER REQUIREMENTS FOR EXTENDED SERVICES AND ATTITUDES TOWARD PREMIUMS

- Exhibit VI-1 presents personal computer user requirements for extended services and the average premium that those users who felt a need for such coverage would be willing to pay.

- The greatest number of personal computer users were attracted to guaranteed response time, guaranteed repair time (for both hardware and software), and preventive maintenance.

- Exhibit VI-2 shows the cumulative percentage of users who are willing to pay a premium for each extended service at progressively higher premium levels. For example, to receive guaranteed response time:

  - Twenty-nine percent of personal computer users would be willing to pay premiums of between 5% and 10% for guaranteed response time.

  - Six and two-fifths percent would be willing to pay a premium between 10% and 15%.

  - Only 3.2% would pay between 15% and 20%.

EXHIBIT VI-1

PERSONAL COMPUTER USER REQUIREMENTS FOR EXTENDED SERVICES AND ATTITUDES TOWARD PREMIUMS

EXTENDED SERVICE	USERS RESPONDING YES TO REQUIREMENT		REASONABLE PREMIUM AS PERCENTAGE OF BASIC CHARGE FOR MAINTENANCE	
	NUMBER	USERS (Percent)	MEAN	STANDARD DEVIATION
Stand-By Coverage During Critical Periods	16	16.7%	9.7%	9.6%
Guaranteed Uptime	21	21.9	5.8	6.3
Guaranteed Response Time	31	32.3	4.7	5.1
On-Site Spare Parts	23	24.0	2.6	4.9
Remote Diagnostics	28	29.2	3.3	5.4
Preventive Maintenance and Field Changes during Off-Prime Hours	30	31.2	6.3	10.2
Occasional Shift Coverage (Versus Fixed Schedule)	15	15.6	7.0	9.0
Full-Time, On-Site Service Engineer	3	3.1	1.7	2.9
Guaranteed Repair Time (Hardware)	36	37.5	5.3	7.6
Guaranteed Turnaround on Software Fixes	29	30.2	4.8	7.3

EXHIBIT VI-2

CUMULATIVE DISTRIBUTION OF REASONABLE PREMIUMS FOR EXTENDED SERVICES - PERSONAL COMPUTER USERS

EXTENDED SERVICE	PERCENTAGE OF USERS WHO REQUIRE EXTENDED SERVICE AND WILL PAY PREMIUM OVER BASIC MAINTENANCE CHARGE									
	PREMIUM GROUPS									
	>0%	> 5%	>10%	>15%	>20%	>25%	>30%	>40%	>50%	>75%
Stand-By Coverage During Critical Periods	74.9%	56.2%	18.7%	18.7%	12.5%	12.5%	-	-	-	-
Guaranteed Uptime	67.1	28.6	14.3	9.5	-	-	-	-	-	-
Guaranteed Response Time	58.0	29.0	6.4	3.2	-	-	-	-	-	-
On-Site Spare Parts	30.4	13.0	4.3	4.3	-	-	-	-	-	-
Remote Diagnostics	42.8	10.7	7.1	7.1	-	-	-	-	-	-
Preventive Maintenance and Field Changes during Off-Prime Hours	53.4	26.7	16.7	10.0	3.3	3.3	3.3	3.3	-	-
Occasional Shift Coverage (Versus Fixed Schedule)	53.3	33.3	26.6	13.3	13.3	-	-	-	-	-
Full-Time, On-Site Service Engineer	33.3	-	-	-	-	-	-	-	-	-
Guaranteed Repair Time (Hardware)	44.6	27.9	16.8	11.2	5.6	-	-	-	-	-
Guaranteed Turnaround on Software Fixes	48.2	20.6	10.3	10.3	6.9	-	-	-	-	-

- By multiplying the premium that users are willing to pay by the percentage of users willing to pay that premium, the optimum premium level can be determined. Additionally, this will provide an indication of the maintenance revenue that can be expected for each extended service. For example, the optimum premium level for guaranteed response time is 5%, which will yield a revenue increase of 1.5%.

- Word processor users also are attracted to guaranteed response time, preventive maintenance (PM), and guaranteed repair time, as indicated by Exhibit VI-3. As shown in Exhibit VI-4, vendors can expect a maintenance revenue yield of 3.2% from a 15% premium for guaranteed response time, a 3.5% revenue yield from a 15% premium for guaranteed turnaround software fixes, and a 2.7% revenue yield from a 20% premium for PM scheduled during off-prime hours.

- Workstation users also were most attracted to guaranteed response time, preventive maintenance, and guaranteed repair time as extended services, as shown in Exhibits VI-5 and VI-6; however, the highest maintenance revenue yield will result in a 15% premium for guaranteed uptime, which will yield a 2.3% revenue increase. Preventive maintenance in the off-prime hours can expect a 1.2% yield at a 10% premium.

- Along with guaranteed response time and preventive maintenance in off-prime hours, printer/terminal users were most attracted to on-site spare parts, as shown in Exhibit VI-7. Printer/terminal users would pay higher premiums for guaranteed repair times, with an expected yield of 4% additional service revenue expected at a 10% premium level. The optimum revenue gain from on-site spares would be 2.2% from a 10% premium. Exhibit VI-8 provides printer/terminal users' reaction to progressively higher premiums attached to extended services.

