
UNIVAC
Communicate...Compute...Control
UNIVAC 9200

UNIVAC 9000® Series

A new, compatible computer family with exclusive Plated-Wire Memory

9200

Low cost, internally programmed with direct access discs and communications

9300

Versatile, next-step-up tape and disc system with concurrency and communications

9400

High performance, medium scale system with multiprogramming and real-time communications capabilities


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UNIVAC 9200
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UNIVAC 9200 System

- Unlimited growth potential in very low cost, compatible steps
- Full computer capability and speed at or less than punched card equipment costs
- A revolution in the efficiency of punched card data processing
- Quick and simple conversion from punched card to computer operations
- New... UNIVAC 8410 Direct Access Disc Subsystem
- UNIVAC DCS-1 -4...Expandable Data Communication Subsystems
- Management information reporting capability now available to the smaller organization

Management information processing you can afford

Still tied to punched card equipment? Univac has designed the 9200 System with you in mind.

The UNIVAC 9200 System—internally programmed with direct access discs and communications—is a computer with capacity and speeds far greater than many of its higher priced competitors. Further, it is a complete punched card data processing system—one 9200 System replaces several punched card machines, with enormous increases in card processing and report production speeds—at the same or lower cost. Costs start around $1000 per month.

Why make the change? Because it will put your organization in the mainstream of the information revolution. Punched card data processing need never again be a bottleneck which keeps you from modern management reporting and control techniques—even if you "can't afford" a computer.

But you can afford the UNIVAC 9200 System. And you get immediate management and operational benefits—faster, better and more accurate reports; personnel, space and forms savings; fewer intermediate card handling steps. Throughput increases ranging from 8 to 10 times that of punched card equipment will greatly enlarge the capacity for growth and diversity. For long range growth, the 9200 System is a member of a versatile family of compatible computers—the UNIVAC 9000 Series, which includes the 9300 Card/Tape/Disc System with communications—and the powerful, medium scale 9400 System. Growth within the family is possible in very low cost, modular steps.

The UNIVAC 9200 is easy to install. The Installation Planning Guide provided by Univac assures step-by-step direction in converting your present punched card applications to the 9200. Univac's complete software support simplifies programming so that your present personnel can learn to program and operate the 9200 quickly and efficiently.


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UNIVAC 9200 direct access storage systems

The UNIVAC 9200 is a compact, low priced system. It is internally programmed with punched card input-output and high speed printer. The computer is extremely fast, featuring a complete memory cycle time of 1.2 microseconds, and input-output time-shared with computation. Memory starts at 8,192 bytes and can be expanded to twice that size. (Each byte can hold two numeric or one alphabetical character.)

Add the versatile UNIVAC 8410 Disc File to any 9200 System and you bridge the costly gap between punched card and direct access processing. You step up to big-system speed and power—economically. An 8410 Disc File can be field-installed on your UNIVAC 9200 System whenever you desire.

Complete 9200 card systems begin at monthly costs of approximately $1,000 and can be expanded to direct access storage systems with a 3.2 million byte capacity for approximately $2,000 per month total. And with removable discs, you realize unlimited storage potential within the UNIVAC 9000 Series, with no further hardware changes.

A 9200 Direct Access Storage System offers powerful performance advantages:

- Multiple, interrelated files in different sequences can be processed quickly.
- High speed access to large banks of data opens up new and broader applications.
- Computer runs are faster and fewer; less filing space is needed.
- Many auxiliary unit record operations are eliminated.
- Fast information retrieval extends management control, speeds customer service.
- In-line processing gives precise exception reporting for sales, inventory, financial reports.

All members of the UNIVAC 9000 Series—the 9200, 9300 and 9400—offer excellent growth potential in low cost, compatible steps. Now with direct access storage and communications capabilities, their modular design allows you to exactly match hardware and software to your data processing needs.

The UNIVAC DCS-1 or DCS-4 (Data Communications Subsystem) now offers flexible, expandable communications capability for the UNIVAC 9200 System. With this communications technique, 9200 Systems can service up to eight communication lines with a multiplicity of remote devices connected to the central system.

The versatility incorporated into the DCS-1 and DCS-4 is a direct result of Univac engineering excellence—designed to help many small and medium size companies meet their expanding data processing needs.

