Baltimore: Integrating for Emergency and Non-emergency Calls

By Jeff Wittek

It started off like most upgrades do. One agency or department comparing its aging equipment with another's newer models. But, instead of adding some new bells and whistles to achieve parity, this project revised an entire city's approach to call processing. And, along the way, it rewrote the book on large municipal multi-purpose comm centers.

Today, Baltimore City has one of the most streamlined PSAPs in the world. It combines the latest technologies—CTI 9-1-1, mapping, AVL, CAD, trunked radio and more—all in a single Windows NT based LAN. Telecommunicators process both 9-1-1 and 3-1-1 emergency calls presented from a Central Office-based switch with ACD. The entire 35-position system, and its 11-position backup system, are monitored 24-hours a day from a remote Network Operations Center that can take hardware and software inventories, provide pre-failure hardware notification, "inject" hot fixes and new software, and remotely manage an array of maintenance functions.

"We believe we are setting the standard for larger municipalities in processing emergency and non-emergency calls," says William C. Daniels, 9-1-1/3-1-1 coordinator for Baltimore City Police Department. "The ability to dynamically reconfigure our telecommunicators according to call processing needs, and to share information over multiple platforms has set us apart from other major call-centers. More importantly, we have used the technology to improve efficiencies within our agency, which ultimately provides better emergency services to the citizens of Baltimore."

The Way it Was

This major transition was a result of a six-year effort costing nearly $70 million dollars. It began when the City's fire department needed to replace its ailing radio system. The fire crew had also been eyeing the Police Department's CAD system, which had many improved features over theirs. In discussing communications plans for the future, city officials decided on a long range plan that would bring all city call-processing functions under one roof and create a back-up secondary center.

The first step was to move the fire department comm-center to a temporary location atop the Abel Wohlman Municipal Building. This center would be equipped to accommodate fire dispatchers until the new facility was completed. In mid-1998, Baltimore Fire went live with a new Tiburon CAD, and Motorola Gold Elite radio. At that time, the PD comm-center was still in a windowless room within the headquarters building. The City's 3-1-1 call-center was located in an adjacent room. Baltimore was the first city in the nation to deploy 3-1-1 (1996).

"We were all over the place for awhile, so in planning the new center, we had some specific objectives," says Daniels. "First and foremost was the consolidation of all city PSAP call functions into one cohesive unit. That meant a sophisticated call processing workstation that could integrate a variety of applications. My predecessor, Sgt. Nelson Herrman, decided an intelligent workstation was the way to go."

An Integrated Solution

Herrman worked with Bell Atlantic representatives to identify vendors who could supply compatible systems. They chose Plant Equipment, Inc. (PEI) for the 9-1-1 intelligent workstation, MIS and remote access; Tiburon for CAD and mapping; and Motorola for the radio. Representatives from all three companies teamed to integrate their solutions on an easy-to-use desktop. Now, both the new comm-center and the back-up PSAP have identical systems.

PEI's CTI-based VESTA 9-1-1 system works in conjunction with a Nortel Networks DMS-100 CO based switch. The combination provides a sophisticated ACD function as well as Attendant Priority Reassignment (APR), which allows call-takers to log-on (or-off) either the 3-1-1 system or 9-1-1 system as needed. VESTA is integrated with the Tiburon CAD system to provide easy accessibility to all program features on a single desktop. Agent Workstations typically utilize one PC and monitor and two network interface cards, which are controlled with one keyboard and one mouse.

"In the old comm-center we had screens for CAD, screens for ALI, plus telephones, TDD and other devices on the desktop," says Daniels. "Our telecommunicators had a lot of ground to cover. Now, everything is right in front of them. This system is much easier to use."

The New Look

Now located in a newly renovated room within the Baltimore Police Department, the new comm-center has windows overlooking the city. The expansive facility, which was designed by TRW, contains the latest in comm-center technology including a "live" map of the city showing events in progress. Telecommunicators utilize 35 VESTA intelligent workstations to process 9-1-1, 3-1-1, and EMS calls. They field the occasional public works call, as well. There are typically about 16 workstations answering 9-1-1, nine answering 3-1-1, and 3 answering EMS lines. Of course, with APR the room can be dynamically converted to all 9-1-1 within minutes.

"In designing the system, we wanted to reap the benefits of a Central Office switch," says Daniels. "The DMS-100 is an excellent maintenance option, and we have no on-prem equipment. Its Attendant Priority Reassignment function makes it so we can literally have all the workstations here, and in our back-up center, logged in to 9-1-1 within minutes. We use a Nortel CCMIS system to make real-time modifications to the switch."

The comm-center is connected to Bell Atlantic's CO by data-over-voice (Meridian Digital Centrex) proprietary lines. The VESTA network is supported by four powerful servers for maximum redundancy. Telecommunicators log on to the network either as 9-

1-1, 3-1-1, or EMS, using a password confirming their user profile and assigned security level. VESTA gives users an option to pre-record a specialized greeting and a customized set of speed dial numbers, which are available to them at whichever workstation they log-on. Users can also designate a personalized screen lay-out associated with their user profile.

The system utilizes MagIC, PEI's management information system (MIS) package to collect, store and organize its telecommunications data. MagIC can track call data, agent data as well as telcom data in near-real time. This allows Daniels to monitor agent and group activity, troubleshoot anomalies such as excessive abandoned calls, and allocate his resources to optimum levels. The center processes approximately 5,000 emergency calls per day.

To assure optimum performance, the system utilizes PEI's Mission Control service for monitoring, maintenance, hardware/software inventory and future on-line upgrades. Baltimore's network is designed to support advanced features such as ALI over IP (Internet Protocol), and unsolicited ALI for ACN (automatic collision notification).

"This is an innovative approach to the multi-purpose comm-center," says PEI's John K. Fuller, vice president of marketing. "In a center that processes thousands of calls-per-day, it's great to see the power of multiple applications integrated within one workstation while at the same time utilizing the efficiency and economics of CO-based 9-1-1 service. This solution provides the City of Baltimore with one of the nation's most advanced and effective public safety communications systems."

Installation of the new system was completed by Bell Atlantic and the team of vendor integration specialists in October of 1999. Daniels said that from design and installation through training and cutover in mid-November, the project was an excellent example of teamwork.

"This transition was very smooth. We had some call-takers who were a little nervous about making the change, but the training and orientation were excellent," says Daniels. "Every time we had a question, it was answered. In the end, I didn't hear one negative comment from our staff."

Because of the open architecture of the Windows NT platform, Baltimore's system is capable of utilizing a variety of applications such as AVL, Pro Q&A (pre-arrival First Aid), and customized Q&A programs for police.

"One of the best things about this system is it scalability. We can add to it and enhance it according to our needs," says Daniels. "It has the built-in flexibility that will serve us well into the future."

Jeff Wittek is an integration specialist who has been in the 9-1-1 industry for nearly 20 years. He served Montgomery County, PA, for 18 years, rising from Deputy Director of

Telecommunications to Director of Emergency Dispatch Services. He is experienced in both operation and strategic planning for 9-1-1, radio, telephony, and computer technologies. He is an active member of NENA having served as President of Keystone NENA. He currently is the manager of sales engineering for PEI.