IBM System/3 Communications Capabilities

MANAGEMENT SUMMARY

Introduced originally in 1969 with the 96-column card format, the IBM System/3 is still one of the most widely used small business-oriented computer systems. As late as September 1976, new model announcements were made which extended the system both upwards and downwards into a family spanning a broad range of capabilities.

The System/3 seems to have reached its upper limit for expansion and, unlike newer IBM systems, the System/3 has not been supported within the SDLC environment promoted by IBM's System Network Architecture (SNA).

Communications support for the System/3 is limited. Depending on the particular model, a System/3 can support up to two synchronous communications lines and up to eight asynchronous lines. (The eight line MLTA required to support asynchronous communications is an RPQ). If the hardware support is limited, the software support for those features is comprehensive. The System/3 can function as a:

● Tributary station on a multipoint line connected to a host System/370 or other IBM computer system.

● Control station for one or two synchronous multipoint communications lines.

● Control station for a network of up to eight low speed asynchronous communications lines.

● Multileaving remote job entry work station for a System/370 host system.

● Host computer for a network of up to two synchronous and eight asynchronous communications lines serving up to 15 communications tasks concurrently for applications programs written in RPG II: COBOL, FORTRAN, and Assembler.

● Host computer for one multipoint synchronous communications line for an applications program written entirely in RPG II-style specification form.

USER REACTION

In December 1978, Datapro Research Corporation compiled user reaction questionnaires received over a 17-month period from among our subscribers, and identified 147 System/3 users. Of these, 27 indicated they were using a System/3 with data communications applications. The 27 users had 31 systems with 79 remote terminals. ▷

A group of processor features for implementing one or two binary synchronous communications lines operating at up to 50,000 bps.

An RPQ permits connection of up to eight low-speed asynchronous communications lines.

Depending on the processor model and the features implemented, the implemental cost for adding one communications line to a System/3 ranges between $145 and $482 per month, including maintenance.

CHARACTERISTICS

VENDOR: International Business Machines Corporation, General Systems Division, 875 Johnson Ferry Road N.E., Atlanta, Georgia 30342. Telephone (404) 256-7000.

DATE OF ANNOUNCEMENT: Model 4—January 1976; Model 6—October 1970; Model 8—September 1976; Model 10—July 1969; Model 12—July 1975; Model 15—July 1973.

DATE OF FIRST DELIVERY: Model 4—NA; Model 6—December 1970; Model 8—June 1975; Model 10—January 1970; Model 12—June 1976; Model 15—March 1974.

NUMBER INSTALLED TO DATE: Information not available.

SERVICED BY: IBM.

CONFIGURATION

There are three types of communications features available for various models of the System/3 product line: Binary Synchronous Communications Adapter (BSCA); Integrated Communications Adapter (ICA), and Multi Line Terminal Adapter (MLTA). The BSCA and ICA each accommodate one communications line, but some models can have two BSCA adapters and not all models can have an ICA. The MLTA is an RPQ feature and accommodates up to 8 lines, but not all models can include an MLTA. The exact features permitted by each model are summarized in the following table:

S/3 Model—	BSCA	ICA	MLTA
4	1	0	0
6	1	0	0
8	1	1	0
10	2	0	1
12	2	0	1
12	1	1	1
15	2	0	1

▶

IBM System/3 Communications Capabilities

▷ A summary of the ratings given by these users is presented below.

	Excellent	Good	Fair	Poor	WA* Comm.	WA* All
Overall satisfaction	13	13	1	0	3.4	3.3
Ease of operation	16	8	2	0	3.5	3.4
Mainframe re- liability	23	2	2	0	3.8	3.8
Peripheral re- liability	14	11	2	0	3.4	3.4
Maintenance						
Promptness	19	5	1	1	3.6	3.4
Quality	18	7	2	0	3.6	3.4
Technical support	8	15	3	0	3.2	2.9
Software						
Operating system	12	14	0	1	3.4	3.1
Compilers and assemblers	13	13	1	0	3.2	3.2
Applications programs	5	9	2	2	2.9	2.8
Ease of pro- gramming	16	9	2	0	3.5	3.3
Ease of con- version	10	9	3	0	3.3	3.2

*Weighted Average based on 4.0 for Excellent. The Comm. WA represents the 27 communications users; the All WA represents all 147 users responding to the surveys.

