INDUSTRIAL DATA PROCESSING APPLICATIONS REPORT

Applications   Subscription Fulfillment

Type of Industry   Publishing

Name of User   TV Guide Magazine
                              Radnor, Pa.

Equipment Used   Univac III Data Processing System

                              Univac 1050 Data Processing System

                              Farrington 2030 Page Scanner

                              Farrington 3010 Document Reader

                              Ampex Tape Deck

                              A. B. Dick Videograph Label Printer

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Synopsis

TV Guide has increased system throughput by eliminating punched cards
in favor of optical character recognition. The company processes more
than 4.5 million subscriptions weekly using two different Univac computers
and an A. B. Dick Videograph capable of printing more than 100,000 labels
an hour. Input to the system is prepared by typists using IBM Selectric
typewriters equipped with scannable font.

       TV Guide was founded as a national publication in 1953 with 10 regional
editions. Today there are 79 editions serving the United States and Canada.
The company's headquarters in Radnor, Pa., a suburb of Philadelphia, employs
more than 600 persons. Another 500 employees are scattered in sales offices
throughout North America. The home office complex houses the magazine's
administrative, advertising, editorial, circulation, production and subscription
departments. The magazine is published by Triangle Publications, Inc.

Data processing has been a major factor in the growth of TV Guide as the nation's largest selling weekly magazine. As an entity, TV Guide has closely paralleled the growth of the industry it covers. Every week more than 14 million copies of the magazine are sold-- 4.5 million by subscription.

Servicing subscribers is the major function of the data processing and customer service departments, which every day process between 20,000 and 25,000 pieces of mail. Most of it is subscription renewel, new subscriptions, address changes and other actions that must be taken to keep subscriber files up to date.

Maintenance of the large subscription file is the job of a Univac III computer, with a 24,000-word core storage capacity, 12 tape drives, a 700 line-per-minute impact printer and a 600 card-per-minute Univac card reader.

TV Guide also uses a Univac 1050 System to process input prepared by two Farrington optical scanning devices and to print out bills, expiration notices and special promotion turn-around documents with scannable font. The 1050 is equipped with a 700 line-per-minute printer, five III-A tape drives, one 6-C tape drive, and an Ampex tape deck, which accepts data processed through the OCR units and stores it on magnetic tape compatible with the 1050's 6-C tape drives. Tape-to-tape conversion is necessary to make the Ampex tapes compatible with the Univac 1050.

Subscription processing can be broken into two distinct categories: new subscriptions, which arrive at Radnor in rough unscannable form; and renewals, address changes, special promotions and gifts which are processed as turnaround documents generated at Radnor and returned by the customer.
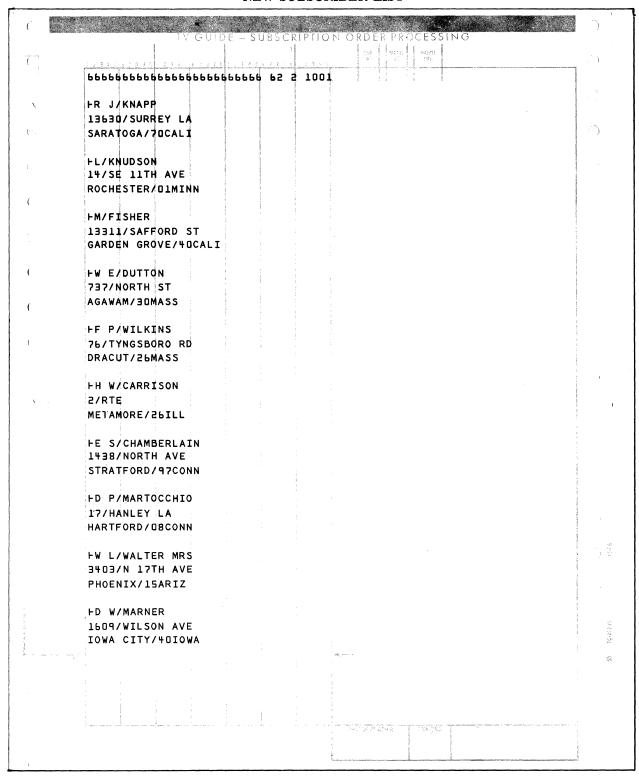
NEW SUBSCRIPTIONS

TV Guide has all but eliminated the punched card in favor of scannable input, and current plans call for the complete phasing out of keypunching in the day to day operations.

