

Qantel Systems 100, 200, and 300

MANAGEMENT SUMMARY

Founded as a communications computer company in 1969, Qantel Corporation began selling small business computers to the first-time user market in 1973. To date, the company has installed more than 4,000 systems worldwide, selling through a network of independent distributors. Qantel's major emphasis is still on the first-time computer user, and one of their major strengths is upward compatibility—all Qantel equipment works with all other Qantel equipment regardless of size, model, or year of production; the operating system and all software is transparent to the hardware.

Qantel's earlier systems included the 1100 and 1200 introduced in 1973; the 800, 900, and 950 (1975); the 1300 (1976); the 210, 1400, and 1400-2 (1977); the 960, 970, 1450, and 1450-2 (1978); and the 965 and 975 (1979).

The Series 100, 200, and 300 systems are replacements for Qantel's earlier line. Announced in May 1980, the new line consist of 16 packaged systems, including two in the 100 Series and seven each in the 200 and 300 Series.

The System 110 and 120 are entry level systems that support from 48K to 64K bytes of memory and a maximum of two workstations. The 110 includes 1.3 million bytes of floppy disk storage and the 120 includes 2.6 million bytes.

The Series 200 systems support from 64K to 256K bytes of memory and up to 32 workstations. The Series 300 systems support from 128K to 1,024K bytes of memory and up to 64 workstations. Both the 200 and 300 series ➤

The Series 100, 200, and 300 small business computer systems are Qantel's newest offerings. Announced in May 1980, this new line currently consists of 16 packaged systems, with base prices ranging from \$11,950 to \$90,950.

MAIN MEMORY: 48K to 1024K bytes.

DISK CAPACITY: 1.3 to 1600 megabytes.

WORKSTATIONS: Up to 2 on 100 series, 32 on 200 series, and 64 on 300 series.

PRINTERS: 55, 75, 150 cps; 240, 300, 420, 600 lpm.

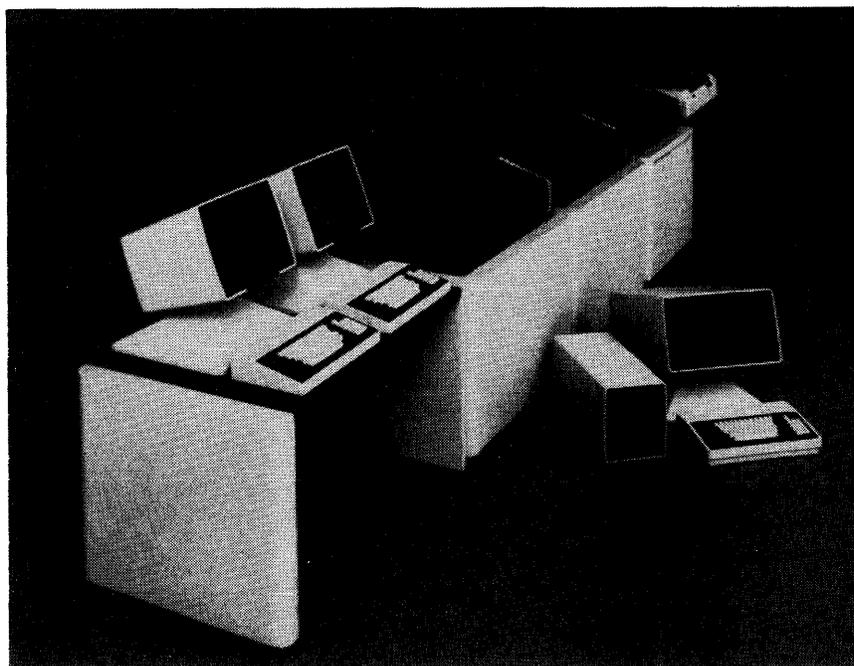
OTHER I/O: Magnetic tape

CHARACTERISTICS

MANUFACTURER: Qantel Corporation, 3525 Breakwater Avenue, Hayward, California 94545. Telephone (415) 783-3410. After September 1, 1980: 4142 Point Eden Way, Hayward, California 94545. Telephone (415) 889-1313.