DCS-1

The UNIVAC DCS-1 provides a choice of 5, 6, 7, or 8 level character data transmission and a selectable synchronizing and idling character. It can automatically generate and check odd or even parity, and allows selected recognition of start-of-message and end-of-message characters. The DCS-1 provides program controlled answering of dialed-line calls.

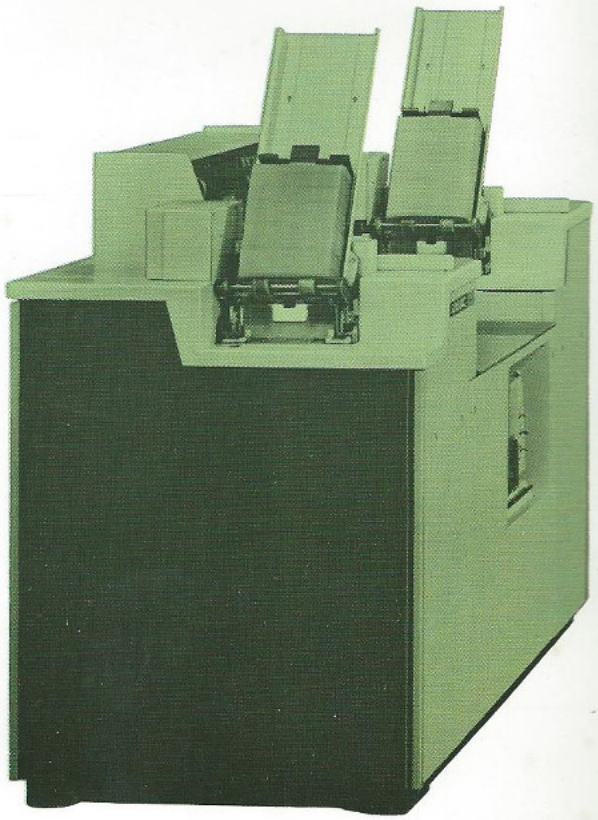
A wide choice of data transmission speeds is possible over existing communication circuits. The DCS-1 will handle 2,000 bits per second over a dialed network—up to 50,000 bits per second via broadband.

