

IBM 3814 Switching Management System

MANAGEMENT SUMMARY

UPDATE: *Introduced in 1980, the IBM 3814 Switching Management System was designed for those users who have a need for channel to control unit switching under a single point control. Since our last update in December 1983, IBM has not made any changes to the system itself. IBM considers the 3814 a stable product and the only changes made are increases in the rental and lease prices.*

The IBM 3814 Switching Management System is a modular channel-to-I/O control unit switch that allows multiple IBM central processing units (CPUs) to share peripheral devices. The 3814 broadens the system I/O capability by pooling groups of control units among the channels; allowing rapid reconfiguration of I/O devices; minimizing the effect of cable restrictions on configuration capability and planning; and extending channel capability by permitting simultaneous online availability of more than eight control units. The 3814 also eliminates the need to duplicate hardware at installations where there are multiple CPUs and the I/O devices are shared resources. The IBM 3814 system can be used with the IBM System/370, Models 135 and up, 303X Series, 4300 Series, and 308X Series processors.

The 3814 Switching Management System consists of control units, Models A1 to A4; remote units, Models B1 to B4; expansion units Model C1 to C4; and an IBM 3604 Model 6 Keyboard/Display unit. One Model A Controller and one 3604 Keyboard/Display are required on each 3814 system. The Model B and C units can be added to the system to expand its switching capability. The four submodels in each model group provide different switch matrix sizes ranging from 16 to 128 nodes, or matrix crosspoints. The B models can be located up to 1,000 feet from the Model A Controller, and a second 3604 operator console can also be located up to 1,000 feet from the controller. ➤

The 3814 Switching Management System provides for more efficient use of I/O devices by pooling groups of control units among the channels of one or more IBM processors. Switching can be performed at up to 4 physical locations that are up to 1,000 feet apart.

MODELS: Models A1 to A4 control units, Models B1 to B4 remote units, Models C1 to C4 expansion units, and 3604 Model 6 Keyboard/Display Unit.

CONFIGURATION: A basic Model A Controller includes: diskette drive, control panel, audible alarm, switch matrix (matrix sizes range from 4 by 4 to 16 by 8 providing a maximum of 128 matrix crosspoints), and four system power-sequence interfaces. A 3604 Model 6 Keyboard/Display is required and must be ordered separately.

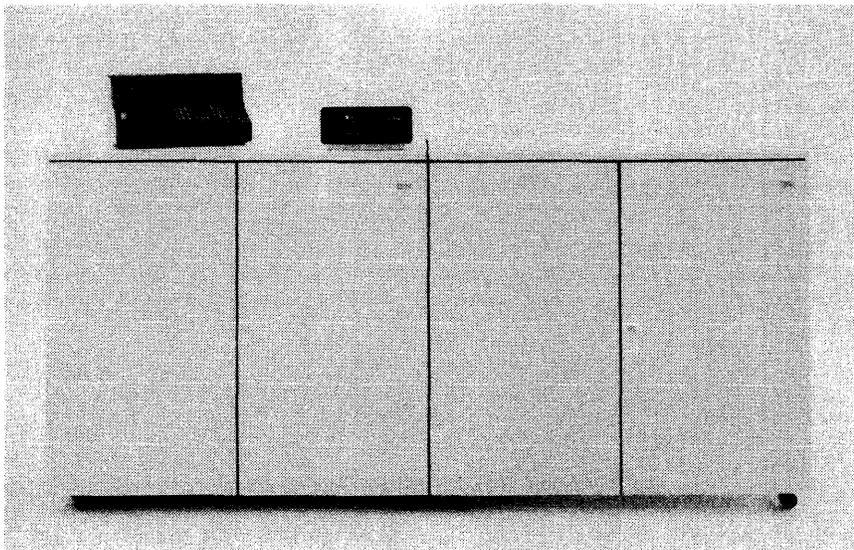
COMPETITION: Data/Switch Models 600, 1000, 1100, 1150, and 1200 Series Computer/Peripheral Switch Systems and T-bar 3690 and 3900 Series Computer Peripheral Switch Systems.

PRICE: The controllers, remote units and expansion units range in purchase price from \$37,980 to \$69,570. The operator console sells for \$1,745.

