

# A Personal Recollection: IBM's Unbundling of Software and Services

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Many people believe that one pivotal event in the growth of the business software products market was IBM's decision, in 1969, to price its software and services separately from its hardware. The author's recollections here shed light on the internal process and surrounding business climate that led to IBM's decision.

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*These recollections express my own opinions and interpretations of what I was told at the time and, in some cases, what I surmised, as well as what I read in the trade press. Because these events took place more than 30 years ago, and we were not allowed to retain any notes or working papers, I welcome readers' information that might amplify, clarify, or correct the statements and reasoning.*

—Burton Grad

In 1968, I was a staff manager in White Plains, New York, at IBM's Data Processing Division (DPD), which was responsible for all product sales in the United States. I reported to George Beam who worked for Archie McGill, vice president of industry marketing in DPD. In my job, I worked with Dr. Herman Goldstine as a liaison to the various IBM Science Centers located in Cambridge, Massachusetts, Palo Alto, California, and other key university sites.

## Setting the stage

The System/360 (S/360) hardware and systems software had, by 1968, propelled IBM to mainframe market dominance. The wealth of available systems and applications software for the S/360 was a major reason why so many companies decided to acquire these mainframe systems (besides the feeling that "no one got fired for buying IBM systems"). With the S/360, IBM had created a de facto system standard. To compete, other hardware vendors could choose to make their machines more like IBM's (that is, plug-compatible or operating-systems program-compatible), or they could devote themselves to market niches with smaller market shares. Neither option satisfied the other major computer hardware companies—Burroughs, Univac, NCR, Control Data, Honeywell, RCA, and GE.

With Control Data Corporation (CDC) in the lead during 1967–1968, the competitors

urged the US Department of Justice (DOJ) to file an antitrust suit against IBM. Their complaints stated that IBM had achieved and maintained its dominant market position not because of better products, good marketing, solid sales practices, or quality support, but principally through IBM's willingness to provide whatever level of support and services the client wanted, without charging directly for these services. The suit claimed that these were, in effect, bundled sales and that IBM did not give the same value (by, for example, charging the same price for the same amount of work) to each customer.

The competitors claimed that IBM selectively used these extra services and programs to win new business and persuade current customers not to switch to other vendors. They charged that IBM maintained its monopolistic power by these anticompetitive practices. The competitors also argued that IBM business practices made it very difficult for other companies to interface their products with IBM equipment and systems software. They charged, further, that IBM selectively lowered prices and pre-announced new systems to inhibit or eliminate competition.

IBM had introduced the S/360 in 1964 on the same terms previously offered for its other computers and for its punched card equipment. Like all computer manufacturers, IBM leased computers to customers on a full-service, monthly rental basis. Similarly, IBM provided training, maintenance, and some level of systems engineering service to enable its customers to use the computers effectively.

IBM felt these business practices were responsive to the marketplace and customers' needs. It believed this bundled structure helped smaller customers affordably get the additional help they needed, while permitting larger customers to develop their own specialized applications.

Nevertheless, some people in DPD, particularly Archie McGill, felt that IBM was missing out on a lucrative opportunity to separately package and price applications software. Accordingly, McGill sponsored two studies, one in 1967 and another in early 1968, to explore what DPD might accomplish by producing application programs of value to specific industries. These studies were aimed at determining what prices could be charged for these programs, how many copies might be sold, and what it would cost to build and maintain these software products.

I was assigned to work on both of these studies, the results of which were ambiguous. They showed a strong level of customer interest for large, transaction processing, database-oriented programs in virtually every industry. What was not clear was how much customers would pay for a packaged—not customized—program and whether, given the high costs of development and IBM's method for allocating overhead, these could be sufficiently profitable offerings. McGill was unable to convince either DPD or IBM corporate management that this direction was worthwhile.