EXHIBIT VI-3

WORD PROCESSOR USER REQUIREMENTS FOR EXTENDED SERVICES AND ATTITUDES TOWARD PREMIUMS

EXTENDED SERVICE	USERS RESPONDING YES TO REQUIREMENT		REASONABLE PREMIUM AS PERCENTAGE OF BASIC CHARGE FOR MAINTENANCE	
	NUMBER	USERS (Percent)	MEAN	STANDARD DEVIATION
Stand-By Coverage During Critical Periods	12	14.8%	8.8%	21.3%
Guaranteed Uptime	19	23.5	6.8	17.7
Guaranteed Response Time	39	48.7	9.2	19.5
On-Site Spare Parts	21	25.9	6.9	16.8
Remote Diagnostics	26	32.5	4.8	15.3
Preventive Maintenance and Field Changes during Off-Prime Hours	29	35.8	8.3	18.5
Occasional Shift Coverage (Versus Fixed Schedule)	14	17.5	9.6	17.8
Full-Time, On-Site Service Engineer	3	3.7	0.0	0.0
Guaranteed Repair Time (Hardware)	31	39.2	6.8	17.4
Guaranteed Turnaround on Software Fixes	22	28.9	9.7	20.6

EXHIBIT VI-4

CUMULATIVE DISTRIBUTION OF REASONABLE PREMIUMS FOR EXTENDED SERVICES - WORD PROCESSOR USERS

EXTENDED SERVICE	PERCENTAGE OF USERS WHO REQUIRE EXTENDED SERVICE AND WILL PAY PREMIUM OVER BASIC MAINTENANCE CHARGE									
	PREMIUM GROUPS									
	>0%	> 5%	>10%	>15%	>20%	>25%	>30%	>40%	>50%	>75%
Stand-By Coverage During Critical Periods	27.0%	27.0%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	-
Guaranteed Uptime	26.4	26.4	10.6	10.6	10.6	5.3	5.3	5.3	5.3	-
Guaranteed Response Time	34.0	31.4	21.1	21.1	15.5	12.9	10.3	7.7	5.1	-
On-Site Spare Parts	38.2	23.9	9.6	9.6	9.6	4.8	4.8	4.8	4.8	-
Remote Diagnostics	22.9	11.4	7.6	7.6	7.6	3.8	3.8	3.8	3.8	-
Preventive Maintenance and Field Changes during Off-Prime Hours	30.9	24.0	13.7	13.7	13.7	10.3	10.3	10.3	3.4	-
Occasional Shift Coverage (Versus Fixed Schedule)	35.7	35.7	21.4	14.3	14.3	14.3	14.3	14.3	-	-
Full-Time, On-Site Service Engineer	-	-	-	-	-	-	-	-	-	-
Guaranteed Repair Time (Hardware)	25.7	22.5	12.8	12.8	9.6	6.4	6.4	6.4	6.4	-
Guaranteed Turnaround on Software Fixes	28.1	28.1	23.6	23.6	19.1	10.0	10.0	10.0	10.0	-

EXHIBIT VI-5

WORKSTATION USER REQUIREMENTS FOR EXTENDED SERVICES AND ATTITUDES TOWARD PREMIUMS

EXTENDED SERVICE	USERS RESPONDING YES TO REQUIREMENT		REASONABLE PREMIUM AS PERCENTAGE OF BASIC CHARGE FOR MAINTENANCE	
	NUMBER	USERS (Percent)	MEAN	STANDARD DEVIATION
Stand-By Coverage During Critical Periods	16	19.0%	9.4%	19.2%
Guaranteed Uptime	20	23.8	8.8	16.8
Guaranteed Response Time	35	41.2	4.9	13.1
On-Site Spare Parts	16	18.8	4.4	6.8
Remote Diagnostics	28	32.9	2.1	3.7
Preventive Maintenance and Field Changes during Off-Prime Hours	34	40.5	6.2	13.6
Occasional Shift Coverage (Versus Fixed Schedule)	24	28.2	5.4	10.5
Full-Time, On-Site Service Engineer	2	2.4	0.0	0.0
Guaranteed Repair Time (Hardware)	26	30.6	5.3	14.8
Guaranteed Turnaround on Software Fixes	23	27.7	3.9	10.7

EXHIBIT VI-6

CUMULATIVE DISTRIBUTION OF REASONABLE PREMIUMS FOR EXTENDED SERVICES - WORKSTATION USERS

EXTENDED SERVICE	PERCENTAGE OF USERS WHO REQUIRE EXTENDED SERVICE AND WILL PAY PREMIUM OVER BASIC MAINTENANCE CHARGE									
	PREMIUM GROUPS									
	>0%	> 5%	>10%	>15%	>20%	>25%	>30%	>40%	>50%	>75%
Stand-By Coverage During Critical Periods	37.4%	24.9%	12.4%	12.4%	12.4%	6.2%	6.2%	6.2%	6.2%	-
Guaranteed Uptime	50.0	25.0	15.0	15.0	5.0	5.0	5.0	5.0	5.0	-
Guaranteed Response Time	34.4	22.9	5.8	5.8	2.9	2.9	2.9	2.9	2.9	-
On-Site Spare Parts	33.6	24.9	6.2	6.2	6.2	-	-	-	-	-
Remote Diagnostics	28.6	14.3	-	-	-	-	-	-	-	-
Preventive Maintenance and Field Changes during Off-Prime Hours	34.0	29.3	11.7	5.8	5.8	2.9	2.9	2.9	2.9	-
Occasional Shift Coverage (Versus Fixed Schedule)	45.9	33.4	4.2	4.2	4.2	4.2	4.2	4.2	-	-
Full-Time, On-Site Service Engineer	-	-	-	-	-	-	-	-	-	-
Guaranteed Repair Time (Hardware)	34.5	23.0	3.8	3.8	3.8	3.8	3.8	3.8	3.8	-
Guaranteed Turnaround on Software Fixes	26.0	17.3	4.3	4.3	4.3	4.3	4.3	34.3	-	-

