Honeywell Datanet 6678

The Datanet 6678 front-end processor shown above operates within the Honeywell Distributed Systems Environment.

MANAGEMENT SUMMARY

The Datanet 6678, first introduced in January 1977 and only recently delivered, is actually a Level 6 device, similar in design to Honeywell's minicomputers. Its unveiling coincided with the announcement of Distributed Systems Environment (DSE), Honeywell's answer to IBM's SNA. The 6678 is the first processor to adhere to DSE networking rules.

DSE, which will govern the design and direction of new Honeywell communications-oriented hardware and software products, is built upon two premises. First, future network arrangements must accommodate an integrated, distributed data base. This approach requires the capability to maintain a disk data base in which the parts are physically scattered over the geography of the network. The substance of this premise is that Honeywell has made an irrevocable commitment to true distributed data processing. Second, host processors within the network will not have a master/slave relationship. All host processors under DSE will operate in a "co-operative mode." Bit-oriented protocol for the network will be High-Level Data Link Control (HDLC). Honeywell's sensor-based systems will also conform to DSE rules and, therefore, can be incorporated in a network along with Honeywell's data processing equipment.

A programmable front-end processor for Honeywell Level 66 and Level 68 host computers. The Datanet 6678 operates under NPS, GRTS, or GRTS-II on the Level 66 and under Multics on the Level 68.

The 6678 can accommodate up to 96 full- or half-duplex communications lines operating asynchronously at speeds up to 9600 bps and synchronously at up to 56,000 bps. BSC and the bit-oriented HDLC are supported.

A typical system handling 40 asynchronous and 12 synchronous lines, including two high speed lines, can be purchased for $233,771, or rented for $5,012 per month including maintenance.

The 6678 is the first Honeywell front end to conform to Distributed Systems Environment, Honeywell's networking architecture.

CHARACTERISTICS

VENDOR: Honeywell Incorporated, Honeywell Plaza, Minneapolis, Minnesota 33408. Telephone (612) 870-5200.


DATE OF FIRST DELIVERY: Third quarter of 1978.

NUMBER DELIVERED TO DATE: Information not available.

SERVICED BY: Honeywell Incorporated.

CONFIGURATION

The Datanet 6678 front-end processor is based on Honeywell's Level 6 minicomputer technology. The 6678 was designed to service Level 66 and Level 68 host computers. The basic configuration includes the processor with cache memory, 64K words of memory storage, a host processor attachment, a controller for console and cassette/diskette drive attachment, and six Channel Interface Bases. The maximum number of communications lines that can be physically attached, through adapters, to the six Channel Interface Bases is 48. The processor has a one-microsecond memory cycle time and an average instruction execute time of 2 microseconds. The 64K of 18-bit words of standard memory is expandable in 64K increments up to 256K words. Data traveling between the processor and memory is via the system bus. The Input/Output Multiplexer handles data between the I/O Adapters/Controller and memory storage. The cache memory contains the last information from memory that received processor action, permitting faster access if additional processor action is required upon the information.

CONNECTION TO HOST COMPUTER: The standard Direct Interface Adapter supports attachment to a local host.
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Table 1. Channel Adapters

<table>
<thead>
<tr>
<th>Type of Line Interfaces</th>
<th>Speed, bps</th>
<th>Feature Number</th>
<th>Number of Lines Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS-232C Synchronous</td>
<td>Up to 9600</td>
<td>DCF6611</td>
<td>2</td>
</tr>
<tr>
<td>RS 232-C Asynchronous</td>
<td>Up to 9600</td>
<td>DCF6612</td>
<td>2</td>
</tr>
<tr>
<td>CCITT V.35 for HDLC Synchronous</td>
<td>Up to 9600</td>
<td>DCF6623</td>
<td>1</td>
</tr>
<tr>
<td>CCITT V.35 for High-speed Synchronous</td>
<td>Up to 56,000</td>
<td>DCF6627</td>
<td>1</td>
</tr>
<tr>
<td>BSC, voice-grade</td>
<td>Up to 2400</td>
<td>DCF6618</td>
<td>1</td>
</tr>
<tr>
<td>BSC, high-speed</td>
<td>Up to 56,000</td>
<td>DCF6621</td>
<td>1</td>
</tr>
<tr>
<td>Synchronous, high-speed</td>
<td>Up to 56,000</td>
<td>DCF6619</td>
<td>1</td>
</tr>
<tr>
<td>HDLC, voice grade</td>
<td>Up to 9600</td>
<td>DCF6620</td>
<td>1</td>
</tr>
<tr>
<td>HDLC, high-speed</td>
<td>Up to 56,000</td>
<td>DCF6622</td>
<td>1</td>
</tr>
<tr>
<td>Automatic Call Unit</td>
<td>Up to 9600</td>
<td>DCF6613</td>
<td>2</td>
</tr>
</tbody>
</table>

Configuration

DCF6678 Front-end Network Processor

(1) Basic memory is 64K 18-bit words, expandable in 64K word increments to 256K words.

