F-CP3
1983

Field Service Program 1983
Annual Presentation

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FIELD SERVICES PROGRAM

1983 ANNUAL PRESENTATION

AGENDA

A. Introduction

B. Overview of Field Service

C. Field Service Operations Analysis

D. User Requirements and Vendor Ratings

E. Field Service Marketing

F. Personnel Issues

G. Software Maintenance Planning

H. Strategic Recommendations

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A. INTRODUCTION

INPUT FIELD SERVICE PROGRAM
1983 INTERVIEW BASE

Market Sector	Telephone Interviews	
	Users	Vendors
Large/Medium Systems	324	7
Small Systems	342	15
Peripherals/Terminals	351	16
Office Products	306	10
Total	1323	48

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FIELD SERVICE PROGRAM (FSP), 1983

RESEARCH STUDIES				
MARKET SECTORS	QUARTER	USER REQUIREMENTS	COMPETITIVE ENVIRONMENT	PERSONNEL ISSUES	MANAGEMENT, TECHNOLOGY & STRATEGY ISSUES
		I	II	III	IV
	Large Systems	S	WP	P	W
	Small Systems	S	WP	P	W
	Peripheral & Terminal Products	S	WP	P	W
	Office Products	S	WP	P	W

- Hotline Inquiry Service
- Library Access
- Annual Presentation

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TOP VENDOR FIELD SERVICE
HOTLINE USAGE, 1983

Vendor	Hours Jan–Sept.
1. DEC	81.75
2. IBM	58.75
3. Honeywell	33.25
4. Texas Instruments	32.25
5. CDC	27.75

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B. OVERVIEW OF FIELD SERVICE MARKET

VENDOR FINANCIAL PERFORMANCE

- 1982 Field Service revenue was, on average:

    - 15% of total company revenues and
      grew at 16%

    - 12% of total company profits

- Field Service profit before tax was 19%,
  expected to be 22% in 1983.

- Monthly revenue per FE was $6,800 in
  1982, expected to be $7,380 in 1983.

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VALUE OF FIELD SERVICE

To the Company

- Contribution of 15% of revenue to the top line, 12% to the bottom line.

To Sales

- Reputation of solid support, image of quality products through service.

To Account Development

- "Free" consulting to client on configuration/bottleneck evaluation, planning.

To Customer

- Accomplishment of system availability goals; main link between company and the customer.

LARGE/MEDIUM SCALE VENDOR
1982 FS REVENUE

Company	FS Revenue U.S. ($ millions)	Percent Growth Rate 1981-1982	Percent of Total Revenue 1982
Amdahl	$78	13%	28%
Burroughs	618	23	25
Control Data	236	11	9
Cray Research	12	58	10
Data General	93	27	19
DEC	496	33	21
Honeywell	217	2	27
IBM	3,800	21	19
NAS	41	30	20
Perkin Elmer	65	20	42
Tandem	25	80	13
Univac	432	5	28

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SMALL SCALE VENDOR 1982 FS REVENUE

Company	FS Revenue U.S. ($ millions)	Percent Growth Rate 1981-1982	Percent of Total Revenue 1982
Auto-trol	$10	30%	29%
Burroughs	618	23	25
Calma	20	24	23
Computervision	33	57	16
Data General	93	27	16
Datapoint	49	16	14
DEC	496	33	21
Four Phase	55	14	27
Hewlett-Packard	205	18	10
Honeywell	217	2	27
IBM	3,800	21	19
Intergraph	12	70	12
NCR	554	6	31
Prime	53	50	20
Texas Instruments	126	3	16

PERIPHERALS AND TERMINALS VENDOR
1982 FS REVENUE

Company	FS Revenue U.S. ($ millions)	Percent Growth Rate 1981-1982	Percent of Total Revenue 1982
Calcomp	$9	-	15%
Centronics	6	8%	8
Control Data	236	11	9
Decision Data	17	24	30
IBM	3,800	21	19
ITT/Courier	31	20	8
Burroughs	618	23	25
MDS	29	5	14
NAS	41	30	20
STC	66	52	9
Telex	29	9	19
Xerox	549	6	10
Beehive	3	12	6

OFFICE PRODUCTS VENDOR 1982 FS REVENUE

Company	FS Revenue U.S. ($ millions)	Percent Growth Rate 1981-1982	Percent of Total Revenue 1982
A.B. Dick	$32	14%	15%
Apple	18	74	3
CPT	5	57	4
Convergent Technologies	-	-	-
Commodore	6	70	4
DEC	496	33	21
Exxon	7	30	7
IBM	3,800	21	19
NBI	8	35	7
Rolm	10	25	2
Tandy	5	80	1
Wang	53	39	7
Xerox	549	6	10

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FORECAST OF FIELD SERVICE REVENUES

- Total U.S. Field Services revenues in 1982 were $8.99B rising to $17.2B by 1987.

- Growth is slowing:

  - Field service component of users cost of ownership is already high.

  - IBM services price umbrella is coming down.

  - Reliability is going up.

  - Alternate delivery modes are coming onstream.

- Productivity is increasing at 10% per annum.

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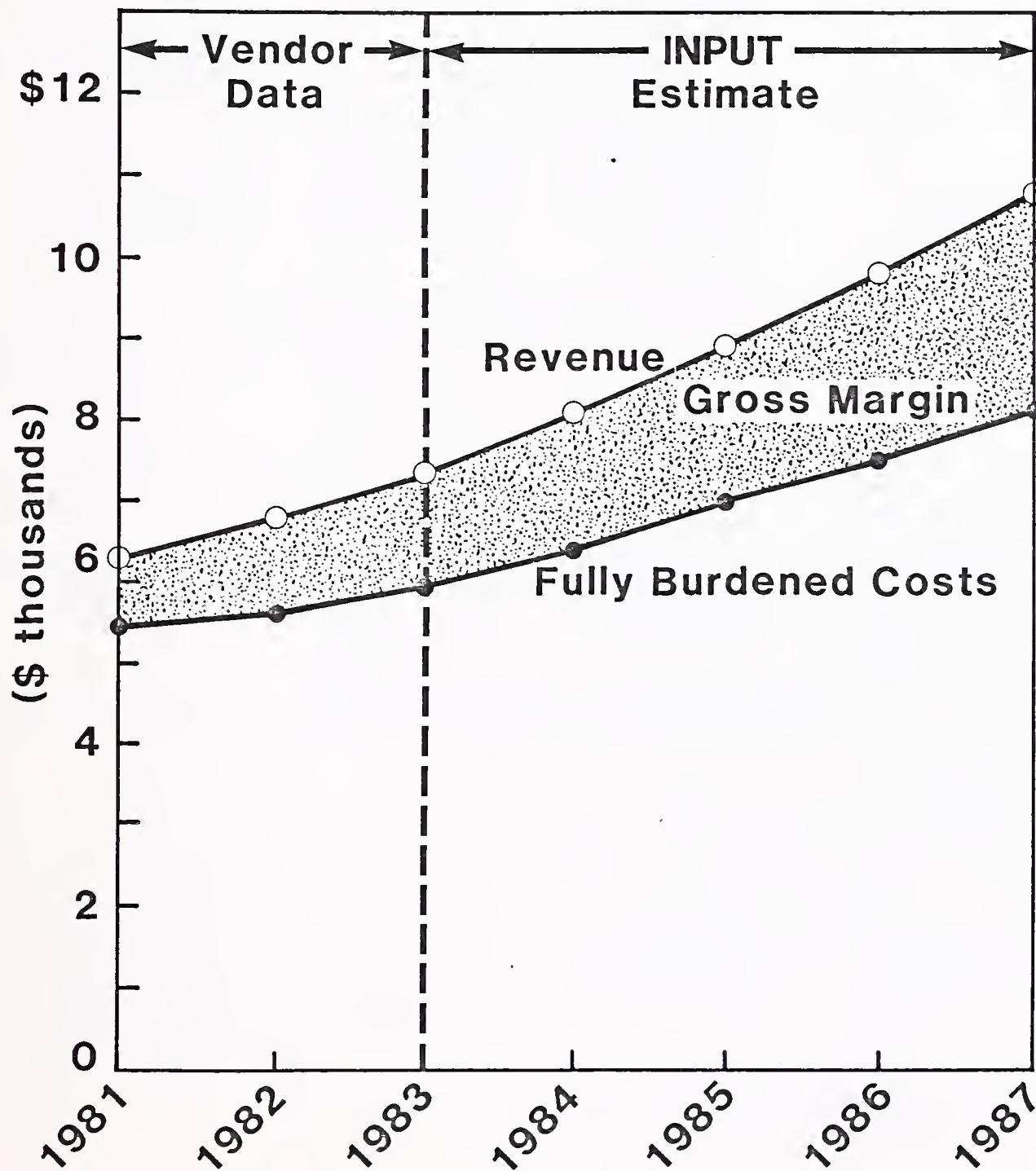
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FORECAST OF U.S. FIELD REVENUE AND PERSONNNEL GROWTH 1982-1987

Year	Revenue ($ millions)	Personnel (thousands)	Revenue per Field Service Person ($ thousands)
1982	$8,990	145	62.0
1987	17,160	168	102.1
AAGR (percent)	13.6%	3.0%	10.6%

MONTHLY REVENUE AND FULLY BURDENED EXPENSE PER FIELD ENGINEER, 1981-1987

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CHANGING ROLE OF FIELD SERVICE

