USING IMPULSE TECHNOLOGY TO IMPLEMENT HOME SHOPPING

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ABSTRACT

Cable's impulse technology is a sophisticated, computer-controlled system that has established itself as a consumer-friendly ordering technique. Automated data collection from subscribers requires hardware installed in the home and a refined software package for the addressable controller. Many of the refinements in impulse technologies have been made to provide application flexibility.

While pay-per-view programming has been the driving force behind impulse technology, its application to home shopping is being explored today.

A traffic model comparing home shopping to pay-per-view will explain why the existing store-and-forward technology is capable of handling home shopping order entry. Examining the traffic under peak loading and penetratrion criteria identifies the configuration parameters for addressable computer equipment required to support impulse shopping.

Full addressable control of the subscriber impulse equipment provides the required security. Also, a subscriber code can be used to identify an authorized purchaser. Downloaded activation, credit limits and disconnect commands provide simple purchase authorization/deauthorization.

Finally, as in pay-per-view, impulse home shopping can be phased into a system. The impulse technology can be used in conjunction with phone ordering.

The real beauty is that today's impulse technology can be used for home shopping and pay-per-view, while its flexibility lends itself to other future applications.

TRAFFIC MODEL

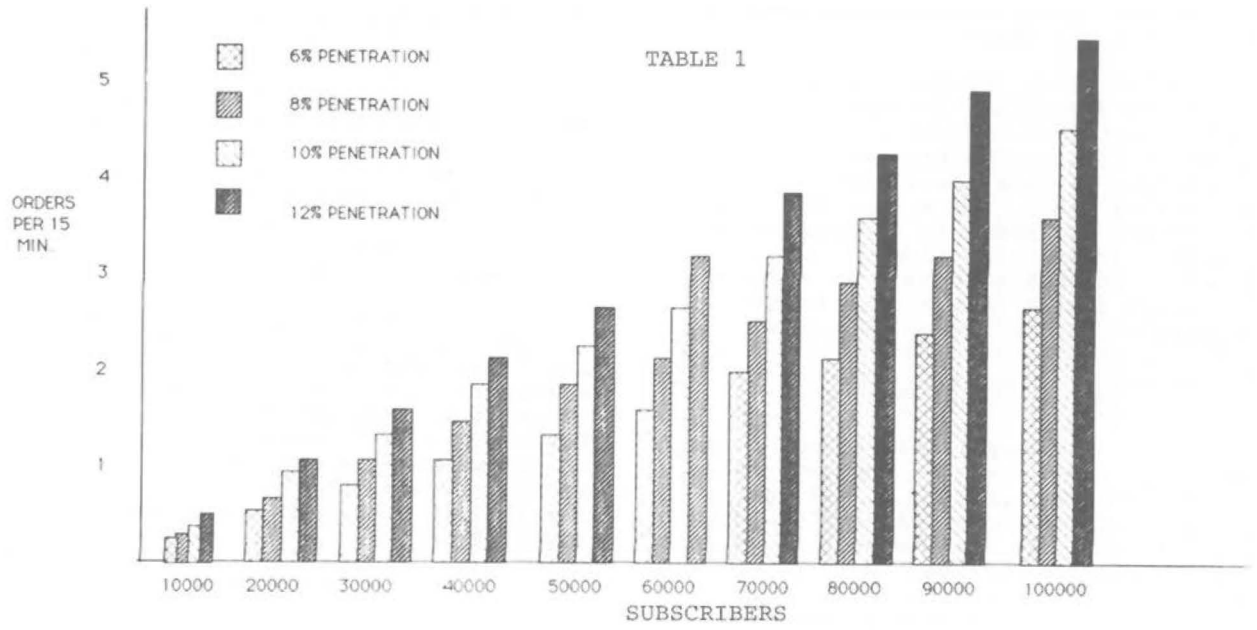
As an overview, there are currently two system configurations today of store-and-forward technology, two-way RF and a hybrid of cable and phone. In both of these systems the addressable computer is in full control of the incoming communications. For the cable return configuration, the computer controls the timing of the communications, and incoming frequency and level. The computer in the phone line return configuration controls the incoming phone line traffic through its polling sequence. The control in both systems is a factor of the software installed in the system and therefore can modified to fit a specific system.

The polling rate in each configuration is dependent on the specific system parameters and the technology in use. Two-way RF is dependent only on the return traffic on the cable system and is therefore the most efficient means of return path. Of course the main issue in a two-way system is the concern of maintaining the return path. The incoming call rate in a hybrid system is dependent on the phone lines in the community, the number of incoming lines to the computer, and the length (number of digits) of the number being dialed.

In the realm of impulse pay-per-view, the peak order load occurs during the 10 minutes before an event begins to 5 minutes into an event. As the impulse system ages and subscribers become accustomed to impulse purchasing, they order events closer to the event start. Thus, buys are truly made on "impulse".