(2) One or two Peripheral Interface Adapters are optional.

(3) One Direct Interface Adapter, providing connection to the host, is standard. A second adapter, which serves only for backup redundancy, is optional.

(4) Six Channel Interface Bases, which support all channel adapters, are standard. Six additional CIB's can be added. Three types are available; DCF6607, which supports all channel adapters; DCF6605, which supports all adapters except BSC; and DCF6609, which supports all except HDLC.

(5) Four Channel Adapters can be attached to one Channel Interface Base. Depending on type of line interface, each adapter can support one or two lines; see Table 1.
Physically, the handsome 6678 occupies 6 square feet of floor space compared to the 27 square feet of older Datanet models. The physical mounting of up to four unique-function daughter boards onto one mother board is an example of DSE's packaging technological improvements. A tangible result is that the 6678 can be expanded one communications base at a time, whereas the smallest equivalent increment in earlier Datanets is four.

Development delayed first delivery of the 6678 until third quarter 1978, a full year later than the originally scheduled delivery date. It was too early for us to gather user experience.

computer. Optionally, a second Direct Interface Adapter can be added for a total of two paths to one or two host computers. Only one host link can be active at any given time. Use of a second Adapter for two paths to the same processor would be for back-up purposes.

TRANSMISSION SPECIFICATIONS

The Channel Interface Base serves as the interface between the Input/Output Multiplexer and up to four Channel Adapters. Six Channel Interface Bases are standard, with one to six additional Bases available as options. The maximum of 12 Bases can support up to 48 Channel Adapters. Different Channel Adapter types can be selected, depending upon the type of line interface to be supported Synchronous speeds up to 56,000 bps and asynchronous speeds up to 9600 bps are accommodated. Except for the Bisynchronous adapter, lines can be either full- or half-duplex. The number of lines each adapter can support is shown in Table 1. The six Channel Interface Bases included in the basic 6678 are the "standard" type. The standard Base will support all Channel Adapters except HDLC, and a third supports all except the Bisynchronous Adapter. Automatic dialing is available as a feature that occupies one adapter slot in the Channel Interface Base. Each Automatic Call unit can handle up to two lines.

The equipment is available for purchase or for rental under a 1-year, 3-year, 5-year, 6-year, or 7-year lease. Maintenance is included in the rental prices for periods from 8 a.m. to 6 p.m. on Mondays through Fridays. For other periods, the user pays a fixed percentage of the monthly maintenance charge. Alternatively, the user can obtain on-call maintenance service at standard hourly rates of $45 per man-hour.

The software to drive the 6678 front-end processor when it is attached to a Level 66 host is the Network Processing Supervisor (NPS). NPS will interface with GCOS-66 operating system and requires no applications reprogramming. Software similar to NPS that is native within the Multics operating system operates the front-end processor when it is attached to Level 68 hosts. Along with performing the communications line handling function, the 6678 software provides automatic restart/recovery options and statistical traffic recording.

Alternatively, the Remote Terminal System (GRTS) or its updated version (GRTS-II) will operate the Datanet 6678 when the host is a Level 66 computer. GRTS does not perform all the functions of NPS and in that light can be considered a sub-set of NPS.

CONSOLE: The System Support Controller serves as the interface between the Input/Output Multiplexer and the console. A diskette or a cassette drive can be attached to the controller for bootstrapping and operating system support. The Honeywell Heavy Duty Console is required when the operating software is NPS. Otherwise, a basic teleprinter console can be used.

PERIPHERAL INTERFACE: Up to two Peripheral Interface Adapters are optional. The primary reason for this capability is for the attachment of disk for audit, restart and message switch purposes. GRTS software does not support this option.

PRICING

<table>
<thead>
<tr>
<th>Monthly Lease (1)</th>
<th>1-year</th>
<th>6-year</th>
<th>Purchase</th>
<th>Monthly Maint.</th>
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<tbody>
<tr>
<td></td>
<td>$4,230</td>
<td>$3,690</td>
<td>$190,870</td>
<td>$491</td>
</tr>
</tbody>
</table>

(1) Includes prime shift maintenance.

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