	External Image	Internal Image
Yesterday	Hardware Problem Fixer	Necessary Expense
Today	System Support	Revenue/Profit Generator
Tomorrow	Total Service	Managing, Developing and Servicing Installed Base
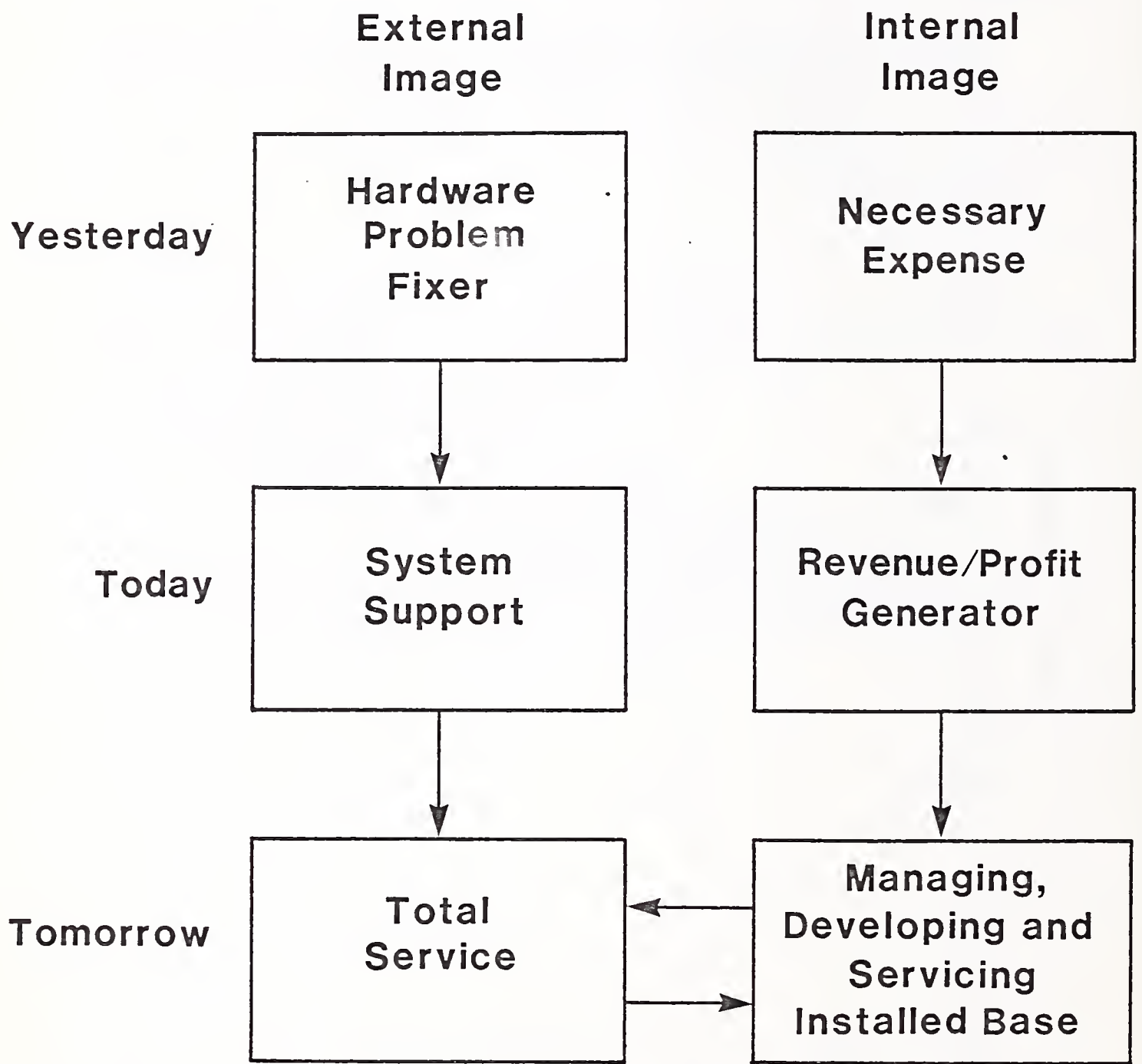
CHANGING ROLE OF HARDWARE ENGINEER

	Past	Present	Future
Diagnostic	• On Arrival with Available Means	• Prior to Arrival	• Self Diagnosing
	• At System Level	• At Sub-system Level	• At Component Level
Repair	• On-site Repair of Failed Component	• Swap Failed Board, No Repair	• Redundant or Fail-soft Hardware
			• Swap Failed Subsystem
System Status	• Down	• Down	• Up

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CHANGING ROLE OF SOFTWARE ENGINEER

	Past	Present	Future
Diagnostic	• On-site	• Support .Center Assistance	• Remote Tie In
Repair	• On-site	• Revised Version Shipped	• Down-line Loading of Patched or Revised Code
System Status	• Down	• Down	• Degraded But Still Operable

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CONVERSION OF FIELD SERVICE TO TOTAL SERVICE CONCEPT

	Phase			Status
A.	Hardware Maintenance	→	System Support	Accomplished by 70% of vendors
B.	Cost Center	→	Profit Center	Accomplished by 90% of Vendors
C.	Field Service	→	Full Post Sales Support	1983–1987

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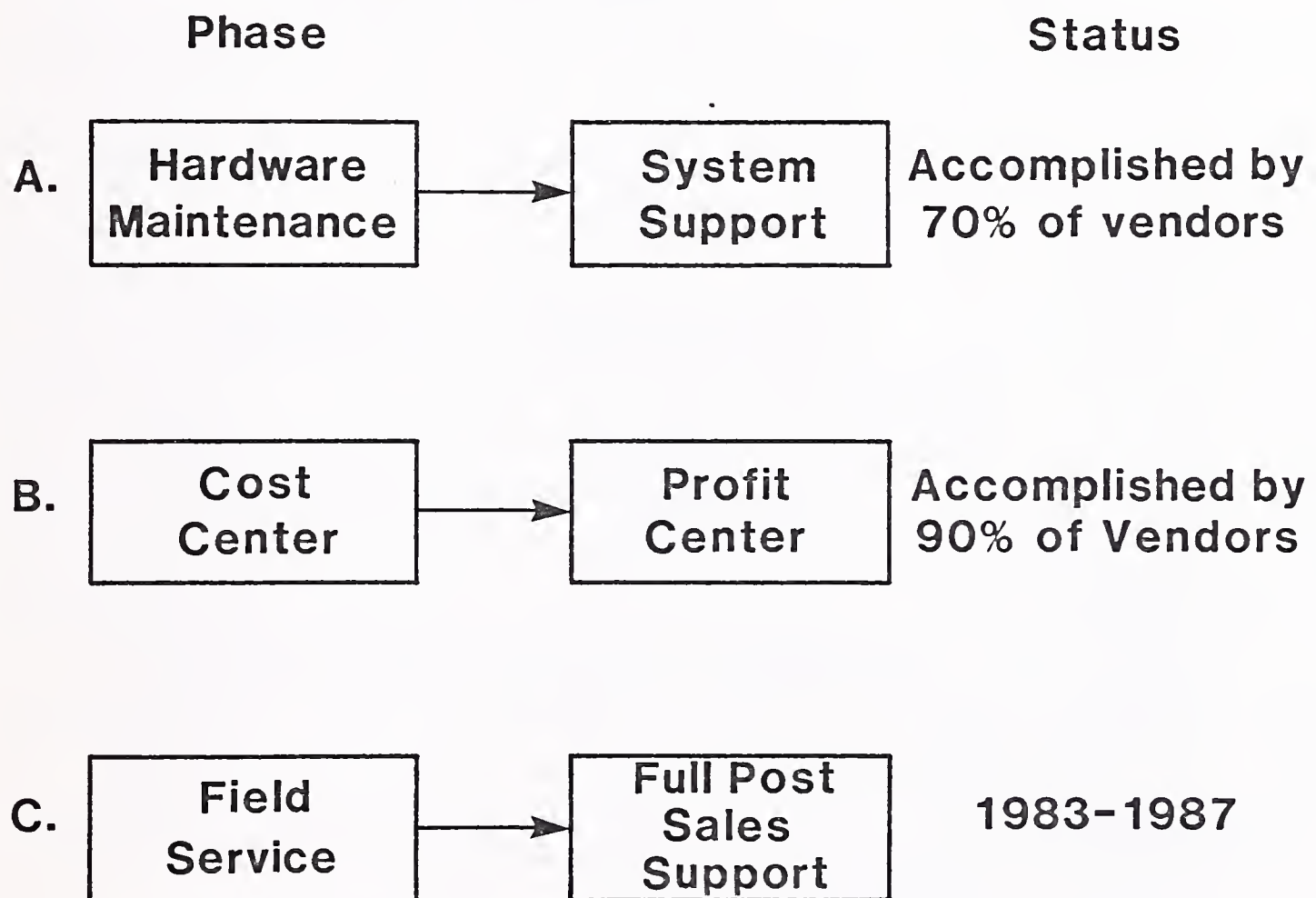
COMPONENTS OF TOTAL SERVICE

Field Service User Needs

System Consulting*
Hardware/Software Configuration*
System/Add-on Installation
Training & Documentation*
Hardware/Software Maintenance
Supplies*
Add-ons*
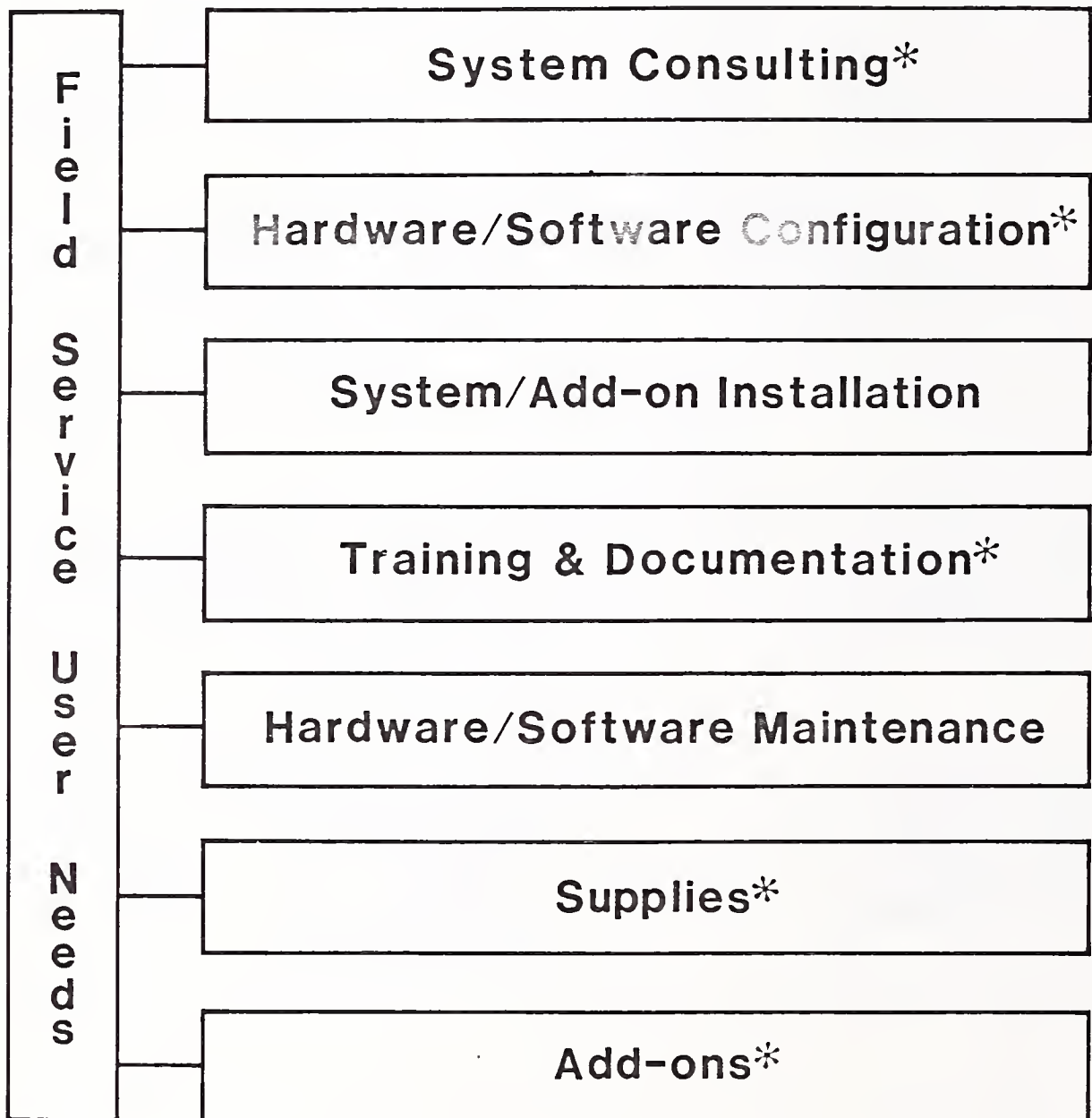
*Usually not part of today's Field Service.

