

Bull DPS 8000

PRODUCT DESCRIPTION

With the introduction of the DPS 8000, Bull has expanded the range of large systems running under the GCOS 8 operating system. The DPS 8000 joins the DPS 8, DPS 88, and DPS 90 as large-scale systems in the Groupe Bull line. At present, the DPS 8000 range consists of the Bull DPS 8000/81 monoprocessor system and the Bull DPS 8000/82T tandem processor system with redundant architecture. Later this year, Bull plans to announce redundant three- and four-processor systems in the DPS 8000 Series.

Bull has indicated that the new DPS 8000 Series is targeted at three major markets: users who want to replace installed Level 66 and DPS 8 systems; users who need hardware platforms for dedicated server systems such as infocenters, videotex servers, and application development centers; and users who require decentralized systems.

Designed and developed by Honeywell Bull, Inc. in Phoenix, Arizona, the Bull DPS 8000 will be marketed by both Bull and Honeywell Bull. The new system uses state-of-the-art technology: VLSI gate array circuits implementing CML logic, 1MB memory chips, 256KB cache memory, redundant system architecture, multipipeline instruction processing, memory multileaving, and support of segment sizes up to 4 billion bytes. Running under GCOS 8, the new DPS 8000 Series offers complete compatibility with the preceding hardware base of GCOS 8 products.

The CML technology incorporated into the DPS 8000 results in the consumption of less energy than other types of circuitry, generates less heat, and increases overall system reliability. Each CML chip contains 1,200 to 1,500 bipolar gates with switching times of 0.4 nanoseconds. The chips are encapsulated in single-chip packages mounted on advanced technology circuit boards.

These original packaging techniques reduce the number of central processor circuit boards to eleven basic boards, each consisting of 30 packages for a single central processor. This technology reduces floor space by three-quarters over previous methods. A Bull DPS 8000 central system, including memory, input/output processors, channels, and connectors, resides in a single cabinet.

The DPS 8000 Model 81 single-processor system features 16 megabytes of main memory, expandable to 128 megabytes and one Input/Output Processor (IOP) which supports up to 16 physical channels. It is field upgradable to a DPS 8000 Model 82. The Model 82T features 32 megabytes of memory, expandable to 256 megabytes, and two IOPs which each support up to 16 physical channels. The Model 82 contains two of each major central system component to ensure maximum availability in the event of component failure.

PRODUCT ANNOUNCED: The DPS 8000 is the successor to Bull's DPS 8, which fits into the range of GCOS 8 large systems.

COMPETITION: Amdahl 580 Series, IBM 4381 and 3090 Model 120E

DATE ANNOUNCED: June 1987.

SCHEDULED DELIVERY: First installations late in 1987; volume shipments early in 1988.

BASIC SPECIFICATIONS

MANUFACTURER: Bull, 121 avenue Malakoff, 75116, Paris, France. Telephone (01) 4502 9090. Telex 614050 F; Honeywell Bull Limited, Honeywell House, Great West Road, Brentford, Middlesex TW8 9DH, U.K. Telephone 01-568-9191. Telex 28453/4.

MODELS: Bull DPS 8000 Model 81 and Model 82T.

CONFIGURATION: The DPS 8000 Model 81 is a single-processor complex consisting of one CPU with 16 megabytes of main memory, one System Console, one System Control Unit (SCU), one Maintenance Subsystem (MS), one Input/Output Processor (IOP) supporting up to 16 physical channel connections, and one modem for remote maintenance. Memory can be expanded to 128 megabytes in 16-, 32-, and 64-megabyte increments. Users can also configure three additional consoles per IOP for a maximum of four, an optional 23-inch large screen monitor, an additional system console, and an optional system console printer.

A fully redundant processor complex, the DPS 8000 Model consists of two CPUs, 32 megabytes of main memory, two SCUs, two MS, two IOPs, each supporting up to 16 physical channels, and two modems for remote maintenance. Main memory is expandable to 256 megabytes in 16-, 32-, 64-, and 128-megabyte increments. Users can also configure the system with up to six additional system consoles or a maximum of four consoles per IOP and up to eight per system. In addition, users can configure an optional 23-inch large screen monitor and a optional system console printer.