Qantel was founded in 1969 as a communications computer company, and has been selling small business computers to the first-time-user market since 1973. Currently, Qantel has 120 locations worldwide and employs about 800 people. Systems are available on a purchase or lease basis through a network of about 65 distributors in the U.S. Maintenance is handled by Qantel's own field engineering staff.

In April 1980 Qantel and Mohawk Data Sciences (MDS) reached an agreement in principal whereby Qantel would be ➤



Qantel's Systems 100, 200, and 300 series of small business computers are replacements for Qantel's 210, 900, and 1400 systems. Totally compatible with all other hardware and software ever sold by Qantel, the line supports up to 1024K bytes of memory, 1600 megabytes of disk storage, and 64 terminals. Basic packaged system prices range from \$11,950 to \$90,950.

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▷ systems can be configured to include from 12 million bytes to 1600 million bytes of disk storage. The higher the model number, the larger the basic system disk storage capacity, from 12 million bytes to 200 million bytes. All Series 200 and 300 systems can support any of the disk drives offered by Qantel—up to eight in total.

All Series 200 and 300 systems can also support multiple tape units and multiple printers. Qantel offers 800 and 1600 bpi tape drives; a letter-quality 55 cps printer; 75 and 150 cps serial matrix line printers; and line printers with speeds ranging from 240 lpm to 600 lpm. The maximum peripheral mix on any 200 or 300 system is dependent on I/O channel availability. Series 200 systems offer 11 user I/O channels and Series 300 systems offer 15 user I/O channels.

Any System 200 can be field upgraded to a System 300 via an upgrade kit that includes the necessary cabinetry, power supply, and expanded capabilities.

Software for the Series 100, 200, and 300 systems includes two operating systems, the QICBASIC programming language, an assembler, a report generator, a program generator, QICPLAN for business and financial modeling and control, a word processing package, and a number of application packages.

Qantel's Business Executive System for Timesharing (BEST) operating system is the operating system that has been used with all of Qantel's earlier line of small business computers. BEST supports up to 32 simultaneous jobs and 64 workstations on the various systems, depending on the system's hardware configuration and the mix of applications being processed. BEST supports Qantel's QICBASIC and REAL programming languages.

The BEST/Advanced Operating System (AOS) was introduced along with the Series 100, 200 and 300 systems. BEST/AOS offers the benefit of improved capabilities and performance to installations with large main memories available, and is compatible with all current Qantel hardware and software. BEST/AOS takes advantage of the expanded memory automatically, allocating it dynamically, and on demand, so that each user is provided the memory required for optimum performance.

BEST/AOS also provides built-in operating support and buffer space for print spooling. Print information is automatically re-routed by the system and stored on disk for subsequent release to the printer when available. Another feature of BEST/AOS is a "transaction backup" facility that automatically records individual transactions on magnetic tape as they occur. With this feature, full disk backup procedures are required less frequently.

One of the most significant increased performance features of BEST/AOS is fast access to data stored on disk. The operating system maintains an exact copy in memory of the most recently accessed disk sectors. When ▷

▶ merged with MDS. MDS manufactures and markets distributed data processing and data entry systems.

MODELS: Series 110, 120; Series 220/320, 230/330, 240/340, and 250/350.

DATE ANNOUNCED: May 1980.

DATE OF FIRST DELIVERY: May 1980.

DATA FORMATS

BASIC UNIT: Eight-bit byte.

FIXED-POINT OPERANDS: Variable length instructions three, six or eight bytes. The operand is specified by a two byte address.

FLOATING-POINT OPERANDS: None.