VALUE OF FIELD SERVICE

To	Value
Company	15% of Revenue 12% of Profit
Sales	Image of Quality/ Responsiveness Competitive Argument
Account Development	Consulting to Account Synchronize Customer with Company Goals
Customer	System Availability Goals Communications with Vendor

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C. ANALYSIS OF USER REQUIREMENTS AND VENDOR RATINGS

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USER REQUIREMENTS VERSUS
SERVICE RECEIVED

SERVICE	LARGE SYSTEM	SMALL SYSTEM	PERIPHERALS/TERMINALS	OFFICE PRODUCTS
H/W Maintenance	–	B	B	B
S/W Maintenance	–	C	B	B
Add-on Sales	B	B	B	A
Supplies Sales	C	C	B	A
Consulting	A	A	A	A
Documentation	–	–	A	–
Training	C	B	B	B
Installation	B	A	A	A

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OVERALL USER RATINGS OF LARGE-SYSTEM VENDORS

VENDOR	Environmental Planning	Physical Site Planning	Consulting	Documentation	Training	Installation Planning	Hardware Maintenance	Software Maintenance	Supplies Sales	Add-on Sales	Site Audits	Relocation	De-installation	Total Score (A = 3, B = 2, C = 1)
Amdahl	A	A	A	C	C	A	–	–	C	B	B	A	B	24
Burroughs	A	–	B	–	–	–	–	–	B	C	C	A	A	·15
Control Data	A	A	A	C·	C	B	–	–	A	A	A	A	A	28
Cray	A	B	A	B	–	C	C	–	B	B	–	A	B	21
DEC	B	B	B	C	B	C	–	–	A	A	A	B	C	22
Data General	B	C	A	–	B	B	–	–	C	B	A	A	A	22
Honeywell	A	B	B	–	C	B	–	–	C	–	C	A	A	18
IBM	B	A	A	C	C	A	B	–	C	B	B	A	A	29
NAS	C	B	A	–	–	B	C	–	–	C	A	A	A	19
Perkin-Elmer	B	B	B	–	C	A	–	–	–	B	A	C	A	19
Tandem	C	–	A	A	C	A	–	C	B	C	B	–	A	20
Univac	A	A	B	–	–	C	–	–	–	A	B	B	B	18
Overall Service Scores	28	23	31	9	10	23	4	1	16	22	25	29	31	

A = 25% or less dissatisfied, and at least 50% satisfied   – = all grades below A, B and C

B = 35% or less dissatisfied, and at least 40% satisfied

C = 45% or less dissatisfied, and at least 30% satisfied

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OVERALL USER RATINGS OF SMALL-SYSTEM VENDORS

VENDOR	Environmental Planning	Physical Site Planning	Consulting	Documentation	Training	Installation Planning	Hardware Maintenance	Software Maintenance	Supplies Sales	Add-on Sales	Site Audits	Relocation	De-installation	Total Score (A = 3, B = 2, C = 1)
Autotrol	A	A	A	–	C	B	–	–	A	B	A	–	–	20
Burroughs	B	A	A	–	A	B	–	B	B	A	A	A	A	29
Computervision	A	A	A	–	B	A	C	–	–	C	A	B	–	21
Data General	A	A	A	C	B	B	–	B	–	A	A	A	A	28
Datapoint	A	A	A	B	C	B	C	C	C	B	A	A	A	28
Digital Equipment	A	B	B	C	A	A	C	–	C	B	B	A	A	26
Four Phase	A	A	A	B	B	A	C	–	–	A	A	A	A	29
Hewlett-Packard	A	A	A	C	A	B	C	C	A	A	A	A	A	32
Honeywell	A	A	A	–	B	A	A	C	–	B	B	A	A	28
IBM	A	A	A	A	A	A	B	A	C	A	A	A	A	36
Intergraph	B	A	A	–	C	B	C	–	A	A	A	C	–	22
NCR	A	A	A	B	B	A	–	–	A	B	A	A	A	30
Prime	A	A	A	B	A	A	–	C	–	C	A	A	B	27
Texas Instruments	A	–	A	–	–	–	B	B	–	B	*	B	A	17
Overall User Ratings	40	38	41	14	28	33	13	11	17	32	37	35	32	

A = 25% or less dissatisfied, and at least 50% satisfied

B = 35% or less dissatisfied, and at least 40% satisfied

C = 45% or less dissatisfied, and at least 30% satisfied

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OVERALL USER RATINGS OF PERIPHERAL AND TERMINAL VENDORS

VENDOR	Environmental Planning	Physical Site Planning	Consulting	Documentation	Training	Installation Planning	Hardware Maintenance	Software Maintenance	Supplies Sales	Add-on Sales	Site Audits	Relocation	De-installation	Total Score (A = 3, B = 2, C = 1, X = 0)
CDC	A	A	A	B	A	A	B	A	X	A	X	A	A	31
Centronics	A	A	A	B	B	X	–	X	C	B	A	X	X	19
Decision Data	A	A	–	A	C	A	B	X	–	A	A	B	B	25
IBM	A	A	A	B	B	A	A	A	A	A	A	A	A	37
ITT	B	A	A	C	–	C	–	C	A	A	A	B	A	25
Memorex	B	A	B	A	–	B	C	C	B	A	B	A	A	27
Mohawk	A	A	A	B	A	A	A	C	A	A	A	A	B	35
NAS	A	A	C	A	C	A	C	–	B	A	B	A	B	27
STC/Documation	A	A	A	B	A	–	C	B	–	–	B	A	A	25
Telex	B	C	–	A	C	A	–	–	A	A	X	X	X	16
Xerox	A	A	A	A	C	B	–	–	C	A	A	B	B	26
Overall Service Scores	30	31	24	26	17	23	13	11	18	29	24	24	23	

A = 25% or less dissatisfied, and at least 50% satisfied
B = 35% or less dissatisfied, and at least 40% satisfied
C = 45% or less dissatisfied, and at least 30% satisfied

X = Insufficient or no responses   – = All grades below A, B, and C

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OVERALL USER RATINGS OF OFFICE PRODUCTS

VENDOR	Environmental Planning	Physical Site Planning	Consulting	Documentation	Training	Installation Planning	Hardware Maintenance	Software Maintenance	Supplies Sales	Add-on Sales	Site Audits	Relocation	Deinstallation	Total Score (A = 3, B = 2, C = 1)
Copiers	B	A	A	C	C	A	–	*	B	A	–	A	B	23
Facsimile Machines	–	–	A	–	B	B	–	*	–	C	–	–	–	8
PBX, PABX	A	A	B	B	B	A	C	–	B	B	C	C	–	20
Personal Computers	–	–	–	–	–	–	–	–	B	*	*	*	*	2
Word Processors	B	C	B	–	C	A	C	C	B	C	C	C	B	18
Workstations	A	B	B	C	A	–	–	B	A	–	–	C	–	17
Overall Service Scores	10	9	12	4	9	11	2	3	11	7	2	6	4	

A = 25% or less dissatisfied, and at least 50% satisfied	
B = 35% or less dissatisfied, and at least 40% satisfied	– = all grades below A, B, and C
C = 45% or less dissatisfied, and at least 30% satisfied	

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SYSTEM AVAILABILITY
BY PRODUCT CATEGORY

Category	Percent Average	
	Requirement	Actual
Large Systems	96.8	96.8
Small Systems	93.8	94.4
Peripherals/Terminals	94.6	94.8
Office Products	92.6	93.9

SYSTEM AVAILABILITY BY VENDOR
(Large Systems)

Vendor	Mean	
	Required	Actual
Amdahl	97.67	97.86
Burroughs	97.93	98.19
CDC	95.83	95.23
Cray	96.39	96.94
DEC	96.32	96.55
Data General	92.32	95.04
Honeywell	97.63	96.83
IBM	97.68	97.66
NAS	97.89	97.90
Perkin Elmer	94.71	92.18
Tandem	98.09	97.38
Univac	96.63	97.25

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SYSTEM AVAILABILITY BY VENDOR
(Small Systems)

Vendor	Mean	
	Required	Actual
Autotrol	97.3	95.5
Burroughs	92.6	91.9
Computervision	94.0	95.3
DEC	95.4	95.9
Data General	93.2	95.8
Datapoint	91.5	94.0
Four Phase	93.8	93.7
Hewlett-Packard	95.8	95.5
Honeywell	94.1	94.7
IBM	91.9	93.8
Intergraph	96.2	94.3
NCR	90.7	94.2
Prime	93.3	92.9
Texas Instruments	95.3	94.4

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SYSTEM AVAILABILITY BY VENDOR
(Peripherals and Terminals)

Vendor	Mean	
	Required	Actual
CDC	97.3	98.2
Centronics	92.0	95.3
Decision Data	93.9	92.2
IBM	94.6	95.3
ITT	93.2	95.0
Memorex	95.2	94.3
Mohawk	92.9	96.1
NAS	98.2	97.2
STC/Documentation	93.7	93.1
Telex	95.7	95.6
Xerox	94.7	92.5

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SYSTEM AVAILABILITY BY PRODUCT
(Office Products)

Product	Mean	
	Required	Actual
Copiers	89.84	92.20
Facsimile Machines	94.02	92.09
PBX, PABX	95.83	95.37
Personal Computers	87.97	90.92
Word Processors	93.81	95.10
Workstations	95.80	96.96

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RESPONSE TIME

Category	Mean Time (hours)	
	Requirement	Actual
Large Systems	1.8	1.7
Small Systems	4.5	4.8
Peripherals/Terminals	2.8	2.7
Office Products	6.2	5.7

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REPAIR TIME BY PRODUCT CATEGORY

Category	Mean Time (hours)	Comment
Large Systems	3.5	Amdahl, Cray and NAS < 2
Small Systems	5.8	Honeywell, DEC and Datapoint < 3
Peripherals/ Terminals	3.5	CDC, ITT and NAS < 2
Office Products	6.3	Copiers, WP ≤ 2

REPAIR TIME EXPERIENCED
BY OFFICE PRODUCT USERS
(hours)

Product	Mean
Copiers	1.60
Facsimile Machines	4.49
PBX, PABX	3.71
Personal Computers	19.42
Word Processors	2.07
Workstations	4.19