CENTRAL PROCESSOR AND MEMORY: DPS 8000 processors use Very-Large-Scale Integration (VLSI) gate array circuits, implementing CML logic, one-megabit memory chips, 256KB cache memory, and dynamic random access memory (DRAM). A central complex includes the central processing units (CPU), System Control Unit (SCU), and the main memory component. The CPU makes use of instruction pipeline processing to speed up instruction execution. It also uses virtual memory addressing and contains an associative memory that holds the most recently-referenced page table words. Descriptor-controlled access enhances system security. Extended segment capability supports segment sizes up to four billion bytes. Execution control store holds up to 64K-bytes of command information.

The SCU component serves as the interface between the CPU and main memory and the input/output processor and connected peripherals. The SCU regulates data transfer traffic and controls system interrupts and demands for central memory.

Main memory, which ranges from 16MB to 256MB, uses one-megabit DRAM circuits obtained from another chip vendor. Memory supports internal interlacing to speed up data access and uses

Bull DPS 8000

▶ The DPS 8000/82T model delivers approximately 1.8 times the processor performance of the single processor 8000/81. The fully duplicated version includes two of each central system component in a fully cross-barred configuration, providing automatic rerouting of processing to help ensure maximum system availability to support continuous processing. A DPS 8000/81 can be field upgraded to the DPS 8000/82T.

True to its BlueGreen strategy of corporate information and communications solutions, Bull has integrated the DPS 8000 into its ISO/DSA architecture, thereby enabling the DPS 8000 to serve as a centralized or decentralized database server in local or long distance connections.

GCOS 8 now features the Rapid Access Data System (RADS), a software disk cache buffer technique first offered last year. The RADS feature improves throughput by storing a larger body of information within main memory to reduce the number of disk fetches. When information for a given task is called for, the system first searches the RADS area before accessing a disk. This technique takes advantage of faster semiconductor memories on board the mainframe and sidesteps problems associated with I/O bottlenecks.

RELATIONSHIP TO CURRENT PRODUCT LINE:

Within the Bull world, both DPS 8000 processors are positioned above the DPS 8/70, the top-end model within DPS 8 model line. The Model 81 is said to have 1.6 times the performance of the DPS 8/70 in commercial/scientific batch environments and 1.8 times within Data Management IV-Transaction Processor environments. Jobs that use long floating-point operands and BCD jobs may have substantially less performance, according to Bull. Compared to the DPS 8/49, the Model 81 is said to have a relative performance range of 2.6 to 3.0.

Of all the recent Bull offerings announced within the last year, the introduction of the DPS 8000 Series may prove to be the most critical. By Bull's own estimation, DPS 8 installations make up about 80 percent of the company's 10,000 worldwide user base. The two-processor DPS 8000, the apparent follow-on series for the eight-year old DPS 8 product line, is aimed squarely at this substantial user base. The announcement of a new processor series employing the latest logic gate and memory technology is long overdue, of course.

According to market estimates compiled by International Data Corporation, the Framingham, Massachusetts computer industry market research firm, 1,082 Bull users worldwide are using DPS 8/70 machines, the top-end product within the existing DPS 8 line. This represents more than a third of the entire worldwide DPS 8 user base. Before the introduction of the DPS 8000 Series, DPS 8/70 users looking for more room to grow could jump to a DPS 88 model or move to a Bull DPS 90. The more powerful DPS 8000 Series, however, represents a potentially less costly move.

▶ automatic error detection and correction. Memory can be expanded through the addition of memory boards.

INPUT/OUTPUT SUBSYSTEM: The DPS 8000 IOP handles data transfer between connected peripheral subsystems and network processors and the SCU. An IOP supports up to 16 physical channels and 64 logical channels. Under this arrangement, a single physical channel accepts data from multiple logical channels. The channel pipelining arrangements support concurrent input and output operations.