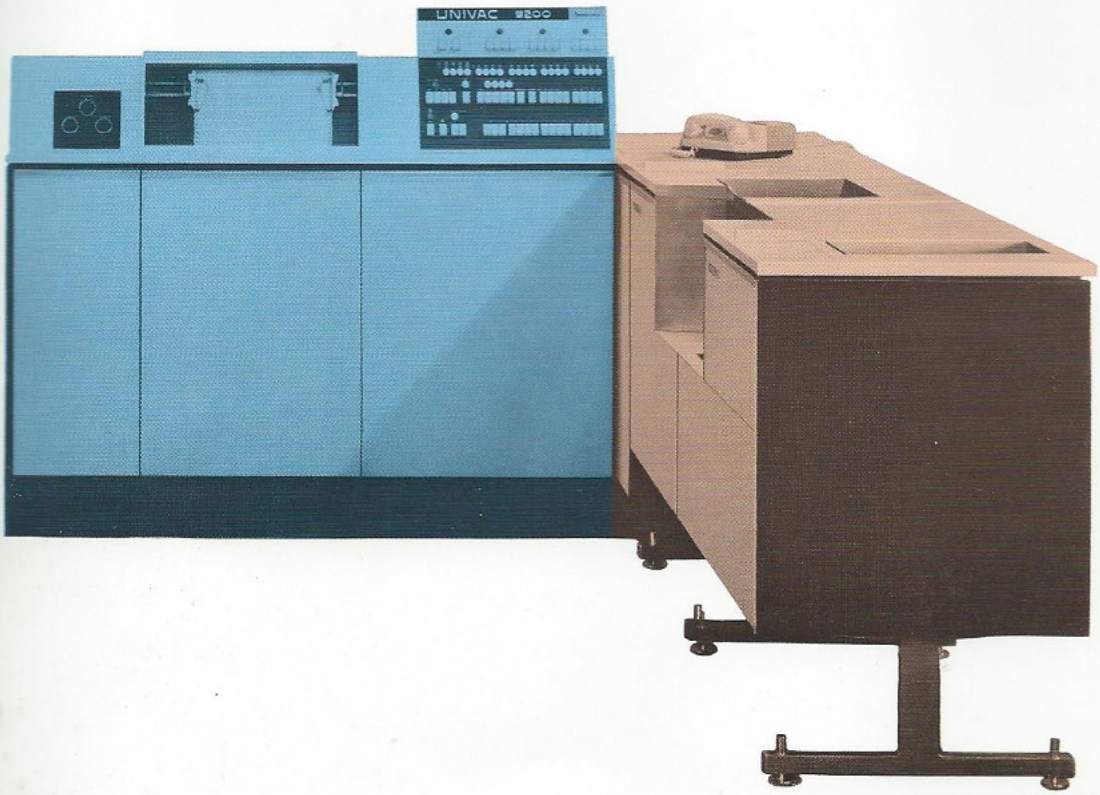
DCS-4

With one UNIVAC DCS-4, concurrent communications is possible using up to four lines. However, with two DCS-4 Subsystems, communications can be transmitted using up to eight lines.

Input-output capabilities

- *Card reading*—cards are read at 400 cards per minute. If the read-punch feature is used, a second file can be read concurrently at 200 cards per minute by the card punch.
- *Card punching*—75 to 200 cards per minute based on last column punched.
- *Printing*—basic speed of 250 alphanumeric lines per minute can be increased up to 500 numeric lines per minute within the same report through the use of the variable speed print feature. In addition, your UNIVAC 9200 System can now be equipped with a new feature which upgrades the printer from the basic 250 lines per minute to 300 lines per minute. When this is used in conjunction with the existing variable speed print feature, 600 lines per minute can be achieved for numeric print lines.
- When the 9200 is combined with the UNIVAC 1001 Card Controller, this system provides more card processing power and flexibility. The combination will allow reading from as many as four separate files at combined speeds of over 2,000 cards per minute. This combination replaces seven punched card machines; accounting machine, calculator, collator, sorter, reproducer, card proving machine and summary punch—with, of course, the added powers of a computer.




UNIVAC 9200

Get more than ever before

The UNIVAC 9200 System not only offers exceptional cost-performance ratios, it also provides extreme flexibility of management reporting and control to the smaller organization. Here are some of the ways that the 9200 brings tangible and immediate benefits.

Faster reporting

High speed processing and consolidation of punched card equipment functions reduce time required to handle your workloads. Output can be produced in minutes or hours, instead of days or weeks. Management can obtain entirely new reports from punched card files and obtain special reports more rapidly. Today's management must be immediately responsive for competitive survival and growth; and the UNIVAC 9200 can provide information fast enough to make the difference.

Savings through efficiency

The UNIVAC 9200 System will revolutionize the efficiency of any card data processing installation. Work will be accomplished in a fraction of the time.

As a further advantage, the UNIVAC 9200/8410 combination offers a large reduction in processing time for existing applications. The UNIVAC 8410 Disc Cartridges can be quickly interchanged, as your specific applications change. As a result of this interchange capability, your system capacity is unlimited. This can mean a radical reduction in overtime expense and little or no reliance on temporary personnel and outside service bureaus.

Other sources of savings are indirect but just as tangible. The 9200 requires less space, power and air conditioning. Card and forms usage can be cut down through the consolidation of runs. The elimination of intermediate "check runs" reduces operating costs.

An end to card shuffling

The 9200 can free your data processing operation from the seemingly endless manipulation of increasing volumes of punched cards. Consolidation of machine functions into one, single pass computer run can appreciably cut down the number of files, reduce card sorting, collating, gangpunching, and can eliminate multiple tabulations required to produce summary totals. Possibilities for costly card handling errors are sharply curtailed.

With the UNIVAC 9200/8410 Direct Access Storage System, it is possible to have the equivalent of from 40,000 to 320,000 cards on-line simultaneously—certainly a major advantage for your business.

Immediate capacity for growth and improvement

The UNIVAC 9200 System takes card processing installations out of their potential blind alley. It will make possible improvements in reporting (and sophistication in information analysis) that could not be dreamed of with traditional punched card concepts. And the 9200 is just the beginning of a whole family of compatible computers, offering growth in size and power at very low cost increments.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Unlimited application benefits

The 9200 System offers a virtually unlimited range of applications in industry, science and government agencies. When the 9200 is coupled with the UNIVAC 8410 Disc File and the UNIVAC DCS-1 or DCS-4, these applications can be further expanded. In the data processing center of a decentralized business, a UNIVAC 9200 can quickly transmit or receive information from any communications-oriented member of the Univac family. This includes the large real-time systems, such as the UNIVAC 1108 or 494. Administrators of geographically separated educational and medical facilities can now solve many data processing problems with a communications-oriented 9200 System.