INSTRUCTIONS: Instructions are of two types: one-address and two-address instructions. Single-address instructions are three bytes long, with the operand address occupying the first two bytes and the op code and modifier occupying the low-order byte. Double-address instructions are six bytes long. The first operand address occupies the first two bytes; the fourth and fifth bytes contain the second operand address; and the remaining two bytes hold the op code with modifiers and instruction length. Indirect and direct addresses are both available, as well as decimal arithmetic instructions.

INTERNAL CODE: ASCII.

MAIN STORAGE

STORAGE TYPE: MOS integrated circuits.

CYCLE TIME: See below under CAPACITY.

CAPACITY: The System 110 and 120 have 16K bytes of user memory and 48K bytes of total memory, expandable to 64K. Average memory cycle time is 0.8 microseconds.

The System 220, 230, and 240 series have approximately 16K bytes of user memory and 64K bytes of total memory, expandable to 256K bytes. The System 250 series has approximately 80K bytes of user memory and 128K bytes of total memory, also expandable to 256K.

The System 320, 330, and 340 series has approximately 80K bytes of user memory and 128K bytes of total memory, expandable to 1024K bytes. The System 350 series has approximately 208K bytes of user memory and 256K bytes of total memory, also expandable to 1024K bytes.

Average memory cycle time for the System 200 and 300 series is 0.95 microseconds.

CHECKING: None on Systems 110 or 120; parity checking on all other systems.

STORAGE PROTECTION: None.

RESERVED STORAGE: 32K bytes are reserved for the operating system on the System 110 and 120; 48K on the System 200's and 300's.

CENTRAL PROCESSOR

A microprocessor is used on the Systems 110 and 120. The Systems 200 and 300 all use a high-performance/large-scale-▶

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PERIPHERALS/TERMINALS	
DEVICE	DESCRIPTION & SPEED
MAGNETIC TAPE UNITS	
5205/6	Tape drive, 800 bpi, 45 ips, 36 KBS
5215/6	Tape drive, 1600 bpi, 45 ips, 76 KBS
PRINTERS	
4441	Auxiliary character printer, 55 cps, serial interface
4446	Bottom/rear feed version of 4441
5041	64-char. line printer, 300 lpm, drum
5042	96-char. line printer, 240 lpm, drum
5051	64-char. line printer, 600 lpm, drum
5052	96-char. line printer, 420 lpm, drum
5066	64-char. line printer, 300 lpm, band
5101/2/3	Serial matrix line printer, 8-inch print line, 75 cps
5111/2/3	Serial matrix line printer, 8-inch print line, 150 cps
5121/2/3	Serial matrix line printer, 13.6-inch printer line, 75 cps
5131/2/3	Serial matrix line printer, 13.6-inch print line, 150 cps
TERMINALS	
4031	1728-character (27 lines x 64 characters) or 1920-character (24 lines x 80 character) video terminal, 7 x 9 dot matrix; 19,200 bps local, 1200, 2400, 4800, 9600 bps remote, switch selectable

➤ these sectors are re-used, the required data is taken from memory, at memory speed, and the physical disk access is eliminated. The amount of memory dedicated to this disk sector pooling operation is variable, and can be adjusted by the user.

QICBASIC is Qantel's language for developing interactive, business-oriented programs. Developed specifically for business applications, QICBASIC is similar in concept and command structure to Dartmouth BASIC, but has more sophisticated file handling and printing capabilities.

Qantel's Report Generator allows non-programmers to answer a series of questions in simple English-like statements while being prompted by the system. If the operator doesn't know the answer to a question, typing in "HELP" brings a menu of legal answers. By specifying the files that are to be accessed and the data within those files, the generator can be instructed to produce a report that includes break points, ascending or descending sequences, exclusion based on values, subtotals, grand totals, and customized headings.