During 1968, IBM was well aware that the DOJ was pursuing the possibility of a suit against it, alleging monopoly in the computer market. IBM assessed its position during the fall of 1968 and concluded that it probably could not successfully defend itself against an antitrust charge stemming from tie-in sales because of its bundling practices. IBM executives were especially concerned about the systems engineering services provided at different levels to different customers because the amount of these services was not directly related to the price customers paid for the hardware. Systems engineering was, in fact, viewed by IBM as the core of the tie-in sales problem; systems and application programs, and other services such as education and field maintenance were not viewed as critical in their own right. IBM's concerns about bundling existed because of its large market share, although the computer industry's other major manufacturers were all bundling their services, too.

Meanwhile, because the DOJ did not act quickly to file suit against IBM, CDC initiated its own suit against IBM in December 1968 charging that various IBM practices were monopolistic and had damaged CDC's growth and earnings. This suit targeted IBM's practices related to early announcements of new product lines competing with CDC's advanced hardware products. Additionally, the suit cited IBM's having directly provided service bureau functions through a back door—a remote

online services operation in DPD—not through the Service Bureau Corporation, which had been mandated by the 1956 consent decree to provide all IBM service bureau activities.

IBM executives, including Thomas J. Watson Jr., Vincent Learson, and, particularly, Burke Marshall, held discussions with senior DOJ attorneys and believed that IBM could preempt a DOJ suit by announcing it would unbundle its services, then doing so promptly. This seemed far better than waiting for a DOJ suit and negotiating a new consent decree or dealing with a long, expensive trial. The financial threat to IBM was enormous. If the US government could prove that IBM had improperly obtained and exercised monopoly power in the computer field and had thereby harmed its competitors, every affected competitor (and many customers) could claim treble damages. Competitors could claim lost sales revenue and profits, and customers could argue they had paid excessive fees but not received full value from the bundled price. This possibility would have threatened IBM's business existence.

IBM also believed that preemptive action might be a defense against later suits if IBM could show that it had taken reasonable corrective steps as soon as the problem's nature was evident, and the market and technology had matured sufficiently. Management hoped that these actions might mitigate or eliminate damage judgments for previous actions and prevent claims for additional future damages.

Therefore, on 6 December 1968, IBM announced that it would unbundle the major services previously included free with its hardware offerings and would announce specific changes by 1 July 1969. IBM also pledged to implement the changes in a timely fashion, but would honor and satisfy existing commitments to its customers.

Unfortunately for IBM's preemptive strategy, on the last day of the Johnson administration on 17 January 1969, US Attorney General Ramsey Clark filed an antitrust suit against IBM. By this time, IBM was already committed to unbundling, and it still believed that the changes were necessary to defend itself against private suits as well as the DOJ suit.

### **The Unbundling Task Force**

To carry out this strategic directive and to plan and establish the basis for separately pricing various services and software offerings, IBM created the Unbundling Task Force. A team of almost 100 people was initially assembled in mid-December 1968, each member on full-time assignment. The task force, located at the VonKohorn building in White Plains, was instructed to operate independently and avoid contact with people in

the company's operating divisions, except to collect information from them. The task force was divided into five teams, each addressing a service or support area that might be unbundled: systems engineering, education, field engineering, custom programming, and packaged software. The task force members represented IBM's hardware, marketing, pricing, finance, and legal departments, among others.

I was assigned by McGill to represent DPD on the packaged software team. Besides myself, representing DPD and focusing on application programs, this team had only two other members: Ted Climis, director of programming on the corporate staff, who was the team leader, and Hugh Williams, representing the Data Systems Division, which produced all the systems and utilities programs. Unfortunately, both Climis and Williams are now deceased.

The key software-related issues addressed by the software team included:

- Separation between systems programs and application programs.
- How to handle programming languages, sorts, and utility programs.
- How to determine which programs would be separately priced.
- How to handle the programs already available versus those in the process of being developed and those that would be developed in the future.
- How to handle possible problems that could be caused by charging for systems engineering while still providing some software products free.

These complexities stemmed from IBM's long business history and recent operating precedents.

