NAS AS/XL Series

Product Enhancement

With such big Alliance Series announcements as two-gigabyte-size main memories, a new dyadic processor, more channels, faster data transfer rates, and accelerated model delivery dates, National Advanced Systems (NAS) has once again upped the ante in its plug-compatibility wars with IBM. In a series of announcements occurring during January, February, and March, NAS unveiled various offerings that reestablish a price/performance balance with IBM and Amdahl, which also offers IBM 370-compatible hardware.

In January, just weeks before the announcement of new IBM 3090 models and enhancements, NAS announced the AS/XL 70, a dyadic processor that has a performance range falling between the AS/XL 60 uniprocessor and the AS/XL 80 dyadic processor. Additionally, NAS increased data transfer speeds from three megabytes to six megabytes per second, a feature now available with all Alliance Series models. In conjunction with this announcement, NAS announced the 7900-2X Semiconductor Disk Subsystem, which operates at the new transfer speed.

In February, NAS introduced one-megabit dynamic random access memory (DRAM) chips and expanded maximum main memory capacities on all Alliance models. The AS/XL Models 50, 60, 70, and 80 can now be configured with up to one full gigabyte of main memory and the Models 90 and 100 can go up to two gigabytes. The IBM plug-compatible vendor increased channel capacity on the AS/XL 90 and AS/XL 100 models from 96 to 128 channels. The higher memory capacities and 128-channel option will be available during the fourth quarter of this year.

In March, NAS accelerated delivery schedules for the AS/XL 90, the three-way processor, and the AS/XL 100, the four-way processor, its two top-end offerings. The two models will now be available by the second quarter of this year rather than the third quarter. In speeding up deliveries, NAS will be making the processors available before IBM's announced third quarter delivery of its two top-end 3090 models, the Model 400E, the enhanced four-way processor, and the newly announced Model 600E, the six-way processor.

Besides delivery of the new NAS processors, the vendor is also planning to deliver its version of expanded storage by the second quarter. The NAS Expanded Memory option will let users configure up to 960 megabytes of memory as expanded memory on Models 50, 60, 70, and 80, and up to 1.92 gigabytes on Models 90 and 100. In the peripherals area, NAS announced an IBM-compatible 7480 Cartridge Tape Subsystem. The system uses 18-track tape cartridges and is capable of transferring data at either three or six megabytes per second. Similar to IBM, the NAS system records data at approximately 38,000 bytes per inch. It will be available during the third quarter. All told, the new memory and channel capacities, performance options, and peripherals either match or exceed the capacities or performance of current IBM 3090 offerings.

The opening NAS salvo directed at IBM began with the January announcement of the AS/XL 70 dyadic processor, which is said to offer more than 1.2 to 1.4 times the internal throughput of the single-processor AS/XL 60. The new processor features 64 megabytes to one gigabyte of main memory, 32 to 64 channels, 256K bytes of high-speed cache memory, and 512K bytes of dynamic working storage. It's upgradable to the AS/XL 80, also a dyadic processor. The new processor fills an apparent performance gap between the Model AS/XL 60 and the Model AS/XL 80. It was initially available during the first quarter.

Grabbing more attention than the new processor announcement was the introduction of the six-megabyte-per-second transfer feature and the new semiconductor disk that's capable of operating at this new transfer speed. The NAS dynamic channel subsystem uses up to four input/output processors which each support up to 32 channels. All channels can simultaneously transfer data at three megabytes per second in data streaming mode for an aggregate transfer rate of 384 megabytes per second. Furthermore, up to 16 channels on each IOP can now support a transfer rate of six megabytes per second for an aggregate data rate of up to 576 megabytes per second. According to NAS, the new, faster data rates can reduce channel busy percentages by up to 48 percent. This means users can now perform twice as many I/O operations in the same amount of time or support nearly twice as many devices on the same channel without a significant increase in channel load. The higher speed is transparent to the user and requires no changes to operating system and application software.

Announced with the higher transfer speed was the 7900-2X Semiconductor Disk Subsystem, an addition to the 7900-1X family. Operating at the new higher transfer speed, the 7900-2X can be shared between different mainframes regardless of whether those processors have a six-megabyte channel capability. The device is designed to provide fast access for both read and write data. The semiconductor storage device can be ➢

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configured with from 128 megabytes to 512 megabytes of memory. Users may configure up to four 7900-2X units in a subsystem for a maximum capacity of two gigabytes. Each 2X may be divided into one, two, four, or eight logical volumes which can range from 16 megabytes to 512 megabytes per logical volume, depending on the size of the storage unit.

In the main memory area, NAS has responded to IBM one-megabit chip technology with its own one-megabit dynamic RAMs, which now make it possible to have central memory configurations in the gigabyte range. Model 50 memory now ranges from 32 megabytes to one gigabyte. Memories for Models 60, 70, and 80 can range from 64 megabytes to one gigabyte, and memories for the top-end models can range from 128 megabytes to two gigabytes. To ease the paging load, the Models 50, 60, 70, and 80 can be configured with up to 960 megabytes of expanded memory and the Models 90 and 100 can be configured with up to 1.92 gigabytes of expanded memory.