The 9200 can prepare more complete and accurate operating information much faster than a battery of punched card equipment. It can generate—as a by-product of each operation—responsive ***management information*** for better information and better utilization of resources.

In billing applications, for example, the 9200's 63 character type font can be printed anywhere on the form. Result...more complete invoices. Its computing ability can calculate back order quantities simultaneously with invoice preparation. Split commissions, complex discounts and sales tax formulas can be handled with ease. At the same time the UNIVAC 9200 can create an invoice summary card containing complete information for commissions and accounts receivable. Customer payments can be expedited since the 9200 can provide all transaction details and aged balances when preparing monthly statements.

Manufacturing and inventory control can be streamlined and costs reduced. The UNIVAC 9200 can provide automatic output for creation of required purchase or factory orders, while it is updating inventory balances. Purchasing, accounts payable and cost accounting procedures can be tightened for maximum control. Closer monitoring of forecasts, budgets and variances is possible because of extensive 9200 storage capacity; "management by exception" reports can become an automatic by-product of normal accounting operations.

Or used as a central system—your UNIVAC 9200, with a DCS-1 or DCS-4, can transmit or receive information from a UNIVAC 1004, DCT 2000 and another 9200 System—as well as any other Univac computer which has communication devices. This excellent data collection and transmitting capability can prove invaluable in the processing of payroll registers, billing statements, updated inventories, sales and labor analysis and production control reports. Additional communication problems dealing with insurance, medicine and education are quickly handled by the UNIVAC 9200 System.

Budget conscious management will appreciate the special care Univac has taken to make conversion from punched card equipment to the 9200 an extremely smooth operation.

More than just a computer—UNIVAC Service

Service means much more to Univac than just the placing of an order for a computer. Service means that the years of unmatched engineering excellence, programming capabilities and new data processing techniques are constantly updated for your benefit—providing a continuity of assistance in two critical business areas—the saving of time and money.

How is this accomplished? Here are just a few of the service benefits realized when you install a Univac computer.

UNIVAC Test Centers

It is of prime importance to many organizations to be able to check out and "polish" their data processing programs prior to the installation of their system. Univac has Test Centers located throughout the country specifically for this purpose. These 9200 Test Centers—designed for the Univac customer—offer excellent assistance in system design, programming training and program testing. By taking advantage of this user-oriented service, you'll be ready to "go on the air" when your system arrives.

Education

To further provide the finest support service possible, Univac offers a broad range of data processing training programs. For example, prior to the installation of your UNIVAC 9200, members of your management staff and other specified personnel will have the opportunity to absorb essential data processing knowledge.

Post delivery support

Service continues after the installation of your UNIVAC 9200. Product support information, the updating of software manuals and various other new techniques will be directed throughout your data processing channels—assurance that Univac assistance and benefits are unequaled in the Industry.

Hardware

Plated-wire memory

Plated-Wire Memory—a Univac first—gives the 9200 System memory a 1.2 microsecond cycle time. The central processor can perform over 10,000 additions or subtractions per second. It can handle complex computing problems at very high speeds with a capability sufficient even for scientific computations.

The 9200 processor has 8,192 storage locations or bytes of memory which are field expandable to 12,288 or 16,384 bytes. Each byte contains 8 bits plus a parity bit, and can store one character or two numerical digits of information. The size of field is limited only by the number of storage positions reserved in the program. Stored information is completely addressable by bytes. And any part of storage may be accessed for processing at any time.

Monolithic integrated circuitry

Univac's monolithic integrated circuits are built on very small silicon chips. A typical circuit may contain on a single chip the equivalent of 21 transistors, 27 resistors, and 3 diodes. An extremely high reliability factor is engineered into these advanced assemblies. And they need no interconnections as do hybrid integrated circuits. By drastically shortening electronic paths a more compact processor is produced. But more important, it is a faster, more reliable processor.

