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NOVEMBER 1991

U.S. LARGE SYSTEMS USER REQUIREMENTS

1991

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Introduction

Introduction

This report presents large systems users' requirements for and satisfaction with the service and support they receive from their service vendor. The report also analyzes users' requirement for services ancillary to the actual maintenance of the computer system.

A

Scope

The report examines the service requirements of users of the following large systems: Amdahl, BULL, IBM 308X, IBM 309X, and NCR. Exhibit I-1 provides a breakdown of the manufacturers included in the sample.

EXHIBIT I-1

User Sample by Vendor

Vendor	Completed Interviews
Amdahl	35
BULL	33
IBM 308X	30
IBM 309X	30
NCR	35
Total Sample	163

Each vendor/product analysis includes:

- Service contract coverage, both days per week and hours per day
- Users' criteria for selecting a service vendor
- Service contract type
- Type of vendor providing service
- Perceptions of independent maintenance organizations
- Traditional areas of system availability, response time, repair time and aspects of hardware service
- Systems software support areas, type of vendor, type of contract
- Aspects of systems software support
- Response/fix time for software problems
- Opportunities for ancillary services
- Current use of discounts and willingness of users to investigate discounts not currently received

The report is presented in four chapters. Chapter I provides an introduction to the report, the scope, methodology, interpretation of data, and data presentation. Chapter II is an overview of the large systems sample. Chapter III provides individual analyses by product vendor. Wherever possible, comparisons will be made to the information presented in the report *U.S. Large Systems User Requirements, 1990*, or to the sample as a whole. Chapter IV provides comparative exhibits, examining each area by vendor. Appendix A provides the questionnaire used for the user research.

B
Methodology

For this report, INPUT surveyed 163 users of large systems in the U.S as to their requirement for and satisfaction with the service they receive. Each interview was conducted by telephone or fax using the questionnaire in Appendix A. INPUT targets the appropriate systems executive with responsibility for coordinating the maintenance of the system. Typical titles include Data Processing Manager, IS Director or Manager, Data Center Manager, or Vice President of IS. The companies interviewed represent a variety of industries, as shown in Exhibit I-2.

EXHIBIT I-2

User Sample by Industry Sector

Industry	Respondents
Manufacturing	38
Distribution	12
Transportation	4
Utilities	5
Banking/Finance	16
Education	18
Insurance	7
Telecommunications	1
Services	22
Medical	12
Federal Government	12
State/Local Government	12
Other	4
Total	163

INPUT emphasizes the value of telephone interviews over other types of research-gathering techniques because of the ability of the interviewer to focus the respondent and control the source of information and the size of the sample. The questionnaire was faxed to many respondents, who wished to see the full questionnaire before answering it.

After the data gathering process was complete, the information is entered into a dBase III Plus (Ashton-Tate) data base and analyzed using ABstat (Anderson Bell). Quality control measures are applied at each step to ensure data integrity.

C

Interpretation of Data

Mean values are used throughout the tabulated data presented in this report. These means refer to the mean value of user ratings for specific aspects of service performance, or the mean value of a range of service performance aspects required or received by the respondents.

In this report, the ratings for service requirements ranged from 1 to 10, with 1 equal to a very low requirement or satisfaction and 10 being an extremely high requirement or satisfaction. In some cases, 0 was used to denote no requirement for service or a service not received at all from the vendor.

For the purposes of this report, the following definitions apply:

- System availability refers to the time the system is actually available for processing, disregarding non-critical peripherals outages or normal preventative maintenance down time.
- Response time is the time between the placement of a service call to the vendor and the arrival of the service engineer on-site.
- Repair time relates to the time the service engineer spends working on the system until it is fully operational.
- Difference is a comparison of the mean service required with the mean service received. A negative number denotes a shortfall in the service received. A positive number denotes the mean service received exceeding the mean service required.
- Percent satisfied is based on a comparison of whether the service received met or exceeded service required for each individual respondent. A count is made of how many individuals had their requirements met or exceeded for that particular service requirement, which converts to the percent satisfied.

D

Data Presented

For each of the six user sections (Large Systems, Amdahl, BULL, IBM 308X, IBM 309X, and NCR) of this report, the following fifteen exhibits will be presented:

Exhibit 1 - *Contract Coverage* presents the days per week and hours per day of maintenance coverage as reported by the respondents.

Exhibit 2 - *Service Vendor Selection Criteria* analyzes the importance of certain criteria in selecting a service vendor.

Exhibit 3 - *Hardware Maintenance Provider* presents the reported sources of service used by the sample to provide required maintenance on their hardware. Multiple sources of hardware maintenance service are allowed.

Exhibit 4 - *Reasons IMO Not Used* present the reasons why users do not use an IMO as part of their maintenance plan for equipment.

NOTE: When applicable, a special Exhibit 4A *(Reasons for IMO Use)* is included to describe issues relating to why users have an independent maintenance organization as part of their maintenance plan.

Exhibit 5 - *Maintenance Contract Terms* provides information on the length of contract terms or types of maintenance contracts held by the sample.

Exhibit 6 - *System Availability Performance Analysis* examines the mean system availability, response time and repair time required by the sample; the system availability, response, and repair times received; and the percent of the users having their requirements met or exceeded.

Exhibit 7 - *System Failure Rates* are presented, giving the mean number of failures per year, and the mean percentages for the approximate causes of the failures.

Exhibit 8 - *Hardware Service Required versus Received* examines six individual aspects and overall hardware maintenance service to determine the level of service required, the level received, satisfaction with service and the percent of respondents having their requirements met or exceeded.

Exhibit 9 - *Software Maintenance Provider* presents the sources used by the sample to provide system software support. Multiple sources are recorded where applicable.

Exhibit 10 - *System Software Maintenance Contract Terms* presents the types of service contracts held by the respondents to support system software.

Exhibit 11 - *System Software Problem Resolution* provides information on the resolution of system software problems, on-site and over the phone. The exhibit also covers the percent of respondents that had their software support requirements met or exceeded in the issues of response time and fix time on software problems.

Exhibit 12 - *System Software Support Required versus Received* examines six aspects and overall system software support to determine the level of support required by the respondents, the level received, mean satisfaction with system software support and the percent of users having their requirements met or exceeded.

Exhibit 13 - *Ancillary Services* presents information on the current market for services ancillary to the maintenance function and the possibility for the expansion of these services. Information is presented on the number of respondents currently receiving these services, their mean requirement, mean level received, and the percent of respondents having their requirements met or exceeded.

Exhibit 14 - *Multivendor Services* examines the percent of respondents receiving multivendor services on their CPU, peripherals, and network products. The level of interest in multivendor services is also presented.

Exhibit 15 - *Discounts* presents the percent of respondents currently receiving discounts for reduced levels of service or special contractual arrangements and the interest in these discounts by those not receiving them at this time.

Large Systems Summary

Large Systems Summary

The overall 1991 large system sample consists of 163 users of Amdahl, BULL, IBM 308X, IBM 309X, and NCR large systems users. Data for the user group as a whole is presented with the following key highlights:

- A greater percentage of the users reported extended 7 X 24 coverage for their large systems than in past years.
- Service quality issues rated higher in mean importance when selecting a service vendor. In the mid- to late-1980s, price was considered more important; it is now ranking 7 out of 12 criteria, showing a shift to quality of service.
- A small number of users used an IMO as part of their service scheme, 11 out of 163. The main reasons an IMO was used were lower cost and single-source service.
- Overall there appears to be more of a requirement for ancillary services. Over 50% of the respondents expressed some level of requirement for ancillary services, with 38% to 68% of the users reported receiving some level of service. Users receiving service equal to or better than their requirement ranged from 53% to 91%.

EXHIBIT II-1

Contract Coverage
Large Systems

	Percent of Sample	
	1991	1990
Days Covered		
Monday - Friday	32	47
Monday - Saturday	0	4
Monday - Sunday	68	49
Hours Covered		
1 - 9	21	35
10 - 16	8	13
17 - 24	71	52

EXHIBIT II-2

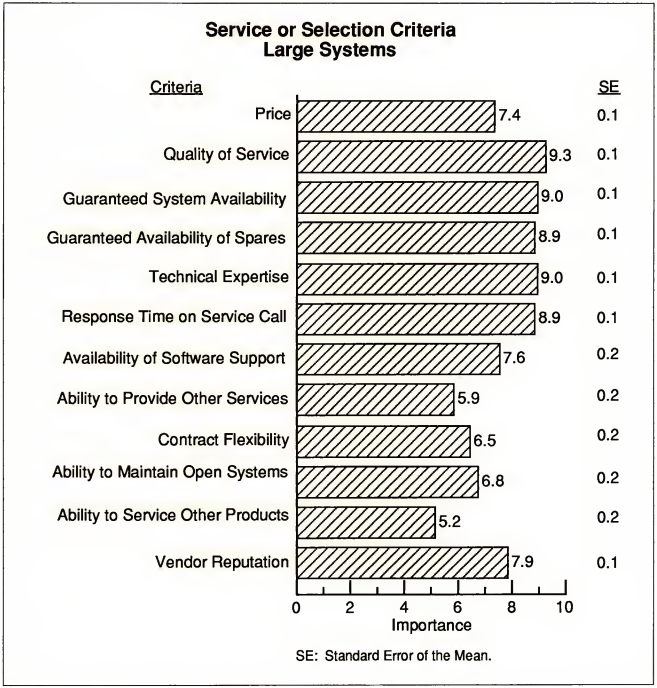


EXHIBIT II-3

Hardware Maintenance Provider
Large Systems

Provider	Percent of Mentions	Primary
Manufacturer	93	91
Dealer/Distributor	5	2
Independent Maintenance Organization	7	7
In-House	2	0
Other	0	0

Multiple Responses Allowed.

