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Posted on February 07, 1993

<http://www.businessweek.com/stories/1993-02-07/guess-what-ibm-is-losing-out-in-mainframes-too>

Information Processing

GUESS WHAT: IBM IS LOSING OUT IN MAINFRAMES, TOO

No question, 1992 was a disaster for IBM: The company's first-ever operating loss, a costly round of cutbacks resulting in the biggest net loss in American corporate history, a 50% plunge in its share price, and a hail of criticism that led IBM's directors on Jan. 26 to seek a replacement for Chairman and CEO John F. Akers (page 24).

Nearly lost in the headlines, however, was a particularly alarming revelation: IBM, it seems, has even lost its touch in mainframe processors and storage systems--a \$50 billion worldwide industry that it has dominated for 25 years. While overall sales of such equipment grew by an anemic 2% in 1992, analysts figure that IBM's mainframe processor revenues dropped 10% to 15% in 1992, to about \$7.5 billion. At the same time, mainframe rival Amdahl Corp. posted a 48% revenue gain and confounded Wall Street predictions of a fourth-quarter loss with a \$2.45 million net profit. Unisys Corp., the No.2 mainframer, reported that its mainframe sales jumped more than 10% over 1991.

Clearly, the mainframe is not dead. What is dead, though, is revenue growth from the old-style machines, such as IBM's current System/390. Even Amdahl and Unisys face the challenge that looms over IBM's mainframe business: a painful shift to large-scale computers based on the same kind of microprocessor technology used in personal computers and workstations. Dozens of companies, from Hewlett-Packard Co. to American Telephone & Telegraph Co., have pulled years ahead of IBM in creating machines from these inexpensive parts. These new computers can outperform the old ones in absolute power but are often priced at a tenth or less per unit of computing.

As they race to teach big corporations the new math, IBM's rivals are beginning to indulge in what James Cassell, Gartner Group Inc.'s chief mainframe analyst, calls a "feeding frenzy." Consider: Using Big Blue's mainframe processors, customers pay approximately \$100,000 for each MIPS, or the capacity to execute 1 million instructions per second, a rough gauge of computing power. Hewlett-Packard's largest minicomputers, built from the company's own RISC (reduced instruction-set computing) microprocessors, cost about \$12,000 per MIPS. Because of that disparity, "companies that had Big Blue stamped on their forehead are now talking to us," says Willem P. Roelandts, vice-president and general manager for HP's Computer Systems Organization.

HP's "mainframe alternative" marketing program has won some 200 orders since last May--and IBM's latest bad news is helping. Says Roelandts: "Customers are saying: 'The whole world has changed--why should I listen to just IBM?' They're looking for a second strategic supplier."

The mounting attack extends to the highest levels of IBM's mainframe line. Leading the pack is AT&T's NCR

unit, which sells a "massively parallel" machine that can gang together as many as 1,000 Intel Corp. 486 chips, just like those in PCs. It outruns IBM's \$20 million-plus ES/9000 processor complex on many jobs, yet sells for a maximum of \$12.6 million. A mere 32-processor version has yielded, on average, a sevenfold reduction in processing times compared with an Amdahl mainframe at Shepard's, a publisher of legal citations and a unit of McGraw-Hill Inc., which publishes BUSINESS WEEK. "There's no way a conventional mainframe could keep up with our growth," says Gary Richard, director of information systems and technology at Shepard's.

TELLTALE PATTERN. NCR is getting its foot in the doors of major IBM customers by showing how its machines can do things that conventional mainframes just can't--at least not quickly. William J. Eisenman, vice-president of NCR's Large-Computer Products Div., says the focus is on industries such as retailing, airlines, and banking, where managers need to search vast amounts of data for telltale patterns. Hallmark Cards Inc., for instance, uses its new NCR 3600 mainframe to scan daily sales at 250 of its own outlets and those of such chains as Wal-Mart Stores, Kmart, and Target Stores. "There's a real sense that IBM as a company hasn't given customers the tools to run their businesses in the '90s," says Henry Burkhardt III, president and CEO of Kendall Square Research Corp., one of several startups planning to attack Big Blue's commercial mainframe base.