EXHIBIT VI-7

PRINTER/TERMINAL USER REQUIREMENTS FOR EXTENDED SERVICES AND ATTITUDES TOWARD PREMIUMS

EXTENDED SERVICE	USERS RESPONDING YES TO REQUIREMENT		REASONABLE PREMIUM AS PERCENTAGE OF BASIC CHARGE FOR MAINTENANCE	
	NUMBER	USERS (Percent)	MEAN	STANDARD DEVIATION
Stand-By Coverage During Critical Periods	12	17.4%	4.6%	5.4%
Guaranteed Uptime	19	27.5	6.8	9.9
Guaranteed Response Time	32	46.4	6.6	8.5
On-Site Spare Parts	23	33.3	5.7	8.4
Remote Diagnostics	18	26.1	4.0	4.6
Preventive Maintenance and Field Changes during Off-Prime Hours	32	46.4	3.6	4.9
Occasional Shift Coverage (Versus Fixed Schedule)	18	26.1	9.0	11.4
Full-Time, On-Site Service Engineer	2	2.9	2.5	3.5
Guaranteed Repair Time (Hardware)	20	29.0	14.5	22.1
Guaranteed Turnaround on Software Fixes	11	16.2	6.4	9.8

EXHIBIT VI-8

CUMULATIVE DISTRIBUTION OF REASONABLE PREMIUMS FOR EXTENDED SERVICES - PRINTER/TERMINAL USERS

EXTENDED SERVICE	PERCENTAGE OF USERS WHO REQUIRE EXTENDED SERVICE AND WILL PAY PREMIUM OVER BASIC MAINTENANCE CHARGE									
	PREMIUM GROUPS									
	>0%	> 5%	>10%	>15%	>20%	>25%	>30%	>40%	>50%	>75%
Stand-By Coverage During Critical Periods	50.0%	33.3%	8.3%	-	-	-	-	-	-	-
Guaranteed Uptime	57.9	31.6	10.3	10.3	10.3	10.6	5.3			
Guaranteed Response Time	52.9	34.2	21.7	15.5	6.2	3.1	-	-	-	-
On-Site Spare Parts	47.7	26.0	21.7	13.0	8.7	-	-	-	-	-
Remote Diagnostics	55.7	22.3	5.6	-	-	-	-	-	-	-
Preventive Maintenance and Field Changes during Off-Prime Hours	43.6	24.9	6.2	-	-	-	-	-	-	-
Occasional Shift Coverage (Versus Fixed Schedule)	77.8	50.0	16.7	5.6	5.6	5.6	5.6	5.6	-	-
Full-Time, On-Site Service Engineer	50.0	-	-	-	-	-	-	-	-	-
Guaranteed Repair Time (Hardware)	75.0	50.0	40.0	30.0	20.0	5.0	5.0	5.0	5.0	5.0
Guaranteed Turnaround on Software Fixes	45.5	27.3	18.2	18.2	18.2	-	-	-	-	-

C. USER ATTITUDES TOWARD ALTERNATIVE DELIVERY MODES

- An additional way to increase revenue and avoid price increases is the offering of alternative delivery modes with appropriate discount attached. Office systems users have traditionally accepted delivery methods other than on-site response. Although users definitely prefer to receive their service on-site, office systems users show a willingness to receive their service through alternative methods.

- Exhibit VI-9 indicates that personal computer users show a willingness to use depot service (either ship-in or carry-to) and a strong support for working with telephone support centers. Vendors will find that telephone support centers will assist in reducing maintenance costs by reducing the number of no-fault-found calls.

- Exhibit VI-10 indicates that word processor users are willing to work with telephone support centers, especially for software-related problems. Also, word processor users report a growing interest in remote diagnostics and down-line loading of software. Users see these activities as improving overall system availability by reducing response time.

- Exhibit VI-11 demonstrates workstation users' desire to receive their service on-site; however, user acceptance of remote service will increase as system networking increases.

- Printer/terminal users also favor on-site service but demonstrate a willingness to work with telephone support centers, if available. Printer/terminal users' responses are shown in Exhibit VI-12.