Qantel's Report Generator is designed to enable persons with little or no programming experience to generate their own special reports. Using a brief question-and-answer dialogue, the Report Generator asks the user in simple language to specify the report requirements. The parameters include the data files to be used, the information elements within the file to be printed, the criteria for selection of printed items, the order in which to print the items, the physical format in which the items are to appear on the report, the items which contribute to report totals, and the report title. In addition, the user can also apply any standard arithmetic function to any of the information elements in a file, or create new information elements based on the results of those calculations. ➤

AUGUST 1980

➤ memory processor—the same processor used in Qantel's earlier 970, 975, 1450, and 1450-2 systems.

REGISTERS: None which are directly addressable. Operations normally associated with register functions are firmware-controlled by Qantel's operating system.

INDIRECT ADDRESSING: Available to multiple levels.

INDEXING: None.

INSTRUCTION REPERTOIRE: There are 101 standard instructions and no optional instructions. The instructions include the following five categories, with the number of instructions shown for each category:

Data Handling	30
Arithmetic and Logic	21
Decision and Control	20
Input/Output	14
Special Instructions	16
Total	101

INSTRUCTION TIMINGS: Times are per byte (where applicable) and are given in microseconds:

	Series 100	Series 200/300
Load	8	2
Store	8	3
Add/Subtract	22	6
Multiply	88	20
Divide	132	26
Compare and Branch	39	8

INTERRUPTS: One external interrupt level on all models. The interrupt system services peripheral devices. One internal interrupt is provided. ➤

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▷ QICPLAN is Qantel's modeling and control plan for software that combines sophisticated forecasting tools and historical data base reference in a plain-English environment. Oriented to the general executive, QICPLAN emphasizes the practical control aspects of business projection.

The Databased Word Processor package can generate correspondence and produce various types of documents.

Applications packages available from Qantel include SOLUTIONS, for handling common business functions; QMRP, for manufacturers; CAS, a client accounting system for CPS's; and packages for physicians and medical clinics, electrical wholesalers, and hotels.

At present Qantel has about 100 distributors and agencies throughout the world, with further expansion planned. Dealers generally handle applications programming for Qantel's customers, either in-house or by independent contract.

Qantel's current strength is in the distribution industry, where approximately 60 percent of their installed systems have been placed. The banking/financial industry accounts for another 10 percent.

USER REACTION

The Qantel Series 100, 200, and 300 systems have not been in the hands of users long enough for any meaningful evaluation. To see the users reaction to earlier Qantel systems, refer to Reports M07-100-401 and M11-704-101.□

► INPUT/OUTPUT CONTROL

I/O CHANNELS: The System 110 and 120 have 5 I/O channels; the System 200 series, 11 I/O channels; and the System 300 series, 15 I/O channels.

CONFIGURATION RULES

The Qantel systems may include multiple printers and multiple tape drives. The maximum peripheral mix is dependent on I/O channel availability.

WORKSTATIONS: See SYSTEM CHARACTERISTICS table.

DISK STORAGE: See SYSTEM CHARACTERISTICS table.

MAGNETIC TAPE: See SYSTEM CHARACTERISTICS table and PERIPHERALS/TERMINALS table.

PRINTERS: See SYSTEM CHARACTERISTICS table and PERIPHERAL/TERMINALS table.

MASS STORAGE

MODEL 3301, 3311 DISK DRIVES: The 3301 is internally mounted on the System 110 and has a 1.3 megabyte capacity on dual removable floppy disks. The 3311 is internally mounted on the System 120 and has a 2.6 megabyte capacity

on dual-sided floppy disks. The drives feature a 10-millisecond minimum arm positioning time and a 55-millisecond average. There are 768 bytes per sector, 11 sectors per track, and 77 cylinders per disk.

MODEL 3110, 3114 DISK DRIVES: The 3110 drive is internally mounted on the Systems 220 and 320. The 3114 is a stand-alone version available for use on any Qantel System 200 or 300. The drives have one fixed 6-megabyte disk and one removable 6-megabyte disk. Average rotational delay is 12.5 milliseconds and average arm positioning time is 35 milliseconds. There are 768 bytes per sector (with ten sectors per track), two tracks per cylinder, and 400 cylinders per disk. The data transfer rate is 312K bytes per second.