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IMPORTANCE OF SINGLE-SOURCE MAINTENANCE TO USERS

Large System Vendor	Mean (1-10)
Amdahl	4.74
Burroughs	7.36
CDC	6.92
Cray	7.60
DEC	6.77
Data General	8.29
Honeywell	8.30
IBM	6.21
NAS	6.43
Perkin Elmer	6.90
Tandem	5.70
Univac	7.32

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IMPORTANCE OF SINGLE SOURCE OF MAINTENANCE

SMALL SYSTEM VENDORS	MEAN (1-10)
Autotrol	8.0
Burroughs	8.5
Computervision	8.3
DEC	8.5
Data General	7.7
Datapoint	8.8
Four Phase	7.4
Hewlett-Packard	7.9
Honeywell	8.2
IBM	8.2
Intergraph	8.4
NCR	8.5
Prime	7.7
Texas Instruments	6.7

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IMPORTANCE OF SINGLE-SOURCE MAINTENANCE TO USERS

Peripheral/Terminal Vendor	Mean (1-10)
CDC	4.5
Centronics	5.5
Decision Data	6.9
IBM	7.9
ITT	7.3
Memorex	7.0
Mohawk	8.3
NAS	7.6
STC/Documentation	6.1
Telex	7.3
Xerox	8.2

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IMPORTANCE OF SINGLE-SOURCE MAINTENANCE TO USERS

Office Products	Mean (1-10)
Copiers	8.75
Facsimile Machines	8.00
PBX, PABX	8.52
Personal Computers	6.21
Word Processors	8.26
Workstations	7.23

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THIRD-PARTY MAINTENANCE

Large System Vendor	Now Using (percent)	Have Considered (percent)
Amdahl	14.7	38.2
Burroughs	39.3	7.1
CDC	54.2	37.5
Cray	40.0	20.0
DEC	50.0	50.0
Data General	42.9	38.1
Honeywell	12.1	24.2
IBM	22.6	41.5
NAS	30.0	40.0
Perkin Elmer	35.0	15.0
Tandem	40.0	30.0
Univac	25.8	9.7

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THIRD-PARTY MAINTENANCE

Small System Vendor	Now Using (percent)	Have Considered (percent)
Autotrol	-	4.8
Burroughs	20.0	3.3
Computervision	31.6	31.6
DEC	45.2	35.5
Data General	30.0	26.7
Datapoint	15.0	5.0
Four Phase	-	5.0
Hewlett-Packard	25.0	20.0
Honeywell	13.3	20.0
IBM	22.5	12.5
Intergraph	15.0	-
NCR	19.0	9.5
Prime	45.0	20.0
Texas Instruments	25.0	45.0

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THIRD-PARTY MAINTENANCE

Peripheral/Terminal Vendor	Now Using (percent)	Have Considered (percent)
CDC	55.0	25.0
Centronics	70.0	40.0
Decision Data	30.0	35.0
IBM	28.3	56.7
ITT	26.7	26.7
Memorex	27.3	54.5
Mohawk	10.0	10.0
NAS	42.9	14.3
STC/Documentation	27.5	35.0
Telex	33.3	53.3
Xerox	25.0	30.0

THIRD-PARTY MAINTENANCE

Office Product	Now Using (percent)	Have Considered (percent)
Copiers	11.8	7.8
Facsimile Machines	6.2	0.0
PBX, PABX	24.1	6.9
Personal Computers	26.2	23.0
Word Processors	11.4	20.0
Workstations	25.8	19.4

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FAULT CALL ANALYSIS

TREND ANALYSIS OF COST BREAKDOWN
OF A TYPICAL FAULT CALL

Component	1982	1983 (percent change over 1982)
Average Cost ($)		+5.9%
Direct Labor (%)		-0.3
Travel Labor (%)	Reference Year	+0.9
Parts and Materials (%)		+0.9
Travel Expense (%)		-4.5
Burden/Overhead (%)		+3.0
Number of Calls per Week		+10.6%

Source: Vendor Interviews

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AVERAGE FAULT CALL COSTS
1982 (ACTUAL) AND 1983 (EXPECTED)

Equipment Category	1982 (dollars per call)	1983 (dollars per call)	Change (percent)
Mainframes	$307	$331	+7.8%
Small Business Systems/ Minicomputers	245	247	+0.8
Peripherals	129	136	+5.4
Terminals	132	147	+11.4

Source: Vendor Interviews

MAINFRAME VENDORS' COST BREAKDOWN OF A TYPICAL FAULT CALL

Component	1982	1983
Average Cost ($)	$307	$331
Direct Labor (%)	15%	
Travel Labor (%)	9	No Change
Parts and Materials (%)	26	
Travel Expense (%)	13	
Burden/Overhead (%)	37	
Number of Calls per Engineer per Week	4.1	5.6

Source: Vendor Interviews

SMALL BUSINESS SYSTEMS AND MINICOMPUTER VENDORS' COST BREAKDOWN OF A TYPICAL FAULT CALL

Component	1982	1983
Average Cost ($)	$245	$247
Direct Labor (%)	27%	25%
Travel Labor (%)	21	24
Parts and Materials (%)	14	19
Travel Expense (%)	19	5
Burden/Overhead (%)	19	27
Number of Calls per Engineer per Week	13	17

Source: Vendor Interviews

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PERIPHERAL VENDORS' COST BREAKDOWN
OF A TYPICAL FAULT CALL

Component	1982	1983
Average Cost ($)	$129	$136
Direct Labor (%)	39%	
Travel Labor (%)	16	No Change
Parts and Materials (%)	27	
Travel Expense (%)	4	
Burden/Overhead (%)	7	
Number of Calls per Engineer per Week	10.8	12.0

Source: Vendor Interviews

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TERMINALS VENDORS' COST BREAKDOWN OF A TYPICAL FAULT CALL

Component	1982	1983
Average Cost ($)	$132	$147
Direct Labor (%)	22%	24%
Travel Labor (%)	18	19
Parts and Materials (%)	25	21
Travel Expense (%)	11	9
Burden/Overhead (%)	24	27
Number of Calls per Engineer per Week	11.8	14.4

Source: Vendor Interviews

PER CALL CHARGE RATES
BY EQUIPMENT CATEGORY

Category	Average Hourly Rate (dollars)		Change (percent)
	1982	1983 (Plan)	
Mainframes	$93.60	$113.50	+21%
Small Business Systems	57.63	58.05	+0.7
Minicomputers	74.55	76.83	+3.1
Microcomputers	65.00	70.50	+8.5
Peripherals	87.00	96.00	+10
Terminals	59.29	65.00	+9.6
Word Processors	60.00	62.75	+4.6
Data Communications	50.00	56.00	+12

Source: Vendor Interviews

IBM PC

- Marketplace

  - IBM had 23% of 1982 business user expenditures, compared to Apple's 18%.

  - New products targeted at lower and upper ends of market.

- Distribution Strategy

  - Authorized Dealer Network

  - IBM Product Centers

  - Local Branch Offices (Replacing National Marketing Center)

- Maintenance Strategy

  - Mail-in to Regional Repair Center

  - Carry-in to IBM Service Exchange Center (Depot)

  - Courier Pickup and Delivery Arranged by IBM

  - On-site Service, Offered in 38 Cities
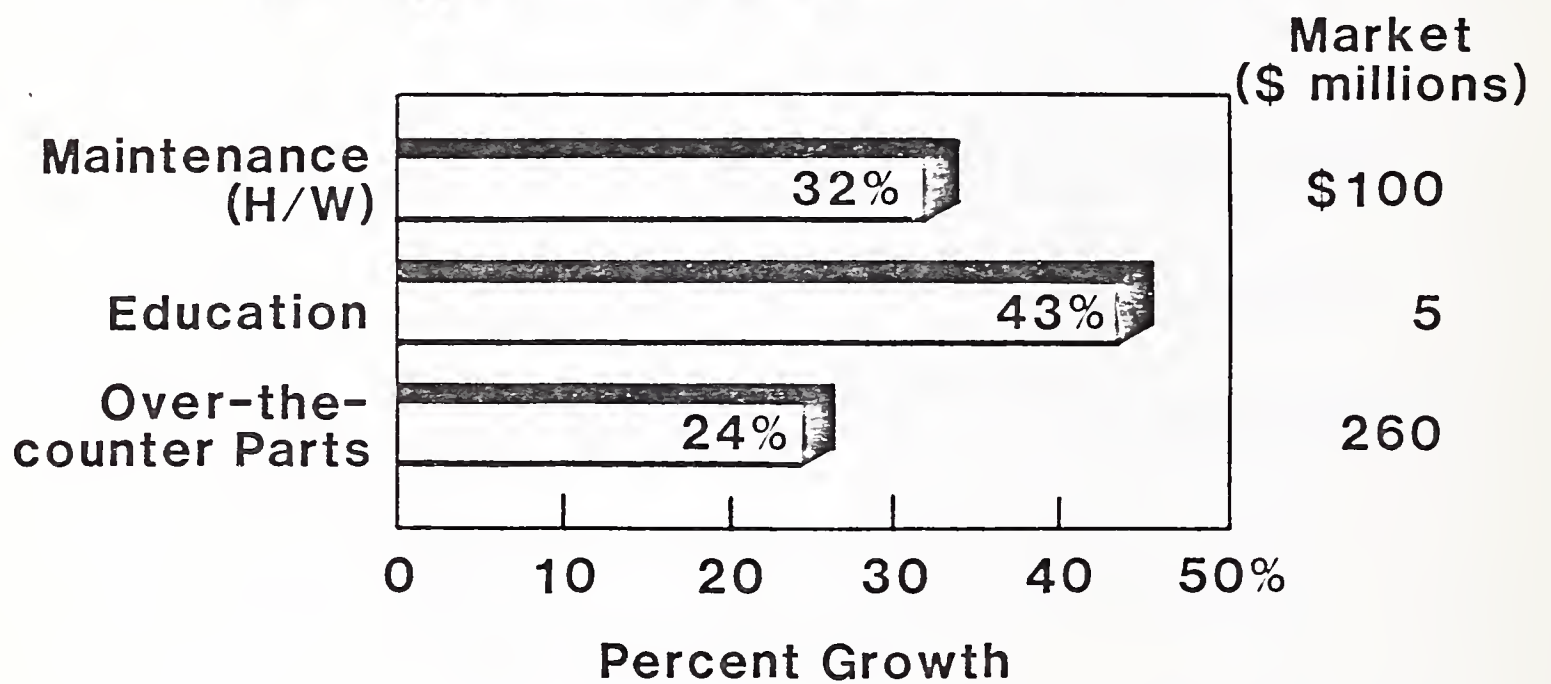
BUSINESS PC REVENUE FORECAST
1982-1987