EXHIBIT VI-9

PERSONAL COMPUTER USER ATTITUDES TOWARD ALTERNATIVE DELIVERY METHODS FOR MAINTENANCE

MAINTENANCE DELIVERY METHOD	RATING (1-10)*			
	HARDWARE		SOFTWARE	
	MEAN	NUMBER OF RESPONSES	MEAN	NUMBER OF RESPONSES
User Involvement in Telephone Diagnosis Working with Support Center	6.0	94	6.6	95
User Involvement with Remote Diagnostics and Software Down-Line Loading	4.3	91	4.5	90
User Replacing Circuit Boards or Patching Software	5.1	94	4.8	94
Ship in/Carry to Repair Center	5.0	94	5.3	94
Consulting/Software Customization	N/A	N/A	4.8	94
Traditional, On-Site Response to Trouble Calls	7.0	94	6.0	94

* Rating: 1 = Low, 10 = High

EXHIBIT VI-10

WORD PROCESSOR USER ATTITUDES TOWARD ALTERNATIVE DELIVERY METHODS FOR MAINTENANCE

MAINTENANCE DELIVERY METHOD	RATING (1-10)*			
	HARDWARE		SOFTWARE	
	MEAN	NUMBER OF RESPONSES	MEAN	NUMBER OF RESPONSES
User Involvement in Telephone Diagnosis Working with Support Center	6.6	81	7.1	77
User Involvement with Remote Diagnostics and Software Down-Line Loading	5.6	78	5.7	70
User Replacing Circuit Boards or Patching Software	4.5	80	4.8	72
Ship in/Carry to Repair Center	4.8	11	4.5	66
Consulting/Software Customization	N/A	N/A	5.8	68
Traditional, On-Site Response to Trouble Calls	8.9	80	8.4	77

* Rating: 1 = Low, 10 = High

EXHIBIT VI-11

WORKSTATION USER ATTITUDES TOWARD ALTERNATIVE DELIVERY METHODS FOR MAINTENANCE

MAINTENANCE DELIVERY METHOD	RATING (1-10)*			
	HARDWARE		SOFTWARE	
	MEAN	NUMBER OF RESPONSES	MEAN	NUMBER OF RESPONSES
User Involvement in Telephone Diagnosis Working with Support Center	5.7	85	6.1	83
User Involvement with Remote Diagnostics and Software Down-Line Loading	4.7	82	4.9	80
User Replacing Circuit Boards or Patching Software	5.0	84	5.3	83
Ship in/Carry to Repair Center	2.6	7	4.8	80
Consulting/Software Customization	N/A	N/A	4.9	82
Traditional, On-Site Response to Trouble Calls	8.5	85	6.8	84

* Rating: 1 = Low, 10 = High

EXHIBIT VI-12

PRINTER/TERMINAL USER ATTITUDES TOWARD ALTERNATIVE DELIVERY METHODS FOR MAINTENANCE

MAINTENANCE DELIVERY METHOD	RATING (1-10)*			
	HARDWARE		SOFTWARE	
	MEAN	NUMBER OF RESPONSES	MEAN	NUMBER OF RESPONSES
User Involvement in Telephone Diagnosis Working with Support Center	6.2	68	N/A	N/A
User Involvement with Remote Diagnostics and Software Down-Line Loading	5.4	67	N/A	N/A
User Replacing Circuit Boards or Patching Software	5.1	68	N/A	N/A
Ship in/Carry to Repair Center	3.6	21	N/A	N/A
Consulting/Software Customization	N/A	N/A	N/A	N/A
Traditional, On-Site Response to Trouble Calls	8.2	67	N/A	N/A

* Rating: 1 = Low, 10 = High

APPENDIX A: DATA BASE FORMAT

EXHIBIT A-1

OPIA.DBF

FIELD	NAME	TYPE	WIDTH	DECIMAL
001	CATNO	N	006	001
002	VENDOR	C	020	
003	PRODUCT	C	020	
004	Q1A	N	003	
005	Q1B	N	003	
006	Q1C	N	003	
007	Q1D	N	003	
008	Q1E	N	003	
009	Q2A	N	003	
010	Q2B	N	003	
011	Q2C	N	003	
012	Q2D	N	003	
013	Q2E	N	003	
014	Q2F	N	003	
015	Q3A	N	005	001
016	Q3B	N	005	001
017	Q4A	N	005	001
018	Q4B	N	005	001

EXHIBIT A-2

OPIB.DBF

FIELD	NAME	TYPE	WIDTH	DECIMAL
001	CATNO	N	006	001
002	VENDOR	C	020	
003	PRODUCT	C	020	
004	Q5A	N	005	001
005	Q5B	N	005	001
006	Q6A	N	005	001
007	Q6B	N	005	001
008	Q7A	N	006	001
009	Q7B	N	006	001
010	Q8A	N	003	
011	Q8B	N	004	
012	Q8C	N	004	
013	Q9A1	N	001	
014	Q9A2	N	004	
015	Q9B1	N	001	
016	Q9B2	N	004	
017	Q9C1	N	001	
018	Q9C2	N	004	
019	Q9D1	N	001	
020	Q9D2	N	004	
021	Q9E1	N	001	
022	Q9E2	N	004	
023	Q9F1	N	001	
024	Q9F2	N	004	
025	Q9G1	N	001	
026	Q9G2	N	004	
027	Q9H1	N	001	
028	Q9H2	N	004	
029	Q9I1	N	001	
030	Q9I2	N	004	
031	Q9J1	N	001	
032	Q9J2	N	004	