EXHIBIT II-4

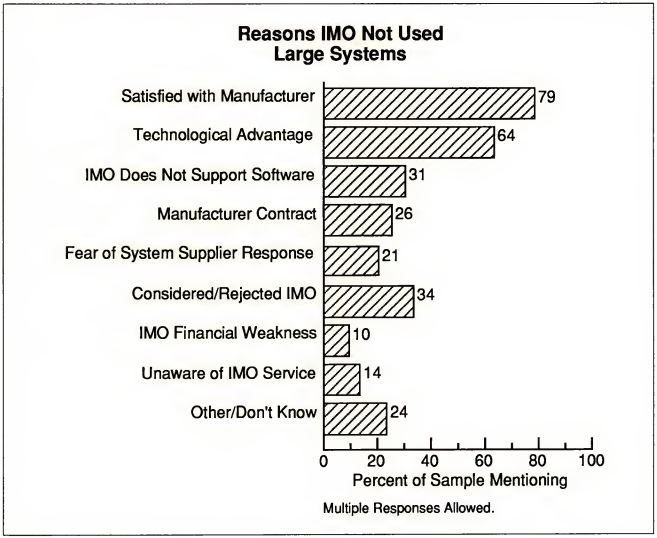


EXHIBIT II-4A

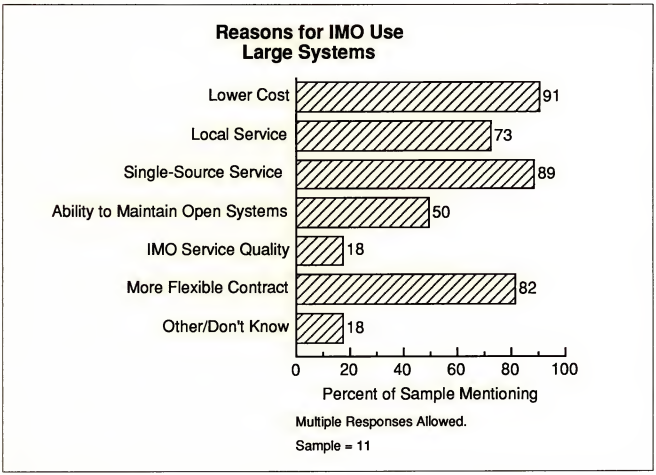


EXHIBIT II-5

Maintenance Contract Terms
Large Systems

Hardware Maintenance	Percent of Respondents
Warranty	3
Five Years	14
Three Years	14
One Year	52
Time and Materials	2
Other	14
None	1

EXHIBIT II-6

System Availability Performance Analysis
Large Systems

	Mean Required	Mean Received	Percent Satisfied
System Availability (%)	97.1	97.9	70
Response Time (hrs.)	1.9	1.6	89
Repair Time (hrs.)	2.8	2.6	90

EXHIBIT II-7

System Failure Rates
Large Systems

Mean Failures Per Year	3.6
Causes of Failure (%)	
Hardware	56
Systems Software	13
Applications Software	6
Other	25

EXHIBIT II-8

Hardware Service Required versus Received Large Systems

	Mean Required	Mean Received	Mean Satisfaction	Percent Satisfied
Spares Availability	8.8	8.0	8.3	60
Engineer Skills	9.0	8.6	8.8	74
Documentation of Maintenance	7.1	7.3	8.1	84
Help Desk Support	7.6	7.4	7.8	79
Remote Diagnostics	7.4	7.5	7.8	81
Real-time Software Diagnostics	6.9	6.8	7.3	83
Overall Hardware Maintenance	9.1	8.8	8.9	73

Note: Scale 1-10, 1 = Lowest, 10 = Highest

EXHIBIT II-9

Software Maintenance Provider
Large Systems

Provider	Percent of Mentions
Hardware Manufacturer	82
Other Hardware Service Provider	13
Software Product Vendor	24
Value-Added Reseller (VAR)	5
In-House	53
Other	5

Multiple Responses Allowed.

EXHIBIT II-10

System Software Maintenance Contract Terms
Large Systems

Software Maintenance	Percent of Respondents
Included in License Fee	35
Three-Year	3
One-Year	34
Custom	10
None	6
Don't Know	12

EXHIBIT II-11

System Software Problem Resolution
Large Systems

Solved by Phone (%)	69
Elapsed Time (hrs.)	8.4
Other Problems	
Response Time	
• Required (mean hrs.)	9.4
• Received (mean hrs.)	9.2
• Percent Satisfied	81
Fix Time	
• Required (mean hrs.)	6.0
• Received (mean hrs.)	7.3
• Percent Satisfied	88

EXHIBIT II-12

System Software Support Required versus Received Large Systems

	Mean Required	Mean Received	Mean Satisfaction	Percent Satisfied
Engineer Skills	8.6	7.8	8.1	60
Documentation	8.3	7.4	7.8	55
Software Installation	7.7	7.3	7.8	62
Provision of Updates	8.0	7.7	7.9	75
Operational Training	6.8	6.1	6.7	62
Software Remote Support	7.6	7.1	7.5	66
Software Support Overall	8.6	7.8	8.1	59

Note: Scale 1-10, 1 = Lowest, 10 = Highest

EXHIBIT II-13

Ancillary Services
Large Systems

	Number of Mentions Currently Contracted	Mean Level Required	Mean Level Received	Percent Satisfied	Number of Mentions Not Receiving But Required
Configuration Planning	95	6.5	7.3	78	25
Capacity Planning	86	6.6	6.7	60	29
Environmental Planning	88	6.0	6.7	78	30
Cabling	92	6.5	7.2	87	27
Software Evaluation	75	6.0	5.9	69	23
Maintenance-Related Training	89	5.9	6.3	80	26
Install/De-install/Moves	112	7.5	8.0	91	19
Consulting	95	6.0	6.3	75	18
Network Planning	72	6.2	6.3	59	24
Network Management	63	5.8	5.9	59	25
Disaster Recovery	68	6.6	6.1	67	27
Facilities Management	46	4.8	5.0	64	22
Problem Management	70	6.1	6.3	65	24
Applications Software Support	74	6.4	6.3	53	21

EXHIBIT II-14

Multivendor Services
Large Systems

Service on Other Manufacturers'	Percent Receiving	Interest in Three Years
CPUs	9	2.1
Peripherals	21	2.4
Network Products	18	2.5

	Level of Interest
Single Point of Contact	3.4

Note: Scale 1 - 5, 1 = Lowest, 5 = Highest

EXHIBIT II-15

Discounts
Large Systems

	Percent Receiving	Mean Willingness to Receive
Multiyear	39	4.1
Prepayment	23	4.0
Call Screening/Problem Management	20	4.1
Deferred Response	10	3.0

Note: Scale 1 - 10, 1 = Lowest, 10 = Highest

Vendor Performance Data

Vendor Performance Data

Chapter III presents the individual vendor/product analyses for Amdahl, BULL, IBM 308X, IBM 309X, and NCR large systems.

A
Amdahl

The Amdahl sample consisted of 35 users of the Amdahl 58XX and 59XX large systems. In the analysis of the Amdahl information, the following points are noteworthy:

- Service issues of quality, technical expertise, spare parts, and system availability rated highest in terms of evaluating service vendors. Price, which had been important in past years, appears to be of less importance.
- A relatively high percent (53%) of respondents reported having only a one-year contract with their service vendor, providing an opportunity for other vendors to court them on maintenance services.
- System availability seems to be just slightly less than the requirements of the users, with only 65% of the users receiving the required level of systems availability.
- The level of service for spares availability appears to have decreased, while the level required stayed about the same. The percent of respondents satisfied with spares availability is lower than that for other aspects of hardware service.
- The use of ancillary services from maintenance vendors has increased from the 1990 sample. Users report receiving levels of service meeting or exceeding their requirements for nine out of fourteen ancillary services.
- Multivendor services do not appear to have a great deal of importance with the Amdahl sample, with less than 17% of the respondents receiving any type of multivendor services.

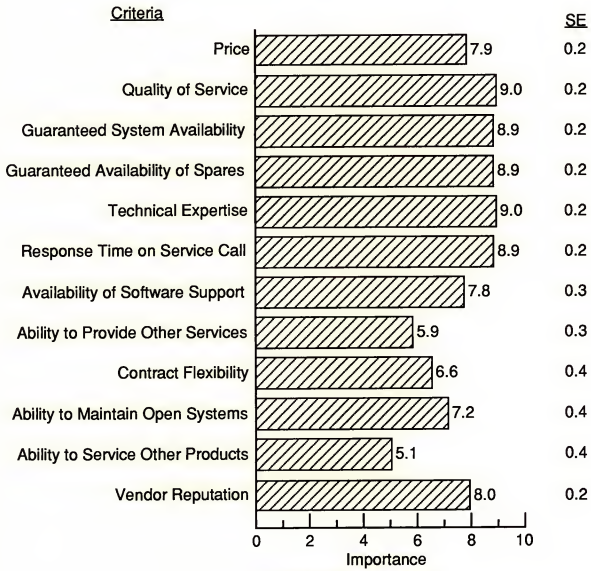
EXHIBIT III-A-1

Contract Coverage
Amdahl

	Percent of Sample	
	1991	1990
Days Covered		
Monday - Friday	3	7
Monday - Saturday	0	0
Monday - Sunday	97	93
Hours Covered		
1 - 9	0	7
10 - 16	0	0
17 - 24	100	93

EXHIBIT III-A-2

Service Vendor Selection Criteria
Amdahl



SE: Standard Error of the Mean.

EXHIBIT III-A-3

Hardware Maintenance Provider
Amdahl

Provider	Percent of Mentions	Primary
Manufacturer	100	100
Dealer/Distributor	3	0
Independent Maintenance Organization	0	0
In-House	0	0
Other	0	0

Multiple Responses Allowed.