MODEL 3021 DISK DRIVE: Sealed, fixed media unit with a storage capacity of 10 megabytes. Mounted internally on the System 231. Average rotational delay is 12.5 milliseconds and average arm positioning time is 60 milliseconds. The data transfer rate is 960K bytes per second.

MODEL 3031, 3032 DISK DRIVES: Sealed, fixed media units with a storage capacity of 20 megabytes. The Model 3031 is mounted internally on the Systems 231 (optional) and 331 (standard). The 3032 is a stand-alone version available for use on all Qantel 200 and 300 systems. Specifications are the same as for the 3021 disk drive.

MODEL 3041, 3042 DISK DRIVES: Sealed, fixed media units with a storage capacity of 40 megabytes. The 3041 is mounted internally on the Systems 232 and 332. The 3042 is a stand-alone version available for use on all Qantel 200 and 300 systems. Specifications are the same as for the Model 3021 disk drive.

MODEL 3425, 3426 DISK DRIVES: Sealed, fixed media units. The 3425 has a storage capacity of 70 megabytes and the 3426 a capacity of 140 megabytes. Average rotational delay is 10 milliseconds and average arm positioning time is 30 milliseconds. The data transfer rate is 960K bytes per second.

MODEL 3441/2, 3451/2 DISK DRIVES: Sealed, fixed media units. The 3441 has a storage capacity of 90 megabytes; and the 3451, 200 megabytes. Average rotational delay is 12.5 milliseconds and average arm positioning time is 35 milliseconds. The data transfer rate is 2M bytes per second. The XXX1 models are mounted internally on Systems 252/352, and 253/353, respectively. The XXX2 models are stand-alone models for use on all Qantel 200 and 300 systems.

INPUT/OUTPUT UNITS

See Peripherals/Terminals table.

COMMUNICATIONS CONTROL

MODEL 6251 COMMUNICATIONS CONTROLLER: Built around a microprocessor with a 16K-byte memory, the 6251 operates as either a synchronous or asynchronous controller. It can handle half-duplex and full-duplex communications over direct dial or leased lines of the public telephone network. Software packages are available to emulate widely used remote devices, such as HASP, 2780, 3780, 3270, and 3740.

MODEL 4804 COMMUNICATIONS CONTROLLER: An asynchronous communications controller or video terminal controller using Qantel Standard Protocol (QSP). Used for communication between Qantel systems only. ▶

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SYSTEM 100, 200, 300 SERIES CHARACTERISTICS							
Model	Memory Capacity		Max. Number of Workstations	Disk Capacity		Mag. Tape	Standard Printer
	Min.	Max.		Min.	Max.		
110	48K	64K	2	1.3M	1.3M	No	None
120	48K	64K	2	2.6M	2.6M	No	None
220	64K	256K	32	12M	1600M	Opt.	150 cps
231	64K	256K	32	20M	1600M	Std.	150 cps
232	64K	256K	32	40M	1600M	Std.	150 cps
245	64K	256K	32	70M	1600M	Std.	150 cps
246	64K	256K	32	140M	1600M	Std.	150 cps
252	128K	256K	32	90M	1600M	Std.	150 cps
253	128K	256K	32	200M	1600M	Std.	150 cps
320	128K	1024K	64	12M	1600M	Opt.	300 lpm
331	128K	1024K	64	20M	1600M	Std.	300 lpm
332	128K	1024K	64	40M	1600M	Std.	300 lpm
345	128K	1024K	64	70M	1600M	Std.	300 lpm
346	128K	1024K	64	140M	1600M	Std.	300 lpm
352	128K	1024K	64	90M	1600M	Std.	300 lpm
353	128K	1024K	64	200M	1600M	Std.	300 lpm

SOFTWARE

OPERATING SYSTEMS: All Qantel systems operate under BEST (Business Executive System for Timesharing) or BEST/AOS (Best Advanced Operating System). Both operating systems are disk-resident and designed for use by non-professionals.