EXHIBIT A-3

OPIC.DBF

FIELD	NAME	TYPE	WIDTH	DECIMAL
001	CATNO	N	006	001
002	VENDOR	C	020	
003	PRODUCT	C	020	
004	Q10A1	N	003	
005	Q10A2	N	003	
006	Q10B1	N	003	
007	Q10B2	N	003	
008	Q10C1	N	003	
009	Q10C2	N	003	
010	Q10D1	N	003	
011	Q10D2	N	003	
012	Q10E1	N	003	
013	Q10E2	N	003	
014	Q10F1	N	003	
015	Q10F2	N	003	
016	Q10G1	N	003	
017	Q10G2	N	003	
018	Q10H1	N	003	
019	Q10H2	N	003	
020	Q10I1	N	003	
021	Q10I2	N	003	
022	Q10J1	N	003	
023	Q10J2	N	003	
024	Q11A	N	001	
025	Q11B	N	001	
026	Q11C	N	001	
027	Q11D	N	001	
028	Q11E	N	001	
029	Q11F	N	001	

EXHIBIT A-4

OPID.DBF

FIELD	NAME	TYPE	WIDTH	DECIMAL
001	CATNO	N	006	001
002	VENDOR	C	020	
003	PRODUCT	C	020	
004	Q12A1	N	003	
005	Q12A2	N	003	
006	Q12B1	N	003	
007	Q12B2	N	003	
008	Q12C1	N	003	
009	Q12C2	N	003	
010	Q12D1	N	003	
011	Q12D2	N	003	
012	Q12E2	N	003	
013	Q12F1	N	003	
014	Q12F2	N	003	
015	Q13	N	001	
016	Q14	N	001	
017	Q15A	C	030	
018	Q15B	C	020	
019	Q16A	N	001	
020	Q16B	N	001	
021	Q17A	N	001	
022	Q17B	N	001	
023	Q17C	N	001	
024	Q17D	N	001	
025	Q18A	N	001	
026	Q18B	N	001	
027	Q18C	N	001	
028	Q19	N	003	

EXHIBIT A-5

OPIE.DBF

FIELD	NAME	TYPE	WIDTH	DECIMAL
001	CATNO	N	006	001
002	VENDOR	C	020	
003	PRODUCT	C	020	
004	Q20A	N	003	
005	Q20B	N	003	
006	Q20C	N	003	
007	Q20D	N	003	
008	Q20E	N	003	
009	Q20F	N	003	
010	Q20G	N	003	
011	Q20H	N	003	
012	Q21	N	003	
013	Q22A	N	003	
014	Q22B	N	003	
015	Q22C	N	003	
016	Q22D	N	003	
017	Q22E	N	003	
018	Q23	N	001	
019	Q23A	C	030	
020	Q23A1	N	001	
021	Q23A2	N	001	
022	Q23A3	N	001	
023	Q23B	N	001	
024	Q24	C	030	
025				

EXHIBIT A-6

OPIF.DBF

FIELD	NAME	TYPE	WIDTH	DECIMAL
001	CATNO	N	006	001
002	ZIP	C	005	
003	INDUSTRY	C	030	
004	AREA	C	003	
005	VENDOR	C	020	
006	PRODUCT	C	020	

APPENDIX B: QUESTIONNAIRE

1. On a scale of 1-10, how important are each of the following maintenance factors in computer purchase decision-making: (1 = least important, 10 = most important)

   a. Price (of maintenance) _____

   b. Uptime or system availability _____

   c. Response time _____

   d. Repair time _____

   e. Vendor reputation _____

2. On a scale of 1-10, please rate your maintenance vendor in the following categories:

   a. Hardware service engineers' communication _____

   b. Software service engineers' communication _____

   c. Overall service image of the vendor _____

   d. Dispatching _____

   e. Escalation _____

   f. General responsiveness of the vendor _____

3. a. What is your requirement for hardware response time?_____(hours)

   b. What do you receive?_____(hours)

4. a. What is your requirement for hardware repair time?_____(hours)

   b. What is the average repair time (once the FE is on site)?_____(hours)

5. a. What is your requirement for software response time?_____(hours)

   b. What do you currently receive?_____(hours)

6. a. What is your requirement for software fixes?_____(hours)

   b. What do you currently receive?_____(hours)

7. a. What overall level of system availability do you require?_____%

   b. What level of system availability are you experiencing?_____%

8. a. How many system interruptions do you have each month?_____

   b. What percentage of system interruptions are hardware related?_____%

   c. And software related?_____%

9. Do you have a requirement for any of the following services, and if so, what would you consider a reasonable premium to pay over the basic maintenance charge?

Service	1 = Yes, 2 = No Yes/No	Reasonable Premium (percent)
a. Stand-by coverage during critical periods	_____	_____%
b. Guaranteed uptime	_____	_____%
c. Guaranteed response time	_____	_____%
d. On-site spare parts	_____	_____%
e. Remote diagnostics	_____	_____%
f. Preventive maintenance and field changes during off-prime hours	_____	_____%
g. Occasional shift coverage (versus fixed schedule)	_____	_____%
h. Full-time, on-site service engineer	_____	_____%
i. Guaranteed repair time (hardware)	_____	_____%
j. Guaranteed turnaround on software fixes	_____	_____%

10. a. Please rate, on a scale of 1-10, your requirements for the following vendor goods and services.

    b. Please rate your current level of satisfaction with the services you receive from your maintenance vendor.