The group of communications users rated the System/3 slightly higher in most categories than the group of all users. Almost all communications users had Model 10 and larger systems. □

▶ **TRANSMISSION SPECIFICATIONS**

BSCA: Accommodates one point-to-point switched (DDD) or non-switched (Leased) communications line operating at 600, 1200, 2000, 2400, or 3600 bps or a point-to-point non-switched line operating at 4800, 7200, 19,200, 40,800 or 50,000 bps. Essentially all IBM Bisync terminals and computer systems operating within these parameters can be accommodated. In addition, a System/3 equipped with a BSCA can serve as a tributary on a multipoint line to a System/360 or 370 computer system at speeds up to 7200 bps. The System/3 with a BSCA can serve as the control station for a multipoint line operating at up to 7200 bps. For those System/3 models that can accept a second BSCA, the maximum speed of the second feature is 7200 bps, but the second BSCA does not limit the operation of the first BSCA in any way.

A number of features are available for the BSCA, to implement the above and additional capabilities, including Auto Call, Internal Clock, Station Selection, and Text Transparency.

Auto Call cannot be installed with Station Selection. Internal Modem (see below), or EIA Local Interface (see below).

The Internal Clock feature provides a data rate of 600, 1200, 2000, or 2400 bps for modems that do not provide clocking. If any one terminal on a multipoint line uses internal clocking, all must use it. The feature cannot be installed with EIA Local Interface (see below).

Station Selection is required for the System/3 to function as a tributary station on a multipoint line. It cannot be installed with Auto Call, but it does not preclude operation of a System/3 with BSCA as a control station on a multipoint line. Concurrent tributary and control station operation is not possible using the same BSCA adapter. Alternate use of the same BSCA for tributary and control station operation may require switching modems.

Text transparency is available only for EBCDIC code and permits any character code to be transmitted as data; i.e., control character recognition is suspended.

Additional features available with the BSCA for the System/3 Model 8, 10, 12, and 15 include an EIA Local Interface and an Integrated Modem.

The EIA Local Interface allows the connection of a 3271 Model 1 or 2 controller (3270 cluster display) or stand-alone 3275 Model 1 or 2 display directly to the System/3 BSCA without modems. A transfer rate of 2400, 4800, or 8000 bps is supported.

The Integrated Modem operates at 1200 bps. It is available in two modems; one for use over a non-switched line and one for a switched line. The switched line version includes Auto Answer. This feature requires the Modem Base feature. If two BSCA features with Integrated Modems are installed, a separate Modem Base is required for each.

ICA: Provides one or two local interfaces and one remote interface; only one can be active at a time. The remote interface feature (Synchronous Line, Medium Speed) supports one half-duplex, binary synchronous communications line operating at up to 4800 bps over a switched facility and up to 7200 bps over a non-switched facility. Point-to-point or multipoint (control station only) operation is supported. ASCII or EBCDIC code is supported. An EBCDIC Text Transparency feature is available for remote or local operation. The 8000 bps Local Interface feature supports a 3271 Model 1 or 2 controller (3270 cluster display) or a stand-alone 3275 Model 1 or 2 display. The 2400 bps Local Interface feature supports one bisync terminal such as a 3741 key/diskette unit. Modems are not required to connect terminals to a System/3 ICA via an ICA. On the Model 12, the ICA and the second BSCA are mutually exclusive.

MLTA: An RPQ for the System/3 Model 10, 12, or 15. It accommodates up to eight low speed asynchronous, point-to-point or multipoint lines. It can support communications with IBM 1050, 2740, 2741, CMCST, or similar terminals, including IBM 3767 and System/7 units emulating a 2741.

SOFTWARE

A number of facilities are available to support data communications on the System/3, including:

● **RPG II Telecommunications** (all models).

● **Communications Control Program** (all models).

● **BSCA Multiline/Multipoint** (Models 8, 10, 12, and 15).

● **Multileaving RJE Work Station** (all models).

● **RJE Work Station** (Models 8 and 10).

RPG Telecommunications feature is standard on the Model 12 and 15 and is an extra cost option for the Model 6, 8, and 10. Model 6 RPG II is available for the Model 4. This feature supports a single BSCA or ICA feature and facilitates the transmission and reception of data over voice grade or high speed communications lines. The programmer fills out a separate specifications sheet, which specifies the functions to be performed. The feature permits the following operations modes: receive only; receive with conversational reply; transmit only, transmit with conversational reply, or alternate transmit and receive file. The feature supports point-to-point communications over switched or nonswitched facilities; it also supports multipoint operation with the System/3 functioning as a tributary station. ▶

IBM System/3 Communications Capabilities

Communications Control Program (CCP) provides control facilities for multi-terminal communications systems connected to a System/3 via either the BSCA or MLTA. The System/3, in turn, can operate as a tributary terminal to a host System/360 or 370 computer. CCP permits programs coded in COBOL, FORTRAN, or RPG II to access the terminals; handles resource management to reduce contention between programs accessing the same files; monitors the terminals and responds to their commands; and controls the concurrent execution of multiple application programs within the CCP partition. A special version of CCP is used with the System/3 Model 4 to control multiple local display workstations.