BEST contains a powerful disk and file management system. Major features of BEST are dynamic disk allocation, tree structural files, direct or sequential record access, and automatic record blocking. The executive system also optimizes memory and provides memory-resident user programs and multiple access to a single program. BEST supports up to 32 simultaneous jobs and 64 terminals on the various systems, depending on the hardware configuration and the mix of applications being processed. The QICBASIC compiler can run as a "job" in a user partition.

BEST/AOS is an advanced version of BEST that offers the benefit of improved capabilities and performance to Qantel installations with large main memories available. The enhanced performance of BEST/AOS provides expanded memory to each user of the system, automatically and without necessary program changes. Available memory is allocated dynamically, on demand, so that each user is provided with the correct amount of memory for optimum performance. There is no need to fit each program into a specific or limited, fixed partition site.

BEST/AOS also provides built-in operating support and buffer space for print spooling, which eliminates waiting for a printer to become available before a printing operation can be executed. Print information and data are automatically re-routed by the system and stored on disk for subsequent release to the printer when available.

A "transaction back-up" feature of BEST/AOS, available with systems that include magnetic tape, automatically records individual transactions on magnetic tape at the time they occur. This feature provides full disk back-up concurrent with daily system operation, rather than full daily back-ups.

One of the most significant improvements provided by BEST/AOS is a faster access to data stored on disk. BEST/AOS maintains an exact copy, in memory, of all the most recently accessed disk sectors. When these disk sectors are re-used, the required data is taken from memory, at memory speed, avoiding any physical disk access. The

amount of memory dedicated to this disk sector pooling operation is variable, and can be adjusted by the user to obtain optimum performance.

LANGUAGES: QICBASIC, an interactive programming language, is designed specifically for Qantel processors in a business environment. The language is self-documenting and provides execution of machine-code programs separately from compilation and debugging. QICBASIC is an enhanced version of Dartmouth BASIC.

REAL is a relocatable assembly language also supported by BEST. REAL programs can be linked with QICBASIC programs or can be run independently.

Report Generator is a software tool that allows non-programmers to specify parameters for reports in simple English-like statements, while being prompted by the system. Reports may include data from one file or from multiple files. Typical parameters include the file name, file elements, sorting key elements, ascending or descending sequence, exclusionary values, total and sub-total break points, report headings, and other information. If an operator doesn't know the answer to a question, simply typing "HELP" causes the generator to respond with a "shopping list" of permissible answers.

Program Generator is a software tool that utilizes existing data for new program development. Once file structure information has been defined for file maintenance programs, the Program Generator can prompt the operator/programmer in designing data-entry programs and can later use the same information to hasten the writing of inquiry, update, and printing programs. The generator keeps building on existing routines for entry, inquiry, and updating files, to re-use the standardized instructions to aid in more complex programs. The generator also provides automatic documentation.

QICPLAN is a planning and forecasting tool for business that allows the user to make projections of what he hopes will happen and then to make changes to the projections to find out "what will happen if so and so occurs." QICPLAN gives prediction and projection through "modeling," and the model of the user's business can be as simple or as sophisticated as desired. QICPLAN can be used for budgeting, P & L planning, tax planning, cash flow forecasting, new product projections, acquisition planning, capital expenditure timing, liquidation profiling, production lot release planning, lease vs. buy evaluations, and new venture analysis.

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WORD PROCESSING: The Databased Word Processor can be used to:

- Generate correspondence (letters, memoranda)
- Product long documents (manuals, reports, etc.)
- Assemble unique documents from standard paragraphs and clauses (contracts, petitions, etc.)
- General repetitive correspondence that includes varying data from current active data files (such as names, addresses, etc.) in each document.

UTILITIES: Several standard utilities, including a language editor, disk sort, and file copy are available.