For many years, IBM had developed and distributed programs to customers that performed a variety of tasks on small, medium, and large computers. Programs ranged from the primary operating systems, systems utilities, and programming language compilers to a range of commercial and scientific applications. In some cases, these programs had been developed in conjunction with specific customers who were willing to have IBM let other companies share them. In other cases, programs had been built by IBM systems engineers, both in the US and internationally. Furthermore, many programs had been developed on a professional basis in the product divisions (for systems programs) and the marketing divisions (for significant business and scientific application programs).

Initially, most of IBM's application programs were viewed as illustrative models that would assist

customers in designing and building their own programs. But, with the advent of the S/360 and the increased use of standard scientific packages like linear programming, project management, and simulation, customers could directly use these programs. They were designed to address many customers' needs, were programmed for efficiency and accuracy, and were thoroughly tested. They were packaged and marketed in conjunction with hardware sales, especially for some of the smaller systems—for example, the newspaper composition system was the key to significant sales of the IBM 1130 computer.

The Unbundling Task Force examined the investment required to build and maintain major systems programs like the S/360's operating systems. Because these programs were already available to thousands of customers, there seemed no way to charge existing customers sufficient money to recover the original investment or to support the large programming staffs necessary to maintain and enhance the products. The conclusion was that IBM could not charge enough to make these public-domain operating systems products profitable.

With regard to applications, the economics and business impacts were not as obvious. It appeared there might be a reasonable case to charge companies for the use of new application programs and that IBM could find enough paying customers to make this profitable. Even here there were problems because most major programs were being developed in conjunction with customers and had been committed to various accounts to sell them new or additional computer hardware.

It was also not clear, in advance, what the business outlook would be for programming languages, system utilities, and certain hybrid systems/application programs like the Customer Information Control System (CICS) for transaction processing and the Information Management System (IMS) for database management.

Today, companies follow a well-defined set of practices in pricing, licensing, distributing, maintaining, and enhancing software products. But in 1968–1969, only a few dozen software products were for sale, and there were no standard terms and conditions. So IBM had to conduct its own comprehensive analysis to establish how to package and price these software products and related support services.

We individually examined each program under development, but not yet released, to determine its cost and potential market. Additionally, a comprehensive pricing strategy was worked out using essentially the same procedures, logic, and rules as used in pricing IBM hardware. This involved analyzing the market

opportunity; projecting the unit sales at different price levels; then determining whether the expected revenue would generate sufficient profit after deducting the full development and maintenance costs with their associated overhead and full marketing, sales, and support costs, as well as the general and administrative cost allocations.

Simultaneously, the in-house IBM lawyers were drafting contracts to protect IBM's rights to these programs yet permit customers reasonable use. This included consideration of whether the programs would be sold or must be licensed; who had what rights of ownership and use; and whether a program could be run on only a single machine, on multiple machines at a single site, or at multiple sites in an organization.

The task force also analyzed maintenance service obligations (telephone support, correction of errors, enhancements), including the possibility of different classes of service for different classes of programs. We reviewed the issue of who would provide this direct service: systems engineers, field engineers, or headquarters personnel either at regional or headquarters-based development centers.

To compound the problems, in April 1969, IBM was sued by Applied Data Research (ADR) in regard to ADR's Autoflow program. ADR claimed that IBM was giving away a somewhat comparable flowcharting program, thereby preventing ADR from realizing reasonable economic benefits from its Autoflow investment. ADR then acquired Programatics and sued IBM regarding IBM's free sorting program. One possibility that IBM considered was whether an ADR settlement was desirable to clear the decks, or if it was better to let the suit stay open at least until the unbundling announcements had been made. The concern was how to prevent (or at least not encourage) other, similar software suits.

By May 1969, after much research, analysis, and debate, the Unbundling Task Force produced its recommendations: Almost all services would have to be separately priced to minimize the risk of future suits and limit damage claims from previous actions. These services might not be particularly profitable businesses by themselves, but the task force felt there was no other choice. IBM still wanted to use these services to help sell hardware but recognized that the new businesses had to be set up to make money. If they consistently lost money, IBM could possibly be subject to prosecution for selling loss leaders.