Special processor feature

Multiply, divide and edit hardware is available. This 9200 instruction set operates at speeds several times faster than those of more expensive computers. This option will also free a portion of the basic memory so that larger object programs can be run.

Printing versatility

The printer operates at a minimum speed of 250 lines per minute—with the standard 63 character type bar. Printing speed can be greatly increased with the variable print-speed feature. A type bar with 48 characters provides printing between 250 and 500 lines per minute. Alphanumeric information (48 character font) is printed at the rate of 250 lines per minute, and lines containing numeric information (16 character font) are printed at the rate of 500 lines per minute. However, this printing rate can be increased to 300 and 600 lines per minute, respectively, with the addition of the 300 Line Per Minute Print Feature, which is field-installable. The standard 96 print positions can be optionally expanded to 120 or 132.

Card input-output

The card reader operates at 400 cards per minute. The card punch operates at 75 to 200 cards per minute. The card punch may be equipped with a read feature which adds a 200 card per minute reader to the system, resulting in an input rate of 600 cards per minute. This feature permits master file matching, match punching and interspersed gangpunching as well as reading and punching the same card.

The UNIVAC 1001 Card Controller can be linked to the 9200, replacing or supplementing the card reader. Operating on-line with the 9200 Computer, the 1001 is perfect for multiple card-file applications, eliminating pre-computer collating runs. And the 1001's card input to the 9200 System is performed at rates up to 2,000 cards per minute. The 1001's advanced file search capability can be utilized concurrently with 9200 processing. While the 9200 is processing a card, the 1001 is searching the file for data associated with the next card to be processed. When this data is located, the 1001 transfers it to the 9200 for processing.

The 1001 is also a valuable unit for off-line card handling, performing collating, sorting, editing, and proving

operations during the UNIVAC 9200 processing cycle.

Disc drives

The UNIVAC 8410 Disc File provides 9200 Computers with direct access storage of 3.2 to 12.8 million bytes or 6.4 to 25.6 million digits in packed decimal format.

The basic 8410 System includes a master dual disc drive and is expandable—one at a time—from 2 to 8 drives. Each disc drive holds a reversible disc cartridge with two storage surfaces, one of which is on-line. By interchanging disc cartridges, unlimited storage is assured for serial processing.

Each 8410 Disc surface can store 10,000 160-byte records plus an 8,000 byte fast access storage called the Fastband. All disc drives contain a fixed head for reading and writing on the Fastband and a movable arm with two heads for the remainder of the disc surface.

The average time for arm positioning on a single disc surface is 110 milliseconds. This effectively reduces to 55 ms with two disc surfaces on-line, when arm positioning is overlapped with read, write and check operations. Average disc rotation time is 25 ms, which is also the access time for each Fastband.

A high speed buffer permits all disc reading, writing, checking and searching to be performed simultaneously with 9200 processing and peripheral operations.

Software

Naturally, hardware is important when describing a Univac computer. And just as important is software—the procedures for simplifying the programming effort and smoothing operations. And the UNIVAC 9200 System Software is tailor-made for the card, disc or communications system. This features a Report Program Generator that provides a very simple programming language for the translation of the majority of business applications into computer language. There is also a Gangpunch Reproducer program which performs common punched card functions such as reproducing and interspersed gangpunching at the command of a few simple control cards.

In addition to the RPG and Gangpunch Reproducer, the comprehensive programming support for 9200 Systems includes:

- Assembler and IOCS—machine oriented language to handle more sophisticated programming requirements of card, communications and disc systems.
- Supervisor—monitors and controls communications, card and disc system activity.
- System File and Disc Loader—permits the creation and processing of a disc program library.
- Control Stream Operations—automatic scheduling of programs stored in the disc program library without excessive operator intervention.
- Library Services—maintenance of disc program libraries.
- Disc Sort—provides for DAS file rearrangement.
- Utility Programs—effective maintenance of disc data files.
- Mathpac—Univac's unique subprograms for floating point and mathematic calculations.

Highly compatible with many of today's punched card computers, UNIVAC 9200 Systems feature easy transition through RPG and BAL language processors.

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Low cost, internally programmed with direct access discs and communications

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Versatile, next-step-up tape and disc system with concurrency and communications

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High performance, medium scale system with multiprogramming and real-time communications capabilities

...and more to come!


UNIVAC 1100

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