BSCA Multiline Multipoint (MLMP) provides assembly language level I/O routine support for applications programming in any language. It supports the ICA and one or two BSCA features in point-to-point or multipoint (tributary or control station) arrangements. It cannot be used with an RPG II program that uses the Telecommunications feature.

Multileaving RJE Work Station (MRJE/WS) permits a System/3 equipped with a BSCA or ICA to function as a remote job entry work station to a System/370 operating under OS/360 (HASP or ASP), OS/VS1 (JES/RES), OS/VS2 (JES2/3), or VM/370 (RCS). It supports point-to-point communications only. Input can be from a combination of devices. Output (returned data set) can be directed to the originating work station, to another work station, or to a central facility peripheral device. The multileaving feature improves the efficiency of normal BSC transmission by appending ACK's and NACK's to returned data blocks rather than sending them as separate messages. Data blocks from multiple active tasks may be intermixed in the data stream. MRJE/WS disk files can be accessed by print, copy, and dump utilities and by RPG II, COBOL, FORTRAN, and Assembler applications programs.

RJE Work Station (RJE/WS) provides job entry capabilities for a System/3 equipped with a BSCA to a System/360 or 370 running under OS/360. Point-to-point or multipoint arrangements are supported.

PRICING

IBM offers the System/3 on a purchase or rental basis. The standard IBM rental contract includes equipment maintenance and entitles the customer to up to 176 hours of billable time per month. Time used in excess of that amount is billed, for most System/3 components, at an extra-use rate of 10% of the basic hourly rate, (i.e.; 10% of 1/176 of the monthly rental for each hour of extra use).

The Term Availability Plan (TAP), originally introduced with the System/32, is available for the System/3 Model 4, 8, 12, and 15 Processing Units and features. Under the TAP, which has an initial duration of 36 months, the customer is given a discount of about 5% on monthly rental costs; overtime charges are still applied. Lease and purchase price protection is ensured for the first 12 months. Accruals toward purchase of up to 50% of the purchase price are permitted during the first 36 months. Specified maximum second and third year lease and purchase prices are guaranteed that correspond to an increase of about 5% each year. The TAP can be extended for one year at a time indefinitely, and one extension of less than one year is permitted. Component or feature discontinuance or downgrades incur termination charges.

All of the software facilities specifically oriented to data communications is included in the Systems Control Programming for the System/3, except RPG II. SCP features are not extra cost. RPG II and the Telecommunications features are extra cost.

		Rental*	Purchase Price	Monthly Maint.
2074	Binary Synchronous Communications Adapter (up to 50K bps)	$385	$6,895	$78.50
1315	Auto Call Feature	55	1,170	1
3601	EIA Local Attachment	33	563	1
4703	Internal Clock Feature	34	734	1
	1200 bps Integrated Modem (requires #4703 and #5201):			
4781	Non-switched	17	387	3.50
4782	Switched with Auto Answer	25	516	5
5201	Modem Base (for mounting #4781)	38	937	2.50
7477	Station Selection Feature	26	580	1
7850	Text Transparency Feature (for EBCDIC)	26	580	1
2084	Binary Synchronous Communications Adapter, Second (up to 7200 bps; #2074 is a prerequisite)	385	6,895	63
1325	Auto Call Feature	55	1,170	1
3602	EIA Local Attachment	33	563	1
4723	Internal Clock	34	734	1
	1200 bps Integrated Modem (requires #4723 and #5202):			
4781	Non-switched	17	387	3.50
4782	Switched with Auto Answer	25	516	5
5202	Modem Base (for mounting #4782)	38	937	2.50
7487	Station Selection Feature	26	580	1
7851	Text Transparency Feature (for EBCDIC)	26	580	1
4645	Integrated Communications Adapter	176	4,415	17
4801	8000 bps Local Interface (for local attachment of an IBM binary synchronous 3275 Display; modems not required)	29	760	1
4802	2400 bps Local Interface (for local attachment of an IBM binary synchronous terminal; modems not required)	29	760	1
6202	Synchronous Line, Medium Speed (up to 7200 bps)	92	2,300	2.50
7851	Text Transparency (for EBCDIC)	26	580	1

*Rental prices include equipment maintenance.

