ADVANCED TECHNOLOGY

DRAMATIC NETWORK IMPROVEMENTS THROUGH PREDICTIVE MAINTENANCE – A CASE STUDY

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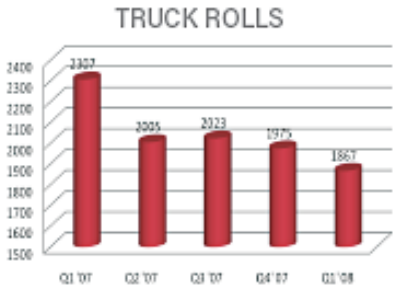
INTRODUCTION

The Time Warner system in Mt. Vernon, NY was a typical HFC system. Operational numbers for metrics such as the number of truck roll, trouble calls, and repeat service calls were proportionally comparable to other Time Warner systems in the region. In January, the Mt. Vernon system added a tool that allowed them to completely change their approach to plant maintenance from a reactive model to a Predictive model. As a direct result, The Mt. Vernon system reachhed an exemplary level of operational numbers within one year. This case study outlines how these results were achieved.

Mt. Vernon is a system within Time Warner's New York City Division. The system provides service to approximately 16,000 basic cable subscribers with 52 fiber optic nodes and 92 miles of coaxial plant. It is an urban/suburban mixed plant with a significant number of MDU's, and was last upgraded in 1995. Maintenance of the plant is performed by 5 service and 3 maintenance technicians.

WHAT IMPROVED?

The following charts clearly show the improvements and trends that were achieved over time through utilizing the new tool and committing themselves to the Predictive Maintenance approach. Truck Rolls in the one-year period decreased 19%, and repeat service calls decreased 13%.



19% DECREASE IN TRUCK ROLLS

13% DECREASE IN REPEAT SERVICE CALLS

While the Truck Roll and Repeat Service Call improvements are impressive, the most dramatic results can be seen in Mt. Vernon's tracking of "Refer to Plant" service tickets. As is the practice with most cable operators, when a service ticket is formed, a service technician is sent to the customer premise to troubleshoot the home and drop. If the service technician is unable to resolve the ticket it is then referred to a maintenance technician to troubleshoot the plant. By employing Predictive Maintenance, the Mt. Vernon system was able to reduce their "Refer to Plant" service tickets by 72.5%.

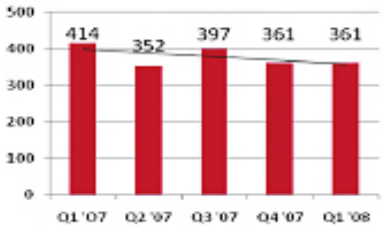
What highlights these improvements as being even more dramatic are the RGU additions that were realized during this same period. One could reasonably expect that as more Digital Phone and HSD subscribers are acquired, that there would be a corresponding increase in the number of service calls related to these services. As the two sets of charts below show, Mt. Vernon went against this expected trend – even with increasing Digital Phone and HSD subscribers, Digital Phone and HSD Service Calls significantly dropped.

72.5% DECREASE IN REFER TO PLANT

DIGITAL PHONE SUBS VS. DECREASE IN DIGITAL PHONE SERVICE CALLS

DIGITAL PHONE SUBS

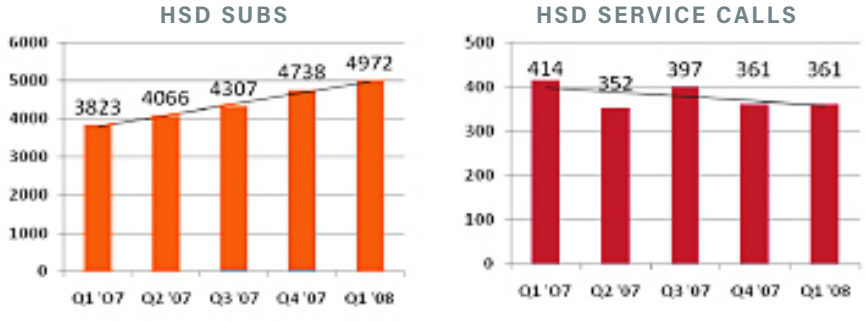
DIGITAL PHONE SERVICE CALLS



30% INCREASE IN DIGITAL PHONE SUBS
12.8% DECREASE IN DIGITAL PHONE SERVICE CALLS

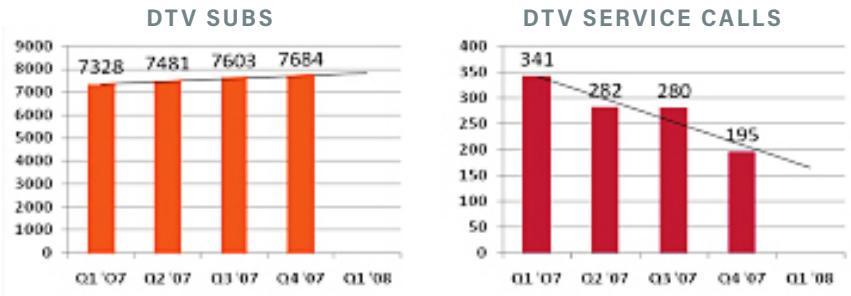
There were also positive trends with Digital Television service calls. Even though there was a slight decrease in the number of subscribers resultant from aggressive Verizon FiOS marketing activity in the area, the Digital Television Service Calls decreased at a significantly greater rate than the subscriber loss.