APPLICATIONS: Qantel currently supplies the following applications package on a national basis: SOLUTION, designed to handle common business functions such as invoicing, inventory control, accounts receivable and payable, order entry, information inquiry, sales analysis, general ledger, and payroll. It has been used in such

industries as garment manufacturing, newspaper production, and electrical manufacturing; QMRP, a comprehensive system for manufacturers, including order entry, work-in-process, bill-of-materials, material requirement planning, inventory control, and accounts payable; CAS, a client accounting system for CPA's including client write-up, time and billing, and financial modeling; plus comprehensive systems for physicians and medical clinics, electrical wholesalers, and hotels (back-office processing).

PRICING

POLICY: Qantel systems are available on a purchase or lease basis. Individual models are offered as a package, including the processor, required peripherals, and system software (BEST and QICBASIC).

SUPPORT: Maintenance is separately priced and is handled by Qantel's own field engineering staff. Qantel provides service to customers in about 45 states.

EQUIPMENT: Purchase and lease prices for basic system configurations are shown in the following Equipment Prices.■

EQUIPMENT PRICES

SYSTEMS		Purchase Price	Monthly Maint.	Monthly Lease/Purchase (includes maint.)
110	Systems 110; includes CPU with 16K bytes user memory (expandable to 32K), 48K bytes total memory (expandable to 64K), integral video terminal, integral 1.3 megabyte floppy disk drive	\$11,950	\$105	\$380
120	System 120; same as 110 but with 2.6 megabyte floppy disk drive	14,450	132	465
220	System 220; includes CPU with 16K bytes user memory, 64K bytes total memory (expandable to 256K), one VDT, 12 megabyte disk drive (3111), 150 cps matrix printer	29,950	286	975
231	System 231; includes CPU with 16K bytes user memory, 64K bytes total memory (expandable to 256K), one VDT, 20 megabyte disk drive (3031), 150 cps printer, 1600 bpi magnetic tape unit	35,950	384	1,211
232	System 232; same as 231 but with 40 megabyte disk drive (3041)	44,950	414	1,448
245	System 245; includes CPU with 16K bytes of user memory, 64K bytes of total memory (expandable to 256K bytes), one VDT, 70 megabyte disk drive (3425), 150 cps matrix printer, 1600 bpi tape drive	54,950	449	1,713
246	System 246; same as 245 but with 140 megabyte disk drive (3426)	74,950	609	2,333
252	System 252; includes CPU with 80K bytes of user memory, 128K bytes of total memory (expandable to 256K), one VDT, 90 megabyte disk drive (3441), 150 cps matrix printer, 1600 bpi magnetic tape drive	61,950	479	1,904
253	System 253; same as 252 but with 200 megabyte disk drive (3451)	67,950	524	2,087
320	System 320; include CPU with 80K bytes user memory, 128K bytes total memory (expandable to 1024K), two VDT's, 12 megabyte disk drive (3110), 300 lpm printer	49,950	379	1,528
331	System 331; includes CPU with 80K bytes user memory, 128K bytes total memory (expandable to 1024K), two VDT's, 20 megabyte disk drive (3031), 1600 bpi magnetic tape unit	59,590	487	1,866
332	System 332; same as 331 but with 40 megabyte disk drive (3041)	64,950	507	2,001
345	System 345; same as 331 but with 70 megabyte disk drive (3425)	74,950	542	2,266
346	System 346; same as 331 but with 140 megabyte dual disk drive (3426)	94,950	702	2,886
352	System 352; includes CPU with 208K bytes user memory, 256K bytes total memory (expandable to 1024K), two VDT's, 90 megabyte disk drive (3441), 1600 bpi magnetic tape unit	84,950	602	2,556
353	System 353; same as 351 but with 200 megabyte disk drive (3451)	90,950	647	2,739
9537	Field upgrade; any System 2XX to System 3XX (includes cabinetry, power supply, and expanded capabilities); maintenance rates determined at time of upgrade based on resultant equipment configuration; typical monthly lease/purchase for the upgrade is \$229, excluding maintenance	9,950	—	—
PROCESSOR OPTIONS				
2901	Real-time clock	950	15	37