	Percent Growth	Market ($ millions)
Hardware	19%	$2,605
Software	35%	548
After Sales	28%	375
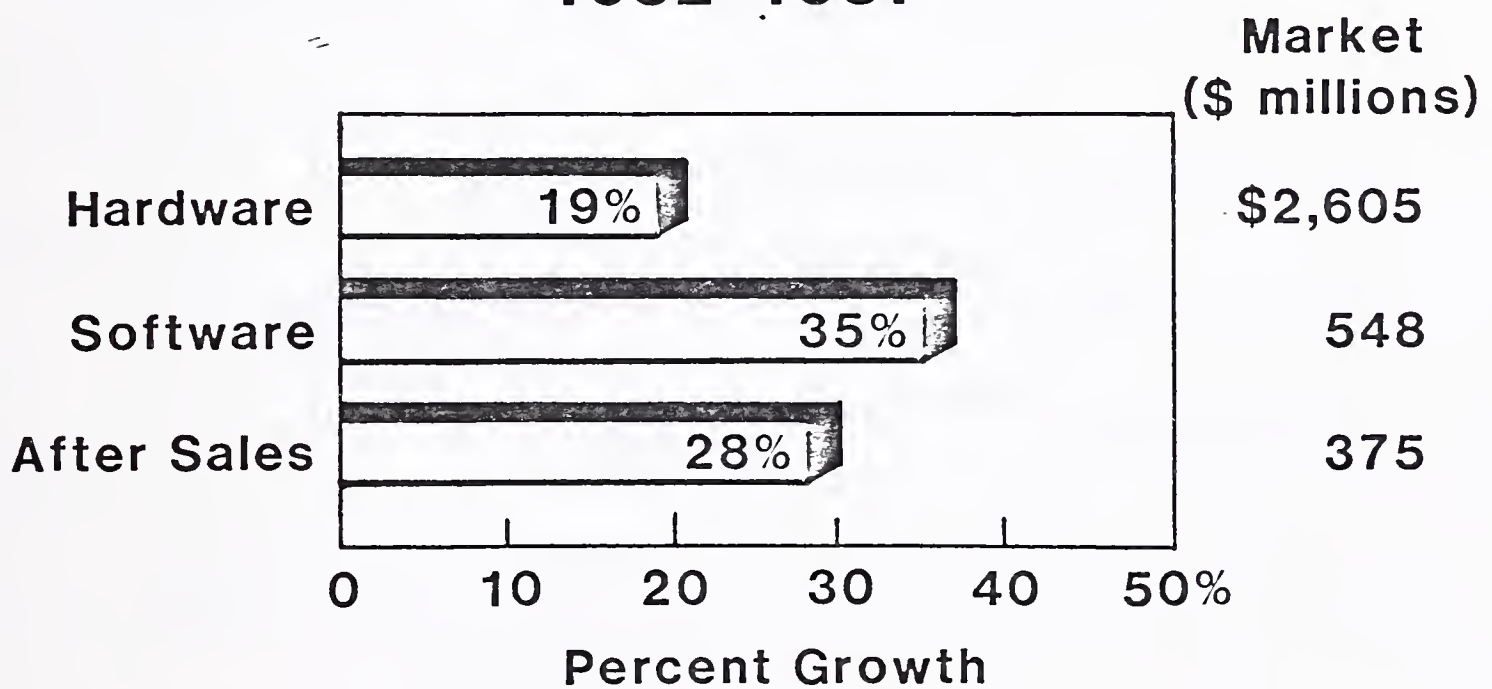
Total Market Forecast

1982 = $3,528 M

1987 = $10,047 M

BUSINESS PC HARDWARE SUPPORT FORECASTS

Market ($ millions)

	Percent Growth	Market ($ millions)
Maintenance (H/W)	32%	$100
Education	43%	5
Over-the-counter Parts	24%	260

Percent Growth: 0 10 20 30 40 50%

Total Hardware Support Forecast:

1982 = $365 M

1987 = $1,180 M

IBM PC

| Qty. | Product | | (dollars) | | |
	Code	Description	Purchase Price	Courier	On-site
1	5150	CPU, 64KB, Keyboard	$1,575.00	$132.00	$165.00
1	5151	Monochrome Display & Card	680.00	35.00	62.50
2	3907	5 1/4 Single-side Floppy	1,058.00	93.00	116.00
1	5152	80 cps Matrix Printer	595.00	50.00	62.50
		Total	$3,908.00	$310.00 7.9%	$405.00 10.4%

IBM PC

Qty.	Product Code	Description	(dollars) Purchase Price	Carry-in	Mail-in
1	5150	CPU, 64KB, Keyboard	$1,575.00	$106.00	$92.50
1	5151	Monochrome Display & Card	680.00	28.00	24.50
2	3907	5 1/4 Single-side Floppy	1,058.00	75.00	65.00
1	5152	80 cps Matrix Printer	595.00	40.00	35.00
		Total	$3,908.00	$249.00 6.4%	$217.00 5.6%

ON-SITE SERVICE PRICING ON IBM PC
1982-1983

	Product	On-site Service Pricing		Change (percent)
		1982	1983	
5150	CPU, 64KB, Keyboard	$185.00	$165.00	(10.8%)
5151	Monochrome Display & Card	35.00	62.50	78.6
3907	5 1/4 Single-sided Floppy (2)	124.00	116.00	(6.5)
5152	80 cps Matrix Printer	179.00	62.50	(65.1)
Total		$523.00*	$450.00	(14.0%)

* On-site service offered through Computerland.

PERSONAL COMPUTER
USER SELF MAINTENANCE

- Even with the introduction of on-site services, users are receptive to self maintenance (price induced).

- Users are dissatisfied with essential services required for self maintenance:

    - Only 19% satisfied with consulting

    - Only 8% satisfied with documentation

- Vendors also need to address continued access to spares.

LOCAL AREA NETWORKS

- 10% of all business PC users utilize local area networks.

- By 1985, 25% of all users will utilize LANs.

- Currently, multivendor environments cause "finger pointing" concerning maintenance.

- Micro computer vendors need to satisfy users need for single source maintenance.

  - Maintenance Management Contracts

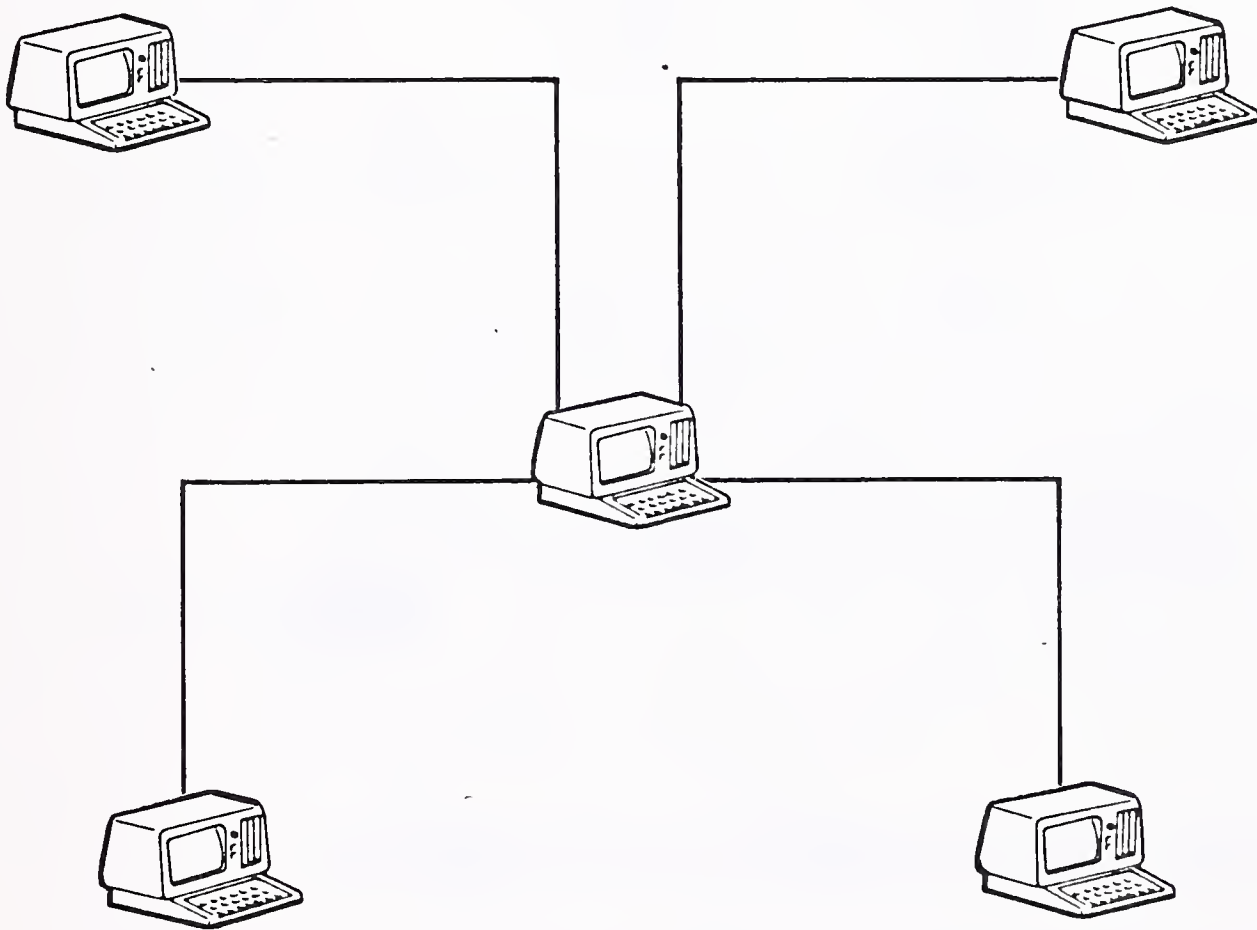 - Increased Use of Compatible Shared Diagnostics Built into Network Processor.