IBM System/3 Communications Capabilities

Monthly License Fee

	RPG II Compiler	Telecommunications Feature*
System/3:		
Model 4 and 6	40	46
Model 8	54	46
Model 10 (card)	37	37
Model 10 (disk)	54	46
Model 12	93	—
Model 15	116	—

*RPG II for the Model 12 and 15 includes the Telecommunications feature as standard.■

IBM System/3 Communications Capabilities Update

Communications Control Program (CCP) provides control facilities for multi-terminal communications systems connected to a System/3 via either the BSCA or MLTA. The System/3, in turn, can operate as a tributary terminal to a host System/360 or 370 computer. CCP permits programs coded in COBOL, FORTRAN, or RPG II to access the terminals; handles resource management to reduce contention between programs accessing the same files; monitors the terminals and responds to their commands; and controls the concurrent execution of multiple application programs within the CCP partition. A special version of CCP is used with the System/3 Model 4 to control multiple local display workstations.

BSCA Multiline Multipoint (MLMP) provides assembly language level I/O routine support for applications programming in any language. It supports the ICA and one or two BSCA features in point-to-point or multipoint (tributary or control station) arrangements. It cannot be used with an RPG II program that uses the Telecommunications feature.

Multileaving RJE Work Station (MRJE/WS) permits a System/3 equipped with a BSCA or ICA to function as a remote job entry work station to a System/370 operating under OS/360 (HASP or ASP), OS/VS1 (JES/RES), OS/VS2 (JES2/3), or VM/370 (RCS). It supports point-to-point communications only. Input can be from a combination of devices. Output (returned data set) can be directed to the originating work station, to another work station, or to a central facility peripheral device. The multileaving feature improves the efficiency of normal BSC transmission by appending ACK's and NACK's to returned data blocks rather than sending them as separate messages. Data blocks from multiple active tasks may be intermixed in the data stream. MRJE/WS disk files can be accessed by print, copy, and dump utilities and by RPG

II, COBOL, FORTRAN, and Assembler applications programs.

RJE Work Station (RJE/WS) provides job entry capabilities for a System/3 equipped with a BSCA to a System/360 or 370 running under OS/360. Point-to-point or multipoint arrangements are supported.

PRICING

IBM offers the System/3 on a purchase or rental basis. The standard IBM rental contract includes equipment maintenance and entitles the customer to up to 176 hours of billable time per month. Time used in excess of that amount is billed, for most System/3 components, at an extra-use rate of 10% of the basic hourly rate, (i.e.; 10% of 1/176 of the monthly rental for each hour of extra use).

The Term Availability Plan (TAP), originally introduced with the System/32, is available for the System/3 Model 4, 8, 12, and 15 Processing Units and features. Under the TAP, which has an initial duration of 36 months, the customer is given a discount of about 5% on monthly rental costs; overtime charges are still applied. Lease and purchase price protection is ensured for the first 12 months. Accruals toward purchase of up to 50% of the purchase price are permitted during the first 36 months. Specified maximum second and third year lease and purchase prices are guaranteed that correspond to an increase of about 5% each year. The TAP can be extended for one year at a time indefinitely, and one extension of less than one year is permitted. Component or feature discontinuance or downgrades incur termination charges.

All of the software facilities specifically oriented to data communications is included in the Systems Control Programming for the System/3, except RPG II. SCP features are not extra cost. RPG II and the Telecommunications features are extra cost.

		Rental*	Purchase Price	Monthly Maint.
2074	Binary Synchronous Communications Adapter (up to 50K bps)	$361	$6,895	$79
1315	Auto Call Feature	52	1,170	1
3601	EIA Local Attachment	31	563	1
4703	Internal Clock Feature	32	734	1
	1200 bps Integrated Modem (requires #4703 and #5201):			
4781	Non-switched	16	387	4
4782	Switched with Auto Answer	24	516	5
5201	Modem Base (for mounting #4781)	36	937	3
7477	Station Selection Feature	25	580	1
7850	Text Transparency Feature (for EBCDIC)	25	580	1
2084	Binary Synchronous Communications Adapter, Second (up to 7200 bps; #2074 is a prerequisite)	328	6,895	63
1325	Auto Call Feature	52	1,170	1
3602	EIA Local Attachment	31	563	1
4723	Internal Clock	32	734	1
	1200 bps Integrated Modem (requires #4723 and #5202):			
4781	Non-switched	16	387	4
4782	Switched with Auto Answer	24	516	5
5202	Modem Base (for mounting #4782)	36	937	3
7487	Station Selection Feature	25	580	1
7851	Text Transparency Feature (for EBCDIC)	25	580	1
4645	Integrated Communications Adapter	165	4,415	17
4801	8000 bps Local Interface (for local attachment of an IBM binary synchronous 3275 Display; modems not required)	28	760	1
4802	2400 bps Local Interface (for local attachment of an IBM binary synchronous terminal; modems not required)	28	760	1
6202	Synchronous Line, Medium Speed (up to 7200 bps)	87	2,300	3
7851	Text Transparency (for EBCDIC)	25	580	1

*Rental prices include equipment maintenance.