The recommendations from our packaged software team were to differentiate between system control programs (SCPs) and all other systems and application programs. SCPs included the operating systems and primary system man-

agement facilities, but not language compilers, utilities, or any application programs. The SCPs would still be delivered with the equipment; all other programs would be packaged and marketed on an individually priced basis. We recommended that programs could only be licensed (to avoid the issue of purchase and recopy) and that they would be charged for on a monthly basis that would include maintenance and support. Only official IBM programs would be announced and supported. No provisions were made for handling programs developed by systems engineers or by customers.

Systems control software was, in fact, the only area in which IBM decided not to unbundle. The rationale was that the implementation of certain functions in hardware and software was technologically so intertwined that the decision on how to implement a function should be based on engineering and economic considerations, not pricing policies. IBM decided it was necessary to draw the line between SCPs and the priced software and then to hold the line as long as possible.

IBM had also determined that most systems engineering work was for marketing and sales support and would not have to be separately priced. However, when later experience showed that much of the previous systems engineering work was of a programming or other technical support nature, systems engineering shifted almost entirely to separately priced activities (for which most customers were unwilling to pay).

After executive management's approval of the recommendations, the task force expanded to include hundreds of additional people to implement the new unbundling policies. Their work included developing customer announcement packages, sales rep compensation plans, and so on.

### **The new policies and procedures**

On 23 June 1969, IBM announced its unbundled offerings:

- Systems engineering work would be priced on an hourly basis, except for marketing and sales support activities.
- Equipment maintenance (field engineering) would be priced on a monthly fee basis.
- Education was priced on a per-student or per-course basis, except for marketing and sales classes.
- Custom programming was initially to be priced on a cost-plus basis, with the future option to bid fixed-price contracts.
- Seventeen language, utility, and application software products were announced on a

monthly lease-pricing basis (see Table 1), which included telephone support, error correction, and some future enhancements.

The initial prices of the 17 programs were set relatively low because parts of all the announced programs were already in the public domain. The intent was to raise prices as more of each product was developed under the new rules.

IBM's additional software announcements included these:

- SCPs would not be unbundled but still delivered with hardware, with no separate charge.
- IBM would copyright each program. In addition, an individual usage license with each customer would preclude the customer from copying or selling the program or its usage rights to anyone else. This license included trade secret provisions.
- IBM would honor its existing customer commitments, even if it meant delivering versions of some of the priced software, systems engineering services, or education without a fee.
- Full implementation of the new rules would take effect on 1 January 1970.

Simultaneously, IBM reduced hardware prices an average of 3 percent, a reduction viewed, considering the magnitude of the services and software being unbundled, as exceedingly small by financial analysts and many reporters.

One market view was that IBM was trying to show that bundled services had little value; the other view was that IBM was using unbundling as an excuse to raise prices, which would increase revenues and, hence, profits.

IBM provided a six-month moratorium on payment for these new software products and services and honored all previously committed obligations. Such obligations included the provision of free licenses for various software programs that had been promised to clients, either in writing or orally, prior to the unbundling announcement. This was regarded by some of the trade press and competitors as a subterfuge to enable IBM to continue many of its previous practices for a significant period of time and, thereby, avoid the negative market impact from the increased prices that customers might have to pay.

In my opinion, these perceptions were wrong. First, the revenue increase from IBM software and services would initially be small; it would build up gradually over several years because the programs were to be leased rather than sold, and the other services would have to create their own markets. The historic IBM costs that had been incurred in

building the programs were sunk costs and would never be separately recovered. Because the SCPs were not to be priced, there was no substantial revenue expected from what was the largest element of software development costs. Also, because programs delivered before June 1969 would remain free, including their delivery to new customers, no revenue bonanza would accrue from this installed base or from future sales of previously developed programs. Program additions or enhancements would be priced, but the base programs could not be charged for because they were effectively in the public domain.