EXHIBIT III-A-4

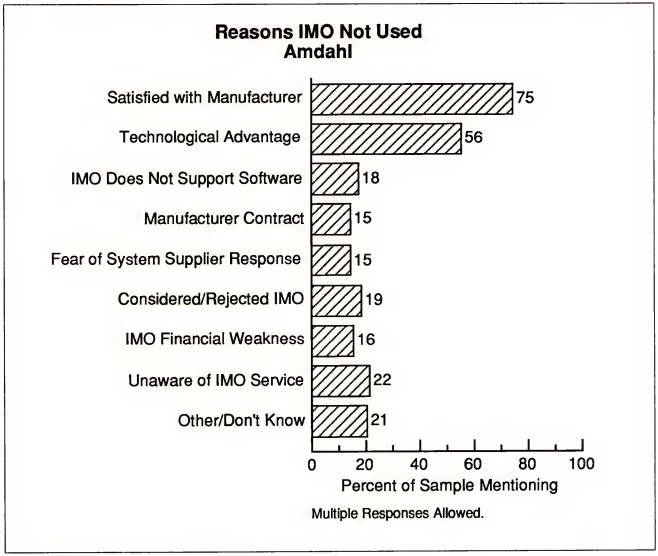


EXHIBIT III-A-5

Maintenance Contract Terms
Amdahl

Hardware Maintenance	Percent of Respondents
Warranty	3
Five Years	3
Three Years	24
One Year	53
Time and Materials	0
Other	17
None	0

EXHIBIT III-A-6

System Availability Performance Analysis
Amdahl

	Mean Required	Mean Received	Percent Satisfied
System Availability (%)	97.8	97.7	65
Response Time (hrs.)	1.4	1.2	93
Repair Time (hrs.)	2.0	2.2	93

EXHIBIT III-A-7

System Failure Rates
Amdahl

Mean Failures Per Year	4.3
Causes of Failure (%)	
Hardware	42
Systems Software	15
Applications Software	8
Other	35

Sample Size: 34

EXHIBIT III-A-8

Hardware Service Required versus Received
Amdahl

	Mean Required	Mean Received	Mean Satisfaction	Percent Satisfied
Spares Availability	8.9	8.2	8.4	65
Engineer Skills	8.9	8.9	9.0	88
Documentation of Maintenance	7.4	7.8	8.1	85
Help Desk Support	7.7	8.1	7.9	91
Remote Diagnostics	8.2	8.2	8.2	88
Real-time Software Diagnostics	6.9	7.0	7.5	94
Overall Hardware Maintenance	9.1	8.9	9.0	82

Note: Scale 1-10, 1 = Lowest, 10 = Highest

EXHIBIT III-A-9

Software Maintenance Provider
Amdahl

Provider	Percent of Mentions
Hardware Manufacturer	62
Other Hardware Service Provider	56
Software Product Vendor	36
Value-Added Reseller (VAR)	4
In-House	75
Other	8

Multiple Responses Allowed.

EXHIBIT III-A-10

System Software Maintenance Contract Terms Amdahl

Software Maintenance	Percent of Respondents
Included in License Fee	29
Three-Year	9
One-Year	29
Custom	11
None	11
Don't Know	11

EXHIBIT III-A-11

System Software Problem Resolution Amdahl

Solved by Phone (%)	58
Elapsed Time (hrs.)	9.0
Other Problems	
Response Time	
• Required (mean hrs.)	8.5
• Received (mean hrs.)	5.4
• Percent Satisfied	92
Fix Time	
• Required (mean hrs.)	5.1
• Received (mean hrs.)	4.9
• Percent Satisfied	100

EXHIBIT III-A-12

System Software Support Required versus Received Amdahl

	Mean Required	Mean Received	Mean Satisfaction	Percent Satisfied
Engineer Skills	8.4	8.0	8.0	66
Documentation	8.4	7.6	7.8	55
Software Installation	7.2	7.3	7.9	67
Provision of Updates	7.7	8.0	8.0	81
Operational Training	6.2	6.3	6.6	71
Software Remote Support	6.7	6.3	6.6	7
Software Support Overall	9.0	8.0	8.1	56

Note: Scale 1-10, 1 = Lowest, 10 = Highest

EXHIBIT III-A-13

Ancillary Services
Amdahl

	Number of Mentions Currently Contracted	Mean Level Required	Mean Level Received	Percent Satisfied	Number of Mentions Not Receiving But Required
Configuration Planning	25	6.1	7.1	88	4
Capacity Planning	21	6.3	6.3	70	4
Environmental Planning	21	6.1	7.2	91	5
Cabling	23	6.6	7.6	91	3
Software Evaluation	14	5.1	5.0	71	4
Maintenance-Related Training	20	5.9	6.9	90	3
Install/De-install/Moves	25	7.6	7.9	88	2
Consulting	26	6.0	6.5	89	1
Network Planning	16	5.8	5.7	63	3
Network Management	14	5.4	5.5	79	3
Disaster Recovery	14	5.8	4.9	71	4
Facilities Management	7	5.1	4.3	86	3
Problem Management	14	6.5	6.7	71	3
Applications Software Support	9	6.3	6.3	67	6

EXHIBIT III-A-14

Multivendor Services
Amdahl

Service on Other Manufacturers'	Percent Receiving	Interest in Three Years
CPUs	9	2.0
Peripherals	17	2.3
Network Products	17	2.4
		Level of Interest
Single Point of Contact		2.7

Note: Scale 1 - 5, 1 = Lowest, 5 = Highest

EXHIBIT III-A-15

Discounts
Amdahl

	Percent Receiving	Mean Willingness to Receive
Multiyear	31	3.4
Prepayment	20	3.9
Call Screening/Problem Management	17	4.3
Deferred Response	4	2.6

Note: Scale 1 - 10, 1 = Lowest, 10 = Highest

B
BULL

The BULL sample consisted of 32 users of BULL DPS large systems. The following points appear significant in the BULL information:

- Service issues relating to the quality of service rated higher than contractual issues in selecting a service vendor.
- There do not appear to be any overwhelming reasons why BULL users do not use IMOs, as there were in the 1990 study. Although satisfaction with manufacturer was mentioned the most often (67%) it was not the high 79% of the 1990 sample.
- Spares availability received by the sample is much lower than the mean level of spares availability required, 6.7 and 8.5 respectively. Only 33% of the sample received spares availability that met or exceeded requirements. There was a difference of -1.0 in the 1990 sample, but with a higher mean satisfaction with spares reported.
- A higher number of respondents in 1991 reported receiving some type of ancillary services than did the 1990 user sample. Mean service levels required ranged from 4.1 to 6.1, with mean levels of service received ranging from 4.3 to 7.7. Only in disaster recovery was there a sizable difference between the mean level required (6.0) and the mean level received (4.4). There appears to be a high requirement for disaster recovery services from the users of BULL systems that is not being met.
- Single-point-of-contact mean level of interest appears to be fairly high—3.5 on a scale of 1-5.

EXHIBIT III-B-1

Contract Coverage
BULL

	Percent of Sample	
	1991	1990
Days Covered		
Monday - Friday	79	90
Monday - Saturday	0	5
Monday - Sunday	21	5
Hours Covered		
1 - 9	55	53
10 - 16	24	42
17 - 24	21	5

EXHIBIT III-B-2

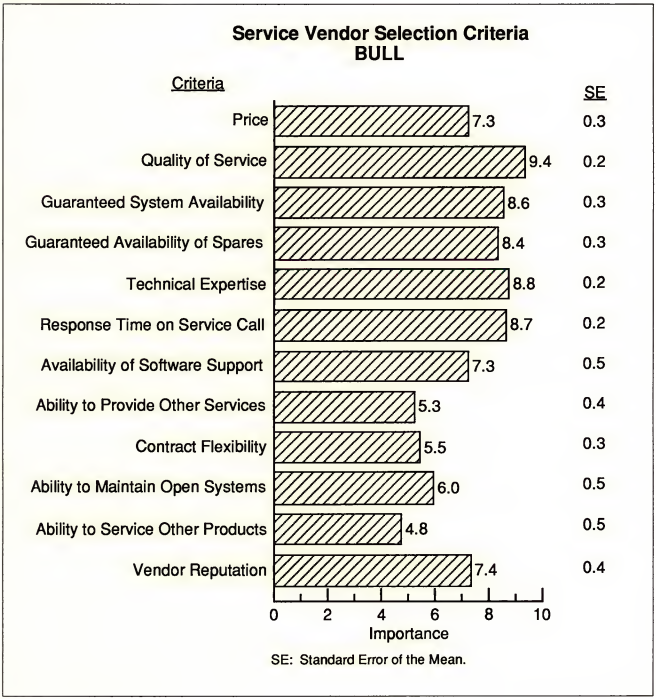


EXHIBIT III-B-3

Hardware Maintenance Provider
BULL

Provider	Percent of Mentions	Primary
Manufacturer	94	91
Dealer/Distributor	12	6
Independent Maintenance Organization	3	3
In-House	0	0
Other	0	0

Multiple Responses Allowed.

