Too many minisupers and not enough buyers

In the crowded market, vendors tried differentiation, bargain prices, but they still couldn't get users to bite

The summer of 1988 will be remembered among Midwestern farmers for the devastating drought. In computing history, the season will go down as the time the minisupercomputer market dried up.

By late summer, minisuper vendors had begun to resemble stunted cornstalks on the prairie: Celerity Computing, faced with bankruptcy, sold its assets to Floating Point Systems, Inc, itself deep in red ink; Alliant Computer Systems Corp. reported its first-ever quarterly loss; Saxpy Computer Corp., facing bankruptcy, sought a buyer; Multiflow Computer, Inc. laid off workers; and Prime Computer, Inc. wrote off millions in sundering its agreement with minisuper maker Cydrome, Inc.

"The market is a price/performance hole. It's big enough to support only one or two companies," says Richard Shaffer, publisher of the "Technologic Computer Letter." "As long as there are more than two companies, pricing will suffer."

Although the stiff price competition may have provided some bargains for organizations that were already interested in the technology, it failed to bring enough new users into the market to support the number of vendors vying for survival. And with the base of vendors almost certain to shrink, users' choices are also likely to diminish.

Sole survivor?

Shaffer says that among the beleaguered minisuper vendors, Convex Computer Corp. has the best chance of survival. "Convex has name recognition. They were first. They have software, and no one has been able to touch them," he says.

In March, Convex announced six models in its C series, moving from vector processing to parallel.

The most powerful models, the three-processor C230 and the four-processor C240, are slated to be shipped in the fourth quarter.

Archrival Alliant, despite difficulties, posted a full slate of announcements in the past year. In October 1987, the company claimed to break the $100,000 price barrier with the introduction of a low-end model, the FX/4.

In February, Alliant introduced its second-generation systems, the FX/40 and FX/80, and announced it would acquire Raster Technologies, Inc.

In May, Alliant announced the FX/82, a cluster of two FX/80s, and in August, the company brought out its Visualization series, which are models equivalent to its existing line but with tightly integrated Raster Technologies graphics processors added.

Other minisuper vendors tried to weather the drought. Cydrome announced the Cydra 5 in January, which it called a departmental supercomputer. Prime renamed the machine the MXCL 5 and sold it under its label before becoming discouraged with slow sales and dropping the product from its line.

On the heels of its Celerity acquisition, Floating Point introduced the M64/145, a high-end addition to its M64 series. In May, Floating Point announced its M64/35 MCAE Superserver.

When the dust bowl days in minisuper territory have passed, the survivors may find they have endured only to see their harvest gathered by industry giants IBM and Digital Equipment Corp.

Both stand poised to reap whatever fruit the field offers, having watched others perform the labors of cultivation.

IBM continued to offer its 3090 vector facility, enhancing it at the introduction of the 3090 S models in July.

IBM seeks to promote the vector facility as an attractive add-on to its 3090 mainframes. Users who own the mainframes are encouraged to consider adding the vector option.

In this way, IBM can build its own market on its installed mainframe base without incurring the steep sales expenses stifling the multitude of smaller vendors.

Shaffer, however, is critical of IBM's approach. "IBM does not have the right product. They have a PR campaign," he maintains. "Customers want high-speed computers on a network, not an add-on facility."

Many observers have been waiting for DEC to seriously enter the market. However, it made its first foray in a low-key manner: When introducing its multiprocessing 8800 "Polar Star" series, DEC said the processors could also be used in parallel but a programmer would have to "decompose" manually.

With the introduction of VMS Version 5.0 several weeks later, however, DEC unveiled a VAX Fortran compiler, bringing full parallel processing capability to its VAX line.

Computer shoppers may have noticed that terminology took a strange — and misleading — twist this year. Many mini-

supercomputer vendors began dropping the "mini" prefix in describing their products, instead calling their machines supercomputers, formerly a name used to describe only the world's most powerful and costly processors.

The intent may have been to achieve product differentiation in an overcrowded market. Or it may be that minisupercomputer vendors thought that by changing categories, they could erase the stigma of failure and, by association, pick up some of the luster of supercomputing leader Cray Research, Inc.

Whatever the reasoning, this shift amounts to false labeling. While superminis may have achieved computing levels that were the exclusive preserve of true supercomputers a few years ago, supercomputers have gained performance as well, keeping distance between them and their lower priced followers.