USE AND CONFIGURATIONS OF LOCAL AREA NETWORKS

	"Do you use LAN?" (percent)			Configuration (percent)		
	Yes	No	N/A	Star	Ring	Bus
Personal Computer	9.8%	85.2%	5.0%	67.3%	0.0%	32.7%

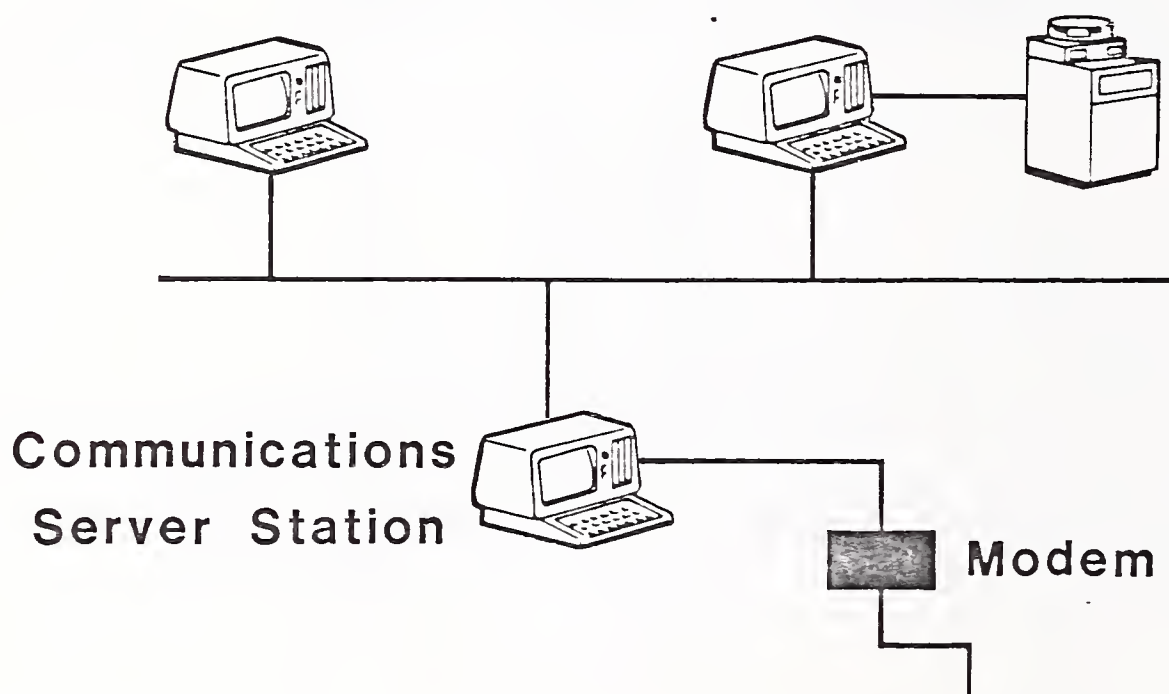# LOCAL AREA NETWORKS
CMD MUPPET (COMMODORE)

Maximum Number of Stations = 64

Average Price/Station = $250.00 (Plus Cost of Controller)

INPUT

LOCAL AREA NETWORKS
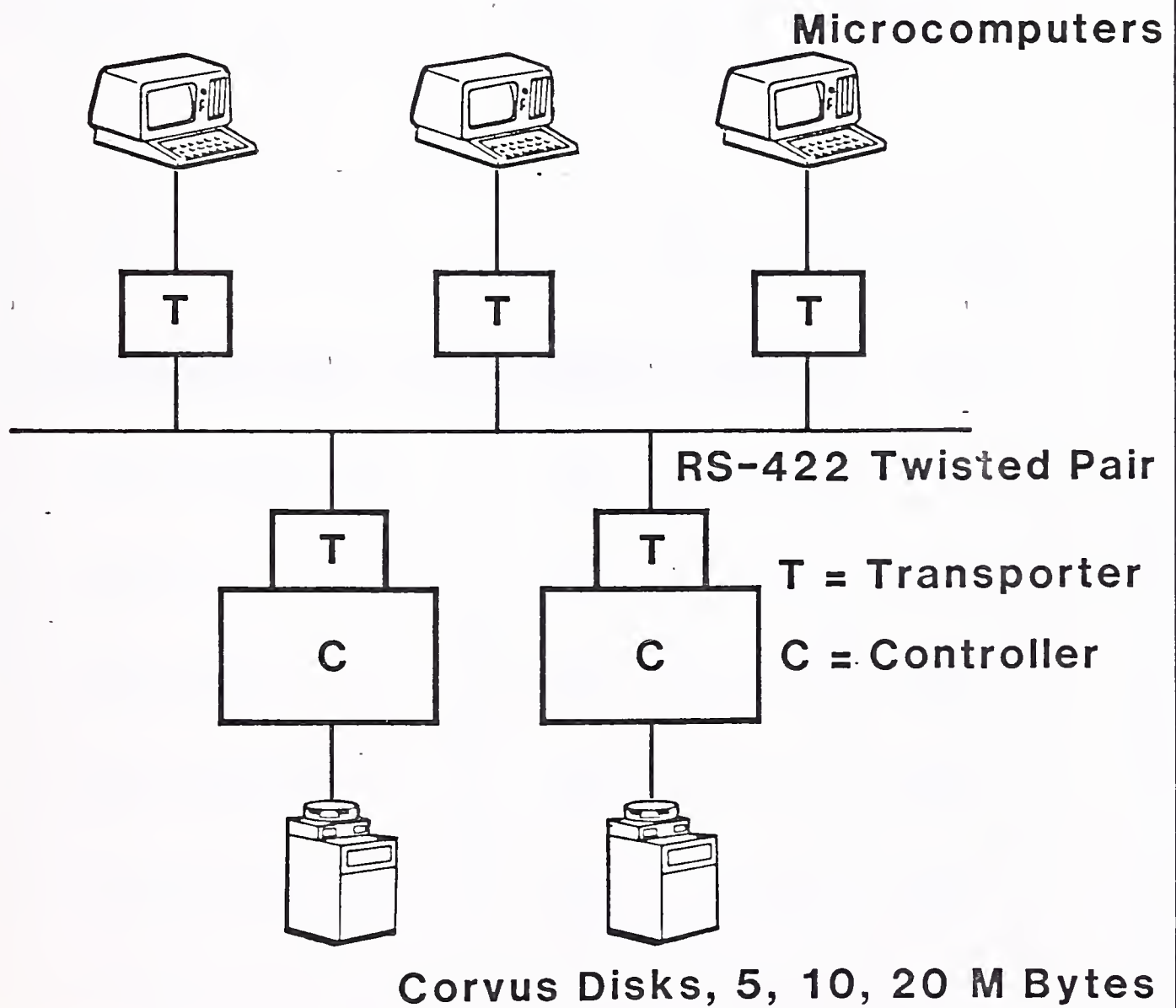# NESTAR CLUSTER/ONE (APPLE II)

Communications
Server Station

Modem

Maximum Number of Stations = 32

Cost per Station = $400.00 for Hardware

File Server Station = $1,000.00-$2,200.00 for Software

LOCAL AREA NETWORKS
CORVUS OMNINET
(IBM, TRS, APPLE, ATARI, ZENITH)

Microcomputers

RS-422 Twisted Pair

T = Transporter

C = Controller

Corvus Disks, 5, 10, 20 M Bytes

Maximum Number of Stations = 64

Average Price/Station = $500.00

INPUT

D. FIELD SERVICE MARKETING

LARGE SYSTEM USER ATTITUDES TOWARDS FE IN SALES ROLE
(percent)

Sales Activity	Favor	Neutral	Oppose
Supplies	24%	14%	62%
H/W Features	50	8	42
Add-ons	47	10	43
Upgrades	52	8	40
New Models	37	9	54
S/W Features	23	12	65

INPUT

FCP3

SMALL SYSTEM USER ATTITUDES TOWARDS FE IN SALES ROLE
(percent)

Sales Activity	Favor	Neutral	Oppose
Supplies	35%	12%	53%
H/W Features	61	7	32
Add-ons	57	7	36
Upgrades	60	8	32
New Models	47	8	45
S/W Features	30	10	60

PERIPHERAL/TERMINAL USER ATTITUDES TOWARDS FE IN SALES ROLE

(percent)

Sales Activity	Favor	Neutral	Oppose
Supplies	29%	12%	59%
H/W Features	57	8	35
Add-ons	55	6	39
Upgrades	53	9	38
New Models	58	8	36
S/W Features	32	12	56

INPUT

FCP3

OFFICE PRODUCTS USER ATTITUDES TOWARDS FE IN SALES ROLE

(percent)

Sales Activity	Favor	Neutral	Oppose
Supplies	34%	15%	51%
H/W Features	54	8	38
Add-ons	54	7	39
Upgrades	57	7	36
New Models	49	8	43
S/W Features	40	26	34

INPUT

USER RATINGS OF ALTERNATIVE MAINTENANCE DELIVERY METHODS

Method	Average User Rating	
	Large System	Small System
On–Site	7.4	8.1
Remote Diagnostic	7.0	6.7
Support Center	6.4	5.6
User Patching	5.5	5.4

VENDOR RATINGS OF ALTERNATIVE MAINTENANCE DELIVERY METHODS

Method	Average Vendor Rating	
	Large System	Small System
On-Site	9.2	8.7
Support Center	9.2	8.6
Remote Diagnostics	8.2	5.7
User Self Diagnosis	4.4	7.0

INPUT

USER RATINGS OF ALTERNATIVE MAINTENANCE DELIVERY METHODS

Method	Average User Rating	
	Peripherals/ Terminals	Office Products
On-site	8.1	8.2
Remote Diagnostics	N/A	N/A
Support Center	6.2	6.4
User Patching	4.8	4.9
Ship-in	3.6	4.2

INPUT

FCP3

VENDOR RATINGS OF ALTERNATIVE MAINTENANCE DELIVERY METHODS

Method	Average Vendor Rating	
	Peripherals/ Terminals	Office Products
On-site	8.8	6.6
Support Center	8.3	7.8
Remote Diagnostics	5.6	8.4
User Self Diagnosis	6.1	9.2

INPUT

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ALTERNATIVE DELIVERY METHODS
PRODUCT: WORKSTATIONS

Maintenance Delivery Method	User Rating (1-10)	
	Hardware Mean	Software Mean
On-site	8.4	8.4
Support Center	6.4	6.4
Board Swap or S/W Patch	5.0	5.0
Repair Centers	4.2	4.2
On-site Stand-by	4.6	4.6

INPUT

FCP3

ALTERNATIVE DELIVERY METHODS
PRODUCT: WORD PROCESSORS

Maintenance Delivery Method	User Rating (1–10)	
	Hardware Mean	Software Mean
On-site	8.8	8.8
Support Center	7.0	6.9
Board Swap or S/W Patch	5.2	5.3
Repair Centers	4.1	4.1
On-site Stand-by	4.4	4.1

INPUT

ALTERNATIVE DELIVERY METHODS
PRODUCT: PERSONAL COMPUTERS

Maintenance Delivery Method	User Rating (1-10)	
	Hardware Mean	Software Mean
On-site	7.0	6.7
Support Center	6.6	6.4
Board Swap or S/W Patch	5.2	5.3
Repair Centers	5.4	5.3
On-site Stand-by	3.0	3.0

ALTERNATIVE DELIVERY METHODS
PRODUCT: PBX, PABX

Maintenance Delivery Method	User Rating (1-10)	
	Hardware Mean	Software Mean
On-site	8.3	7.3
Support Center	6.2	5.3
Board Swap or S/W Patch	5.1	4.4
Repair Centers	3.1	3.3
On-site Stand-by	6.8	5.8

ALTERNATIVE DELIVERY METHODS
PRODUCT: FACSIMILE MACHINES

Maintenance Delivery Method	User Rating (1-10)	
	Hardware Mean	Software Mean
On-site	8.7	N/A
Support Center	5.7	N/A
Board Swap or S/W Patch	3.0	N/A
Repair Centers	3.1	N/A
On-site Stand-by	3.0	N/A