IBM's conventional technologies in mainframe disk and tape storage have also become vulnerable. Despite a \$6 billion annual budget for research and development, IBM has begun trailing in these key sectors--a \$6.1 billion business for the company. It has yet to bring out, for instance, a disk array for its mainframes. Offered by such companies as EMC Corp. and Cambex Corp., these devices get dozens of small, low-cost disk drives to do the job of a few large, old-style drives--for a third of the price.

What's more, IBM's conventional drives have suffered reliability problems, allowing Hitachi Ltd. to gain seven points of market share since 1989. Meanwhile, Storage Technology Corp. has cleaned up by selling IBM customers an automated tape library that in some jobs can replace the high-margin disk drives IBM would prefer they use.

IBM isn't sitting on its hands. On Feb. 2, it plans to unveil a parallel processor built from dozens of the same chips that power its RS/6000 engineering workstations. That machine is designed for scientific jobs and may fill the gap left by the Jan. 25 demise of Steve Chen's Supercomputer Systems Inc., a startup IBM had funded for five years. By summer, Big Blue is expected to answer the NCR challenge with a parallel data-base processor designed to attach to its mainframes. It will rely on a microchip version of the 390 design that's being developed under the code name Renoir.

IBM also has plans to revamp its conventional mainframes. In hopes of stimulating demand for the System/390, it's expected to announce on Feb. 9 a new price structure for the big machines. Marc Butlein, chairman of consultant Meta Group Inc., says it may be IBM's most significant pricing action since 1979, when it launched the low-priced 4300 mainframes. The new 390s will offer as much as 30% more processing power per dollar than current models.

The executive responsible for modernizing IBM's mainframe business is Nicholas Donofrio, president of the Enterprise Systems Div. He inherited it in 1992 with the retirement of Carl Conti and found himself with a product line that was trailing those of Amdahl and Hitachi. Without new models of his own--and a glut of used IBM mainframes on the market--Donofrio has been re-sorting to heavy discounts, sometimes lopping as much as 50% off list prices to cut deals. "Price has been their only weapon," says Gartner's Cassell. IBM declined to comment for this story.

The discounting didn't save enough deals to keep IBM's mainframe business in the plus column, however. One reason, says Cassell, is that by mid-1992, customers slowed buying in anticipation of this year's new models. Meanwhile, IBM's price-cutting quickly took a toll on profits. Gross margins on sales of mainframes and their

storage systems have dropped from 65% just a few years ago to under 60%, helping to push the corporate gross-margin rate down to 42%. Now, Donofrio is leading the first serious cost-cutting in IBM's mainframe development and manufacturing. Early this year, Big Blue disclosed plans to cut jobs at its East Fishkill (N.Y.) and Endicott (N.Y.) plants. Both have been heavily involved in producing thermal-conduction modules (TCM), an elaborate and costly type of microchip package that requires water-cooling. For years, competitors such as Amdahl and Hitachi have built cheaper air-cooled mainframes using different packaging techniques. Evidently, IBM is now moving away from water-cooling and by 1996 may convert entirely to air-cooled machines built around Renoir and its successors.

CASH COW? Some IBM critics are calling for a far more aggressive change in IBM's large-systems unit. Charles H. Ferguson and Charles R. Morris, co-authors of a new book, *Computer Wars*, advise IBM to treat its mainframe business as a "cash cow." Their open letter to IBM directors advises: "Put all your traditional data center businesses by themselves. Make the managers responsible for milking profits from a dying business."

Some variation on that theme will likely turn out to be IBM's future tack, especially if the new CEO it hires is less enamored of mainframes than Akers and Jack D. Kuehler, his chief technologist, seem to have been. But even as the market for traditional mainframes begins to shrink, reports of the large-scale computer's death are premature. "The level of rhetoric has gotten absurd," says Amdahl President and Chief Operating Officer E. Joseph Zemke. Large companies will always have a need for big computers, in one form or another. It's just that in the future, when shopping for such machines, IBM may not be the first brand that comes to mind. John W. Verity in New York with bureau reports

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