EXHIBIT III-B-4

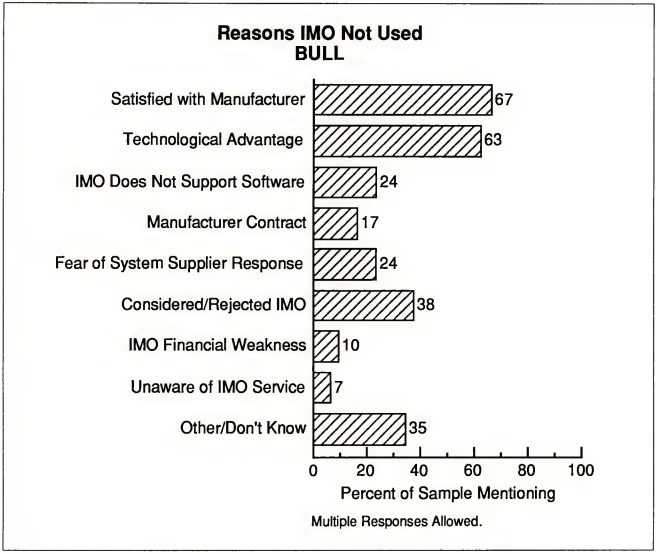


EXHIBIT III-B-5

Maintenance Contract Terms
BULL

Hardware Maintenance	Percent of Respondents
Warranty	3
Five Years	3
Three Years	9
One Year	69
Time and Materials	0
Other	16
None	0

EXHIBIT III-B-6

System Availability Performance Analysis
BULL

	Mean Required	Mean Received	Percent Satisfied
System Availability (%)	96	96.2	75
Response Time (hrs.)	2.0	2.4	70
Repair Time (hrs.)	2.5	3.0	89

EXHIBIT III-B-7

System Failure Rates
BULL

Mean Failures Per Year	4.3
Causes of Failure (%)	
Hardware	67
Systems Software	11
Applications Software	6
Other	16

Sample Size: 33

EXHIBIT III-B-8

Hardware Service Required versus Received
BULL

	Mean Required	Mean Received	Mean Satisfaction	Percent Satisfied
Spares Availability	8.5	6.7	7.2	33
Engineer Skills	8.8	7.8	8.0	58
Documentation of Maintenance	6.4	6.7	7.1	78
Help Desk Support	7.2	6.5	6.9	66
Remote Diagnostics	6.8	6.7	6.7	74
Real-time Software Diagnostics	6.4	6.1	6.3	69
Overall Hardware Maintenance	9.0	8.2	8.2	55

Note: Scale 1-10, 1 = Lowest, 10 = Highest

EXHIBIT III-B-9

Software Maintenance Provider
BULL

Provider	Percent of Mentions
Hardware Manufacturer	84
Other Hardware Service Provider	4
Software Product Vendor	7
Value-Added Reseller (VAR)	8
In-House	52
Other	0

Multiple Responses Allowed.

EXHIBIT III-B-10

System Software Maintenance Contract Terms
BULL

Software Maintenance	Percent of Respondents
Included in License Fee	27
Three-Year	0
One-Year	46
Custom	15
None	6
Don't Know	6

EXHIBIT III-B-11

System Software Problem Resolution
BULL

Solved by Phone (%)	72
Elapsed Time (hrs.)	3.8
Other Problems	
Response Time	
• Required (mean hrs.)	8.2
• Received (mean hrs.)	6.4
• Percent Satisfied	79
Fix Time	
• Required (mean hrs.)	4.1
• Received (mean hrs.)	5.6
• Percent Satisfied	79

EXHIBIT III-B-12

System Software Support Required versus Received
BULL

	Mean Required	Mean Received	Mean Satisfaction	Percent Satisfied
Engineer Skills	8.6	8.0	8.4	63
Documentation	8.2	7.1	7.8	44
Software Installation	7.8	7.1	7.9	68
Provision of Updates	7.7	6.8	7.4	66
Operational Training	6.5	5.0	6.2	53
Software Remote Support	7.6	6.6	6.9	59
Software Support Overall	8.6	7.5	8.0	56

Note: Scale 1-10, 1 = Lowest, 10 = Highest

EXHIBIT III-B-13

Ancillary Services
BULL

	Number of Mentions Currently Contracted	Mean Level Required	Mean Level Received	Percent Satisfied	Number of Mentions Not Receiving But Required
Configuration Planning	15	6.1	7.7	87	8
Capacity Planning	12	6.0	6.9	75	9
Environmental Planning	12	5.1	5.5	75	7
Cabling	12	5.4	5.4	75	9
Software Evaluation	11	5.6	6.2	73	6
Maintenance-Related Training	14	5.4	7.0	79	9
Install/De-install/Moves	14	5.4	6.1	86	6
Consulting	13	5.0	5.5	77	7
Network Planning	12	5.6	6.3	67	6
Network Management	13	5.4	6.1	69	6
Disaster Recovery	7	6.0	4.4	57	8
Facilities Management	4	4.1	5.3	50	9
Problem Management	7	4.6	4.3	29	9
Applications Software Support	11	5.0	5.8	46	9

EXHIBIT III-B-14

Multivendor Services
BULL

Service on Other Manufacturers'	Percent Receiving	Interest in Three Years
CPUs	6	1.7
Peripherals	15	2.2
Network Products	15	2.2

	Level of Interest
Single Point of Contact	3.5

Note: Scale 1 - 5, 1 = Lowest, 5 = Highest

EXHIBIT III-B-15

Discounts
BULL

	Percent Receiving	Mean Willingness to Receive
Multiyear	17	4.0
Prepayment	21	3.8
Call Screening/Problem Management	7	3.5
Deferred Response	14	3.0

Note: Scale 1 - 10, 1 = Lowest, 10 = Highest

C
IBM 309X

The sample consisted of 30 users of IBM 309X large systems. In analyzing the data collected, the following points appear significant:

- As in other portions of the large systems sample, IBM 309X respondents value the service quality components higher than contractual items when evaluating a service vendor.
- Over 60% of the respondents reported having a contract of three or more years in duration. As a result, IBM 309X users are not as amenable as other user groups studied to considering service from a vendor other than IBM.
- Even though the mean system availability required is the same as the mean system availability received, on an individual basis, only 64% of the respondents reported receiving system availability that met or exceeded their requirements.
- Respondents in the 1991 sample reported a higher mean percent of system software problems that were resolved by phone than in the 1990 user group or in the 1991 sample as a whole. Mean elapsed time for problem resolution dropped from the 1990 respondent group.
- System software support appears to be lacking in meeting the requirements of the users. Mean ratings received were all lower than the mean ratings required for the six aspects of system software service and support overall. Only 52% of the respondents had their requirements met or exceeded for system software support overall.
- The provision of service ancillary to the maintenance function appears to be another area requiring improvement. Overall, mean requirements were higher than mean service levels received. Over 75% of the respondents reported having their requirements met in the areas of configuration planning, cabling, maintenance-related training, installation/deinstallation/moves, consulting, and problem management.
- The IBM 309X user group reported a higher mean level of interest in single-point-of-contact service than the large system respondents as a whole—4.0 versus 3.4.
- A higher percentage of users reported receiving a multi-year discount on their equipment service in 1991 than in 1990 or in the overall sample.

EXHIBIT III-C-1

Contract Coverage
IBM 309X

	Percent of Sample 1991
Days Covered	
Monday - Friday	3
Monday - Saturday	0
Monday - Sunday	97
Hours Covered	
1 - 9	0
10 - 16	3
17 - 24	97

EXHIBIT III-C-2

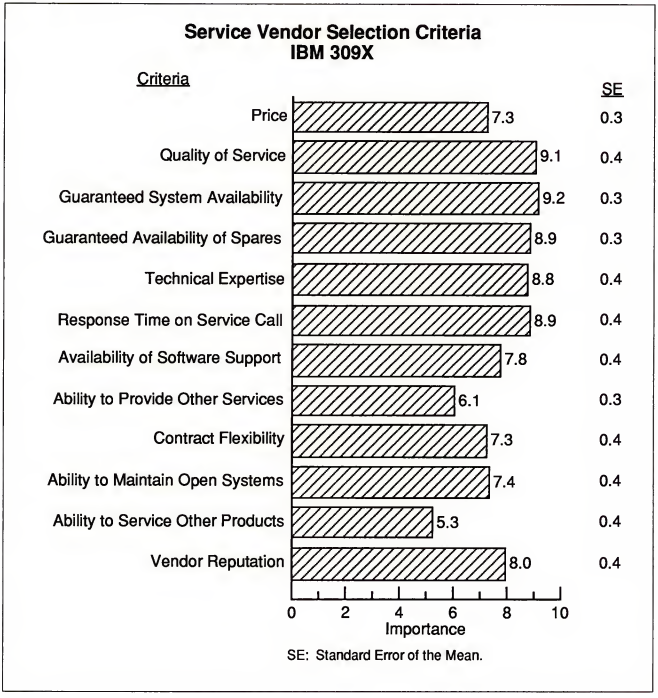


EXHIBIT III-C-3

Hardware Maintenance Provider
IBM 309X

Provider	Percent of Mentions	Primary
Manufacturer	100	97
Dealer/Distributor	7	3
Independent Maintenance Organization	3	0
In-House	0	0
Other	0	0

Multiple Responses Allowed.

EXHIBIT III-C-4

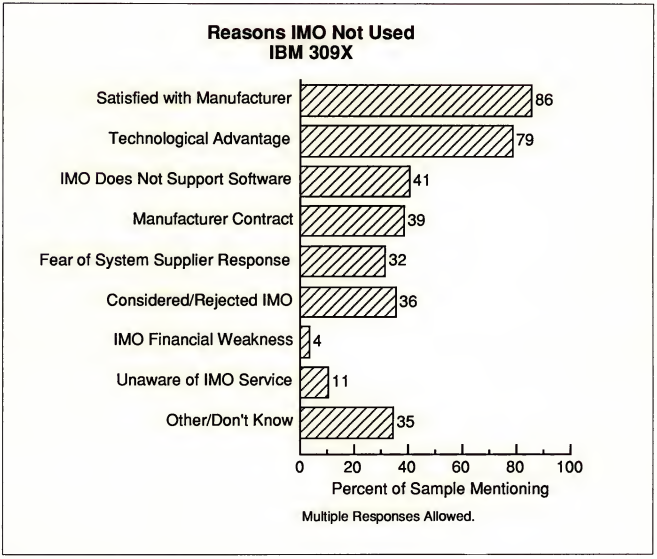


EXHIBIT III-C-5

Maintenance Contract Terms
IBM 309X

Hardware Maintenance	Percent of Respondents
Warranty	7
Five Years	50
Three Years	11
One Year	18
Time and Materials	0
Other	10
None	4

EXHIBIT III-C-6

System Availability Performance Analysis
IBM 309X

	Mean Required	Mean Received	Percent Satisfied
System Availability (%)	98.8	98.8	64
Response Time (hrs.)	1.8	1.0	100
Repair Time (hrs.)	2.1	1.4	91

EXHIBIT III-C-7

System Failure Rates
IBM 309X

Mean Failures Per Year	3.7
Causes of Failure (%)	
Hardware	40
Systems Software	15
Applications Software	8
Other	37

Sample Size: 30

EXHIBIT III-C-8

Hardware Service Required versus Received IBM 309X

	Mean Required	Mean Received	Mean Satisfaction	Percent Satisfied
Spares Availability	9.0	8.9	9.2	79
Engineer Skills	9.4	9.1	9.3	52
Documentation of Maintenance	7.9	7.7	8.7	73
Help Desk Support	8.2	8.3	8.9	90
Remote Diagnostics	8.7	8.8	9.2	67
Real-time Software Diagnostics	8.7	8.0	8.2	81
Overall Hardware Maintenance	9.3	9.3	9.4	90

Note: Scale 1-10, 1 = Lowest, 10 = Highest

EXHIBIT III-C-9

Software Maintenance Provider
IBM 309X

Provider	Percent of Mentions
Hardware Manufacturer	86
Other Hardware Service Provider	4
Software Product Vendor	46
Value-Added Reseller (VAR)	4
In-House	71
Other	4

Multiple Responses Allowed.