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While the minisuper vendors sorted themselves out, the Minnesota twins of supercomputing, Cray and ETA Systems, Inc. each introduced new systems that increased the angle of their tilt toward Unix.

The move toward Unix is likely to bring an increasing number of applications to supercomputing users as developers find it attractive to write for an operating system that can be used on a variety of hardware. Unix should also free users from dependence on a single vendor, opening up the market to competitive bidding as never before.

In February, Cray introduced the eight-processor Y-MP/832 as an extension of its six-year-old X-MP family. At $20 million, the Y-MP carries the top price tag of any Cray system.

Unicos, Cray's adaptation of Unix, is standard on the Y-MP, as it is for the Cray-2, while COS, Cray's other operating system, is available as an option. The Y-MP features 32-bit addressing and circuits that are 1,000 times denser than those in the 24-bit X-MP, according to Cray.

In May, Cray replaced its best-selling X-MP product line with an extended architecture version. With a top price of $14 million, the X-MP EA line is intended to offer more power to X-MP customers who could not afford to move to the Y-MP.

The Cray X-MP EA offers up to four times the memory of the X-MP system and implements the Y-MP's 32-bit architecture.

The systems contain one to four CPUs. The X-MP EA comes with both Unicos and COS operating systems.

Sibling rivalry

In October 1987, Cray's Twin Cities rival, ETA, announced two low-end versions of its ETA 10 supercomputer. The ETA 10 Models P and Q, priced at $850,000 and $1.2 million, respectively, use air for cooling rather than the liquid nitrogen used by the original ETA 10 model.

The Models P and Q are intended to fill what ETA termed a gap between supercomputers and minisupers. "The P and Q models give us an installed base. Later, users can move up to more powerful ETAs," an ETA spokesman says.

At the time of introduction, some analysts were skeptical that the systems might fall through a crack in the market rather than find a niche. However, by early September, ETA reported that 16 P and Q models had shipped.

Although Unix was not available on the systems at the time of rollout, ETA says it is currently in beta testing and will be formally announced in early October. "The users are demanding Unix. We are going to give the user what he wants," the ETA spokesman says.

Later this year, the low-end supercomputer market will greet yet another player as Evans and Sutherland Computer Corp., widely known in the graphics market, is scheduled to announce its entry.

In the massively parallel arena, BBN Advanced Computers, Inc. introduced in October 1987 the Butterfly GP1000, a Unix-based multiprocessor that can contain up to 256 microprocessors sharing one gigabyte of memory.

In May, Active Memory Technology, Inc. introduced the DAP 510, a low-priced massively parallel system for number-crunching applications that uses a VAX or a Sun Microsystems, Inc. workstation as a front end.

A year from now, while there will undoubtedly be fewer minisupercomputer vendors from which to choose, the promise of Unix portability will, at least, allow users to choose freely among those vendors that remain.