HSD SUBS VS. HSD SERVICE CALLS



4.8% INCREASE IN HSD SUBS
42.8% DECREASE IN HSD SERVICE CALLS

DTV SUBS VS. DTV SERVICE CALLS



4.4% DECREASE IN DTV SUBS
23.1% DECREASE IN DTV SERVICE CALLS

HOW THE IMPROVEMENTS WERE REALIZED

The tool used by Time Warner Mt. Vernon was the Hunter System by Arcom Digital. Hunter uses radar technology to pinpoint the root causes of network impairments in the plant. Specifically, Hunter uses the inherent nonlinear characteristics of Common Path Distortion (CPD) as a marker to find the source location of network impairments. Hunter is able to identify and calculate the time-distance to the impairment to within feet. Using a database derived from the system's electronic maps, it identifies which device or devices are the corresponding time-distance away. The technician can then pinpoint the exact location and fix the impairment. Troubleshooting and guesswork are thus replaced with an efficient and scientific approach. The operational improvements that Mt. Vernon has experienced is not unique as we have seen similar gains in deployments in other cities in the US and throughout the world.

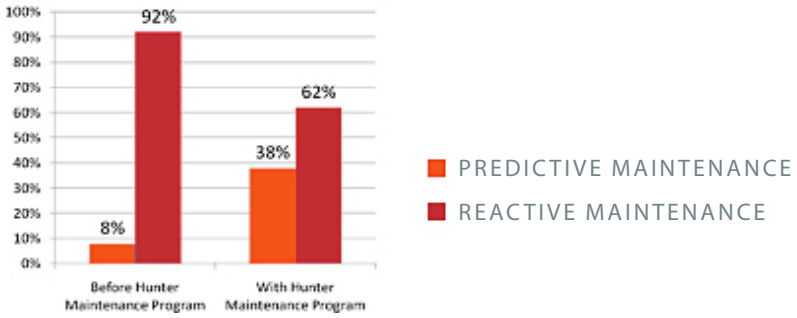
SHIFTING INTO HIGH GEAR

What contributed to Mt. Vernon's success was that all levels of the organization completely bought into the tool as the driving force behind their complete maintenance program. The Hunter system has the ability to identify sources of CPD that are -80dB, well below the system noise floor. The Mt. Vernon system took the approach that they wanted to find and fix all sources of CPD, regardless of the level. If CPD is measurable and exists, it is evidence of a deficiency in a network interface or connection point. In many cases the lower level CPD found by Hunter is not yet network affecting. Mt. Vernon chose to aggressively go after all CPD sources, including low level ones. This enabled a shift in the maintenance program from reactive maintenance driven by outages, customer complaints, and other real problem based inputs to a Predictive Maintenance program where problems are identified and fixed before they become network affecting – and before the customer is impacted.

We immediately saw the value of what Hunter's technology could bring us" reflects Bob Ried, Technical Services Director for Time Warner Mt. Vernon.

Hunter Predictive Maintenance capabilities changed Mt. Vernon's approach towards plant maintenance by adding a new level of intelligence to the existing PM program. "Every morning we analyze which nodes are being affected by CPD and our technicians go out and easily fix it. This affords us more time to perform general plant maintenance," says Bob. With the added time, Mt. Vernon has been able to gradually shift more towards preventative and Predictive Maintenance and away from reactive maintenance, adding to their overall plant performance. The chart below illustrates this shift.

TECHNICIAN MAINTENANCE ALLOCATION



The technicians and equipment users have bought into the program and have diligently used it almost every day for the past year. It has made them more efficient and more satisfied. For Patrick O'Connor, Maintenance Technician at Mt. Vernon, the Hunter platform has been extremely easy to use. "I take pride in my work and with Hunter I know I fixed the problem. I had been working on a node for eight months trying to track a CPD impairment. With Hunter, I found and fixed it in an hour and the problem hasn't come back."

CUSTOMERS NOTICE THE DIFFERENCE

Over the past year, Mt. Vernon has been competing heavily with Verizon FiOS in their area. Despite the competition, all the trends are moving in the right direction. Time Warner has been able to increase Digital Phone and HSD premium service customers. Even with this growing customer base, Mt. Vernon has been able to reduce service calls for those related services by using Hunter to effectively troubleshoot their return path. Best of all, they have been able to do so without the use of expensive node splits.

"I have been completely satisfied with Arcom's Hunter solution" says Brian Kelly VP/GM of Time Warner Mt. Vernon. "During the past year and a half, Mt Vernon has installed no other plant performance or maintenance programs. Hunter is the sole contributor to our plant's increased performance and the reduction of service calls is a direct indication that our customers are happy".

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