INPUT

ALTERNATIVE DELIVERY METHODS
PRODUCT: COPIERS

Maintenance Delivery Method	User Rating (1-10)	
	Hardware Mean	Software Mean
On-site	8.9	N/A
Support Center	6.1	N/A
Board Swap or S/W Patch	3.9	N/A
Repair Centers	2.4	N/A
On-site Stand-by	3.2	N/A

INPUT

LARGE SYSTEMS MAINTENANCE
CONTRACT OPTIONS – ALL VENDORS

Option	Percent of Users	Premium (percent MMC)
Standby Coverage	43%	9%
Guaranteed Uptime	35	11
Guaranteed Response Time	54	4
Remote Diagnostics	48	3
PM/ECO in Off-Prime	71	3
Occasional Shift	32	4
Guaranteed H/W Repair Time	29	10

FCP3

SMALL SYSTEMS MAINTENANCE
CONTRACT OPTIONS – ALL VENDORS

Option	Percent of Users	Premium (percent MMC)
Standby Coverage	21%	6%
Guaranteed Uptime	20	6
Guaranteed Response Time	39	4
On-site Parts	23	5
Remote Diagnostics	27	4
PM/FCOS in Off-Prime	37	3
Guaranteed H/W Repair Time	24	5

INPUT

PERIPHERAL/TERMINAL MAINTENANCE CONTRACT OPTIONS – ALL VENDORS

Option	Percent of Users	Premium (percent MMC)
Standby Coverage	22%	3%
Guaranteed Uptime	24	4
Guaranteed Response Time	33	3
On-site Spare Parts	34	1
PM/FCOS in Off-Prime	40	3
Guaranteed H/W Repair Time	20	4

INPUT

FCP3

OFFICE PRODUCTS MAINTENANCE CONTRACT OPTIONS – ALL VENDORS

Option	Percent of Users	Premium (percent MMC)
Guaranteed Uptime	16%	3% .
Guaranteed Response Time	35	4
Local Supplies Inventories	28	3
Local Spare Parts Inventories	16	5
Guaranteed H/W Repair Time	15	7

CHANGES IN LARGE SYSTEM MAINTENANCE CONTRACTS

(percent)

Provision	Favor	Neutral	Oppose
Long-term Contracts (> 1 Year)	57%	14%	29%
Automatic Renewal	57	10	33
Variable Shift	70	14	16
Standardized Forms	34	17	49
Annual Invoicing	24	13	63
Unbundled H/W Maintenance	50	21	29
Unbundled S/W Maintenance	49	24	27

INPUT

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CHANGES IN SMALL SYSTEM MAINTENANCE CONTRACTS

(percent)

Provision	Favor	Neutral	Oppose
Long-term Contracts (> 1 Year)	47%	11%	42%
Automatic Renewal	56	8	36
Variable Shift	63	20	17
Standardized Forms	37	18	45
Annual Invoicing	27	13	60

CHANGES IN PERIPHERALS/TERMINAL MAINTENANCE CONTRACTS

(percent)

Provision	Favor	Neutral	Oppose
Long-term Contracts (>1 Year)	54%	8%	38%
Automatic Renewal	54	10	36
Variable Shift	70	11	19
Standardized Forms	50	12	38
Annual Invoicing	22	12	66

INPUT

FCP3

CHANGES IN OFFICE PRODUCTS MAINTENANCE CONTRACTS

Provision	Favor	Neutral	Oppose
Long-term Contracts (>1 Year)	41%	16%	43%
Automatic Renewal	53	14	33
Variable Shift	44	31	25
Standardized Forms	41	21	38
Annual Invoicing	35	18	47
Unbundled H/W Maintenance	57	21	22
Unbundled S/W Maintenance	54	26	20

INPUT

PRICE AS A FACTOR IN SELECTING EQUIPMENT AND MAINTENANCE

	Average Rating (1-10)	
Office Product	Price of Equipment Mean	Price of Maintenance Mean
Copiers	7.7	6.6
Facsimile Machines	7.6	7.3
PBX, PABX	7.8	8.0
Personal Computers	6.6	5.6
Word Processors	7.3	7.0
Workstations	6.9	6.4

INPUT

FCP3

E. SOFTWARE MAINTENANCE PLANNING

USER RATINGS OF
VENDOR ABILITY TO MAINTAIN SOFTWARE

LARGE SYSTEM VENDOR	RATING (1-10) MEAN
Amdahl	7.9
Burroughs	7.0
CDC	5.8
Cray	7.9
DEC	6.4
Data General	7.1
Honeywell	7.0
IBM	6.9
NAS	7.4
Perkin Elmer	4.9
Tandem	7.2
Univac	6.8

INPUT

FCP3

LARGE SYSTEM SOFTWARE RESPONSE TIME WITH SYSTEM DOWN

VENDOR	MEAN TIME (hours)	
	REQUIRED	ACTUAL
Amdahl	1.1	0.6
Burroughs	1.2	1.2
CDC	2.2	0.6
Cray	0.3	0.5
DEC	8.0	2.4
Data General	2.7	2.9
Honeywell	1.1	1.0
IBM	1.3	3.8
NAS	1.0	1.3
Perkin Elmer	11.9	19.8
Tandem	1.9	2.4
Univac	1.4	2.5

INPUT

LARGE SYSTEM SOFTWARE RESPONSE TIME WHEN SYSTEM IS SEVERELY DEGRADED

VENDOR	MEAN TIME (hours)	
	REQUIRED	ACTUAL
Amdahl	1.3	1.0
Burroughs	2.6	5.0
CDC	6.2	5.4
Cray	0.5	0.5
DEC	12.6	14.1
Data General	2.8	2.4
Honeywell	2.7	5.4
IBM	10.2	11.0
NAS	4.7	4.7
Perkin Elmer	3.0	13.5
Tandem	1.6	2.0
Univac	15.1	20.8

INPUT

FCP3

USER RATINGS OF
THE ABILITY TO MAINTAIN SOFTWARE

SMALL SYSTEM VENDOR	RATING (1-10) MEAN
Autotrol	5.0
Burroughs	6.6
Computervision	6.2
DEC	7.3
Data General	8.6
Datapoint	7.3
Four Phase	6.7
Hewlett-Packard	7.1
Honeywell	6.5
IBM	7.8
Intergraph	6.2
NCR	6.3
Prime	7.3
Texas Instruments	7.4

INPUT

RESPONSE TIME TO SOFTWARE FAILURES

SMALL SYSTEM VENDOR	MEAN TIME TO RESPOND (hours)	
	SYSTEM DOWN	
	REQUIRED	ACTUAL
Autotrol	5.1	5.1
Burroughs	5.1	14.4
Computervision	3.6	10.9
DEC	2.7	4.2
Data General	1.0	1.0
Datapoint	1.4	1.6
Four Phase	3.0	3.2
Hewlett-Packard	2.0	3.4
Honeywell	2.2	1.0
IBM	2.8	5.9
Intergraph	3.7	3.9
NCR	2.3	6.5
Prime	1.4	0.6
Texas Instruments	11.3	24.4

INPUT

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RESPONSE TIME TO SOFTWARE FAILURES

| SMALL SYSTEM VENDOR | MEAN TIME TO RESPOND (hours) | |
| | SYSTEM SEVERELY DEGRADED | |
	REQUIRED	ACTUAL
Autotrol	12.6	12.6
Burroughs	5.5	15.4
Computervision	6.4	12.2
DEC	2.8	4.2
Data General	2.1	3.4
Datapoint	2.6	7.2
Four Phase	3.2	3.4
Hewlett-Packard	5.8	14.3
Honeywell	2.6	1.6
IBM	4.5	6.5
Intergraph	4.3	4.0
NCR	3.4	7.3
Prime	5.2	4.0
Texas Instruments	11.3	24.4

INPUT

LARGE SYSTEM INTEGRATION OF
S/W SUPPORT INTO H/W SUPPORT FUNCTION

INTEGRATION OF LARGE SYSTEMS SOFTWARE SUPPORT ACTIVITY	PERCENT OF VENDORS IMPLEMENTING	DEGREE OF INTEGRATION (percent)	
		1983	1985
Systems Software	71%	76%	88%
Applications Software	43	100	100
Third Party Software	14	100	100

INPUT

FCP3

SMALL SYSTEM INTEGRATION OF S/W SUPPORT INTO H/W SUPPORT FUNCTION

INTEGRATION OF SMALL SYSTEMS SOFTWARE SUPPORT ACTIVITY	PERCENT OF VENDORS IMPLEMENTING	DEGREE OF INTEGRATION (percent)	
		1983	1985
Systems Software	60%	46%	68%
Applications Software	53	27	47
Third Party Software	0	0	0

INPUT

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LEVEL OF INTEGRATION OF S/W SUPPORT WITH H/W SUPPORT – PERIPHERAL/TERMINAL AND OFFICE PRODUCT VENDORS COMBINED

INTEGRATION OF OFFICE PRODUCTS SOFTWARE SUPPORT ACTIVITY	PERCENT OF VENDORS IMPLEMENTING	DEGREE OF INTEGRATION (percent)	
		1983	1985
Systems Software	83%	16%	40%
Applications Software	50	12	22
Third-party Software	33	2	10

F. PERSONNEL ISSUES

AVERAGE FIELD SERVICE SALARY
BY PRODUCT TYPE

(000's)

Large Systems: FE Trainee 18.8, Qualified FE 28.8, Senior FE 35.3, Software Support Engineer 32.1, Line Manager 35.1

Small Systems: FE Trainee 12.4, Qualified FE 21.3, Senior FE 27.0, Software Support Engineer 26.0, Line Manager 32.0

Peripheral/Terminals: FE Trainee 16.0, Qualified FE 19.9, Senior FE 23.2, Software Support Engineer 24.2, Line Manager 32.8

Office Products: FE Trainee 14.8, Qualified FE 18.3, Senior FE 20.6, Software Support Engineer 25.0, Line Manager 30.0

Legend:
- ◫ Large Systems
- ◫ Small Systems
- ◫ Peripheral/Terminals
- ◫ Office Products

INPUT
FCP3

SALARY BY JOB TITLE: LARGE SYSTEM VENDORS

Title	Average 1983 Salary	Gain over 1982 (percent)
Trainee	$18,800	10.0%
Qualified Field Engineer	28,800	10.0
Senior Field Engineer	35,300	10.0
S/W Support Engineer	32,100	8.0
Line Manager	35,100	10.0

INPUT

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SALARY BY JOB TITLE:
SMALL SYSTEM VENDORS

Title	Average 1983 Salary	Gain over 1982 (percent)
Trainee	$12,400	8.0%
Qualified Field Engineer	21,300	8.0
Senior Field Engineer	27,000	8.0
S/W Support Engineer	26,000	10.0
Line Manager	32,000	6.0