IBM System/3 Communications Capabilities

Monthly License Fee

	RPG II Compiler	Telecommunications Feature*
System/3:		
Model 4 and 6	40	46
Model 8	54	46
Model 10 (card)	37	37
Model 10 (disk)	54	39
Model 12	89	—
Model 15	106	—

*RPG II for the Model 12 and 15 includes the Telecommunications feature as standard.■

IBM System/3 Communications Capabilities

▶ *Communications Control Program* (CCP) provides control facilities for multi-terminal communications systems connected to a System/3 via either the BSCA or MLTA. The System/3, in turn, can operate as a tributary terminal to a host System/360 or 370 computer. CCP permits programs coded in COBOL, FORTRAN, or RPG II to access the terminals; handles resource management to reduce contention between programs accessing the same files; monitors the terminals and responds to their commands; and controls the concurrent execution of multiple application programs within the CCP partition. A special version of CCP is used with the System/3 Model 4 to control multiple local display workstations.

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II, COBOL, FORTRAN, and Assembler applications programs.

RJE Work Station (RJE/WS) provides job entry capabilities for a System/3 equipped with a BSCA to a System/360 or 370 running under OS/360. Point-to-point or multipoint arrangements are supported.

PRICING

IBM offers the System/3 on a purchase or rental basis. The standard IBM rental contract includes equipment maintenance and entitles the customer to up to 176 hours of billable time per month. Time used in excess of that amount is billed, for most System/3 components, at an extra-use rate of 10% of the basic hourly rate, (i.e.; 10% of 1/176 of the monthly rental for each hour of extra use).

The Term Availability Plan (TAP), originally introduced with the System/32, is available for the System/3 Model 4, 8, 12, and 15 Processing Units and features. Under the TAP, which has an initial duration of 36 months, the customer is given a discount of about 5% on monthly rental costs; overtime charges are still applied. Lease and purchase price protection is ensured for the first 12 months. Accruals toward purchase of up to 50% of the purchase price are permitted during the first 36 months. Specified maximum second and third year lease and purchase prices are guaranteed that correspond to an increase of about 5% each year. The TAP can be extended for one year at a time indefinitely, and one extension of less than one year is permitted. Component or feature discontinuance or downgrades incur termination charges.

All of the software facilities specifically oriented to data communications is included in the Systems Control Programming for the System/3, except RPG II. SCP features are not extra cost. RPG II and the Telecommunications features are extra cost.

		Rental (1-year lease)*	Purchase Price	Monthly Maint.
2074	Binary Synchronous Communications Adapter (up to 50K bps)	329	7,660	79
1315	Auto Call Feature	48	1,300	1
3601	EIA Local Attachment	29	625	1
4703	Internal Clock Feature	30	816	1
	1200 bps Integrated Modem (requires #4703 and #5201):			
4781	Non-switched	16	387	4
4782	Switched with Auto Answer	22	516	6
5201	Modem Base (for mounting #4781)	34	937	3
7477	Station Selection Feature	23	644	1
7850	Text Transparency Feature (for EBCDIC)	23	644	1
2084	Binary Synchronous Communications Adapter, Second (up to 7200 bps; #2074 is a prerequisite)	329	7,660	79
1325	Auto Call Feature	48	1,300	1
3602	EIA Local Attachment	29	625	1
4723	Internal Clock	30	816	1
	1200 bps Integrated Modem (requires #4723 and #5202):			
4781	Non-switched	16	387	4
4782	Switched with Auto Answer	22	516	6
5202	Modem Base (for mounting #4782)	34	937	3
7487	Station Selection Feature	23	644	1
7851	Text Transparency Feature (for EBCDIC)	23	644	1
4645	Integrated Communications Adapter	152	4,905	17
4801	8000 bps Local Interface (for local attachment of an IBM binary synchronous 3275 Display; modems not required)	26	844	1
4802	2400 bps Local Interface (for local attachment of an IBM binary synchronous terminal; modems not required)	26	844	1
6202	Synchronous Line, Medium Speed (up to 7200 bps)	80	2,555	3
7851	Text Transparency (for EBCDIC)	23	644	1

*Rental prices include equipment maintenance.