EXHIBIT III-C-10

System Software Maintenance Contract Terms
IBM 309X

Software Maintenance	Percent of Respondents
Included in License Fee	63
Three-Year	0
One-Year	10
Custom	3
None	7
Don't Know	17

EXHIBIT III-C-11

System Software Problem Resolution
IBM 309X

Solved by Phone (%)	74
Elapsed Time (hrs.)	11.0
Other Problems	
Response Time	
• Required (mean hrs.)	10.2
• Received (mean hrs.)	15.1
• Percent Satisfied	70
Fix Time	
• Required (mean hrs.)	7.5
• Received (mean hrs.)	8.7
• Percent Satisfied	84

EXHIBIT III-C-12

System Software Support Required versus Received IBM 309X

	Mean Required	Mean Received	Mean Satisfaction	Percent Satisfied
Engineer Skills	8.7	7.7	8.0	56
Documentation	8.8	7.3	7.5	39
Software Installation	7.9	7.5	7.7	46
Provision of Updates	8.4	8.2	8.4	80
Operational Training	7.1	6.5	7.0	67
Software Remote Support	8.5	7.9	8.0	55
Software Support Overall	8.6	7.9	7.9	52

Note: Scale 1-10, 1 = Lowest, 10 = Highest

EXHIBIT III-C-13

Ancillary Services
IBM 309X

	Number of Mentions Currently Contracted	Mean Level Required	Mean Level Received	Percent Satisfied	Number of Mentions Not Receiving But Required
Configuration Planning	19	7.7	7.8	79	1
Capacity Planning	21	7.3	6.4	52	0
Environmental Planning	22	7.2	7.0	73	0
Cabling	20	7.9	8.1	90	0
Software Evaluation	16	6.8	6.1	67	0
Maintenance-Related Training	21	6.5	6.1	81	0
Install/De-install/Moves	29	9.1	9.0	88	0
Consulting	19	7.3	7.2	79	0
Network Planning	17	7.8	7.1	59	0
Network Management	13	7.5	5.9	42	0
Disaster Recovery	15	8.0	6.7	60	0
Facilities Management	10	7.9	7.1	60	0
Problem Management	14	7.0	6.7	79	0
Applications Software Support	12	7.8	6.8	58	0

EXHIBIT III-C-14

Multivendor Services
IBM 309X

Service on Other Manufacturers'	Percent Receiving	Interest in Three Years
CPUs	3	2.1
Peripherals	13	2.5
Network Products	17	2.8

	Level of Interest
Single Point of Contact	4.0

Note: Scale 1 - 5, 1 = Lowest, 5 = Highest

EXHIBIT III-C-15

Discounts
IBM 309X

	Percent Receiving	Mean Willingness to Receive
Multiyear	79	5.3
Prepayment	33	4.1
Call Screening/Problem Management	29	4.5
Deferred Response	9	2.3

Note: Scale 1 - 10, 1 = Lowest, 10 = Highest

D

IBM 308X

The sample consisted of 30 users of IBM 308X large systems. The following points are noteworthy in the 308X user group data analysis:

- Thirty percent of the 308X group reported using independent maintenance, as compared to 7% of the overall large systems group. This may be a result of the age of the 308X systems. A noticeable percentage of users who had reported having 308X systems in the past have upgraded to the IBM 309X or other newer systems.
- Major reasons for using independent maintenance include lower cost, single-source service, and more flexible contracts. The major reason for users not having IMO service was their satisfaction with the manufacturer for service.
- There was a great deal of diversity mentioned by users in the ancillary services area. Over 30% of respondents reported receiving one or more ancillary service from their maintenance vendor, with 75% receiving assistance with installation and moves. Overall, most mean received levels were greater than the mean level of service required. Less than 50% of the respondents receiving assistance with capacity planning and application software support had their requirements for service met or exceeded. Over 90% of the users receiving maintenance-related training and installation/moves received the level of service they required.

EXHIBIT III-D-1

Contract Coverage
IBM 308X

	Percent of Sample 1991
Days Covered	
Monday - Friday	3
Monday - Saturday	0
Monday - Sunday	97
Hours Covered	
1 - 9	7
10 - 16	0
17 - 24	93

EXHIBIT III-D-2

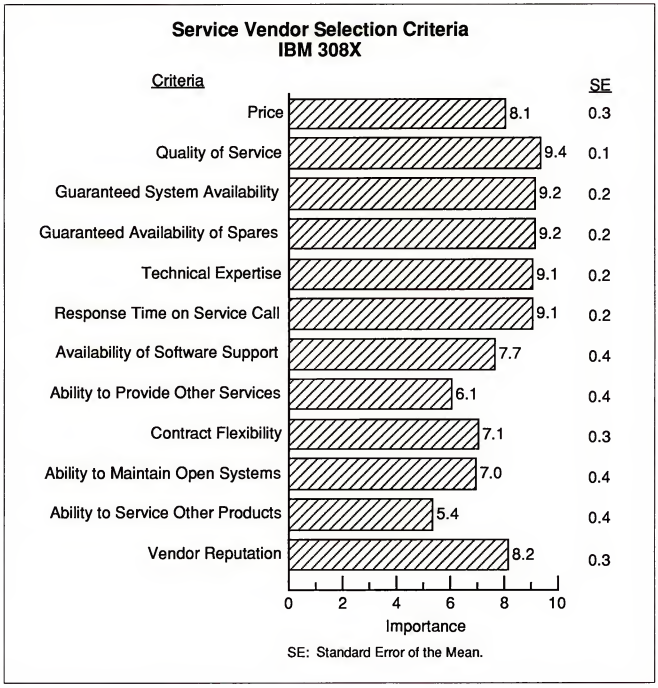


EXHIBIT III-D-3

Hardware Maintenance Provider
IBM 308X

Provider	Percent of Mentions	Primary
Manufacturer	70	67
Dealer/Distributor	3	3
Independent Maintenance Organization	30	27
In-House	3	3
Other	0	0

Multiple Responses Allowed.

EXHIBIT III-D-4

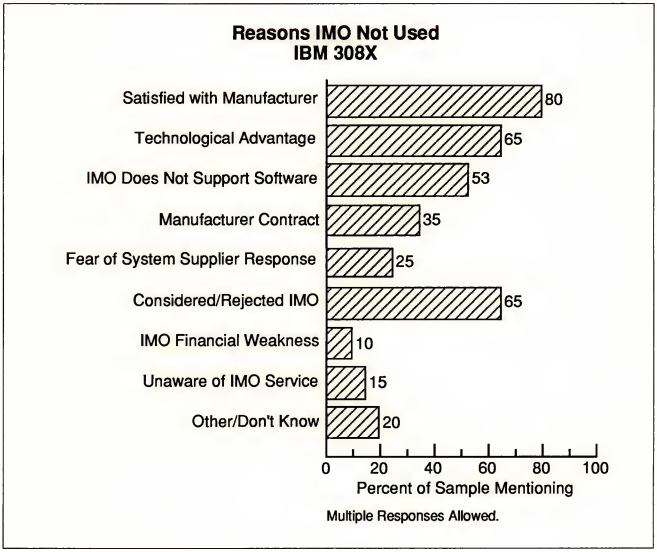


EXHIBIT III-D-4A

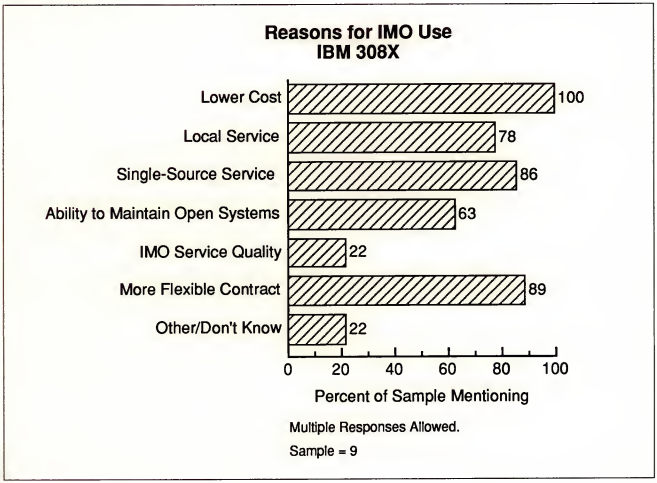


EXHIBIT III-D-5

Maintenance Contract Terms IBM 308X

Hardware Maintenance	Percent of Respondents
Warranty	0
Five Years	15
Three Years	26
One Year	40
Time and Materials	0
Other	19
None	0

EXHIBIT III-D-6

System Availability Performance Analysis IBM 308X

	Mean Required	Mean Received	Percent Satisfied
System Availability (%)	97.1	98.1	68
Response Time (hrs.)	1.6	1.2	100
Repair Time (hrs.)	3.9	4.0	85

EXHIBIT III-D-7

System Failure Rates
IBM 308X

Mean Failures Per Year	3.8
Causes of Failure (%)	
Hardware	55
Systems Software	18
Applications Software	2
Other	25

Sample Size: 30

EXHIBIT III-D-8

Hardware Service Required versus Received
IBM 308X

	Mean Required	Mean Received	Mean Satisfaction	Percent Satisfied
Spares Availability	9.1	8.6	8.9	63
Engineer Skills	9.2	8.7	8.8	63
Documentation of Maintenance	6.9	7.3	8.5	83
Help Desk Support	7.7	7.5	8.4	74
Remote Diagnostics	7.2	7.5	9.2	81
Real-time Software Diagnostics	7.2	7.5	8.1	92
Overall Hardware Maintenance	9.2	9.0	9.0	73

Note: Scale 1-10, 1 = Lowest, 10 = Highest

EXHIBIT III-D-9

Software Maintenance Provider
IBM 308X

Provider	Percent of Mentions
Hardware Manufacturer	93
Other Hardware Service Provider	0
Software Product Vendor	21
Value-Added Reseller (VAR)	3
In-House	48
Other	10

Multiple Responses Allowed.