IBM's cost structure was also generally misunderstood. IBM had been a relatively low-cost producer, both in manufacturing and programming, because it had such a large customer base against which to write off its investments. The fundamental and intrinsic overhead in an operation of IBM's size and scope is the major factor in product pricing—this overhead was not changed. In fact, costs probably increased because of the separate-pricing decision. IBM's marketing and sales activities, which represented a significant percentage of the operating costs, would still generate the same costs. The general feeling (borne out by later experience) was that IBM sales reps would not expend much energy selling the new services and software products but would continue primarily selling hardware.

Finally, IBM needed to be very cautious financially because it had no real sense of how customers would respond to the new services. The immediate 3 percent reduction in the rental price of all hardware already installed would have a measurably negative effect on IBM's revenues, with an even more serious effect on its profits in the early 1970s.

### Customer and market reaction

Customer reaction to the IBM announcements was decidedly negative, with many customers arguing that the hardware price reductions in no way compensated for the projected additional costs of separate charges for all the various unbundled services.

The competitors who had helped initiate the US government's suit were also dissatisfied but for different reasons. In their view, the announcements' cumulative effect did not provide sufficient opportunity for them to obtain either increased market share or higher profits. In fact, most hardware companies chose not to unbundle their own software and services in 1969–1970. Only the leasing companies and S/360 clone producers were happy because their customers would now have equal access

**Table 1. IBM's system products and lease pricing. (Courtesy IBM Archives)**

<b>Program Product Name</b>	<b>Program Number</b>	<b>Initial Availability</b>	<b>Monthly Use Charge (\$)</b>	<b>Reference</b>
<i>1130 Computing System—Program products</i>				
Charge Materials Allocation Processor	5711-P11	10/69	20	P68-126
Linear Programming System	5711-CO1	6/69	30	P68-125
<i>System/360—Program products</i>				
Advanced Life Information System (DOS), Version 2	5736-N11	7/69	500	P69-21
Array Processing Subroutine (M44)	5736-P71	7/69	300	P68-169
Array Processing Subroutine (OS)	5736-P72	7/69	300	P68-169
Customer Information Control System (OS)	5736-U11	6/69	600	P69-36
Generalized Information System (OS)	5736-CX1	6/69	1,500	P68-66
Graphic Analysis of Three Dimensional Data (OS)	5736-CX2	12/69	300	P68-125
Information Management System (OS)	5736-CX3	7/69	600	P68-66
Medical Information System Programs (DOS), Version 2	5736-H11	6/70	50	P68-127
Order Allocation System (DOS)	5736-D41	3/70	125	P69-40
Power System Planning (OS)	5736-U12	9/69	300	P68-90
Project Management System (OS), Version 3	5736-CP1	9/69	300	P69-37
Property and Liability Information System (DOS), Version 2	5736-N21	9/69	300	P69-32
Rigid Frame Selection Program (DOS/OS)	5736-EC1	11/69	25	P68-172
Text Processor—Edit/360 (DOS)	5736-K11	10/69	250	P68-173
Text Processor—Pagination/360 (DOS)	5736-K12	7/70	450	P69-56

to all IBM services and programs.

Interestingly, the application software announcements did not create much customer interest. This was true although the announcements included two of IBM's most valuable future products, CICS and IMS. The other large industry-specific programs such as ALIS and PALIS for the insurance industry were not well received, because customers were unwilling to modify their internal procedures to accommodate a packaged, one-size-fits-all offering.

Unbundling of education caused a serious problem, because customers were unwilling to pay for programmer training. This led to a shortage of trained programmers, which delayed new application development and slowed market growth for years after unbundling.

But negative customer reaction related chiefly to the separate pricing of systems engineering. IBM discovered that the systems engineers had been doing far more programming work than reported, and customers were understandably upset at the high prices they would have to pay for these previously free services. This customer response surprised IBM management, because its unbundling decisions were based on analyses showing that most of the previous systems engineering work would still be free as marketing and sales support, not for-fee programming. The error occurred because the systems engineers, knowing they were not supposed to be doing programming, gave the task force members the

answers they wanted to hear, not the truth. As a result, many customer situations had to be adjusted, and the systems engineering rules had to be modified to more realistically meet customer commitments and expectations.

