PUBLIC TRANSPORTATION

Project Profile

Greater Cleveland Regional Transit Authority: Integrating CCTV, Access Control, and Life Safety

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-Bernard Buckner
GCRTA's Security Systems Manager

Whether they take a bus to work, ride the train to the airport, or travel among the 59 municipalities it serves, Greater Cleveland Regional Transit Authority's riders logged nearly 60 million trips a year. The RTA is one of the largest and most far-flung transit systems in the United States. That makes it especially difficult to provide a safe environment for its 4 million riders and 3,000 employees, and protect its many buildings, millions of dollars of physical assets, and the more than $30 million it collects in fares every year.

When John K. Joyce, the RTA's Chief of Police and Director of Security took his post in 1991, personal safety and protecting assets were long-standing concerns. "Personal crime and safety issues were always number one and two on our surveys back then," he recalled. His first step to address the issues was to formulate a plan to integrate the four independent security systems he inherited. Over time he added CCTV in public areas and offices, electronic access control at RTA facilities, and voice emergency call boxes for passengers and employees.

After six years of progress, Joyce hired Bernard Buckner in 2000 as security systems manager to upgrade the existing equipment and oversee the integration of the system.

Buckner found that the RTA's 28 CCTV cameras, 750 controlled doors, and between 8,000 and 10,000 life safety monitoring points were hardwired into a 20-year-old mainframe computer. The system had a number of operational drawbacks. For example, the mainframe was not Y2K compliant, so all 2001 entries had to be dated 1990, the last year that days and dates corresponded to 2001. The CCTV system recorded images on remote VCRs located throughout the RTA's domain, which posed a logistical problem because tapes had to be manually replaced and were time-consuming to review when there was an incident.

The RTA has the potential for many types of incidents. For example, almost all the money it collects is in small bills and change that is hard to control. To guard against loss or theft, the authority uses CCTV to follow fare boxes from the bus or train to devaulting stations, to an armored car.

Andover Controls
A Balfour Beatty Company

Another potential danger comes from the compressed natural gas (CNG) that the RTA uses to power some of its vehicles. CNG, while environmentally friendly, is colorless, odorless, and more volatile than gasoline. While the gas contains an additive ester which gives warning of it being in the air, it requires diligent monitoring and quick reaction. So the RTA uses monitoring devices to detect CNG leaks and report them to the central station through the life safety system. It also tracks smoke detectors, fire detection, and enunciation systems.

Key control, while much improved over the original master key system, had room for improvement. It was difficult to invalidate keys that were lost or held by former employees, and doors could not be controlled remotely, so security or custodial people often had to travel to a remote site to open doors manually.

Integrating and Updating with Andover Controls

Joyce and Buckner began talking to the authority's long-time system consultant, *SimplexGrinnell*, about upgrading and integrating the CCTV, access control, and life safety systems. Buckner believed the most efficient and economical approach would be an integrated, networked approach that would consolidate control over all three systems. *SimplexGrinnell* recommended replacing the hardwired mainframe-based system with Andover Controls' network-based *Continuum*™ system, and the analog CCTV system with a digital system by Integral Technologies, a company owned by Andover Controls.

Dispatcher Marlena Boyce investigates a signal before dispatching the Transit Police

But first Buckner had to convince the RTA's information technology department to let him switch from his collection of leased and dial-up lines to their system-wide Ethernet network. The Ethernet was used for everything from groupwide communications to time and attendance recording, and went almost everywhere Buckner needed a connection. However, the IT group was concerned about the network resources that the *Continuum* system would use. "But once we showed them the specs, they realized we'd use very little bandwidth," Buckner said. "Even with a lot of signals going off we would use just three to five percent of the bandwidth. *Continuum* just runs in the background and no one notices it." The IT group agreed, and the RTA began installing the *Continuum* system in 2000.

Digital CCTV Saves Money and Streamlines Security Services

The Integral Technologies digital CCTV system, with its networking support, provides the RTA with real financial and operational benefits. For example, the 28 cameras and 6 DVX digital and 21 tape video recorders cover the path of the money from fares. Under the old system, the RTA dedicated a person to changing VCR tapes twice a week. The tapes, which can hold a month's worth of images, were brought back to the command center and stored. If Buckner's group was asked to document an incident, someone had to locate the right tape in the roughly 200 tapes on file and run it through a VCR until the incident was found. If the incident was recorded, Buckner's group made a copy. "It could be pretty time-consuming," he noted. "We spent between 14 and 19 hours a month viewing tapes, and making a copy is a minute-for-minute commitment."

Today, the Integral system streamlines surveillance by enabling departments to access a digital video recorder over the network and view the images themselves on a local PC. Investigators simply type in the location, date, and time they want to scan, and the Integral system calls up images from the DVX digital video recorders. "The only time the security department gets involved is if someone needs a copy of the images," Buckner noted.