CHARACTERISTICS

MANUFACTURER: International Business Machines Corporation, National Accounts Division, 1133 Westchester Avenue, White Plains, New York 10604. Telephone (914) 696-1900.

MODELS: The 3814 Switching Management System comprises three model groups: the Model A1, A2, A3, and A4 ➤



The 3814 system shown here consists of a Model A Controller with a 3604 Model 6 Keyboard/Display unit and a power control panel, and, on the right, a Model C Expansion Unit. The Model C derives its power from the Model A Controller.

IBM 3814 Switching Management System

➤ COMPETITIVE POSITION

The 3814 Switching Management System competes with the Data/Switch Models 600, 1000, 1150, and 1200 Series Computer/Peripheral Switch Systems and System 1100 Configuration Management System, and the T-bar 3690 Computer Switch Matrix, 3915/3916 Computer Switch System, 3925/3926 DASD Device Matrix Switches, 3934 Remote Channel Activators, and the 3919 Intelligent Matrix Control. While the 3814 provides a maximum of 128 matrix crosspoints per system, the T-bar and Data/Switch systems offer up to 144 and 384 crosspoints per system, respectively.

The IBM and Data/Switch systems can store predefined configurations to facilitate the reconfiguration of peripheral devices. Redundant power supplies, and power sequencing control which are standard on the Data/Switch and T-bar systems are optional features on the IBM 3814. Switch and channel diagnostics are standard on the Data/Switch equipment, IBM offers some diagnostics capability, and T-bar offers none.

ADVANTAGES AND RESTRICTIONS

Each 3814 model can be placed under the power sequencing control of up to four host processors. Power sequencing control from four additional processors is available as an option. The 3814 also features control for the remote enable/disable function of the I/O control units, synchronous or immediate channel switching, support for two-channel switches, password authorization, self-diagnostics, and support for IBM's datastreaming feature. □

► Controllers; the Model B1, B2, B3, and B4 Remote Units; and the Model C1, C2, C3, and C4 Expansion Units.

CONFIGURATION: The Model A units contain an integrated microcode-driven processor that controls the 3814 system. The Model B units can be remotely connected to a Model A or another Model B at distances of up to 1,000 feet. The Model C units can be attached to a Model A or Model B to extend the switching capacity of the system. The various models are connected via a customer-supplied loop cable that begins at the Model A Controller.

One Model A Controller is required on each 3814 system. Each A model contains one or two 4-by-4 switch matrices, its own power supply and the control power for one expansion model, a diskette drive, a control panel, an audible alarm, and four system power sequence interfaces. One IBM 3604 Model 6 Keyboard/Display unit must be connected to the Model A Controller to serve as an operator console. The console can be located up to 32.5 feet from the Model A unit. A second 3604 console can be added to the system and can be located up to 1,000 feet from the Model A Controller.

The Model B Remote Units are standalone models that contain their own power supply and the control power for one expansion model. The Model B units include one or two 4-by-4 switch matrices, a control panel, an audible alarm, and four system power sequence interfaced. The loop connection from the Model B to the Model A Controller can be made through another Model B, a Model C, or a 3604 console.

The Model C Expansion Units do not have their own power supply and must be attached to a Model A or B. The loop

connection from the Model C to the Model A Controller can be made through a Model B, another Model C, or a 3604 console. The Model C units contain one or two 4-by-4 switch matrices and four system power sequence interfaces. A maximum of two Model Cs is permitted on each 3814 system.

Models A1, B1, and C1 each contain one 4-by-4 switch matrix. Models A2, B2, and C2 each include two 4-by-4 switch matrices that are internally configured as one 4-by-8 matrix, while Models A3, B3, and C3 include two 4-by-4 matrices internally configured as one 8-by-4 matrix. Models A4, B4, and C4 contain two 4-by-4 switch matrices that can be cabled as two 4-by-4 matrices, one 4-by-8 matrix, or one 8-by-4 matrix. In each case, the first digit represents the number of peripheral control unit interfaces. The Model A1, B1, and C1 can be upgraded to a Model A4, B4, or C4, respectively, by adding a second 4-by-4 switch matrix.