To compound IBM's problems after unbundling, late 1969 was the beginning of a significant downturn in the US economy. While computers had been relatively immune to previous business downturns, now the business cycle finally caught up with the computer industry. In 1969, IBM's business showed significantly less growth and was impacted even more severely in 1970 and into 1971. While IBM stock prices held for a while, this downturn started a major reexamination of what price/earnings ratio analysts were willing to apply to IBM stock. In 1971, IBM stock reached the highest price it was to reach until 1985.

To further complicate matters, a number of companies had announced their entry into the computer software and services business in 1968–1970, as well as into computer leasing and field engineering services. Many of these companies were undercapitalized and lacked needed management skills, but the stock market still poured large sums of money into these startups. The 1969–1971 recession badly burned these companies and many went bankrupt, which gave the entire independent computer software and services industry a black eye with the financial community. This attitude did not

change until 1978, when Cullinane (later called Cullinet) was able to go public at a respectable price/earnings ratio.

IBM, therefore, faced an angry customer community and saw itself under significant competitive pressure from US and foreign manufacturers. IBM also faced what it regarded as the destabilizing effect of computer leasing firms and clone manufacturers. As a result, IBM took major corrective actions to change the unbundling rules within six months after the June 1969 unbundling announcement.

Some of these changes were essentially cosmetic modifications to the way things were worded. However, other changes greatly broadened the work that systems engineers could perform without charge, expanded courses available for free, made more liberal concessions in recognizing prior commitments to customers, and enabled free distribution of some programs. The latter included what became known as field-developed programs (FDPs) and internal-use programs (IUPs). These programs were essentially equivalent to the previous IBM type III (systems-engineer-produced) and type IV (customer-produced) programs. Although these free programs did not receive formal IBM maintenance or support, they did offer customers many utilities and simple application programs free of charge.

### **Effects of unbundling**

The announcements of 23 June 1969 were, in many ways, like the simultaneous opening of five new plays. After six months of isolation and total concentration, each Unbundling Task Force team—systems engineering, education, field engineering, custom programming, and packaged software—had produced an individually priced service or product to supplement and help sell the underlying computer equipment that was still IBM's bread, butter, and jam. After all, the intent of the entire unbundling activity was to limit IBM's exposure to damage suits and monopoly penalties from previous behavior and to have a clean slate going forward, rather than creating major new growth activities.

Retaining the play analogy, opening night exposed IBM's new services and products to the entire business world, which, to put it most charitably, did not give IBM rave reviews. Instead, each new service and product was panned unmercifully by customers, competitors, the financial press, and by the DOJ. Possibly more significant, IBM as a whole was criticized as having labored mightily and brought forth a litter of mice, all of whom appeared to be seriously diseased.

Nonetheless, IBM's unbundling announce-

ment had a number of significant effects that, together, encouraged the growth and profitability of independent computer software and services companies. One short-term, unforeseen effect that had long-term implications was to significantly reduce the training customers gave their new programmers. This resulted from both IBM's pricing of educational services and the 1969–1971 recession. The net effect was that, by 1972, when the US emerged from the recession, well-trained programmers were in short supply. When companies wanted to program applications quickly, they had to turn to existing professional programming services firms. These firms were then able to establish profitable, long-term relationships with major insurance companies, banks, and communications companies, for example.

The professional services firms paid well for experienced and trained Cobol programmers and could hire them away from customer shops, which did not pay top salaries. Larry Schoenberg, founder of AGS Computers (one of the firms that benefited from this new demand), believes that this helped shape the computer industry during the 1970s. He feels that professional services' growth was the first result of the unbundling and that software products' growth was only the second beneficiary of unbundling.

Another effect of the education prices set by IBM was to encourage other companies to set up learning institutes aimed at training entry-level programmers. Some institutes were quite professional, but others were incompetent frauds.

What's more, a number of professional services companies felt encouraged to produce packaged programs and market them aggressively. This helped lead to the growth of database and data communications systems, the introduction of broad-based time-sharing systems, and the production of cross-industry application programs (accounting and payroll).