STANLEY GIBSON

Special-purpose systems

VENDOR	PRODUCT	DATE FIRST INSTALLED	PRIMARY MARKET[1]	MOST COMPARABLE IBM OR DEC SYSTEM	PERFORMANCE (MIPS)	PERFORMANCE (MFLOPS)[2]	BENCHMARK[3]	MACHINE CYCLE TIME (NSEC)	MEMORY (MEGABYTES)	DISK TRANSFER RATE (MEGABYTES/SEC.)	NUMBER OF PORTS	NUMBER OF CHANNELS	OPERATING SYSTEMS	SUPPORTS ETHERNET OR TOKEN RING	NUMBER OF USERS: MAXIMUM/TYPICAL	WORD LENGTH (BITS)	BASE PRICE
Amdahl Corp. (408) 746-6000	1400E Vector Processor	1985	SE	IBM 3090 Model 600E	NP	10-1,200 (S); 1,714 (P)	31 LP (actual); 17.11 LL (actual)	7	64-1,024	3	4,096	32	MVS/XA	Ethernet	NP/NP	64	$6.5 million with 64M bytes memory, 16 channels, all power supplies
	1200E Vector Processor	1984	SE	IBM 3090 Model 400E	NP	10-600 (S); 857 (P)	30 LP (actual); 16.74 LL (actual)	7	64-1,024	3	4,096	32	MVS/XA	Ethernet	NP/NP	64	$6 million with 64M bytes memory, 16 channels, all power supplies
	1100E Vector Processor	1984	SE	IBM 3090 Model 200E	NP	10-300 (S); 429 (P)	25 LP (actual); 14.86 LL (actual)	7	32-512	3	4,096	32	MVS/XA	Ethernet	NP/NP	64	$4 million with 32M bytes memory, 16 channels, all power supplies
	500E Vector Processor	1985	SE	IBM 3090 Model 180E	NP	10-220 (S); 286 (P)	22 LP (actual); 13.69 LL (actual)	7	32-512	3	4,096	32	MVS/XA	Ethernet	NP/NP	64	$3.5 million with 32M bytes memory, 16 channels, all power supplies
Alliant Computer Systems Corp. (508) 486-4950	FX/1	May 1985	SE	DEC VAX 8800, IBM 3090	NP	4.4 (S), 11.8 (P)	1.2-1.4 LP (actual)	170	64	NP	NP	Two	Unix	Ethernet	8/NP	64	$59,000
	FX/4	November 1987	SE	DEC VAX 8800, IBM 3090	NP	20.7 (S), 47.2 (P)	4.9-6.6 LP (actual)	170	128	NP	NP	Six	Unix	Ethernet	16/NP	64	$99,000
	FX/40	March 1988	SE	DEC VAX 8800, IBM 3090	NP	32.6 (S), 94.4 (P)	5.3-6.8 LP (actual)	170	128	NP	NP	Six	Unix	Ethernet	32/NP	64	$149,000
	FX/80	March 1988	SE	DEC VAX 8800, IBM 3090	NP	70 (S), 188.8 (P)	8.5-10.9 LP (actual)	170	256	NP	NP	12	Unix	Ethernet	64/NP	64	$299,000
	FX/82	July 1988	SE	DEC VAX 8800, IBM 3090	NP	377.6 (P)	NP	170	512	NP	NP	24	UNIX	Ethernet	128/NP	64	$1,250,000
BBN Advanced Computers, Inc. (617) 873-6000	Butterfly GP1000	October 1981	SE	NA	320	100 KFLOPS (S), 300 KFLOPS (P)	300,000 DH (actual)	3	8-512	2.4	128	NP	Based on Unix	Ethernet	NP/NP	32	$99,000 with 8M bytes memory, 1 terminal, 120M-byte tape drive
Britton Lee, Inc. (408) 378-7000	BL8000 Series Shared Datzbase Systems	1988	DP, OA, SE	NA	NP	NP	NP	NP	16-256	3	54	Six	Relational database operating system	Ethernet	NP/150+	32	$345,000-$498,000 with 64M bytes memory, 4G-byte disk, tape
	BL700 Series Shared Database Systems	1981	DP OA, TP	NA	NP	NP	NP	NP	4-6	3	—	One-Seven	Relational database operating system	Ethernet	NP/100+	16	$185,000-$280,000 with 6M bytes memory, 2G-byte disk, tape drive
	BL300 Series Shared Database Systems	1985	DP, OA, TP	NA	NP	NP	NP	NP	4	1.8	Three	One-four	Relational database operating system	Ethernet	NP/30+	16	$45,000-$136,000 with 4M bytes memory, 830M- byte disk, tape drive
Concurrent Computer Corp. (800) 631-2154	3203	1985	DP, SE, TP	DEC Microvax II	NP	NP	.079 LP (actual)	400	2-4	1.2	One	NP	OS/32, Xelos	Ethernet	16/8	32	$27,500 with 2M bytes memory, 182M-byte disk, 8 communication lines, cartridge tape
	3205	1984	DP, SE, TP	DEC Microvax II	NP	NP	.079 LP (actual)	400	2-4	1.2	One	NP	OS/32, Xelos	Ethernet	24/16	32	$19,500 with 2M bytes memory, 8 communication lines, VDU console
	3212	1986	DP, SE, TP	DEC VAX 8250	NP	NP	.18 LP (actual)	260	4-16	3	Eight	NP	OS/32, Xelos	Ethernet	64/32	32	$42,000 with 4M bytes memory, 8 communication lines, VDU console
	3230 XP	1985	DP, SE, TP	DEC VAX 8250	1	NP	.18 LP (actual)	260	4-16	3	16	NP	OS/32, Xelos	Ethernet	128/64	32	$82,200 with 4M bytes memory
	3230 MPS	1985	DP, SE, TP	DEC VAX 8350	1.9-5.3	NP	.36-1.08 LP (actual)	200	2-16	3	16	NP	OS/32	Ethernet	128/64	32	$99,500 with 2M bytes memory, CPU with one attached processor, 8 communication lines
	3280 MPS	1986	DP, SE, TP	DEC VAX 6200, 8800 series	6.4-33.8	NP	1.2-7.2 LP (actual)	100	8-128	3	32	NP	OS/32	Ethernet	512/100	32	$285,000 with 8M bytes memory, WCS, Floating Point Systems, Inc. processor, 8 communications lines, VDU console
Convex Computer Corp. (214) 952-0200	C120	1984	SE	IBM 3090 VF	11.5	20 (S), 20 (P)	3.6 LP (actual)	100	16-1024	10	Up to 80	Five	Unix	Ethernet/ 128	60	64	$275,000 with 32M bytes memory, system console with printer, service processor, multi-bus I/O processor
	C201-C202 Supercomputers	1988	SE	IBM 3090 VF	16.6 (per processor)	36-72 (S), 36-72 (P)	7.3-12.4 MFLOPS LP (actual)	55	32-2048	10	Up to 64	Four	Unix	NP	256/100	64	$495,000-745,000 with 32M bytes memory, system console with printer, service processor, multi-bus I/O processor
	C210-C240 Supercomputers	1987	SE	IBM 3090-200E VF	31.6 (per processor)	50-200 (S), 50-200 (P)	10-18M FLOPS LP (actual)	40	32-2048	10	Up to 128	Four-eight	Unix	Ethernet	256/128	64	$635,000-$1.3 million with 32M bytes memory, system console with printer, service processor, multibus I/O processor