The home shopping industry is truly based on impulsive buying. The products shown on a network are on the air for less than 15 minutes, with an average of 4 to 8 minutes. While the frequency of products on a shopping network, 10 per hour, is much greater than typical pay-per-view programming, one per two hours, impulse technology can meet this application.

To define the average order load for home shopping, the following calculations were made. Home shopping is first divided among a smaller precentage of



subscribers. Typically 6% to 12% of the entire subscriber base are shoppers, while pay-per-view is available to up to 80% of the subscribers - those with addressability. Table 1 shows the average order per 15 minutes which is derived from the following industry averages:

> 6% to 12% of cable subscribers have made a purchase.
>
> The average subscriber who has purchased will make 15 buys per year.

Table 1 represents the number of subscribers in a system multiplied by the 6%, 8%, 10%, and 12% factor. This figure is then multiplied by 15 purchases per year. The total purchases per year is then divided by 365 days, 24 hours, and finally by 4. The 15 minute time period was used so we could compare it to the 15 minutes of ordering in a pay-per-view environment.

In actuality, purchases from home shopping will peak when a product is first seen on the air, peaking 5 to 12 times per hour. Pay-per-view has experienced a peak load on a single offering of 17%-20% of their subscribers with an average of 3%-5% per offering. Even if all the home shoppers in a system ordered an item at the same time (12% of subscriber base) the number of orders would still be less than the maximum load which has already been handled in pay-per-view.

The response time for home shopping purchase is dependent on the ordering method in use and its associated factors. Currently the most common ordering mechanism is human interface. The controlling factors here are the actual dialing of the phone (with pulse dialing this time is longer than tone), and the actual order taking. The software used by the shopping network allows the orders of previous buyers to be entered quickly. The software relies on the data base for shipping and credit information and requires limited information to place an order. It is common for an operator to be able to place an order in 15 to 20 seconds with a total connect time of 30 seconds. This is then added to the time for connect and disconnect.

A new technology to the shopping network is Voice Response Units (VRU). The speed of this ordering method is again dependent on the dialing method and the education of the buyer. If a subscriber is accustomed to ordering with the Voice Response Unit and they have a programmable touch tone phone, they can speed their ordering. This would require the subscriber to program in the shopping network telphone number, identification code (club number), and possibly a size or color identifier.

While this programming will reduce the ordering time from 15 to approximately 10 seconds, many of the subscribers will either not have programmable phones or will wait for the voice prompts before entering information. Therefore, VRU

ordering may reduce the ordering time in some but not all cases.

Ordering with impulse technology not only offers a consumer-friendly ordering technique but also can control the response traffic. The ordering process is dependent on data speed instead of tone dialing rates. Data from the telephone return equipment is transmitted at 300 baud. Transaction time can be reduced to under 5 seconds. In a store-and-forward system though time is not critical.

PREVENTING GRID LOCK

One of the complications seen in the home shopping business is the same as that seen in pay-per-view, local telephone system grid-lock. A "run" on a single product has been known to lock up a local switching office. Not only is this dangerous (emergency calls cannot get through), but valuable orders are lost. With the current order entry system, the phone operators have no control over incoming traffic. Adding a VRU, while reducing order entry time, still does not offer control over incoming traffic. With store-and-forward ordering the addressable computer can control the incoming traffic and prevent grid lock while receiving all the orders.

From the network standpoint the economies of time offered by impulse technology will reduce the grid lock often experienced on their own local switch. Again this grid lock can result in lost orders. Impulse equipment can place orders in their local systems and the addressable controller can be used as a repeater or consolidator. This eliminates the connect and disconnect time for the network's local switching office.

Also important to the ordering process is the identification of authorized purchasers. Current systems utilize a club or identification number to confirm an authorized buyer. A store-and-forward system will support a user selected identification code or "PIN" of up to four digits. This will eliminate orders by non-authorized people (e.g. juveniles). This code can be entered or changed by the authorized buyer for additional security.

For the cable operator, increasing the services (including non-entertainment services), adds value to their transportation system. Impulse can be phased into a system and used in conjunction with phone ordering. Impulse technology can be utilized for pay-per-view and home shopping and its flexibility will lend itself to future applications.

SUMMARY

The benefits of impulse technology's ordering simplicity have been documented in the pay-per-view business. Home shopping, on impulsive business, is the next venture for cable's impulse capability. Order frequency will improve due to impulse technology, impulse-pay-per-view profitted from a two-fold improvement over phone-in ordering. Additional lift in ordering may also be felt in systems which implement impulse shopping and pay-per-view.

Finally, the cable operator will be promoting a new non-entertainment service - Impulse Home Shopping - which is not available to non-cable homes.

Impulse's value is a combination of phone traffic control, consumer-friendliness and, most important, cable exclusivity.