EXHIBIT III-D-10

System Software Maintenance Contract Terms
IBM 308X

Software Maintenance	Percent of Respondents
Included in License Fee	50
Three-Year	7
One-Year	20
Custom	0
None	6
Don't Know	17

EXHIBIT III-D-11

System Software Problem Resolution
IBM 308X

Solved by Phone (%)	65
Elapsed Time (hrs.)	12.0
Other Problems	
Response Time	
• Required (mean hrs.)	6.0
• Received (mean hrs.)	8.6
• Percent Satisfied	79
Fix Time	
• Required (mean hrs.)	6.0
• Received (mean hrs.)	10.8
• Percent Satisfied	93

EXHIBIT III-D-12

System Software Support Required versus Received
IBM 308X

	Mean Required	Mean Received	Mean Satisfaction	Percent Satisfied
Engineer Skills	8.9	7.2	7.6	48
Documentation	8.2	7.1	7.8	59
Software Installation	8.4	7.6	8.2	48
Provision of Updates	8.1	7.5	8.1	74
Operational Training	7.1	5.7	6.6	42
Software Remote Support	6.9	6.8	7.9	71
Software Support Overall	8.5	7.6	7.7	56

Note: Scale 1-10, 1 = Lowest, 10 = Highest

EXHIBIT III-D-13

Ancillary Services
IBM 308X

	Number of Mentions Currently Contracted	Mean Level Required	Mean Level Received	Percent Satisfied	Number of Mentions Not Receiving But Required
Configuration Planning	17	6.0	6.8	71	5
Capacity Planning	15	6.3	6.9	47	8
Environmental Planning	16	5.2	6.3	81	8
Cabling	20	6.0	6.7	84	4
Software Evaluation	17	5.9	5.4	59	3
Maintenance-Related Training	16	5.4	5.6	93	5
Install/De-install/Moves	24	7.2	7.7	96	3
Consulting	18	5.7	5.8	71	2
Network Planning	13	6.4	6.2	54	5
Network Management	13	5.9	5.8	54	5
Disaster Recovery	13	6.3	5.8	69	7
Facilities Management	10	4.6	4.5	56	1
Problem Management	13	6.4	6.2	69	5
Applications Software Support	18	6.1	4.9	47	2

EXHIBIT III-D-14

Multivendor Services
IBM 308X

Service on Other Manufacturers'	Percent Receiving	Interest in Three Years
CPUs	13	2.4
Peripherals	23	2.6
Network Products	20	2.6
		Level of Interest
Single Point of Contact		3.5

Note: Scale 1 - 5, 1 = Lowest, 5 = Highest

EXHIBIT III-D-15

Discounts
IBM 308X

	Percent Receiving	Mean Willingness to Receive
Multiyear	63	5.4
Prepayment	23	3.9
Call Screening/Problem Management	42	4.7
Deferred Response	8	3.5

Note: Scale 1 - 10, 1 = Lowest, 10 = Highest

E
NCR

The NCR user group consisted of 35 users of the NCR 93XX, 94XX, 95XX, and 10000 systems. There is currently a transition from the older 93XX, 94XX, and 95XX systems, since NCR has announced the discontinuation of these systems, to the 10000. In the NCR group, INPUT interviewed 13 users of the 10000 system and 22 users of 93XX, 94XX, and 95XX systems.

The following items appeared noteworthy in comparing the 1991 NCR user group with the 1991 NCR user sample as a whole and the 1990 NCR user group:

- A larger number of users reported moving to seven-day-per-week, two- and three-shift coverage on their equipment.
- Only one respondent reported using an IMO as the primary hardware servicer.
- The major reason given for not using an IMO by the rest of the group was satisfaction with the hardware manufacturer.
- The mean system availability received was higher than the mean availability required—98.6 versus 96.2—with 77% of users receiving system availability equal to or greater than the requirement.
- The mean rating for overall hardware maintenance received was lower than the mean rating required, but 71% of the users had their requirements met.
- An average of 79% of the system software problems were resolved by phone, in an average resolution time of 6.7 hours. In 1990 there was an average of 78% of the problems solved with an average elapsed time of 3 hours.
- The mean ratings for ancillary services received exceeded the mean ratings for services required, but most of the user requirements for services being met ranged from 44%-75%. The exceptions were that 95% of the users requiring installation/move services and 88% of users requiring cabling services had their requirements for these services met.

EXHIBIT III-E-1

Contract Coverage
NCR

	Percent of Sample	
	1991	1990
Days Covered		
Monday - Friday	67	86
Monday - Saturday	0	5
Monday - Sunday	33	9
Hours Covered		
1 - 9	44	86
10 - 16	13	0
17 - 24	43	14

EXHIBIT III-E-2

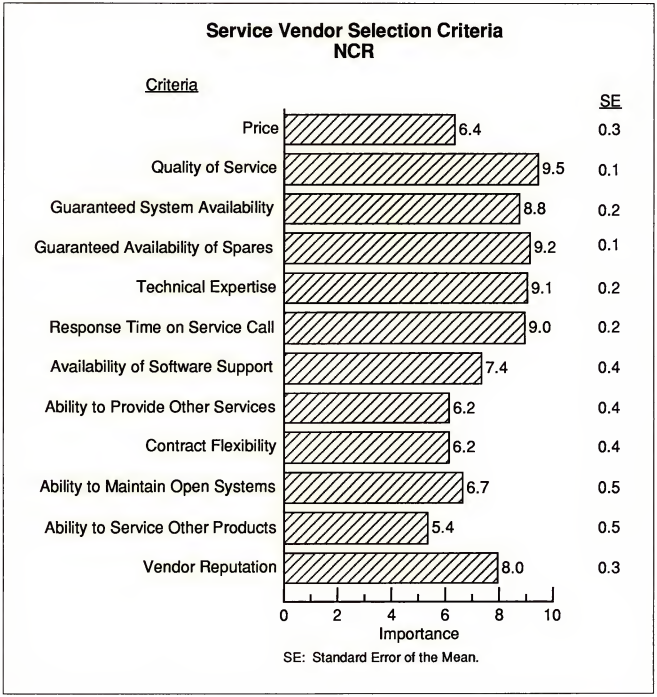


EXHIBIT III-E-3

Hardware Maintenance Provider
NCR

Provider	Percent of Mentions	Primary
Manufacturer	97	97
Dealer/Distributor	0	0
Independent Maintenance Organization	3	3
In-House	6	0
Other	0	0

Multiple Responses Allowed.

EXHIBIT III-E-4

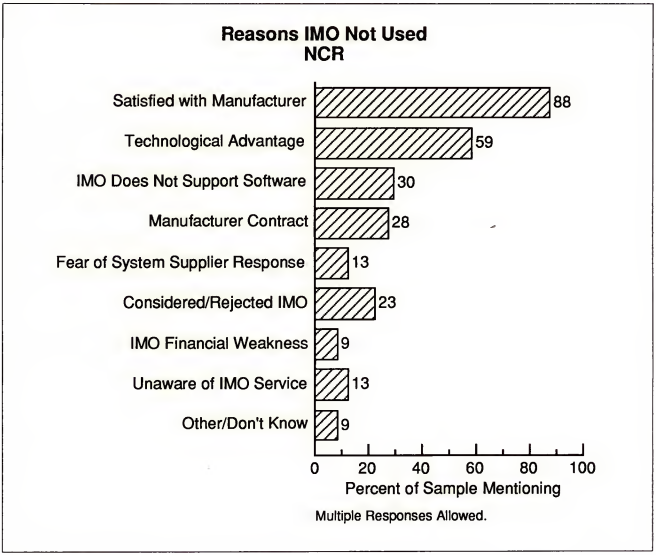


EXHIBIT III-E-5

Maintenance Contract Terms
NCR

Hardware Maintenance	Percent of Respondents
Warranty	3
Five Years	3
Three Years	0
One Year	74
Time and Materials	0
Other	10
None	10

EXHIBIT III-E-6

System Availability Performance Analysis
NCR

	Mean Required	Mean Received	Percent Satisfied
System Availability (%)	96.2	98.6	77
Response Time (hrs.)	2.5	2.1	88
Repair Time (hrs.)	3.3	2.6	94

EXHIBIT III-E-7

System Failure Rates
NCR

Mean Failures Per Year	2.0
Causes of Failure (%)	
Hardware	79
Systems Software	8
Applications Software	3
Other	10

Sample Size: 34

EXHIBIT III-E-8

Hardware Service Required versus Received
NCR

	Mean Required	Mean Received	Mean Satisfaction	Percent Satisfied
Spares Availability	8.6	7.9	8.2	60
Engineer Skills	8.8	8.7	9.0	83
Documentation of Maintenance	6.9	7.2	8.2	97
Help Desk Support	7.2	6.8	7.5	75
Remote Diagnostics	6.2	6.4	7.3	80
Real-time Software Diagnostics	6.0	6.0	6.7	89
Overall Hardware Maintenance	9.1	8.8	9.0	71

Note: Scale 1-10, 1 = Lowest, 10 = Highest

EXHIBIT III-E-9

Software Maintenance Provider
NCR

Provider	Percent of Mentions
Hardware Manufacturer	82
Other Hardware Service Provider	3
Software Product Vendor	12
Value-Added Reseller (VAR)	6
In-House	24
Other	3

Multiple Responses Allowed.