Mail is received three times a day by the cashiering department, where it is sorted, batched and any cash, checks or money orders removed. Each batch of mail is given a header slip which serves as a security and quality control check while that batch of 500 orders is being processed. The header reflects the type of order, the amount of money received, the length of the subscription and a source code. When a batch of mail is completely checked, it is sent to the data processing department where the header documents are scanned, and the information they contain stored on magnetic tape and processed through the 1050 which determines the validity of the fields and the correct money amounts for balancing purposes. A Farrington 2030 page reader, which scans at a rate of 10,000 lines an hour, is used to read the previously typed input headers.

Once the initial computer run is completed, the batches of mail are forwarded to a pool of typists in the customer service department, where the names and addresses of new subscribers are typed, 10 to a page, on 35 IBM Selectric typewriters equipped with scannable font.

The typists work under a strict set of rules in terms of what can and cannot be done when preparing input. Maximum length of any line has been set at 35 characters. Typed pages are collected by group leaders, where they are checked and edited by quality control clerks against the source document for accuracy. Checks are also made to make sure there are no smears or typeovers. The close attention to details enables TV Guide to carefully control input quality and substantially lower the reject rate of the Farrington 2030 page scanner.

NEW SUBSCRIBER LIST

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TV GUIDE - SUBSCRIPTION ORDER PROCESSING

666666666666666666666666 62 2 1001

FR J/KNAPP
13630/SURREY LA
SARATOGA/70CALI

FL/KNUDSON
14/SE 11TH AVE
ROCHESTER/01MINN

FM/FISHER
13311/SAFFORD ST
GARDEN GROVE/40CALI

FW E/DUTTON
737/NORTH ST
AGAWAM/30MASS

FF P/WILKINS
76/TYNGSBORO RD
DRACUT/26MASS

FH W/CARRISON
2/RTE
METAMORE/26ILL

FE S/CHAMBERLAIN
1438/NORTH AVE
STRATFORD/97CONN

FD P/MARTOCCHIO
17/HANLEY LA
HARTFORD/08CONN

FW L/WALTER MRS
3403/N 17TH AVE
PHOENIX/15ARIZ

FD W/MARNER
1609/WILSON AVE
IOWA CITY/40IOWA
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NAMES AND ADDRESSES OF NEW SUBSCRIBERS ARE TYPED IN MACHINE-SCANNABLE
FONT ON SPECIAL FORMS DESIGNED FOR INPUT TO OPTICAL SCANNER. BARELY
VISIBLE LINES AND TYPED INFORMATION ARE FOR GUIDING TYPISTS AND FOR
QUALITY CONTROL PURPOSES.

The completed typing jobs are then merged with the header records already scanned and validated by date processing and the entire package is returned to the EDP department and fed through the page scanner. TV Guide has modified its Farrington page scanner to read 10,000 lines an hour. This was accomplished by keeping the field to the 35 character maximum and shortening the sweep of the light beam. The machine processes some 3,300 orders an hour when working to capacity. When the reader fails to recognize a letter, it automatically locks on that letter, a bell rings, and the correct letter can be inserted manually through a keyboard on the controls.

Input is funneled into the Ampex tape deck, and the data -- the customer's name, address and header control information -- is stored on magnetic tape. The tapes are then run through the 1050 for a validity check (header vs. details) and zero balanced. Another tape-to-tape run prepares the data for the Univac III where all subscriber files are maintained.

Address changes are handled with similar procedures except that financial information is eliminated.

SUBSCRIPTION RENEWALS

The great majority of subscription renewals are generated automatically from the subscription tapes. Renewal reminders are run on the Univac 1050 which automatically prints out scannable turnaround documents in a tape to print run. The first reminder is sent 18 weeks prior to the subscription lapse. Follow-ups are sent at 12 weeks and eight weeks. The customer merely checks the number of years he would like to renew, and whether he is enclosing payment or prefers to be billed later. The mail is then sorted, payments separated from customers who would prefer to be billed, and the renewals sent to data processing in batches of 500.

The batched renewals are run through the Farrington 3010 document reader which inputs the data, a finder code, to magnetic tape storage at a speed of 250 per minute. One week after the renewal is processed the tape automatically generates a bill. If payment is not received, the 1050 generates a second bill five weeks later. If payment is still not received 13 weeks after the order is received, the subscription is automatically cancelled by the Univac III.

ADDRESSING

The final output from the system is more than 4.5 million addressed labels. One of the 12 Univac III tape drives is interfaced to an A. B. Dick Videograph printer capable of printing 110,000 labels an hour. The Videograph is on and running 50 hours a week.

Besides the printing of labels, "bag tags" are printed once every four weeks for attachment to post office mail bags. The use of these tags speeds delivery, since a bag doesn't have to be opened until it reaches the local post office.