Vendor Goods & Services	Requirement (a) 1-10	Current Level (b) 1-10
a. Planning (environmental, physical site installation)		
b. Consulting		
c. Documentation		
d. Training		
e. Sales of supplies		
f. Add-on sales		
g. Site audits		
h. Relocation/deinstallation		
i. Hardware maintenance		
j. Software maintenance		

11. Would you favor or oppose having the field service engineer take orders for: (1 = favor, 2 = oppose, 3 = neutral)

    a. Supplies _____

    b. Add-on equipment _____

    c. New models _____

    d. Upgrades _____

    e. Service contracts _____

    f. Software _____

12. Please rate the importance of receiving your hardware and software support services by the following methods: (scale 1-10)

	(1-10)	
	Hardware	Software
a. Your involvement in telephone diagnosis: working with support center	_____	_____
b. Your involvement with remote diagnostics and software down-line loading	_____	_____
c. Your replacing circuit boards, or patching software	_____	_____
d. Ship in/carry in to repair center	_____	_____
e. Consulting/software customization	[redacted]	_____
f. Traditional, on-site response to trouble calls	_____	_____

13. Do you currently use third-party maintenance on any of your equipment?
_____ (1 = yes, 2 = no) IF YES, GO TO QUESTION 15.

14. Have you considered using third-party maintenance?_____ (1 = yes, 2 = no) IF YES, GO TO QUESTION 20. IF NO GO TO QUESTION 21.

15. a. Which third-party vendor are you currently using? _____

b. And for which product? _____

16. Do you receive third-party maintenance in: (1 = yes, 2 = no)

a. Per call _____ or b. Contract _____

17. If contract:

What is your response time requirement?(1 = yes, 2 = no)

a. 2 hrs._____ b. 4 hrs._____ c. 8 hrs._____

d. Other_____

18. What type of coverage do you receive? (1 = yes, 2 = no)

    a. Mon. - Fri. _____

    b. Saturday _____

    c. Sunday _____

19. On a scale of 1-10, how satisfied are you with the third-party maintenance you are now receiving? _____

20. When considering third-party maintenance, how important are each of the following criteria to you? (1 = not important, 10 = very important)

    a. Price of third party maintenance _____

    b. Improved response time _____

    c. Third-party vendor reputation _____

    d. Hardware support _____

    e. Software support provided by the third-party vendor _____

    f. Overall system uptime (guarantee)

    g. Geographic accessibility _____

    h Other features (spares, diagnostics) _____

21. On a scale of 1-10, how important is a single source of maintenance to you?

    (1 = not important, 10 = very important) _____

    (A single source of maintenance provides a single maintenance contract for all DP products at your site.)

22. Please rate the importance of the following single source maintenance contract features: (1 = not important, 10 = very important)

    a. Improved convenience _____

    b. Improved response time _____

    c. Knowledge of site _____

    d. Reputation of single-source vendor _____

    e. Avoids "finger pointing" _____

23. Do you currently use a Local Area Network in a conjunction with your small computer and/or word processor? (1 = yes, 2 = no)

_____

a. If yes, which vendor?_____

1. Star _____

2. Ring _____

3. Bus _____

b. If no, do you plan to in the next two years? _____

24. Who maintains the network? _____

25. What is your most significant LAN maintenance concern? _____

_____

_____

_____

_____

26. In your opinion, what single change should your maintenance vendor make to significantly improve the level of service?

_____

_____

_____

_____

_____

_____

THANK YOU.

APPENDIX C: USER RESPONDENTS

APPENDIX C

USER RESPONDENTS

1 SECURE DATA CORPORATION
ABBOTT LABORATORIES
ABERDEEN MANUFACTURING COMPANY
ABNEY ACCOUNTING
ADVANCE REFRIGERATOR CO.
AEROSPACE CORPORATION
AGBOBIAN ASSOCIATES
AKZONA INC.
AMERICAN BRASS
AMERICAN GREETING CORP.
AMERICAN NATIONAL INSURANCE
AMERICAN RED CROSS
ANGELES METAL SYSTEMS
APPERSON BUSINESS FORMS
ARDEN MAYFAIR INC.
ARMOLITE LENS CO.
ASSOCIATE GROCERS
BACHE HALSEY & STUART INC.
BEARD OIL COMPANY
BEATRICE FOODS CO.
BEDELL & NELSON INSURANCE
BELDEN CORP.
BERGEN BRUNSWIG CO.
BLAKE MOFFET & POWER
BLUE CROSS OF ARIZONA
BLUEBIRD INC.
BOB OLSEN INC.
BRISTOL SAVINGS BANK
BUILDERS SUPPLY
CALIFORNIA INSTITUTE OF TECHNOLOGY
CARE COMPUTER SYSTEMS

APPENDIX C

USER RESPONDENTS

CARNATION CO.
CBS
CHEMSOLVE
CHEVRON GEOSCIENCE
CHEVRON USA
CHICAGO TRANSIT AUTHORITY
CITY OF COLLINSVILLE
CITY OF FRESNO - FINANCE DEPT.
CITY OF LA-HARBOR DEPARTMENT
CITY OF MONTEREY
CITY OF SANTA CRUZ
CLARK HARDWARE
CLARKS SPRINGTIME CLEANERS
CLOVIS MUNICIPAL SCHOOLS
COCA-COLA
COLLECTORS GUILD INTER-NAL
COMMERCIAL TRAVELERS LIFE INSURANCE
COMMONWEALTH LIFE INSURANCE
COMPUTERMAT
COMPUWORD
CONNECTICUT AIR CONDITIONING
CONTINENTAL GRAIN COMPANY
CORN BELT MUTUAL INSURANCE
COUNTRYSIDE SERVICE & REPAIR
CRAMMER ENGINEERING
CUTLER HAMMER
CUYAHOGA VALLEY BUSINESS EQUIPMENT
D.M. LABS
DANA CORP.
DANA MARKETING INC.
DEERE AND CO.