The various 3814 models can be combined to form larger or more complex configurations. The following matrix sizes can be built from the basic units: 4 by 8, 4 by 12, 4 by 16, 8 by 4, 8 by 8, 8 by 12, 8 by 16, 12 by 4, 12 by 8, 16 by 4, and 16 by 8. A 3814 system can support a maximum of 128 nodes (matrix crosspoints). Each system must have one Model A Controller with 3604 console, and only one Model A per system is permitted.

SYSTEM OPERATION: The 3814 Switching Management System attaches to the byte or block multiplexer channels of the following IBM mainframes: System/370, Models 135 and up; 303X Series systems, 4300 Series, and 308X Series. The 3814 is cabled to the channel as a standard control unit. Each 4-by-4 matrix channel attachment is equivalent to one half of a dedicated control unit. The 3814 supports channels with the Two-Byte Interface, but the interface must be attached on two consecutive channels and on two consecutive control unit interfaces in the same 4-by-4 switch matrix. The 3814 also supports IBM's datastreaming feature, which provides a channel data rate of up to three megabytes per second.

The operator communicates with the 3814 system through the 3604 Model 6 Keyboard/Display unit to establish permissible channel and control unit connections and to enable specific configurations. The 3604 features a keyboard with numeric and function keys, a 240-character gas panel display, and status indicators. To simplify system operation, the 3814 provides storage for up to 80 predefined configurations, including the current and prior configurations.

The 3814 Models A and B feature a power control panel that is mounted on the top of the cabinet. The power for the Model C is controlled from the control panel of the attached Model A or B. The control panel includes a Local/Remote switch that specifies where power control should reside. When the switch is set on Local, power can be turned on or off only from the 3814. When the switch is set on Remote, power sequencing control can be provided by up to four host processors per 3814 model or, optionally, by up to eight processors per model. The 3814 units can be interconnected for power sequencing, so that system power control on any 3814 unit controls the power on all 3814s. The 3814 control panel also includes a Power On button, a Unit Emergency Power Off switch, a reset switch for the audible alarm, and Power On, Power On Pending, Power Fault, Power Off if in Local, I/O Power Sequence Complete, Loop Ready, and Alarm Condition indicators.

Three levels of password authorization control access to the 3814 system: one level each for the operations supervisor, the operator, and the customer engineer.

The 3814 enters a diagnostic checkout procedure as part of the power-on sequence. Operating elements are continuous- ➤

IBM 3814 Switching Management System

ly monitored during system operation to detect malfunctioning hardware. An audible alarm and visual indicators alert the operator to potential problems. All error conditions are recorded on the diskette in the Model A Controller for later diagnosis.

Optional features for the 3814 include Channel Expansion Internal, Channel Expansion External, Control Unit Power Sequencing, and Remote Two-Channel Switch Control.

The Channel Expansion Internal (CH EXP INT) feature is available for 3814 Model C units only and comes in two versions. One version provides four control unit interfaces, and the other provides eight control unit interfaces. The CH EXP INT feature is required when a Model C is combined with a Model A or B to expand the number of channel interfaces. The CH EXP INT feature with four control unit interfaces is required when combining a 4-by-4 (Model C1) or 8-by-4 (Model C3 or C4) switch with an 8-by-4 (Model A3, A4, B3, or B4) to create a 12-by-4 or 16-by-4 switch. The A4 or B4 model must be cabled as an 8-by-4 switch. The CH EXP INT feature with eight control unit interfaces is required to combine a 4-by-8 (Model C2 or C4) switch with a 4-by-8 (Model A2, A4, B2, or B4) to create an 8-by-8 switch. The A4 or B4 model must be cabled as a 4-by-8 switch. A maximum of one CH EXP INT feature is permitted per Model C unit. The four-control unit and eight-control unit versions are mutually exclusive, and neither can be used if the attached Model A or B has a Channel Expansion External feature installed.