IBM System/3 Communications Capabilities

Monthly License Fee

	RPG II Compiler	Telecommunications Feature*
System/3:		
Model 4 and 6	40	40
Model 8	50	38
Model 10 (card)	37	37
Model 10 (disk)	54	40
Model 12	89	—
Model 15	93	—

*RPG II for the Model 12 and 15 includes the Telecommunications feature as standard.■

IBM System/3 Communications Capabilities

MANAGEMENT SUMMARY

The IBM System/3 is still probably the most widely used small business-oriented computer system. Introduced originally in 1969, along with a brand new 96-column card format, the system has been extended both upwards and downwards into a family spanning a broad range of capabilities. Bounded on the upper end by the System/370 family, the System/3 may have reached its upper limit for expansion. On the lower end, the System/32 forms a similar boundary. A new direction was taken when the System/3 Model 4 was introduced in January 1976 as a multiuser system. This approach, long advanced by minicomputer vendors, provides essentially a miniature time-sharing system for local transaction oriented processing.

Communications support for the System/3 is limited. Depending on the particular model, a System/3 can support up to two synchronous communications lines and up to eight asynchronous lines. (The eight line MLTA required to support asynchronous communications is an RPQ). If the hardware support is limited, the software support for those features is comprehensive. The System/3 can function as a:

- Tributary station on a multipoint line connected to a host System/370 or other IBM computer system.

- Control station for one or two synchronous multipoint communications lines.

- Control station for a network of up to eight low speed asynchronous communications lines.

- Multileaving remote job entry work station for a System/370 host system.

- Host computer for a network of up to two synchronous and eight asynchronous communications lines serving up to 15 communications tasks concurrently for applications programs written in RPG II; COBOL, FORTRAN, and Assembler.

- Host computer for one multipoint synchronous communications line for an applications program written entirely in RPG II-style specification form.

USER REACTION

In June 1976, Datapro Research Corporation mailed a questionnaire to about 10,000 subscribers asking them to share their experience with computer systems. From that mailing, a total of 98 users responded with information about the IBM System/3. Of those, 32 were using a System/3 for data communications applications. A total of 37 batch terminals and 68 interactive terminals were ▷

> A group of processor features for implementing one or two binary synchronous communications lines operating at up to 50,000 bps.
>
> An RPQ permits connection of up to eight low-speed asynchronous communications lines.
>
> Depending on the processor model and the features implemented, the incremental cost for adding one communications line to a System/3 ranges between $145 and $482 per month, including maintenance.

CHARACTERISTICS

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12	2	0	1
12	1	1	1
15	2	0	1

TRANSMISSION SPECIFICATIONS

BSCA: Accommodates one point-to-point switched (DDD) or non-switched (Leased) communications line operating at ▶

IBM System/3 Communications Capabilities

▷ represented. A summary of the ratings given by these users is presented below.

	Excellent	Good	Fair	Poor	WA* Comm.	All
Overall satisfaction	17	13	1	0	3.5	3.3
Ease of operation	17	12	1	0	3.5	3.5
Mainframe reliability	29	3	0	0	3.9	3.8
Peripheral reliability	17	14	1	0	3.5	3.4
Maintenance—						
Promptness	22	10	0	0	3.7	3.6
Quality	17	14	1	0	3.5	3.4
Technical support	12	17	2	1	3.3	3.0
Software—						
Operating system	12	18	1	0	3.4	3.3
Compilers and	12	18	2	0	3.3	3.3
assemblers						
Applications	5	13	3	1	3.0	2.8
programs						
Ease of programming	15	15	2	0	3.4	3.3
Ease of conversion	11	13	3	0	3.3	3.2

*Weighted Average based on 4.0 for Excellent. The Comm. WA represents the 32 communications users; the All WA represents all 98 users responding to the survey.

Except for Ease of operation and Compilers and assemblers (which were rated equivalently by the communications users and all users), the communications users were consistently happier with the System/3 than the non-communications users.□

▶ 600, 1200, 2000, 2400, or 3600 bps or a point-to-point non-switched line operating at 4800, 7200, 19,200, 40,800 or 50,000 bps. Essentially all IBM Bisync terminals and computer systems operating within these parameters can be accommodated. In addition, a System/3 equipped with a BSCA can serve as a tributary on a multipoint line to a System/360 or 370 computer system at speeds up to 7200 bps. The System/3 with a BSCA can serve as the control station for a multipoint line operating at up to 7200 bps. For those System/3 models that can accept a second BSCA, the maximum speed of the second feature is 7200 bps, but the second BSCA does not limit the operation of the first BSCA in any way.