The DPS 8000/81 has an input/output throughput capacity of 17 million bytes per second. The fully duplicated DPS 8000/82T has an input/output throughput capacity of 35 million bytes per second and will support up to 256 logical input/output channels.

PERIPHERALS: All peripherals in the current Bull DPS 8 catalog can be connected to the Bull DPS 8000.

COMMUNICATIONS: Datanet 8 Series front-end network processors handle communications chores for the DPS 8000 mainframes. The Datanet 8 Series includes the 8/10, 8/20, and 8/30, which operate within Bull's Distributed Systems Architecture (DNA), an open communications architecture. Users can configure up to eight Datanet processors per system.

The DPS 8000 Series accommodates distributed processing and conforms to the Open Systems Interconnection (OSI) standard for connecting Bull equipment and hardware from other vendors. With the introduction of the DPS 8000, Bull announced Integrated Information Architecture, which divides Bull systems into three different operating levels that range from the enterprise level at the top of a computing organization, departmental level at the middle, and workstation level at the bottom. Users can access information pertinent to an entire organization at the enterprise level. Data that serves the specialized needs of separate groups within an organization can reside at the departmental level. Workstation level processing meets the informational needs of individuals. According to Bull, each level can be interconnected in two or three tiers to meet specific user requirements.

SOFTWARE: Shortly before announcing the DPS 8000, Bull introduced GCOS 8 Software Release 3000, the latest version of the company's primary operating system for large-scale mainframes. The new release supports relational data management software, improved transaction processing, and new larger capacity disk drives. New applications developed on the Bull DPS 8000 can run without modification on DPS 88 and DPS 90 systems, and vice versa.

Release 3000 includes the Rapid Access Data System (RADS), a software disk cache buffer that facilitates fast access to stored data held on disk files. RADS employs an input/output management technique, pioneered by Bull, that uses dynamically reserved memory to reduce input/output for frequently accessed disk files. According to Bull, RADS improves production processing throughput by up to 200 percent.

CONNECTIVITY: To enhance connectivity, Bull introduced Personal Computer Interconnect (PCI) for MS-DOS based personal computers. Using PCI, users can access data from the mainframe and download the data to a personal computer. PCI features a window manager, graphics, VIP terminal emulation, file transfer, and script processing. PCI can work with Lotus 1-2-3, dBase III, Multimate Advantage, and WordStar Professional.

DATA MANAGEMENT: INTEREL, announced with the DPS 8000, is an integrated relational data management product that allows users to view data stored in nonrelational files as relational tables. This facility enables users within an organization to access all data on Bull large systems by means of the same language and without needing to know where or in what format the data resides. INTEREL includes Structured Query Language (SQL) and the Integrated Relational Dictionary System (IRDS). INTEREL's implementation of SQL is compatible with IBM's SQL/DS and

Bull DPS 8000

➤ The DPS 8000 Series extends the power range of the DPS 8 Series via architectural features and circuit technology that are similar to Bull's newer products such as the DPS 90 and DPS 88. The company's medium-to-large scale offerings now employ VSLI Current Mode Logic circuitry and one-megabit memory chips compared to the larger models of the DPS 8 Series which use LSI MSI Schottky TTL logic and 16K-bit and 64K-bit memory chips. The DPS 8000 Series can be configured with 16 megabytes to 256 megabytes of main memory compared with the DPS 8 Series which can be configured with eight megabytes to 64 megabytes of main memory.

In the auxiliary storage area, Bull now offers the MSU3381 and MSU3383 double-capacity disk units, which feature unformatted capacities of 5.04 gigabytes. Last year, Bull made the MSU3380/3382 disks available to its DPS 8 users. These units each have a capacity of 1.8 gigabytes.

Bull is also reemphasizing distributed processing and compatibility with the Open System Interconnect (OSI) standard. Additionally, the GCOS 8 operating system runs on all Bull large-scale mainframes beginning at the DPS 8 and now the DPS 8000 level, making it possible for applications written for one large machine to work with minimal or no modification on other Bull hardware.