An interesting sidelight was that because the new, relatively undercapitalized, software products firms could not financially afford to match IBM's practice of renting software, they charged an up-front fee for delivery and installation. The customers were then charged an annual maintenance and upgrade fee for telephone support, error correction, and delivery of some enhancements. Eventually, the success of this practice by the independent software firms persuaded IBM to offer its customers a similar pricing alternative. Customers could then obtain a multiyear license for use of a program product and only pay annually for the maintenance and update charges.

Certainly, in 1970, very few in the computer

industry or the financial community could envision the opportunity for growth in packaged software or professional programming services that would occur over the next 30 years.

## Conclusions

The following are my personal conclusions regarding the reasons for and the effects of IBM's 1969 unbundling:

- IBM acted from fear that antitrust actions against it would succeed because of IBM's previous discriminatory bundling of services with computer products.
- IBM tried to limit unbundling's impact by putting certain restrictions around offerings and continuing to bundle some level of ongoing activities. Certainly, the experiences immediately after unbundling solidified IBM's feelings that it should go no further on its own.
- The 3 percent price cut on the hardware was probably realistic in terms of actual savings to IBM and projected revenues over the near term. There is no evidence that IBM was using unbundling as a ploy to raise prices.
- Unbundling provided a vital (but not sufficient) condition for the independent software industry's dramatic growth, although this growth took several years to materialize.
- Separate pricing of software actually led to a major competitive advantage for IBM hardware systems because most of the new software products vendors decided to build their products to run on IBM systems, not on competitive systems. This was strictly a matter of economics because IBM's market base was many times larger than any other computer manufacturer's customer base.
- Unbundling mainframe software established a framework for the independent microcomputer software industry's later growth, which followed the model of separately priced offerings by major software suppliers. In contrast, the independent minicomputer software industry was very slow in developing because most of the minicomputer manufacturers were able to control their application software markets.

## Postscripts

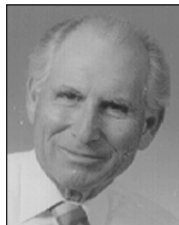
As a consequence of unbundling, IBM unquestionably became the largest supplier of computer software and services during the 1970s and 1980s. However, it never could control that business in the same way that it had (and has) dominated the mainframe hardware market. While IBM was acting in its own, primarily defensive self-interest when it unbun-

dled, the decision became one of the most effective marketing devices IBM could have used to support long-term growth and profitability for itself and the industry. Unfortunately for IBM, it was unable to generate high profits from the revenue growth in the computer software and services market. Its once-dominant market position eroded from 1970 through 1995. Since 1995, IBM has become a much more significant force in solutions services and in major applications software products. Its recent stock price has reflected this renewed profit growth.

IBM settled the CDC suit in early 1973, selling the Service Bureau Corporation to CDC at a discounted price, and paying CDC more than \$100 million for various future services and to cover its past legal fees. In turn, IBM obtained all of CDC's work papers and computerized discovery indices, which it then destroyed, which meant that they couldn't be used by the DOJ. While this made the DOJ very unhappy, IBM was apparently legally entitled to do so. As a result, the DOJ had to recreate all the files they needed to pursue the antitrust suit against IBM.

IBM also settled the ADR software suits in August 1970, but the main issue—charging for IBM programs—had already been resolved through the 1969 unbundling decision.

Finally, the DOJ suit went to trial in 1975. The trial dragged on without resolution for seven more years until 8 January 1982 when the assistant attorney general for antitrust, William F. Baxter, dismissed the suit, citing his opinion that the case was "without merit."



**Burton Grad** has worked on computer software since 1954 when he wrote the first production and inventory control programs for General Electric on the Univac I. He worked for IBM during the 1960s and later was development director for various industries, including initial responsibility for CICS. Since forming his own consulting company in 1978, he has been performing strategic planning and valuation studies for computer software and services companies. Grad was heavily involved in ADAPSO/ITAA from the early 1970s and cofounded the Software History Center with Luanne Johnson in 2000. He is a graduate of Rensselaer Polytechnic Institute.

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