APPENDIX C

USER RESPONDENTS

DENVER PUBLISHING CO.
DEPARTMENT OF FINANCE & REVENUE
DEPARTMENT OF REVENUE
DINERS CLUB
DIRECTOR OF FBI
DON MASSIE COMPANY INC.
DON SWANSON INSURANCE INC.
EATON CORPORATION
EDUCATIONAL SERVICE CENTER
EDWARDS & KELCEY
EECO-ELECTRONIC ENGINEERING
ELECTRO GENERAL CORPORATION
EMPLOYERS MUTUAL CASUALTY
ENERGY ENTERPRISES
EQUITABLE LIFE OF IOWA
EXCHANGE MUTUAL INSURANCE
FAR WEST SERVICE
FARMERS INSURANCE
FARMERS INSURANCE AGENCY
FARMERS INSURANCE GROUP
FEDERAL EXPRESS CORP.
FIRST COMMODITY GROUP
FLETCHER OIL CO.
FORD AEROSPACE & COMMUNICATION
FOREST T. JONES & COMPANY
FOUR E. ENTERPRISES INC.
FOX AND CO.
G. COTTER ENTERPRISE
GARY STEWART INSURANCE
GARY'S STEAKS & SUCH
GATX

APPENDIX C

USER RESPONDENTS

GENERAL INSURANCE CO.
GENERAL SEMICONDUCTOR INDUSTRY
GENERAL UNIVERSAL SYSTEMS
GENISCO TECHNOLOGY CORPORATION
GHM ENTERPRISES
GILMAN ENGINEERING
GOLDEN GRAIN MACARONI CO.
GOLDEN STATE LIMOUSINE
GOLFLAND
GRAPHIC COMPOSITION
GREAT OAK INSURANCE COMPANY
GREAT SOUTHERN LIFE INSURANCE
GREENS COUNTRY CLUB
GRIFFIN WHEEL CO.
HARRIS TRUST & SAVINGS
HARTFORD HOSPITAL
HIGH TECH INC.
HILLSIDE HOSPITAL
HOSPITAL COUNCIL OF NO. CALIFORNIA
HOUSEHOLD RESEARCH INSTITUTE
HOYT LABORATORIES
HUBARD STRAUSBAUGH INSURANCE
HUNTER EQUIPMENT SALES/SERVICE
HYGENICS INC.
ICI AMERICA
IDAHO STATE LAW ENFORCEMENT
IDAHO TRANSPORTATION DEPT.
ILLINOIS TOOL CO. BUILDEX DIV.
INDIAN HEAD
INDUSTRIAL COMPUTER SERVICE
INFRARED INDUSTRIES

APPENDIX C

USER RESPONDENTS

INGERSOLL PRODUCTS
INPUT
INSURANCE ACCOUNTING & STATISTICAL
INTERNATIONAL MACHINERY EXCHANGE
IRON TREE MANAGEMENT INC.
ITT PETERSON SCHOOL
J.H. FILBERT CO. INCORP.
JACK KELLY MOTOR CO.
JAMES APOTHECARY INC.
JAMES SEWELL CO.
JASPER STATE BANK
JOHN DEERE & COMPANY
JOHNS-MANVILLE CORP.
JTS COMPUTER SERVICES
KARTRIDGE PAK CO.
KEMPER GROUP
KGRC RADIO
KIMBERLY-CLARK CORP.
KINGSBURG MACHINE TOOL CORP.
KIRKWOOD ASSOCIATES INC.
KOPPERS CO.
L.D. SCHREIBER CHEESE COMPANY
LIBERTY MUTUAL INSURANCE
LOMA LINDA FOODS
LOS ANGELES TIMES
MACHEN & MCCHESNEY
MAGLA PRODUCTS
MANATEE JUNIOR COLLEGE
MANVILLE BUILDING MATERIALS
MARITIME COMPUTER COMPANY
MAY TAYLOR & COMPANY

APPENDIX C

USER RESPONDENTS

MEAD PRODUCTS
MEDART INC.
MINEWA BOOKS
MISSION INSURANCE COMPANY
MISSISSIPPI CHEMICAL COMPANY
MNEMOTECH COMPANY
MOBIL-PRE MIX
MONTANA POWER CO.
MOTECH COMPUTER
MULTNOMAH COUNTY
MUTUAL OF ENUMCLAN
NAVAL REGIONAL MEDICAL HOSPITAL
NAVIGATING SERVICE
NEVADA INDUSTRIAL
NICHOLET PAPER COMPANY
NORCAL PETROLEUM COMPANY
NORTHSTAR MUTUAL INSURANCE
NORTHWESTERN UNIVERSITY
O & G INDUSTRIES INC.
OAK INDUSTRIES
OCCIDENTAL OIL SHALE COMPANY
OCEAN SPRAY CRANBERRIES INC.
OCEANIC ENTERPRISES
OCONOMOWOC CANNING COMPANY
OFFICIAL AIRLINE GUIDES INC.
OROWEAT FOOD COMPANY
P.L. PORTER
P.P.G. INDUSTRIES
PACE INDUSTRIES
PANHANDLE DISTRIBUTORS INC.
PAOLUCCIO WILLIS & NAU ASSOC.