Meanwhile, Bull is currently phasing out other operating systems such as Multics which continues to be available on a DPS 8/70 mainframe designed specifically to run Multics, despite protests from a devoted following.

In the peripheral area, DPS 8 users planning to migrate to a DPS 8000 will be able to move most of their existing disk, tape, printer, and card unit peripherals over to the DPS 8000 Series. To make it possible to attach peripheral devices to DPS 8000 machines, users must purchase channel connection exchange features to connect peripherals to the DPS 8000 IOP. In addition, some of the older peripherals such as the MTU610 tape unit and the PRU1600 line printer will require further Bull consideration.

COMPETITIVE POSITION: Bull has positioned the DPS 8000 Series against IBM's 4381 Series and the low-end of the 3090 Series. The vendor claims to have a two-to-one advantage over IBM in interactive processing within mixed workload environments involving both batch and interactive processing, with batch being about equal. In May, IBM announced four new 4381 models that are more powerful than existing 4300 models, and also announced a new low end 3090, the Model 120E.

Many of Bull's recent announcements stressing hardware integration and easier data access are in step with industry trends in general and IBM pronouncements in particular. For the last year especially, IBM has been offering hardware- and software-based connectivity products to let PC, mini, and mainframe users operating under incompatible hardware and operating systems share information. Unlike Bull which offers GCOS 8 as the primary operating envi-

ronment for its large-scale mainframes, IBM continues to cope with problems of having to support incompatible operating systems. To encourage 4381 VSE users to migrate to MVX XA, IBM announced in May the Migration System (MVS-MS) product, which is intended to reduce the time and cost required to convert from VSE/SP Version 1, 2, and 3 to an MVA operating environment. MVS-MS was announced with the May 11 introduction of the four new 4381 mainframes. □

➤ **DB2, Oracle, Ingres, and the Teradata DBC/1012 database computer.**

Through INTEREL, users have the same view of online or live information to help them to make decisions and to build their own relational tables. Based on SQL, INTEREL automatically maps data from one format to another and supplies transparency for relational, structured, and unstructured files. It comes as an optional feature of the GCOS 8 operating system for DPS 8000, DPS 8, DPS 88, and DPS 90 systems.

INTEREL accesses storage data through the Data Manager. Using this component, full relational files can be added to existing nonrelational models, and information can be merged through SQL. This functionality provides users with a seamless interface from third-generation data base technologies to newer fourth-generation technologies and allows users to migrate to relational data base functions without the need to duplicate information through copy management.

PROGRAM DEVELOPMENT: Infoedge contains a set of productivity tools for both experienced data processing professionals, technical end users, and nondata processing professionals. The product includes a spreadsheet, a forms generator, and menu system. Infoedge features include Infoedge-Menu Services, which provide a consistent menu selection regardless of terminal or workstation types, systems, function sets, or user sophistication. Menu selections include the Resource Dictionary Services, which allow access to the Information Resource Dictionary System within INTEREL.

Options available with Infoedge include decision-support services, query facilities, and workstation facilities. Query Facilities include Example Query, an end-user request facility; and Reporter, a facility for formatting data obtained from Example Query and SQL into report form.

Workstation facilities include Infoedge-Mail, a distributed electronic message facility, and Infoedge-Meetings, a facility that permits authorized users to "attend meetings" through a terminal device.

PRICING: The following prices are for France, the U.K., and the United States.

In France, a Bull DPS 8000/81 central processor unit costs FF 3,365,000. A Bull DPS 8000/82T costs FF 6,729,000. These prices include a one-year hardware guarantee.

The price for a single-processor DPS 8000/81 from Honeywell Bull, Ltd. in the U.K. that includes a 10 GB disk, four tape drives, and fifty communications lines is typically about £1 million. For a dual processor DPS 8000/82 with a 20 GB disk, four tape drives, and one hundred communications lines, the price is typically about £1.7 million.

The cost of a basic system from Honeywell Bull, Inc. in the U.S. ranges from \$675,000 for an entry-level Model 81 to \$1.3 million for a two-processor Model 82. ■