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EQUIPMENT PRICES

		<u>Purchase Price</u>	<u>Monthly Maint.</u>	<u>Monthly Lease/Purchase (includes maint.)</u>
MEMORY				
2107	Memory expansion option; holds up to 8 32K-byte memory modules; must be ordered when expanding memory beyond each incremental 256K-byte boundary (256K, 512K, or 768K)	500	—	12
2108	32K-byte memory module	2,950	15	83
MASS STORAGE				
3031/2	Fixed-media sealed disk drive; 20 megabytes	12,450	115	402
3041/2	Fixed-media sealed disk drive; 40 megabytes	17,450	135	537
3310/4	Disk drive; 12 megabytes (6 fixed, 6 removable)	11,950	110	385
3301/2/3	Dual flexible disk drive; 1.3 megabytes	5,950	50	187
3311/2/3	Dual flexible disk drive; 2.6 megabytes	6,950	77	237
3425	Fixed-media sealed disk drive; 70 megabytes	26,950	170	790
3426	Fixed-media sealed dual disk drive; 140 megabytes	46,950	330	1,410
3441/2	Fixed-media sealed disk drive; 90 megabytes	24,950	155	729
3451/2	Fixed-media sealed disk drive; 200 megabytes	30,950	200	912
3488	Disk drive controller; for use with models 3441/2, 3451/2; handles up to 4 disk drives	2,950	15	83
MAGNETIC TAPE UNITS				
5205/6	Tape drive; 800 bpi, 45 ips, 36 KCS; requires 5285 controller	7,950	60	243
5215/6	Tape drive; 1600 bpi, 45 ips, 72 KCS; requires 5286 controller	7,950	60	243
5285	Controller; handles up to four 800 bpi tape drives	1,500	18	53
5286	Controller; handles up to four 1600 bpi tape drives	2,000	30	76
PRINTERS				
4441	Auxiliary character printer; 55 cps with serial interface	7,450	45	217
4446	Bottom/rear feed version of 4441	7,950	45	228
5041	Line printer, drum, 64 characters; 300 lpm	15,500	120	477
5042	Line printer, drum, 96 characters; 240 lpm	17,500	130	533
5051	Line printer, drum, 64 characters; 600 lpm	22,500	190	708
5052	Line printer, drum, 96 characters; 420 lpm	24,500	200	764
5066	Line printer, band, 64 characters; 300 lpm	11,950	88	363
5101/2/3	Serial matrix line printer, 8-inch print line; 75 cps	2,450	45	102
5111/2/3	Serial matrix line printer, 8-inch print line; 150 cps	2,950	50	118
5121/2/3	Serial matrix line printer, 13.6-inch print line; 75 cps	3,450	45	125
5131/2/3	Serial matrix line printer, 13.6-inch print line; 150 cps	3,950	50	141
5141	Option set for all 51XX printers; manually selected options include 6 or 8 lines per inch vertically, 10 or 16.6 characters per inch horizontally	300	—	7
5142	Stand for all Model 51XX matrix printers	175	—	4
5163/4/5/6	Font belt for all 506X line printers	1,000	—	23
5191	Paper basket for all Models 506X	275	—	7
TERMINALS				
4031	Video Terminal; 1728 or 1920 characters with switch-selectable transmission rates	3,450	25	105
4804	Video terminal controller or asynchronous communications controller; for use in system-to-system communications between Qantel systems	1,500	15	50
COMMUNICATIONS				
6251	Two-line controller; asynchronous or synchronous	2,500	37	95
6852	Synchronous converter for use with 4031 VDT's; supports transmission speeds of 2400, 4800, and 9600 bps	950	10	32