EXHIBIT III-E-10

System Software Maintenance Contract Terms
NCR

Software Maintenance	Percent of Respondents
Included in License Fee	9
Three-Year	0
One-Year	63
Custom	17
None	0
Don't Know	11

EXHIBIT III-E-11

System Software Problem Resolution NCR

Solved by Phone (%)	79
Elapsed Time (hrs.)	6.7
Other Problems	
Response Time	
• Required (mean hrs.)	14.3
• Received (mean hrs.)	10.7
• Percent Satisfied	82
Fix Time	
• Required (mean hrs.)	7.3
• Received (mean hrs.)	7.0
• Percent Satisfied	77

EXHIBIT III-E-12

System Software Support Required versus Received NCR

	Mean Required	Mean Received	Mean Satisfaction	Percent Satisfied
Engineer Skills	8.6	8.1	8.4	65
Documentation	8.0	7.6	8.3	77
Software Installation	7.4	7.1	7.4	74
Provision of Updates	8.1	7.8	7.9	74
Operational Training	7.1	6.9	7.2	74
Software Remote Support	8.3	7.9	8.1	71
Software Support Overall	8.5	8.1	8.4	71

Note: Scale 1-10, 1 = Lowest, 10 = Highest

EXHIBIT III-E-13

Ancillary Services
NCR

	Number of Mentions Currently Contracted	Mean Level Required	Mean Level Received	Percent Satisfied	Number of Mentions Not Receiving But Required
Configuration Planning	19	7.0	7.1	61	7
Capacity Planning	17	7.0	7.5	56	8
Environmental Planning	17	6.2	6.9	69	10
Cabling	17	6.9	7.6	88	11
Software Evaluation	17	6.4	6.7	75	10
Maintenance-Related Training	18	6.2	6.2	59	9
Install/De-install/Moves	20	7.1	8.5	95	8
Consulting	19	6.2	6.4	56	8
Network Planning	14	5.4	6.2	54	10
Network Management	10	5.2	6.4	44	11
Disaster Recovery	19	6.9	7.2	72	8
Facilities Management	15	4.0	4.1	64	9
Problem Management	22	6.1	6.5	62	7
Applications Software Support	24	7.0	7.2	52	4

EXHIBIT III-E-14

Multivendor Services
NCR

Service on Other Manufacturers'	Percent Receiving	Interest in Three Years
CPUs	14	2.3
Peripherals	34	2.7
Network Products	23	2.7

	Level of Interest
Single Point of Contact	3.4

Note: Scale 1 - 5, 1 = Lowest, 5 = Highest

EXHIBIT III-E-15

Discounts
NCR

	Percent Receiving	Mean Willingness to Receive
Multiyear	13	3.9
Prepayment	20	4.2
Call Screening/Problem Management	7	4.0
Deferred Response	13	3.6

Note: Scale 1 - 10, 1 = Lowest, 10 = Highest

IV

Summary Charts

Summary Charts

In this chapter, INPUT presents a summary of selected data from the 1991 large systems user requirements study. These summary charts allow a vendor-by-vendor comparison of service performance. Data is presented on factors that can be compared on an absolute basis.

The key to an analysis of customer satisfaction is the ability of the vendor to meet or exceed the expectations of the customer. Even the highest rating is lacking if the user's requirement exceeds the rating.

In these charts, the following definitions apply:

- Difference is a comparison of the mean service required to the mean service received. A negative number denotes a shortfall in the service received. A positive number denotes that the mean service received exceeded the mean service required.

- Percent satisfied is based on whether the service received met or exceeded service required for each individual respondent. A count is made of how many individuals had their requirements met or exceeded for that particular service requirement, which converts to the percent satisfied.

EXHIBIT IV-1

Large Systems Vendor Performance System Interruptions

Vendor	Mean Number Per Year	Percent Caused By:			
		Hardware	System Software	Applications Software	Other
Amdahl	4.3	42	15	8	35
BULL	4.3	67	11	6	16
IBM 309X	3.7	40	15	8	37
IBM 308X	3.8	55	18	2	25
NCR	2.0	79	8	3	10
All Vendors	3.6	56	13	6	25

EXHIBIT IV-2

Large Systems Vendor Performance System Availability

Vendor	System Availability (Percent)		
	Required	Received	Difference
Amdahl	97.8	97.7	-0.1
BULL	96.0	96.2	0.2
IBM 309X	98.8	98.8	0.0
IBM 308X	97.1	98.1	1.0
NCR	96.2	98.6	2.4
All Vendors	97.1	97.9	0.8

EXHIBIT IV-3

Large Systems Vendor Performance Response Time

Vendor	Response Time (Hours)		
	Required	Received	Difference
Amdahl	2.0	2.2	-0.2
BULL	2.5	3.0	-0.5
IBM 309X	2.1	1.4	0.7
IBM 308X	3.9	4.0	-0.1
NCR	3.3	2.6	0.7
All Vendors	2.8	2.6	0.2

EXHIBIT IV-4

Large Systems Vendor Performance Repair Time

Vendor	Repair Time (Hours)		
	Required	Received	Difference
Amdahl	1.4	1.2	0.2
BULL	2.0	2.4	-0.4
IBM 309X	1.8	1.0	0.8
IBM 308X	1.6	1.2	0.4
NCR	2.5	2.1	0.4
All Vendors	1.9	1.6	0.3

EXHIBIT IV-5

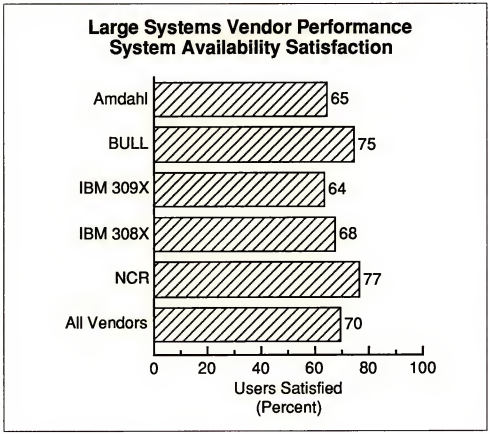


EXHIBIT IV-6

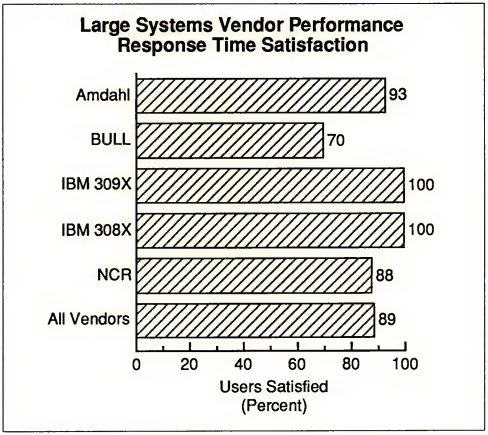


EXHIBIT IV-7

Large Systems Vendor Performance
Repair Time Satisfaction

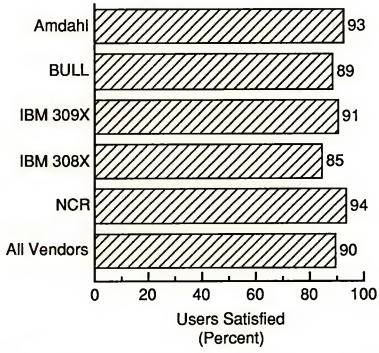


EXHIBIT IV-8

Large Systems Vendor Performance
Hardware Maintenance
Required versus Received

Vendor	Mean Required	Mean Received	Mean Satisfaction
Amdahl	9.1	8.9	9.0
BULL	9.0	8.2	8.2
IBM 309X	9.3	9.3	9.4
IBM 308X	9.2	9.0	9.0
NCR	9.1	8.8	9.0
All Vendors	9.1	8.8	8.9

EXHIBIT IV-9

Large Systems Vendor Performance
Hardware Maintenance Satisfaction

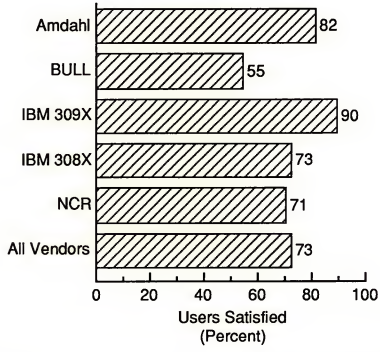
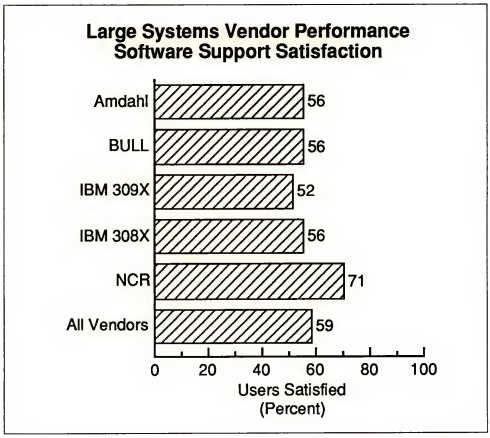


EXHIBIT IV-10

Large Systems Vendor Performance
Software Support
Required versus Received

Vendor	Mean Required	Mean Received	Mean Satisfaction
Amdahl	9.0	8.0	8.1
BULL	8.6	7.5	8.0
IBM 309X	8.6	7.9	7.9
IBM 308X	8.5	7.6	7.7
NCR	8.5	8.1	8.4
All Vendors	8.6	7.8	8.1

EXHIBIT IV-11



Appendix

Appendix: Questionnaire

A. GENERAL

1. What is the make and model of the main computer on your site and how many units do you have?

   - Make _____
   - Model _____
   - Units _____

2. Are you the person responsible for this system?

   If not, then who would be the correct person?