Three major runs are made on the Univac III weekly. The first processes against the active file all new business, renewal business and customer relations transactions. The second, a re-entry run, processes all items that may have been rejected during the first run and replaces change of address at their new spot. The third is the most important. It produces all cash and billing reports, source code analysis reports and creates the tapes for mailing labels. It also produces lists of impending expirations and billings on magnetic tape for processing by the Univac 1050.

Besides the active files, post office requirements make it necessary for TV Guide to keep more than 4 million inactive files on the Univac III's tapes. The system is also used to analyze sales to wholesale outlets. These figures are based on a routine which bases sales on past performance by the various outlets.

RENEWAL FORM AND CORRESPONDING HEADER RECORD

HDR ID	DISP & BAG NO	MAG CODE	REFERENCE NO ST ISSUE |DAY| BATCH NO	UNIT PRICE	TERM	PMT ST	HDR REC TYPE

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ΥΥ  1601  000  792026001  0700  052  11  01

001  00000700  00  000  3011000
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ORDER COUNT	AMOUNT PER BATCH	MULT COP	ADV ST	SOURCE CODE

1 PAID HEADER RECORD

TV GUIDE
America's Television Magazine
BOX 400, RADNOR, PENNSYLVANIA

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R280  00  02148  0056  CHAMPS   -CO 8                    +
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72101
505711
80422
```
Do not write in this space

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C A CHAMPS MISS
   56 HANCOCK RD
MALDEN              MASS   02148
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☐ **One Year $7**   ☐ **Two Years $12**   ☐ **Three Years $16**
☑ My remittance enclosed. ☐ Please bill me.

RENEWAL NOTICES (LOWER DOCUMENT ARE PRINTED OUT AUTOMATICALLY ON MACHINE-SCANNABLE FORMS. AS THESE RENEWALS ARE RECEIVED AT TV GUIDE, THEY ARE SORTED AND BATCHED ACCORDING TO TYPE OF PAYMENT; THOSE WITH PAYMENT ENCLOSED ARE BATCHED SEPARATELY FROM THOSE WHICH REQUEST BILLING. FOR EACH BATCH OF 500 RENEWALS, A HEADER DOCUMENT IS MANUALLY WRITTEN THEN LATER TYPED (TOP DOCUMENT) IN MACHINE-SCANNABLE TYPE. ON THE HEADER RECORD, ABBREVIATIONS ABOVE AND BELOW THE CHARACTER FIELDS STAND FOR THE FOLLOWING: HEADER IDENTIFICATION--A NOTICE TO THE COMPUTER THAT THE DOCUMENT IS A HEADER; DISPATCH AND BAG NUMBER--IDENTIFIES DEPART-MENTS INTERESTED IN THE DATA FOR SUBSEQUENT PRODUCTION OF REPORTS; MAGA-ZINE CODE--IDENTIFIES WHETHER THE HEADER IS FOR TV GUIDE OR ANOTHER PUBLI-CATION: START ISSUE--INDICATES FIRST ISSUE CUSTOMER IS TO RECEIVE; DAY--DATE OF PROCESSING; TERM--LENGTH OF SUBSCRIPTION IN WEEKS; BATCH NUMBER--A SEQUENTIAL NUMBER INDICATING WHICH BATCH HEADER IS FOR; PAYMENT STARTED--INDICATES WHETHER PREPAID OR TO BE BILLED; HEADER RECORD TYPE--SHOWS WHETHER BATCH CONTAINS RENEWALS OR NEW SUBSCRIPTIONS; ORDER COUNT--NUMBER OF ORDERS IN THE BATCH; AMOUNT PER BATCH--DOLLAR TOTAL OF BATCH; MULTIPLE COPIES--INDICATES IF CUSTOMER RECEIVES MORE THAN ONE COPY; ADVANCE START--INDICATES WHEN SUBSCRIPTION IS TO START; SOURCE CODE--INDICATES THE WAY THE ORDER CAME IN (E.G., RESPONSE TO A RENEWAL NOTICE), AND SUBSCRIPTION RATE.

Each week wholesalers send check-up information that is used to analyze sales. A pre-printed form is supplied to key dealers which, when returned, gives an indication of weekly sales by outlets.

The Univac III is also used to produce a number of other marketing reports and statistics on TV Guide readers. In addition to the television magazine, the Radnor EDP center also processes Seventeen Magazine subscriptions using almost identical procedures.

RESULTS AND FUTURE PLANS

It is doubtful that TV Guide could have reached the distribution success it has achieved without a sophisticated computer system. The use of Optical Character Recognition input has speeded throughput considerably. Employes that were formerly keypunchers have been converted to typists and by and large appear to function more efficiently.