INPUT

FCP3

SALARY BY JOB TITLE:
PERIPHERAL/TERMINAL VENDORS

Title	Average 1983 Salary	Gain over 1982 (percent)
Trainee	$16,000	7.1
Qualified Field Engineer	19,990	7.0
Senior Field Engineer	23,200	6.4
S/W Support Engineer	24,200	6.4
Line Manager	32,800	6.6

INPUT

SALARY BY JOB TITLE: OFFICE PRODUCT VENDORS

Title	Average 1983 Salary	Gain over 1982 (percent)
Trainee	$14,800	9.7
Qualified Field Engineer	18,300	9.0
Senior Field Engineer	20,600	9.0
S/W Support Engineer	18,000	9.5
Line Manager	30,000	9.0

INCENTIVES OFFERED TO FIELD SERVICE MANAGEMENT EMPLOYEES: LARGE AND SMALL SYSTEM VENDORS

System Vendor Management Incentive	Large System (percent)	Small System (percent)
Stock Options	100%	38.5%
Performance Bonuses	75	46.1
Suggestion Awards	0	23.0
Periodic Recognition Awards	75	38.5
Special Projects	100	38.5
Award Conferences	75	30.8

INPUT

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INCENTIVES OFFERED TO FIELD SERVICE MANAGEMENT EMPLOYEES: PERIPHERAL/TERMINAL VENDORS

Incentive	In 1983	By 1985
Stock Options	73	73
Performance Bonuses	87	91
Suggestion Awards	40	27
Periodic Recognition Awards	67	73
Special Projects Future Assignments, Etc.	40	45
Award Conferences, Trips	53	64

INPUT

FCP3

INCENTIVES OFFERED TO
FIELD SERVICE MANAGEMENT EMPLOYEES:
OFFICE PRODUCT VENDORS

Office Product Management Incentive	In 1983	By 1985
Stock Options	43	40
Performance Bonuses	43	0
Suggestion Awards	29	60
Periodic Recognition Awards	57	40
Special Projects, Foreign Assignments, Etc.	43	20
Award Conferences, Trips	57	60

INPUT

SELECTED FIELD SERVICE EMPLOYEE ACTIVITIES ENCOURAGED BY VENDORS LARGE AND SMALL SYSTEM

Activities	Percent in 1983
Making Goodwill Calls	95%
Furthering Formal Education	65
Accompany Sales Personnel on Calls	60
Making Public Apperances	75
Selling Maintenance Contracts	65

INPUT

FCP3

SELECTED FIELD SERVICE EMPLOYEE ACTIVITY REQUIRED BY VENDORS: PERIPHERAL/TERMINAL AND OFFICE PRODUCTS

Activity	Percent	
	1983	By 1985
Making Goodwill Calls	63%	86%
Accompanying Sales Personnel on Calls	50	86
Selling Maintenance Contracts	43	50
Attending Sales Meeting	25	57
Further Formal Education	25	29

INPUT

LARGE SYSTEM USER ATTITUDES TOWARDS FIELD SERVICE ENGINEERS IN A SALES ROLE

	User's Attitude (percent)	
Sales Activity	Favor	Oppose
Supplies	24%	62%
H/W Features	50	42
Add-on H/W	46	44
New Models of H/W	37	54
Upgrades	52	40
S/W Packages	23	65

FCP3

SMALL SYSTEM USER ATTITUDES TOWARDS FIELD SERVICE ENGINEERS IN A SALES ROLE

Sales Activity	User's Attitude (percent)	
	Favor	Oppose
Supplies	35%	53%
H/W Features	60	32
Add-on H/W	57	36
New Models of H/W	47	45
Upgrades	60	32
S/W Packages	30	60

PERIPHERAL/TERMINAL USER ATTITUDES TOWARD FIELD SERVICE ENGINEERS IN A SALES ROLE

Sales Activity	User's Attitude (percent)	
	Favor	Oppose
Supplies	28.7%	59.3%
H/W Features	57.0	35.0
Add-on H/W	55.0	39.0
New Models of H/W	53.0	38.0
Upgrades	62.0	30.0
S/W Packages	32.3	55.7

INPUT

OFFICE PRODUCT USERS ATTITUDES TOWARD FIELD SERVICE ENGINEERS IN A SALES ROLE

Sales Activity	User's Attitude (percent)	
	Favor	Oppose
Supplies	33.6%	51.4%
H/W Features	53.9	37.9
Add-on H/W	53.9	39.2
New Models of H/W	49.3	43.2
Upgrades	57.2	35.6
S/W Packages	39.5	35.0

INPUT

SKILL MIX TRENDS AND NEEDS
EFFECTIVE COMPENSATION

Trends

- Away from multiskilled technical capabilities.

- Away from detailed hardware knowledge.

- Towards systems expertise.

- Towards administrative/management functions.

Needs

- Extroverts not introverts.

- Good communications, good "people" skills.

- Multifunction skills (part technician, part confident, part go-between, etc.)

- Flexible attitude.

FCP3

EFFECTIVE COMPENSATION

- Known to be competitive, and just.

- Satisfies basic needs plus a little fantasy.

- Ties individual's success to company success.

- Addresses individual's aspirations

USER RATINGS OF VENDOR COMMUNICATIONS

	Large System	Small System	P/T	Office Products
Management	7.4	7.3	7.3	7.5
H/W Engineer	8.0	8.0	7.7	7.8
S/W Engineer	6.8	6.2	6.7	7.0

INPUT

REASONS FOR LEAVING

	Voluntary	"Released"	Salary	Ext. Promo.	Int. Promo.
Large Systems	33	50	17	0	0
Small Systems	30	10	30	20	10
P/T, Office Production	16	16	32	21	*

LARGE SYSTEMS VENDOR SOURCES OF NEW HIRES

Sources	Rating (1-10)	
	1983	1985
Employee Referrals	7.3	7.3
Trade Schools	7.0	5.8
Competition	7.0	5.5
Military	5.5	3.0
Other Divisions in Company	5.3	5.7

FCP3

SMALL SYSTEMS VENDOR
SOURCES OF NEW HIRES

Sources	Rating (1-10)	
	1983	1985
Employee Referrals	7.2	7.2
Military	6.4	6.4
Competition	6.0	6.3
Trade Schools	5.9	6.1
Other Divisions of Company	5.3	5.3

INPUT

PERIPHERAL/TERMINAL SOURCES OF NEW HIRES

	Rating (1-10)	
Sources	1983	1985
Trade Schools	7.2	7.2
2 Year College Programs	6.0	6.3
Employee Referrals	5.6	6.3
Competition	5.3	5.8
Military	5.1	5.1

INPUT

FCP3

OFFICE PRODUCT VENDOR
SOURCES OF NEW HIRES

	Rating (1-10)	
Sources	1983	1985
Employee Referrals	6.8	7.6
Competition	6.3	4.8
2 Year College Programs	6.0	4.8
4 Year College Programs	5.8	4.8
Trade Schools	4.8	5.2

INPUT

G. STRATEGIC RECOMMENDATIONS

FCP3

RECOGNIZE USER REQUIREMENTS AND RESPOND CONTRACTUALLY

- Increase Number of Standard Contract Options to Satisfy Specific User Group Needs

- Design Contract Options and Pricing to Eliminate Overkill, Take Advantage of Revenue Opportunities and Stabilize Revenue Base

INPUT

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CONSOLIDATE ALL CLIENT SUPPORT INTO TWO AREAS OF RESPONSIBILITY

- Prospect Needs Evaluation/Pre Sale Support

  - Responsibility of Marketing and Sales With Service Manpower Subcontracted as Needed (e.g., Environmental Planning, Installation Planning)

  - Subcontracting Entails Intercompany Billing

- Post Sale Support/Customer Management and Development

  - Responsibility of Field Services With On-going User Requirements Analysis

  - Sales Involved as Needed (e.g., Add-on Sales, Upgrades, Software and New Model Sales)

  - User Requirements Analysis is Site by Site, Summarized Model By Model

FCP3

REDEFINE THE ROLE OF THE FE

- Expand the Visibility of The FE and His Responsibilities

- Promote "Customer Service" Not "Maintenance" As the Role of the FE

- Extroverts Not Introverts

- "The Customers Communications Link With The Vendor"

PRICE/DEMAND CURVE

- Establishes a relationship between pricing
  and potential revenue gain/loss; (actual
  gain/loss is subject to many factors.)

FCP3

PRICE/DEMAND CURVE

- **Price increase percentages should be read as net increases over inflation, e.g., a 3% increase in actual prices is a 0% net increase on the charts if inflation is 3%.**

ANALYSIS OF QUADRANTS

- Price Increase/Lost Business Quadrant

  - Heavily affected by the increased level/ quality of service provided (which shrinks the loss percentage by 10%)

  - Example: 10% price increase combined with a 50% improvement in response time would eliminate customer losses.

ANALYSIS OF QUADRANTS

- Price Decrease/Business Gain Quadrant

    - Mainly affects new additions to the customer base

    - Current client base only affected if alternative service vendors are heavily used.

CONTRIBUTION OF FIELD SERVICES
TO REVENUE GROWTH

In Bad Economy

- **Field Services Provides 15% Growth.**

Good Revenue Growth Opportunities

- **Field Service Has New Sources of Revenue:**
  - **Variable Shift Coverage**
  - **Unbundled S/W Maintenance**
  - **Guaranteed Uptime**
  - **Guaranteed Response Time**
  - **Guaranteed Repair Time**
  - **Standby Coverage**

Good Revenue Base

- **Field service guarantees base line of revenue for several years. (Long-term contracts, automatic renewals).**

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LEVERAGE OF FIELD SERVICE

In Current Services

- **System availability requirements continue to increase; better response = customized services = increased revenues.**

In Account Development

- **FE can convince users of need for add-ons, new features, upgrades.**

In Sales

- **New account sales needs FE support.**

MARKET SEGMENTATION/DIFFERENTIATION

Spares Inventory Leveraging

- **If spares inventory can be leveraged across several product lines, business is vulnerable to alternative suppliers and therefore price sensitive; elsewhere, field service pricing can be aggressive.**

Data Dependence

- **Where business is heavily dependent on the accuracy and timeliness of the data processed by the computer, services are needed that guarantee response, repair and/or uptime; not price sensitive = performance sensitive.**

MARKET SEGMENTATION/DIFFERENTIATION

<u>Asset Value Protection</u>

- The higher the value, the more visible is the maintenance need; not price sensitive = performance sensitive.

<u>General Rules</u>

- Low end products maintenance should be handed off to qualified distributors/VARs (not worth tying up service resources with small margin products).

- Emphasis should be on very high quality large and medium size product services with a degree of customized, value added services.

INPUT

RECOMMENDATIONS

- Focus on converting contract base to longer term contracts to protect revenue stream (trend will soon be downwards on service pricing).

- Provide "extended service options" and small customization of standard contracts to enhance revenue.

- Include all after sales support activities in field service (consulting, add-ons, supplies, SW etc.).

- Target "high demand" business segments (where price sensitivity is least and business dependence on computer is greatest).

FCP3