* Based on *Computerworld* estimates.
** Using Argonne National Laboratory vector unrolling technique and Add/Multiply Assist Microcode.
***One DEC MIPS equals the performance of the VAX 11/780.
[1]Commercial data processing (DP); scientific/engineering (SE); office automation (OA); on-line transaction processing (TP).
[2]Full-precision millions of floating-point operations per second (MFLOPS). Sustained (S); peak (P).
[3]Per-second performance ratings, based on the following industry-standard benchmarks; Dhrystone, Version 1.1, peephole optimization only (DH); Debit/Credit (ET1) transactions based on 95% subsecond responses (DC); Linpack 100 x 100 full-precision in MFLOPS (LP); Livermore Loops harmonic mean, 14 loops (LL). Vendors supplied either actual or estimated benchmark figures.

The companies included in this chart responded to a recent telephone survey conducted by *Computerworld*. When a vendor is unable to provide specific information about its product, the abbreviation NP (not provided) is used. When a question does not apply to a vendor's product, the abbreviation NA (not applicable) is used. Further product information is available from the vendors.

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Cray Research, Inc. (612) 333-5889	Cray Y-MP	Third quarter 1988	SE	NA	NP	360 (S), 2600 (P)	304 LP (actual), 174.4 LL (actual)	6	256	9.6	NP	81 devices can be attached	Unicos	Both	NP/NP	64	$20 million
	Cray-2 (4 processors)	March 1986	SE	NA	NP	65 (S), 1900 (P)	72 LP (estimate), 52 LL (estimate)	4.1	2048	9.6	NP	40 devices can be attached	Unicos	Both	NP/NP	64	$15.5 million
	Cray-2 (2 processors)	New system	SE	NA	NP	40 (S), 175 (P)	72 LP (actual), 28.8 LL (actual)	4.1	512	9.6	NP	20 devices can be attached	Unicos	Both	NP/NP	64	$12 million
	Cray X-MP EA/14SE	NP	SE	IBM 3070	NP	24 (S), 210 (P)	46 LP (actual), 14.2 LL (actual)	10	32	9.6	NP	16 devices can be attached	Unicos	Both	NP/NP	64	$2.5 million
	Cray X-MP EA/464	February 1988	SE	NA	NP	103 (S), 997 (P)	123 LP (estimate), 74.5 LL (estimate)	8.5	32-512	9.6	NP	40 devices can be attached	Unicos	Both	NP/NP	64	$14 million
CSP, Inc. (617) 272-6020	Mini-Map XL38, HXL38 Array Processor	1984	SE	Dedicated peripheral for DEC VAX, Microvax, PDP and HP 9000 series 350	2.7	38-280 (P)	0.5 LP (estimate)	125-375	5-16	NP	Three	NP	DEC VMS, RSX, Hewlett-Packard HPUX	NP	1/NP	32	$27,500 with 5M bytes memory, coprocessor
	MAP-4000 Application Accelerator	September 1988	SE	Dedicated peripheral for DEC Microvax, Microvax II	10	20-40 (P)	4 LP (estimate)	100	2-40	NP	Five	NP	VMS	NP	1/NP	32, 64	$18,995 with 2M bytes memory
Cydrome, Inc. (408) 945-6300	Cydra 5	November 1987	SE	IBM 3090	NP	25-50 (S), 25-50 (P)	15.4 LP, 5.3 LL (actual)	40	512	2.5	128	NP	Cydrix	Ethernet	128/20-30	32 or 64	$495,000
Elxsi Corp. (408) 942-0900	6420	1983	SE	DEC VAX 8800	7	4 (S), 10 (P)	1.6 LP (actual)	50	16-2G	2.4	1024	Two-eight	Embos (proprietary), Unix System V, BSD 4.2, EMS	Ethernet	1024/200+	64	$395,000 with 1 CPU, 16M bytes memory, 2 CRTs, 474M-byte disk, tape drive, 32 ports (RS232)
	6460	Fourth quarter 1988	SE	DEC VAX 8800	25	40 (S), 40 (P)	10 LP (estimate)	25	16-2G	2.4	1024	Two-eight	Embos (proprietary), Unix System V, BSD 4.2, EMS	Ethernet	1024/200+	64	$695,000 with 1 CPU, 32M bytes memory, 2 CRTs, 823M-byte disk, tape drive, 32 ports (RS232)