In the auxiliary storage area, NAS is the latest vendor to announce a tape cartridge device similar to the IBM 3480. The 7480 Cartridge Tape Subsystem can transfer data at either three or six megabytes per second. A typical cartridge will hold 200 megabytes of data, or 400 megabytes using an integrated data compression feature. Similar to the IBM version, the 7480 consists of the Model A22 control unit and the Model B22 drive unit, which accommodates two cartridge tape drives. A maximum configuration can include up to two A22 control units and eight B22 units for a total of 16 tape drives. The device features an Automatic Cartridge Magazine Loader which can load up to eight cartridges per tape drive. By comparison, the IBM automatic cartridge loader can preload up to five cartridges in addition to the cartridge already on the drive and can automatically unload up to six cartridges.

COMPETITIVE POSITION

This latest round of NAS announcements, along with Amdahl and IBM product pronouncements, reasserts an uneasy performance parity among the three large-scale systems competitors. In January, IBM introduced a new six-way, top-end processor that matches the approximate performance of the NAS AS/XL Model 100, a four-way processor, and the Amdahl 5890 Model 600E, also a four-way processor. All three top-end systems have approximate performance ratings falling between 70 and 82 MIPS (millions of instructions per second). Early this year, to enhance price/performance, IBM followed closely by Amdahl brought out new models and enhanced E models, higher performing versions of their previous models of the same model number.

In an apparent response to the January IBM announcements, NAS quadrupled maximum memory options for its Alliance series processors, using one-megabit chip technology. NAS users can now configure the four lower end models with up to one gigabyte of main memory and upper end models with up to two gigabytes, the largest main memories now available on commercial mainframe products. By contrast, the two top-end IBM 3090E models can go up to 256 megabytes and the top-end Amdahl model can be configured with up to 512 megabytes of main memory. In the expanded memory area, NAS also exceeds the offerings of its two main rivals. NAS users can add up to 960 megabytes of expanded storage on the four lower end models and up to 1.92 gigabytes on the two upper end models. The two top-end IBM 3090E models can be outfitted with one gigabyte of expanded storage, and Amdahl models can have up to 512 megabytes of expanded storage.

Whether most mainframe users currently need such roomy memory configurations seems debatable, although one-gigabyte size memories will surely open up interesting possibilities for users running memory-hungry applications, particularly engineering/scientific work. Additionally, larger memories should reduce I/O traffic bottlenecks and ease paging loads. According to NAS, its expanded memory will especially benefit VM/HPO users who are limited to 64 megabytes of main memory.

With the announcement of up to 128-channel capacity for its two top-end models, NAS now offers as much channel capacity as IBM does on its two top-end Models 400E and 600E. The announcement of a six megabyte per second data transfer capability should prove to be a big crowd pleaser. While Amdahl offers a 4.5 megabytes per second transfer speed, IBM users are still waiting for the industry leader to at least match what Amdahl offers. IBM is expected to offer its own 4.5 megabyte per second transfer speed anytime now. Software problems are reportedly holding up the announcement.

Rounding out its response to its IBM rival, NAS finally introduced the 7480 IBM-compatible cartridge subsystem, ending speculation about its tape storage plans. The NAS 7480 A22 control unit sells for $62,000 compared with the comparable IBM 3480 A22 control unit which sells for $65,430. The NAS B22 drive unit which can operate at a data transfer rate of either three or six megabytes per second sells for $41,000 compared with the IBM B22 drive unit which operates at three megabytes per second only and which sells for $43,120.

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EQUIPMENT PRICES

		Purchase Price ($)	Monthly* Main. ($)
	Processors:		
AS/XL 70	Model consists of two CPUs, 64 megabytes to one gigabyte of main memory, 32 to 64 channels, 256K bytes of high-speed cache, and 512K bytes of dynamic working storage.	5,281,000	14,100
AS/XL V70	Model consists of two CPUs, integrated vector processing capability, 64 megabytes to one gigabyte of main memory, 32 to 64 channels, 256K bytes of high-speed cache, and 512K bytes of dynamic working storage.	5,993,000	16,436
	System Upgrades:		
	AS/XL 50 to AS/XL 70	2,231,000	6,096
	AS/XL 70 to AS/XL 80	1,946,410	4,728
7480	Cartridge Tape Subsystem:		
	A22 Control Unit	41,000	*(1)*
	B22 Tape Unit; contains two tape drives	62,000	*(1)*
	Additional Channel Attachment	5,495	*(1)*
	Data Compression	*(1)*	*(1)*
	Dual Control Coupler	3,845	*(1)*
	Automatic Cartridge Magazine Loader	8,455	*(1)*

*Listed maintenance pricing is for 24 hours a day, 7 days a week.
(1) To be announced at a later date