   Name of person responsible _____

   Phone Number _____

3. Do you have another system? What is the make and model number of that system, and how many units do you have?

   - Make _____
   - Model _____
   - Units _____

   All of the following questions that I am going to ask you are related to your _____ system.

4. Could you please rate the importance of the following criteria in selecting your service vendor, on a scale of 1 to 10 (1=Low, 10=High)?

Criteria	Rating
a) Price	_____
b) Quality of service	_____
c) Guaranteed system availability level	_____
d) Guaranteed availability of spare parts	_____
e) Technical expertise	_____
f) Response time on a service call	_____
g) Availability of software support	_____
h) Ability to provide other services	_____
i) Contract flexibility	_____
j) Ability to maintain open systems	_____
k) Ability to service other products	_____
l) Vendor reputation	_____

B. SERVICE VENDOR SELECTION

I would like to ask you some questions about the basic hardware maintenance of your computer system.

5. Would you please tell me who services your system hardware? Who is the primary service vendor? (check one)

(Please circle appropriate service provider type; multiple answers are allowed.)

	Primary
• Manufacturer	Y/N _____
• Dealer/distributor	Y/N _____
• Independent maintenance company	Y/N _____
• Own company	Y/N _____
• Other _____	Y/N _____

If the respondent answered YES to independent maintenance, continue with question 6A. If not, go to question 6B.

6A. Your system, or part of it, is serviced by an independent maintenance company. Could you tell me the reason why you use independent maintenance?

(Please circle appropriate answer; multiple answers are allowed.)

- Lower cost Y/N
- Local service Y/N
- Single-source service Y/N
- Better able to maintain open systems Y/N
- TPM service is higher quality Y/N
- More flexible contract Y/N
- Other Y/N
- Do not know Y/N

(Go to question 7)

6B. You do not use an independent maintenance company. What is the reason for this?

(Please circle appropriate answer; multiple answers are allowed.)

- Satisfied with manufacturer Y/N
- Manufacturer has a technological advantage Y/N
- IMO cannot support software Y/N
- Tied to manufacturer with long-term contract Y/N
- Fear of system supplier response Y/N
- Considered and rejected IMO Y/N
- IMO financial weakness Y/N
- Unaware of IMO service Y/N
- Other Y/N
- Do not know Y/N

7. What maintenance coverage do you receive on this CPU:

   a. How many days per week? _____

   b. How many hours per day? _____

   c. Which type of hardware maintenance contract do you currently have on the main part of your system?

   (Please circle appropriate answer; only ONE answer allowed.)

   - Warranty 1
   - Five years 2
   - Three years 3
   - One year 4
   - Time and Materials 5
   - Other _____ 6
   - None 7

8. Over the last 12 months, how many system interruptions (system failures) did you have per month? _____ or per year? _____

   And what percentage of these system failures were due to:

   Hardware _____%

   Systems software _____%

   Applications software _____%

   Other (i.e., power failure) _____%

   (Please check that percentages add up to 100%)

9. If we define SYSTEMS AVAILABILITY as the percentage of your normal working hours that the system is operational (disregarding non-critical peripheral outages), what percentage availability do you require? What is the percentage actually received over the last twelve months for that system?

   - Required _____%
   - Received _____%

10. Defining HARDWARE RESPONSE TIME as the time it takes between reporting a fault and the arrival of the service engineer on site, in working hours, what response time (in hours) do you require, and what did you actually experience as an average over the last twelve months?

    - Require_____Hours
    - Experienced _____Hours

11. If REPAIR TIME is defined as the time taken to get the system fully operational from the time the engineer arrives on site, what time do you require (in working hours) and what time did you experience during the last twelve months?

    - Require_____Hours
    - Experienced _____Hours

12. I would now like to go through a list of seven aspects of hardware maintenance and ask you to give each a rating on a scale of 1-10 for the service level you require, the service level you receive, and your satisfaction with that service.

	Required	Received	Satisfaction
• Spares Availability	_____	_____	_____
• Engineer Skills	_____	_____	_____
• Documentation of Maintenance	_____	_____	_____
• Help Desk Support	_____	_____	_____
• Remote Diagnostics	_____	_____	_____
• Real-time Software Diagnostics	_____	_____	_____
• Overall Hardware Maintenance	_____	_____	_____

13. If possible, I would like you to provide some information on hardware maintenance pricing.

    a) What percentage price increase or decrease did you pay for hardware maintenance in the year 1990?

        - Increase _____%
        - Decrease _____%
        - No Change Y/N (Circle)

b) What do you expect the price changes for hardware maintenance to be in the future, in percentage terms per year?

- Increase _____%
- Decrease _____%
- No Change Y/N (Circle)

C. SOFTWARE SUPPORT

I would like to ask you some questions now regarding the software service that you receive. These questions relate to system software only—NOT APPLICATIONS SOFTWARE.

14A. Who supports your systems software?

(Please circle appropriate answer; multiple answers allowed.)

- Hardware Manufacturer Y/N
- Other Hardware Service Provider Y/N

  (Specify _____)
- Software Product Vendor Y/N
- Value-Added Reseller (VAR) Y/N
- In-house Y/N
- Other (Specify _____) Y/N
- Do not know Y/N

14B. What type of systems software support contract do you currently have?

(Please circle appropriate answer. Only ONE answer allowed.)

- Support included in software license fee 1
- Three-year contract 2
- One-year contract 3
- Ad hoc/custom 4
- None 5
- Do not know 9

15. What percentage of systems software problems are solved by telephone, and, on average, how long does this take in elapsed time?

- Solved by Phone _____%
- Elapsed Time _____Hours

16. For those problems that are NOT possible to solve over the telephone, what RESPONSE TIME would you find acceptable, and what time (on average and in working hours) have you experienced over the last twelve months? (Take RESPONSE TIME to mean from the time the problem is reported to the arrival of the engineer on site.)

- Acceptable _____Hours
- Experienced _____Hours

17. If FIX TIME is defined as the time taken to get the system software fully operational from the arrival of the engineer on site, then what time (in working hours) do you find acceptable, and what did you experience over the last twelve months?

- Acceptable _____Hours
- Experienced _____Hours

18. I would like to go through a list of aspects of SYSTEMS SOFTWARE SUPPORT and ask you to give an IMPORTANCE or REQUIRED rating of the aspect, a RECEIVED rating, and a SATISFACTION with service received rating for each. (Scale 1-10)

	Importance/ Required	Received	Satisfaction
• Software Engineer Skills Level	_____	_____	_____
• Software Documentation	_____	_____	_____
• Software Installation	_____	_____	_____
• Provision of Updates	_____	_____	_____
• Operational Training	_____	_____	_____
• Software Remote Support	_____	_____	_____
• Software Support Overall	_____	_____	_____

19. If possible, I would like you to provide some information on systems software support pricing.

a) What percentage price increase or decrease did you pay for systems software support in the year 1990?

- Increase _____%
- Decrease _____%
- No Change Y/N (Circle)

b) What do you expect the changes for systems software support to be in the future, in percentage terms per year?

- Increase _____%
- Decrease _____%
- No Change Y/N (Circle)

D. ANCILLARY SERVICES

I would like to discuss with you now services beyond normal maintenance. I am particularly interested in obtaining your views on other services or modified current service offerings that your service suppliers could provide that would help to improve the running of your computer systems.

20. On a scale of 1-10, could you rate your requirement for these services and what you are now receiving. (Scale 1-10; not required/receiving = 0)

	(a) Require (1-10)	(b) Received (1-10)
• Configuration Planning	_____	_____
• Capacity Planning	_____	_____
• Environmental Planning	_____	_____
• Cabling	_____	_____
• Software Evaluation	_____	_____
• Maintenance Related Training	_____	_____
• Installation/De-installation/Moves	_____	_____
• Consulting	_____	_____
• Network Planning	_____	_____
• Network Management	_____	_____
• Disaster Recovery	_____	_____
• Facilities Management	_____	_____
• Problem Management	_____	_____
• Applications Software Support	_____	_____

21. How important is it that your service vendor communicates with you regularly and effectively to advise you of, for example:

- The status of your system
- Possible problems
- Repair plans
- Availability of spare parts
- Routine visits
- Hardware and software changes

Could you please rate your requirement for this communication on a scale of 1 to 10 where 1 indicates a low requirement or communication received and 10 is a high requirement or communication received.

- Required _____
- Received _____

22a. Do you currently receive any of the following multivendor services from your service provider? (Circle)

a. Service on other manufacturer's CPUs? Y/N
b. Service on other manufacturer's peripherals? Y/N
c. Service on other manufacturer's network products? Y/N

22b. Please rate on a scale of 1-5 how important these services would be in the next three years for you. (1 = no interest and 5 = high interest)

(1-5)

a. Service on other manufacturer's CPUs? _____
b. Service on other manufacturer's peripherals? _____
c. Service on other manufacturer's network products? _____

22c. On a scale of 1-5, what would be your level of interest in a "single-point-of-contact" service arrangement?

(1 = no interest, 5 = high interest) _____

23a. Do you currently receive any of the following discounts off your service pricing?

23b. For those not receiving, what is your level of interest in these discounts?

	(a) Y/N	(b) LOI (1-10)
Multi-year	_____	_____
Prepayment	_____	_____
Call Screening/ Problem Management	_____	_____
Deferred Response	_____	_____
Other	_____	_____

24. To wrap this up, may I ask what you would consider to be your single most pressing service concern at this time?

_____

_____

_____

_____

25. And, if you could choose one additional service that your vendor is not currently providing, what would that be?

_____

_____

_____

_____

This completes the questionnaire. I would like to thank you on behalf of INPUT for helping us to complete this survey. To express our appreciation for your time, we will be sending you a "Thank You" package containing a summary of the results from our survey. To make sure you receive your complimentary report summary, let me check the spelling of your name and the address information. (Confirm and record on cover sheet.)