

Meeting with Bill English: Bell Lab Computers

Nov 13, 1958

\$1.4 M purchase price } original specifications
to do job in 4 hours. (but would like to rent)

want 1 machine in '60
would like to install
in '62 at rate of
2 per month,

Revenue Accounting for entire system.

Western Elec had planned to build the computer - data processing.
but Bell Labs decided not to go into data processing business
(separate from central office machines)

Last Aug '58: Bell approached Western.

Piore, Palmer, De Cato, de Williams want to Bell (BBDP)

[set up Hawkins - committee chairman 12 members]

study was made CTDL circuits of 7070 were decided upon.

- 7070 was described to systems people at Bell (D. Terlado) ← ref.
- Applied programming, etc. other

Bell began to think

[30 man years programming was spent on Bell's machine
17,000 instructions rewritten on a typical installation
to handle 250,000 accounts, in 4 hrs (in \$1.4 M cost)

120
accounting
centers.

250,000
accounts,
each

Proposal Nov 19. de Williams will present.

Daily basis
(20 days per mo.)

- component cost ~ same as 7070 but 2x as fast as 7070

(21 passes are made on data) 705 TX is as fast as

- can be cut down to 12 passes
by reorganization.

7070 with tapes will meet \$1.4M but not time-speed

problem: of renting new machine to Bell - has to be rented to others?

instr. 2 instr per word, up to 8000, no indexing, (buffers removed a lot of this)

word: 8 alphanumeric characters of 7 bits each : typical field is no more than 8 char.
56 + 1 parity

4000 words for main program code

1600 words for sup. routine "system controller".

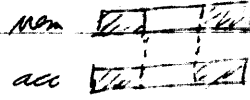
arith: parallel-decimal one time of execution 19 μ s (1% npr/a)

simple 705 instructions (35 ops)

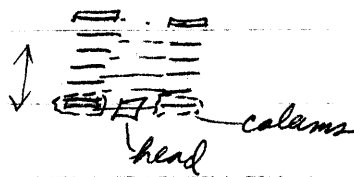
no VFL, but can select a field by masking - no adjusting.

by giving beginning & end characters.

also only characters in acc in some fields are used.



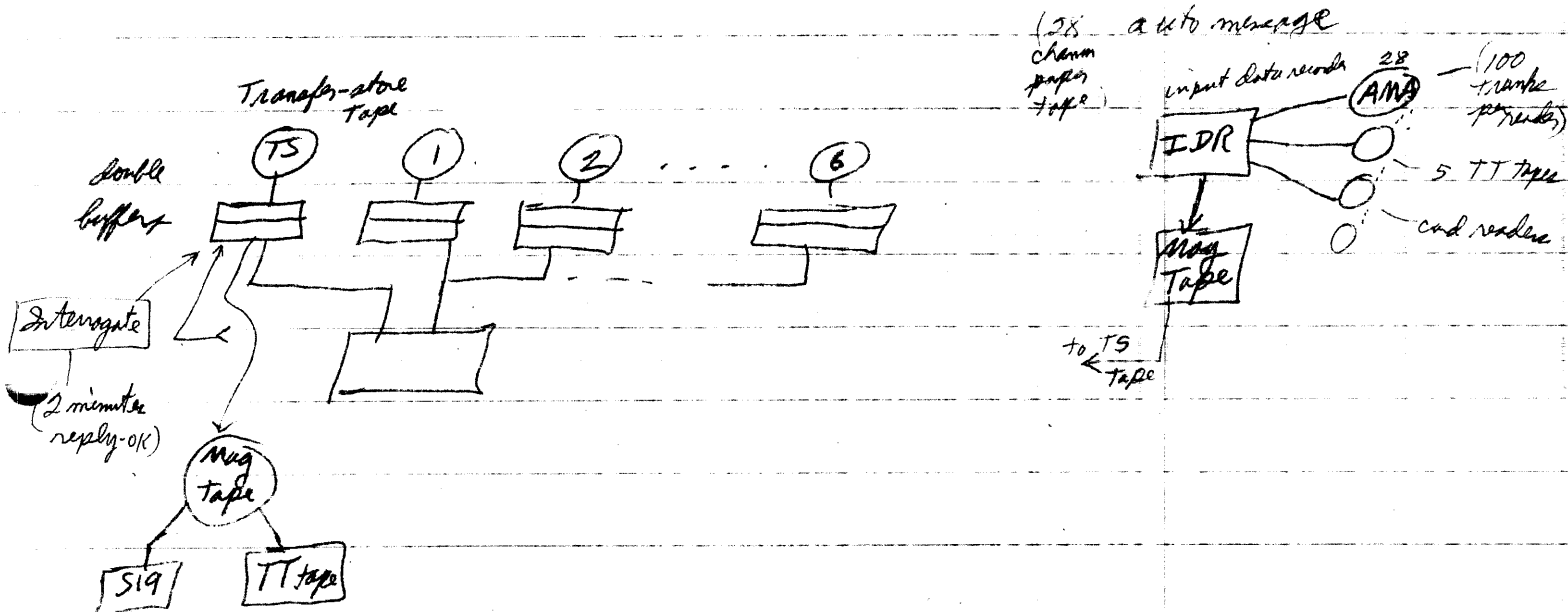
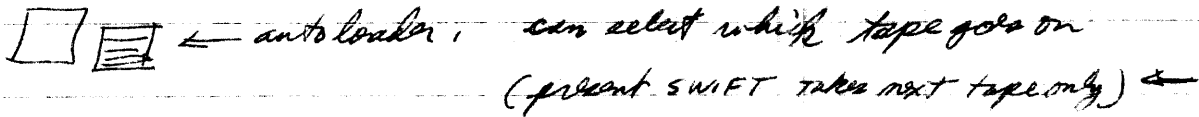
I/O: Tape drives 6 reels/drive installed. - was proposed.



multiple fields on one tape "locus tracks"

operator-less operation is desired. - don't want tape changing.

IBM plans to use 96 KC SWIFT 2 min start time



output tape rewritten on one of regular ones

then rewritten on T.S. tape. — i.e. all I/O is off-line

can change "names" of tapes by using relays. to avoid moving tapes. control program keeps track of which. (indexed I/O)

System of read/write:

- instructions say "read or write" from buffer

480 characters, fixed block

→ buffer filling is automatic.

→ computer stops during transfer.

~~16480~~ 161

1/2" 1/3" 2 msec

200 bits/in

using Ferranti recording

72 KC effective char. rate

(75% of 96 KC)

tape buffer is 4 characters wide

goes at 5 μs rate (reg. memory is 10 μsec)

Transmission continues to record mark (must be 8th char. of word)

- all tapes are separately buffered.

(7070 can do job using control wds & memory — record control wds.)

7070 plans to multiprogram on "SPOOL"

35 million characters each tape (5000 ft reels)

2" wide

120"/sec

200 ^{bits} inches

34 Total Tracks

sets 24

parts 7

Trig 2

- Bell not willing to consider consolidating accounting centers.
alphabetic info. very important +
want a SAP-type assembly
2 out of 5 code on 7070 seemed to be O.K.

also plan to put other jobs on machine - after 4 hours regular.
eg. - service orders
- up-dated directories,
- revenue accounting.

- another separate application - cable pair assignment - routing.
need large-random access memories,
not planning to do it ~~on~~ on this machine

Another machine in product line - a possibility)
- may be same area as 7000-X ?

705 was never highly regarded by Bell - too expensive too slow
705TX too late ?

They want first one in '60.
STRETCH was considered but doesn't fit in 250 K account figure
*1. FM is fixed in their mind - but we shouldn't
discard idea of large machine