ETA Systems, Inc. (612) 642-3400	ETA10-E	December 1986	SE	NA	NP	6858 (P)	62 MFLOPS LP (actual)	10.5	288-1256	12	NP	NP	EOS, ETA System V	Ethernet	NP/NP	32 or 64	$5.9 million-$18.7 million
	ETA10-P	December 1987	SE	NA	NP	750 MFLOPS (P)	27 MFLOPS LP (actual)	24	96-576	12	NP	NP	EOS, ETA System V	Ethernet	NP/NP	32 or 64	$900,000-$1.9 million
	ETA10-G	NP	SE	NA	NP	10286 (P)	94 LP (estimates)	7	576-2256	12	NP	NP	EOS, ETA System V	Ethernet	NP/NP	32 or 64	$9.7 million-$22.5 million
Floating Point Systems, Inc. (503) 641-3151	FPS M64 and Series 60	1984	SE	IBM 3090-180	190	33 on 1,000 by 1,000 LP benchmark (S), 38 (P)	5.9 LP (actual), 8.03 LL (actual)	53	8-112	22	24	Six	Supports VMS	Ethernet	31/5-6	64	$370,000
Harris Computer Systems Division (800) 4-HARRIS	Night Hawk series Model 3400	NP	SE	NA	6-24	NP	7000 DH, .51 LP (estimate)	50	2G bytes (logical), 136M bytes (physical)	2.48	64	32	CX/UX, CX/RT	Both	64/32	32	$75,000 with 1 Night Hawk 3000 CPU, Floating Point accelerator, 94K-byte memory cache, 8-slot Harris VME bus, I/O backplane, console processor with CRT terminal, 19-in. rack, CX/RT 32 user license, Harris compiler
	Night Hawk series Model 3800	NP	SE	NP	6-48	NP	7000 DH, .51 LP (estimates)	50	2G bytes (logical), 296M bytes (physical)	2.48	160	27	CX/UX, CX/RT	Both	160/64	32	$115,000 with 1 Night Hawk 3000 CPU, Floating Point accelerator, 94K-byte memory cache, 8-slot Harris VME bus, I/O backplane, console processor with CRT terminal, 19-in. rack, CX/RT 32 user license, Harris compiler
Intel Scientific Computers (503) 629-7629	iPSC/2 Concurrent Supercomputer	July 1985	SE	DEC VAX 8800	512 (peak)	100-400, 64 bits precision (S), 854, 64 bits precision (P)	86 MFLOPS LP (acutal), 64 bits precision	62 per node	16-2048	4M (burst) or 2.8 (sustained)	NP	127	Unix System V, Release 3	Ethernet	128/4	32	$165,000 with 16 nodes, 1M byte memory per node, 1 workstation, 1 disk, 1 tape drive
Multiflow Computer, Inc. (203) 488-6090	Multiflow Trace- 7/100, 7/200, 14/200, 28/200	January 1987	SE	IBM 3090/200, VAX 8800	41-215	10 (S), 11-60 (P)	10 LP (actual)	170-130	16-512	1.8-3.0	96	Two	Trace/Unix, BSD 4.3 Unix	Ethernet	96/64	256-1024	$197,500 with 16M bytes memory, 1 console, 420M-byte disk, 2G-byte cartridge, 16 ports, 1 channel
Numerix Corp. (617) 964-2500	NMX-464 Attached Vector Processor	April 1987	SE	NA	NP	12-24 (P)	1.1 LP (actual)	125-250	Up to 64	NP	Three	NP	VMS	No	1/1	64	$55,400
	NMX-332 Attached Vector Processor	May 1987	SE	NA	NP	24 (P)	2.2 LP (actual)	125	Up to 64	NP	Three	NP	VMS	No	1/1	32	$45,900
	NMX-432 Attached Vector Processor	August 1983	SE	NA	NP	30 (P)	2.6 LP (actual)	100	Up to 64	20	Four	NP	VMS	No	1/1	32	$64,000
Scientific Computer Systems Corp. (619) 546-1212	SCS-30/XM	NP	SE	IBM 3090VF	17	31 (S), 33 (P)	9 LP (actual)	45	16-1024	1.8-11.5	NP	Four	Scenix (Unix V.3), Cray Operating System (COS), Cray Timesharing System (CTSS)	Both	32+/15	64	$295,000 with 16M bytes memory, 4 channels, power supply
	SCS-40/XM	June 1986	SE	IBM 3090VF	22	41 (S), 44 (P)	12 LP (actual)	45	32-1024	1.8-11.5	NP	Four	Scenix (Unix V.3), Cray Operating System (COS), Cray Timesharing System (CTSS)	Both	32+/15	64	$450,000 with 32M bytes memory, 4 channels, power supply