APPENDIX C

USER RESPONDENTS

PERSONALIZED MONOGRAMMING
PETRASCEP CORPORATION
PFAUDLER COMPANY
PHIL CORSO INC.
PHIL TWEEDY
PHILLIPS PETROLEUM CO.
PITMAN-DREITZER
PLAYBOY ENTERPRISES
POLAROID CORP.
PONTE VEDRA CORPORATION
PORTLAND STATE UNIVERSITY
POTLATCH COMPANY
PUBLIC UTILITY DISTRICT
QUAKER OATS CO. - PET FOOD DIV.
R.J. REYNOLDS INDUSTRIES
R.J. SCHUCK INVESTMENTS
R.W. MOORE
RACHLIN & COHEN
RADIO STATION KRE
RAM GROUP
RANIER NATIONAL BANK
RAYCHEM CORP.
RAYTHEON
RCA CORP.
REDMAN INDUSTRIES
REGAL BELOIT CORP.
RELIANCE ELECTRIC COMPANY
REPCO INC.
REPUBLIC CORP.
RESEARCH-COTTRELL
RESERVE MINING

APPENDIX C

USER RESPONDENTS

REVLON INC.
REXNORD, INC.
REYNOLDS METAL COMPANY
REYNOLDS METALS
RICH PRODUCTS
RIDGEWAY PACKAGING CORPORATION
RIEGEL TEXTILE CORPORATION
ROBERT M. KELLER-INDUS. REALTY
ROCKWELL INTERNATIONAL
ROHN & HAAS COMPANY, INC.
ROHR INDUSTRIES
ROLLINS INC.
ROYSTER COMPANY
RUBBERMAID INC.
RUBICON SYSTEMS INC.
S.F. CITY & COUNTY FIRE DEPT.
SACO DEFENSE SYSTEMS
SACRAMENTO COUNTY
SAFECO CORP.
SAMSONITE CORP.
SAN DIEGO TRUST BANK
SAN MATEO CO.
SANTA FE INDUSTRIES
SAUDER INDUSTRIES
SAVANNAH FOODS & INDUSTRIES
SCNO BARGE LINES
SEATTLE HOUSING AUTHORITY
SECURITY LIFE OF DENVER

APPENDIX C

USER RESPONDENTS

SECURITY PACIFIC CORP.
SENTRY INSURANCE
SHANNON & RITCHIE
SIGMA ONE CORP.
SOLAR TURBINES INTERNATIONAL
SOO LINE RAILROAD COMPANY
SOURCE ONE INC.
SOUTH HILLS ESCROW
SPECTRUM TIME SHARING INC.
ST. JOSEPH'S MEDICAL CENTER
STANDARD OIL OF CALIFORNIA
STANDARD SOFTWARE SYSTEMS
STANDINN COMPANY
STARK-BRUCE DEPOT INC.
STATE OF ARIZONA
STOC BOSTON INC.
STRATFORD/GRAHAM ENGINEERING
SUNBEAM APPLIANCE COMPANY
SUNKIST GROWERS INC.
SUPER VALUE STORES
SUPERIOR OIL
SUPERIOR TRUCKING
SUPERMARKETS GENERAL CORP.
SWIFT AND COMPANY
TEKTRONIX
TERRATEK SYSTEMS
TEXAS FARM BUREAU
THERON INC.
THOUGHTWARE PUBLISHING
TIGER FINANCIAL SERVICES
TOMLINSON & ASSOCIATES

APPENDIX C

USER RESPONDENTS

TOYOTA MOTOR SALES
TRANSAMERICA INFORMATION SERVICES
TRENAM SIMMONS ET AL
TRW
TRW NOBLESVILLE CASTINGS
TWIN CITY BOTTLE INC.
U-HAUL INTERNATIONAL
U.S. BANCORP
U.S. DEPARTMENT OF COMMERCE
U.S. INDIAN HEALTH SERVICE
UNIGARD INSURANCE GROUP
UNION CAMP CORP.
UNION PACIFIC RAILROAD CO.
UNITED BANK SERVICE COMPANY
UNIVERSITY HOSPITAL
USDA NATIONAL FINANCE CENTER
VARIAN ASSOCIATES
VILLAGE OF NILES
W.C. HILL CONSULTING
WAYNE POULTRY DIVISION
WESTLAND SOFTWARE HOUSE
WHARTON & BARNARD
WILKENS ANDERSON COMPANY
WILMINGTON TRUST COMPANY
WINDSHIELD REPAIR INC.
WISMER AND BECKER CONTRACTING
WURLITZER COMPANY
YELLOW FREIGHT SYSTEM INC.
ZALE CORP.
ZODIAC USA