Security Officer Jackie Knox-Cawtheon views exterior surveillance

The DVX recorders have more storage capacity than the VCRs. One reason is that the new digital cameras have built-in motion detectors, so nothing is recorded if there is no activity. That boosts the DVX disk's capacity to more than three times of that of the VCRs – an average of 3½ months of images compared with one month.

The Integral system also increases the level of service available to its users. Buckner recalled that a manager who was responsible for many physical assets and records felt he was imposing on the security department to pursue what he felt were minor issues. "He feels better now because the Integral system lets him review images at his PC without involving us at all," Buckner said.

Another benefit of the CCTV's networking support, he noted, is that if there is an alarm, it automatically streams the video from the camera to the central control station.

Integrating Access and Safety Systems with Continuum

While Buckner was upgrading the RTA's CCTV system, he also had in place a five-year program for upgrading the access control and life safety systems and integrating them with the *Continuum* system. The RTA controls about 750 doors and many more life safety systems, which include the CNG monitors, fire and smoke detection and enunciation devices, duress or "panic" buttons, and elevator and escalator monitors. Buckner says one of the biggest benefits of the *Continuum* system is that the RTA did not have to do anything special to piggyback any of these monitoring points on the network. "That's the benefit of a standards-based integrated system," he said. "Other companies have good stand-alone products, but most of them can't combine access control and life safety like Andover does," he says. "A decentralized system is more appropriate for operations smaller than ours. An integrated system gives the centralized command and control a large organization like ours needs, and its operating expense is lower once it is installed."

Another important characteristic of the *Continuum* system, Buckner says, is the fact that its intelligent remote controllers will continue to operate if there is a network failure. Under the previous hardwired system, a network failure would either cause access points to run in a degraded mode — providing access but no information — or lock down and not work at all. "The Andover ACX access controller has all the intelligence needed to keep the local units running and gathering data," Buckner says. "When the network recovers, the data it collects is uploaded to the central site, so nothing is lost."

The Power of Reporting

Finally, Buckner praises the *Continuum*'s ability to create pre-formatted and *ad hoc* reports quickly and easily. "One of the powers of the Andover system is its ability to go to the report writers, let us define an *ad hoc* report, and get it in an electronic format that I can e-mail or fax to someone who needs it," he notes. The difference, he believes, is in the *Continuum*'s Windows NT operating system, which enables him and his staff to make simple point and click selections. Previously, Buckner was limited in the ways he could format a report. He could generate a Word document, but not an Excel spreadsheet. "The *Continuum* gives me output in standard formats as well as a comma delimited format, so I can do anything I want to with it," he points out.

The reporting capability has helped to dramatically reduce the number of security breaches throughout the RTA. Every week, Buckner creates reports of security breaches, and e-mails them to the appropriate Single Access Control Coordinator (SACC), who controls access in an area. The SACC investigates each breach and corrects its cause. The reports enabled one SACC, who had logged 80 to 90 breaches a week, to reduce them to an average of two.

Payoff for a Long-term Vision

Chief Joyce's vision has paid off since he started integrating the security system in 1991. "The transit system was viewed as a dangerous place then," he said. "But in our latest surveys, the most important issues to passengers were on-time service and the cleanliness of buses. Personal safety didn't even make the first five."

Joyce expects the *Continuum* system to play an important role in the RTA's future. Data gathered from the integrated system can be tracked and enable the Transit Police to anticipate needs and determine if their responses affected the number of incidents. Joyce also plans to enable transit police officers to file reports on their own laptop computers and upload them to a central database, where they are accessible and useful.

"We looked at several alternatives before we started this major upgrade, and none of them matched Andover Controls' range and functions," Buckner said. "We picked each system on its own merits — in fact, when we selected the CCTV system by Integral Technologies, I didn't know it was an Andover-owned company. I'm thrilled that we made the decision to go with Andover's *Continuum* and Integral systems."

PROJECT AT A GLANCE:

Project Type:
Security

Project Name:
Greater Cleveland Regional Transit Authority

Location:
59 municipalities in Greater Cleveland, Ohio

Market Segment:
Public Transportation

Andover Equipment Installed:
7– CX 9900
6– CX 9410
2 – CX 9200
5 – CX 9924
24 – ACX 780
5 – ACX 700
2 – LCX 800

Network:
Ethernet TCP/IP

Applications:
Access control
Security management
Intrusion detection
Alarm monitoring
Digital CCTV
Video storage
Key control

Third-party equipment and/or drivers:
Simplex Fire Panels
Grinnell Fire Panels

Number of Controlled Doors:
750

Number of Cardholders:
3,100

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