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Scientific Computer Systems Corp. (619) 546-1212	SCS-40/MP (two-processor model)	July 1988	SE	IBM 3090VF	44 (expandable)	82 (S), 88 expandable (P)	12 LP (actual)	45	32-1024	1.8-11.5	NP	Four	Scenix (Unix V.3), Cray Operating System (COS), Cray Timesharing System (CTSS)	Both	64+/30	64	$845,000 with 32M bytes memory, 680M-byte disk, 1 tape drive, 16 terminals, 4 channels, expandable I/O processor
Star Technologies, Inc. (714) 768-6460	ST-50	February 1987	SE	NA	NP	50 (S), 50 (P)	NP	80	8-64	10	Three	NP	Array Processor Monitor (Proprietary)	NP	16/1	32	$90,000 with 3 ports, 2 million words of memory
Teradata Corp. (213) 827-8777	DBC/1012	December 1983	DP	IBM 3090	NP	NP	1000 tran/sec. DC (estimate)	50	4M-4G bytes	1.1	NP	NP	TOS (Teradata Operating System)	Ethernet	60,000/200-300	32	$286,000 with 6 processors, 12M bytes memory, 2.2 DASD Gbytes, system console, host software
Thinking Machines Corp. (617) 876-1111	Connection Machine (CM-2)	September 1987	DP, SE	NA	2500	2,500 (S), 31,00 (P)	NP	NP	512	25	Eight	NP	Unix, Symbolics	Ethernet	8/8	NP	$1 million-$5 million
Unisys Corp. (313) 972-7000	Integrated Scientific Processor System	June 1986	DP, SE	IBM 3090 with vector facility	NP	133 (P)	19.56M LP (actual)	30	8-64	2.5	NA	Four-176	OS/1100	NP	NA/NA	72	$5 million with base 1100/91 support system