A number of features are available for the BSCA, to implement the above and additional capabilities, including Auto Call, Internal Clock, Station Selection, and Text Transparency.

Auto Call cannot be installed with Station Selection, Internal Modem (see below), or EIA Local Interface (see below).

The Internal Clock feature provides a data rate of 600, 1200, 2000, or 2400 bps for modems that do not provide clocking. If any one terminal on a multipoint line uses internal clocking, all must use it. The feature cannot be installed with EIA Local Interface (see below).

Station Selection is required for the System/3 to function as a tributary station on a multipoint line. It cannot be installed with Auto Call, but it does not preclude operation of a System/3 with BSCA as a control station on a multipoint line. Concurrent tributary and control station operation is not possible using the same BSCA adapter. Alternate use of the same BSCA for tributary and control station operation may require switching modems.

Text transparency is available only for EBCDIC code and permits any character code to be transmitted as data; i.e., control character recognition is suspended.

Additional features available with the BSCA for the System/3 Model 8, 10, 12, and 15 include an EIA Local Interface and an Integrated Modem.

The EIA Local Interface allows the connection of a 3271 Model 1 or 2 controller (3270 cluster display) or stand alone 3275 Model 1 or 2 display directly to the System/3 BSCA without modems. A transfer rate of 2400, 4800, or 8000 bps is supported.

The Integrated Modem operates at 1200 bps. It is available in two modems; one for use over a non-switched line and one for a switched line. The switched line version includes Auto Answer. This feature requires the Modem Base feature. If two BSCA features with Integrated Modems are installed, a separate Modem Base feature is required for each.

ICA: Provides one or two local interfaces and one remote interface; only one can be active at a time. The remote interface feature (Synchronous Line, Medium Speed) supports one half-duplex, binary synchronous communications line operating at up to 4800 bps over a switched facility and up to 7200 bps over a non-switched facility. Point-to-point or multipoint (control station only) operation is supported. ASCII or EBCDIC code is supported. An EBCDIC Text Transparency feature is available for remote or local operation. The 8000 bps Local Interface feature supports a 3271 Model 1 or 2 controller (3270 cluster display) or a stand alone 3275 Model 1 or 2 display. The 2400 bps Local Interface feature supports one bisync terminal such as a 3741 key/diskette unit. Modems are not required to connect terminals to a System/3 ICA via an ICA. On the Model 12, the ICA and the second BSCA are mutually exclusive.

MLTA: An RPQ for the System/3 Model 10, 12, or 15. It accommodates up to eight low speed, asynchronous, point-to-point or multipoint lines. It can support communications with IBM 1050, 2740, 2741, CMCST, or similar terminals, including IBM 3767 and System/7 units emulating a 2741.

SOFTWARE

A number of facilities are available to support data communications on the System/3, including:

● RPG II Telecommunications (all models).

● Communications Control Program (all models).

● BSCA Multiline/Multipoint (Models 8, 10, 12, and 15).

● Multileaving RJE Work Station (all models).

● RJE Work Station (Models 8 and 10).

RPG Telecommunications feature is standard on the Model 12 and 15 and is an extra cost option for the Model 6, 8, and 10. Model 6 RPG II is available for the Model 4. This feature supports a single BSCA or ICA feature and facilitates the transmission and reception of data over voice grade or high speed communications lines. The programmer fills out a separate specifications sheet, which specifies the functions to be performed. The feature permits the following operations modes: receive only; receive with conversational reply; transmit only, transmit with conversational reply, or alternate transmit and receive file. The feature supports point-to-point communications over switched or non-switched facilities; it also supports multipoint operation with the System/3 functioning as a tributary station. ▶

IBM System/3 Communications Capabilities

➤ *Communications Control Program* (CCP) provides control facilities for multi-terminal communications systems connected to a System/3 via either the BSCA or MLTA. The System/3, in turn, can operate as a tributary terminal to a host System/360 or 370 computer. CCP permits programs coded in COBOL, FORTRAN, or RPG II to access the terminals; handles resource management to reduce contention between programs accessing the same files; monitors the terminals and responds to their commands; and controls the concurrent execution of multiple application programs within the CCP partition. A special version of CCP is used with the System/3 Model 4 to control multiple local display workstations.

BSCA Multiline Multipoint (MLMP) provides assembly language level I/O routine support for applications programming in any language. It supports the ICA and one or two BSCA features in point-to-point or multipoint (tributary or control station) arrangements. It cannot be used with an RPG II program that uses the Telecommunications feature.