The Channel Expansion External (CH EXP EXT) feature is required when a Model B or Model B and C are combined with a Model A, a Model A and C, or a Model B for the purpose of expanding the number of channel interfaces. The CH EXP EXT feature also enables the two 4-by-4 matrices housed within a Model A4, B4, or C4 to be combined to form an 8-by-4 matrix. One CH EXP EXT feature is required to

combine a 4-by-4 (Model B1) or 8-by-4 (Model B3 or B4) switch with an 8-by-4 (Model A3, A4, C3, or C4) to create a 12-by-4 or 16-by-4 switch. Two CH EXP EXT features are required when combining a 4-by-8 (Model B2 or B4) with a 4-by-8 (Model A2, A4, C2, or C4) to create an 8-by-8 or 12-by-8 switch. The Model A4, B4, or C4 must be cabled as either a 4-by-8 or 8-by-4 switch matrix. The maximum number of CH EXP EXT features that can be applied to the 3814 models are as follows: one per Model A1, A3, B1, B3, C1, or C3; two per Model A2, B2, or C2; and one or two per Model A4, B4, or C4.

The Control Unit Power Sequencing (CUPS) feature provides power sequencing control for up to four control units connected to any 3814 model. A maximum of four CUPS features are permitted on each Model A, B, or C.

The Remote Two-Channel Switch Control (RTCSC) Feature—Basic provides for the control of the remote enable/disable function on control units that have two-channel switches. The control units must have the Remote Switch Attachment feature. The RTCSC—Basic feature provides support for up to eight interface selections. The RTCSC—Additional feature provides the two-channel switch control capability for controlling eight additional pairs of interface selections. Three RTCSC—Additional features are permitted per 3814 Model A, B, or C.

PRICING: The 3814 Switching Management System is available under the terms of IBM's Rental or Lease Agreement (LRA) or for purchase. LRA includes maintenance; a separate maintenance contract is available for purchased units. LRA provides for month-to-month rental or for a two-year lease. The termination charge for the lease arrangement is the lower of 5 months' charges or 25 percent of the remaining value of the lease. Purchase credits can be accrued up to a maximum of 60 percent of the monthly payments.

IBM 3814 Switching Management System

EQUIPMENT PRICES

		Purchase Price (\$)	Monthly Maint. (\$)	Monthly Rental (\$)	Monthly Lease* (\$)
IBM 3814 Switching Management System, Models:					
A1	Controller Unit (4 x 4)	47,480	1,825	2,218	1,825
A2	Controller Unit (4 x 8)	60,420	177	2,906	2,325
A3	Controller Unit (8 x 4)	64,740	173	3,119	2,495
A4	Controller Unit (2 4 x 4s)	69,570	190	3,356	2,685
B1	Remote Unit (4 x 4)	39,710	92	1,913	1,530
B2	Remote Unit (4 x 8)	52,660	134	2,531	2,025
B3	Remote Unit (8 x 4)	56,970	129	2,744	2,195
B4	Remote Unit (2 4 x 4s)	61,800	146	2,975	2,300
C1	Remote Unit (4 x 4)	37,980	89	1,825	1,460
C2	Expansion Unit (4 x 8)	50,930	130	2,444	1,955
C3	Expansion Unit (8 x 4)	55,240	126	2,656	2,125
C4	Expansion Unit (2 4 x 4s)	60,070	143	2,894	2,315
Upgrades 3604	Model upgrades (A1 to A4, B1 to B4, or C1 to C4) Model 6 Keyboard/Display (one required)	22,900 1,745	— 12	— 83	— —
Special Features:					
Internal Channel Expansion					
	Model 1520 with 4 Controller unit interfaces	1,550	1	75	69
	Model 1521 with 8 Controller unit interfaces	3,100	1	146	117
External Channel Expansion					
	Model 1531, first 4 x 4 interface	5,350	1	255	204
	Model 1532 second 4 x 4 interface	5,350	1	255	294
Control Unit Power Sequencing					
	Additional power sequencing ports to interconnect four 3814 units Model numbers 1811, 1812, 1813, and 1814	518	1	24	19
System Power Sequencing					
	Model 6350 allows as many as four additional systems to be powered from a remote 3814	207	—	8	6
Remote Two-Channel Switch Control					
	Basic Unit (Model 6010) supplies initial 8 switches	5,180	19	246	197
	Additional Units (Models 6011, 6012, and 6013) supplies three additional sets of 8 switches each	2,415	14	116	93
Optional Features:					
Model 1410	Expanded storage unit	4,800	21	214	171
Model 1420	Display printer Attachment	1,990	3	91	73
Model 1430	Alternate Controller	1,990	3	91	73

*48-month lease. ■