ANI AS A PPV ORDERING TOOL

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ABSTRACT

The Cable Television Manager searches for ways to make Pay-Per-View profitable in his cable system; higher penetration at a lower cost per order is his dream. Automatic Number Identification has answered this call with a easy to use, low cost, 24 hour a day method for subscriber ordering. This can reduce the number of CSR's and business phone lines needed, and provide cost effective "impulse" ordering without the need for thousands of dollars of specialized equipment.

INTRODUCTION

I first heard of Automatic Number Identification (ANI) and its applications for ordering Pay-Per-View events three years ago. I was representing Business Systems, Inc. (BSI) at an Addressability Conference for billing system vendors. After hours of discussion about ANI and other PPV ordering methods, the drawbacks of ANI were obvious to most of us:

- a demanding response time requirement for the billing system
- no immediate positive or negative feedback to the subscriber
- no security from unauthorized use by children in the home
- no convenient method for selecting a specific converter

I heard rumors of cable systems experimenting with ANI, but good things rarely make their way into rumors, so what I heard were the problems, the failures, of these first tries. BSI held a steady course in PPV ordering, offering manual and Audio Response Unit (ARU) methods of ordering events. Then, last Spring, BSI agreed to participate in an ANI test with one of its Cable Television Management System (CTMS) customers. I was called in to lead the software development interfacing with the telephone company turning phone calls into authorized converters and line items on cable service bills.

Remembering every (bad) thing I knew about how ANI worked for ordering PPV events, I was not initially excited about the project. However, with the continuous addition of newer, faster, cheaper computers to the product line of Digital Equipment Corporation and the addition of a new, more efficient programming language to our development arsenal, the demanding response time requirement became less of a burden. The thing that really got me excited about ANI as an ordering tool, however, was that the phone company was going to allow us to indicate which of two recorded messages should be given to the caller.

MULTIPLE MESSAGES

With this new ability, we could then indicate to a caller who attempted to order the 5:00 PM movie at 6:30 PM, that his order was not being accepted. He would then be able to check his ordering instructions, dial the phone number for the 7:00 PM event which he really wished to order in the first place, and get a message indicating that his call was accepted. The "reject" message would also be given to those callers:

- whose phone number we didn't recognize as a valid subscriber,
- who don't have an addressable converter in their home, or
- who are behind in their payments (of course).

By informing the subscriber with a "reject" recorded message, the hostility caused when the caller expects to receive the event is alleviated. Then, when the problem is corrected, the caller usually is more likely to order.

ANI IN THE TELEPHONE SWITCHING SYSTEM

A brief description of ANI is probably overdue at this point. An ANI ordering system is much like the new enhanced 9-1-1 systems in use in cities and counties across the country. In this test configuration, which involves a part of the city of Atlanta, special equipment is needed only at one central office where the Modular Services Node (MSN) is located. When the number is dialed, the tandem switch, which connects the exchanges at the caller's central office with the other central offices throughout Atlanta, "knows" from the three digit prefix, or exchange number, both the central office which handles calls with that prefix and that the number of the calling party should be sent with the outgoing call for identification. This function is not much different from what happens when any phone call is made, making special equipment unnecessary in each central office. Also, since the dialing of the phone number is the only subscriber action needed to complete the transaction, a rotary phone will work as well as a "tone" phone.

When the call reaches the MSN's central office, the tandem switch sends the call to the MSN, instead of to another exchange's switching equipment as would happen with a normal phone call. From here the MSN makes a data packet containing the caller's phone number and the phone number he called and sends it via 2400 baud modems over a leased line to the computer at the cable office. The subscriber phone number database is then searched for a match with the caller's number. If the caller can be identified as a valid subscriber, the order is taken; otherwise the reject is logged for later reporting. The same modem link is used to inform the MSN that the call may be completed. The MSN then picks up the phone (usually before the second ring) and plays a recorded message and hangs up. The entire process, from the time the last digit of the phone number is dialed to when the MSN hangs up the phone, takes less than 16 seconds.

SYSTEM TESTING

Since both the telephone company and BSI were developing new software to process the calls, six weeks were allotted for testing the communication between the MSN and the BSI computer. The first three weeks and the last were the busiest testing days. The first problem identified was that the wrong type of leased line had been installed. Our modems both used two wire; four wire had been set up. While we awaited resolution of this problem, we tested over dial up modems between BSI's office at Greenville, SC and the telephone company's development center. After several days of testing the transport protocol (ANSI X3.28-1976) we had worked most of the obvious bugs out. We then moved to checking the information we were passing back and forth. This part worked well almost immediately. The last day before we were scheduled to "go live," one or two minor glitches were isolated and corrected. The phone company also tested our response times under peak loads. After adjusting the priority of the ANI handling software, we were easily within acceptable limits.

The only major outage for the ANI service came as a result of a late summer thunderstorm, which blew an asynchronous communications port which was connected to the Scientific-Atlanta Addressable Transmitter (ATX), the communications port of that ATX, the phone company's four-wire to two-wire converter on the cable company's end and half the power in the cable office. The ANI system was up within a day, after the phone company checked out and repaired their equipment and a spare ATX was put in place until the damaged one could be repaired.

ORDERING DETERMINATION

The ANI system determines what the subscriber wishes to order by the dialed phone number. In the numbering scheme designed by the cable company, a block of twenty phone numbers was reserved for each of two pay-per-view channels. The fourth and fifth digits matched the channel number (i.e. 340-53xx for channel 53 and 340-54xx for channel 54). The first three digits were determined by the phone company to indicate the exchange number. The final two digits indicated the particular showing time. Using this method it is possible to order an event several hours in advance. It is also possible to order the event after it has started. The cable system defined limit for ordering, after the event begins, is thirty minutes.

THROUGHPUT

In this configuration, sixteen trunk lines have been dedicated to the service, allowing sixteen simultaneous calls. Each call takes sixteen seconds allowing for an average throughput of 1 call per second. Using the number and length of messages required to complete a call, the average throughput of the data link between the MSN and the CTMS can be calculated at

approximately 3 calls per second. The CTMS can handle loads of more than 5 calls per second before system performance significantly begins to degrade, and its worst case response time under these conditions is less than 300 milliseconds.

CONCLUSION

In the ANI test implementation by BSI with North DeKalb Cable TV, customer support representatives reported that ANI was easily and readily accepted by subscribers formerly ordering by manual methods. Further, one month after the ANI system was in full operation, buy rates went from an average of eight previous months at 5.05% to 12.84%. This trend has been reported to be continuing with ANI orders now accounting for an average of 90% of all pay-per-view buys. ANI is providing a major contribution not only to improvement of pay-per-view activity, but also to overall profitability since the ANI operations are handled on an unattended basis running 24 hours each day.