Multileaving RJE Work Station (MRJE/WS) permits a System/3 equipped with a BSCA or ICA to function as a remote job entry work station to a System/370 operating under OS/360 (HASP or ASP), OS/VS1 (JES/RES), OS/VS2 (JES2/3), or VM/370 (RCS). It supports point-to-point communications only. Input can be from a combination of devices. Output (returned data set) can be directed to the originating work station, to another work station, or to a central facility peripheral device. The multileaving feture improves the efficiency of normal BSC transmission by appending ACK's and NACK's to returned data blocks rather than sending them as separate messages. Data blocks from multiple active tasks may be intermixed in the data stream. MRJE/WS disk files can be accessed by print, copy, and dump utilities and by RPG

II, COBOL, FORTRAN, and Assembler applications programs.

RJE Work Station (RJE/WS) provides job entry capabilities for a System/3 equipped with a BSCA to a System/ 360 or 370 running under OS/360. Point-to-point or multipoint arrangements are supported.

PRICING

IBM offers the System/3 on a purchase or rental basis. The standard IBM rental contract includes equipment maintenance and entitles the customer to up to 176 hours of billable time per month. Time used in excess of that amount is billed, for most System/3 components, at an extra-use rate of 10% of the basic hourly rate. (i.e.; 10% of 1/176 of the monthly rental for each hour of extra use).

The Term Availability Plan (TAP), originally introduced with the System/32, is available for the System/3 Model 4, 8, 12, and 15 Processing Units and features. Under the TAP, which has an initial duration of 36 months, the customer is given a discount of about 5% on monthly rental costs; overtime charges are still applied. Lease and purchase price protection is ensured for the first 12 months. Accruals toward purchase of up to 50% of the purchase price are permitted during the first 36 months. Specified maximum second and third year lease and purchase prices are guaranteed that correspond to an increase of about 5% each year. The TAP can be extended for one year at a time indefinitely, and one extension of less than one year is permitted. Component or feature discontinuance or downgrades incur termination charges.

All of the software facilities specifically oriented to data communications is included in the Systems Control Programming for the System/3, except RPG II. SCP features are not extra cost. RPG II and the Telecommunications features are extra cost.

		Rental (1-year lease)*	Purchse Price	Monthly Maint.
2074	Binary Synchronous Communications Adapter (up to 50K bps)	314	9,570	71.50
1315	Auto Call Feature	46	1,620	1.00
3601	EIA Local Attachment	28	781	1.00
4703	Internal Clock Feature —	29	1,020	1.00
	1200 bps Integrated Modem (requires #4703 and #5201):			
4781	Non-switched	16	483	3.50
4782	Switched with Auto Answer	21	644	5.50
5201	Modem Base (for mounting #4781)	33	937	2.50
7477	Station Selection Feature	22	805	1.00
7850	Text Transparency Feature (for EBCDIC)	22	805	1.00
2084	Binary Synchronous Communications Adapter, Second (up to 7200 bps; #2074 is a prerequisite)	314	9,570	71.50
1325	Auto Call Feature	46	1,620	1.00
3602	EIA Local Attachment	28	781	1.00
4723	Internal Clock	29	1,020	1.00
	1200 bps Integrated Modem (requires #4723 and #5202):			
4781	Non-switched	16	483	3.50
4782	Switched with Auto Answer	21	644	5.50
5202	Modem Base (for mounting #4782)	33	937	2.50
7487	Station Selection Feature	22	805	1.00
7851	Text Transparency Feature (for EBCDIC)	22	805	1.00
4645	Integrated Communications Adapter	145	6,130	18.00
4801	8000 bps Local Interface (for local attachment of an IBM binary synchronous 3275 Display; modems not required)	25	1,055	1.00
4802	2400 bps Local Interface (for local attachment of an IBM binary synchronous terminal; modems not required)	25	1,055	1.00
6202	Synchronous Line, Medium Speed (up to 7200 bps)	77	3,190	3.00
7851	Text Transparency (for EBCDIC)	22	805	1.00

*Rental prices include equipment maintenance.

IBM System/3 Communications Capabilities

Monthly License Fee

System/3:	RPGII Compiler	Telecommunications Feature*
Model 4 and 6	$38	$38
Model 8	50	38
Model 10 (card)	37	37
Model 10 (disk)	50	38
Model 12	81	—
Model 15	85	—

*RPG II for the Model 12 and 15 includes the Telecommunications feature as standard.■