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CASE STUDY

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Virginia Communications Centers

EXTERNAL ALARM INTERFACE EXCHANGE IEPD SUCCESS IN VIRGINIA COMMUNICATIONS CENTERS

SYNOPSIS

The purpose of the External Alarm Interface Exchange IEPD is to provide a standard data exchange for electronically transmitting information between an alarm monitoring company and a Public Safety Answering Point (PSAP). There are three primary uses for this IEPD: initial notification of an alarm event, bidirectional update of response status acknowledgements between an alarm monitoring company and the PSAP, and bidirectional update of other events related to an active alarm event between an alarm monitoring company and a PSAP. The External Alarm IEPD has been in development for several years and has been tested extensively through partnerships with York County, Virginia, Department of Fire and Life Safety, Emergency Communications Division; City of Richmond's Police Division of Emergency Communications; the Central Station Alarm Association (CSAA); and Vector Security. The recent upgrade of the exchange from GJXDM to NIEM 2.0 at the City of Richmond enables the exchange to conform to current national standards and qualifies it for the U.S. Department of Justice (DOJ)/U.S. Department of Homeland Security (DHS) information sharing grants. In its 2.5 years of operation with the testing partners, the IEPD has transmitted more than 6,000 alarm exchanges between Vector Security and the two Virginia PSAPs. The benefits resulting from these 6,000 exchanges include 6,000 fewer telephone calls to the two PSAPs, eliminating the need for the alarm monitoring company operator to converse with the PSAP call-taker; elimination of miscommunication between the alarm company operator and the PSAP call-taker; and a significant decrease in response times to alarm-related calls for service, with an increase in law enforcement apprehensions made, fires quickly extinguished, and lives saved.

EXECUTIVE SUMMARY

CHALLENGE: The Public Safety Data Interoperability Program identified a need for an External Alarm IEPD to provide a standard data exchange for electronically transmitting information between an alarm monitoring company and a Public Safety Answering Point (PSAP). The primary uses for this IEPD are initial notification of an alarm event, bidirectional update of response acknowledgements between an alarm monitoring company and the PSAP, and bidirectional update of other events for an open alarm event between an alarm monitoring company and a PSAP.

SOLUTION: In a variety of partnerships with industry, government, and nonprofit organizations, the External Alarm IEPD went through several iterations and extensive testing with two Virginia communications centers. The IEPD was first GJXDM-conformant and was recently upgraded to NIEM 2.0 conformance at the City of Richmond.

RESULTS: In its 2.5 years of operation, the IEPD has transmitted more than 6,000 alarm exchanges between Vector Security and the two Virginia communications centers. The benefits resulting from these 6,000 exchanges include 6,000 fewer telephone calls to the two PSAPs, eliminating the need for the alarm monitoring company operator to converse with the PSAP call-taker; elimination of miscommunication between the alarm company operator and the PSAP call-taker; and a significant decrease in response times to alarm-related calls for service, with an increase in law enforcement apprehensions made, fires quickly extinguished, and lives saved.

AGENCY OVERVIEW

The two agencies that served as pilot sites for the Public Safety Data Interoperability Program's External Alarm IEPD were the City of Richmond, Virginia, and the County of York, Virginia. Richmond is a city of nearly 200,000 citizens and 63 square miles and serves as Virginia's capital. The City of Richmond's Police Division of Emergency Communications handles emergency and nonemergency communications for the city's police, fire, and public works departments and is the primary answering point for the Richmond Ambulance Authority. The county of York, Virginia, is rich in history, with approximately 65,000 citizens and 108 square miles. The Emergency Communications Division of the York County Department of Fire and Life Safety handles emergency and nonemergency communications for the county's fire, emergency medical, and law enforcement agencies.

This effort involved a number of other organizations that were key to the success of the IEPD development and testing, including the Bureau of Justice Assistance (BJA), IJIS Institute, the Association of Public-Safety Communications Officials—International (APCO), the Central Station Alarm Association (CSAA), Vector Security, GE Security, and Waterhole Software, Inc.

CHALLENGE

APCO International established the CAD-to-CAD Interconnectivity Project, Project 36, in August 2000, to explore the interconnectivity between different computer-aided dispatch (CAD) systems. In August 2004, APCO International encouraged the expansion and spinoff of Project 36 with the inclusion of voice and data exchange between PSAPs and third-party call center operators such as Central Station Alarm Association member companies. The APCO International Board of Officers assigned the expanded version of this data exchange development program between PSAPs and CSAA member companies to a new third-party call center group, which included the CSAA.

APCO International and the CSAA formally announced on January 4, 2005, a partnership to develop an exchange that will be consistently used by CAD providers and central station alarm companies for PSAPs to increase efficiency and decrease errors.

The purpose of the External Alarm IEPD (3.0) is to provide a standard data exchange for electronically transmitting information between an alarm monitoring company and a PSAP. There are three primary uses for this IEPD:

- Initial notification of an alarm event.
- Bidirectional update of status between an alarm monitoring company and a PSAP.
- Bidirectional update of other events between an alarm monitoring company and a PSAP.

This effort to upgrade the External Alarm Exchange IEPD was sponsored by the Public Safety Data Interoperability (PSDI) Program, funded by the Bureau of Justice Assistance (BJA) and co-managed by the IJIS Institute and the Association of Public-Safety Communications Officials—International (APCO).

The overall Public Safety Data Interoperability (PSDI) Program is anticipated to encompass multiple projects and is focused on advancing standards-based information sharing to support the emergency communications domains—police, fire, and EMS—and other relevant homeland security domains. The goal of this first project is to improve the real-time information sharing capabilities in the emergency response environment. This includes development of high-value information exchanges (IEPDs) related to local communication centers/PSAPs.

The project committee is composed of 16 representatives from law enforcement, fire services, emergency medical services, industry, emergency management, transportation, APCO, and BJA. The IJIS Institute issued an RFP to its

membership for the technical work for this effort. It was awarded to Waterhole Software, Inc. Waterhole created all the technical artifacts contained in the IEPD and contributed significantly to this overview document.

SOLUTION

The first beta site selected for the initial test project to conduct tests between PSAPs and a central alarm monitoring station member company over the Internet was the York County, Virginia, Department of Fire and Life Safety, Emergency Communications Division. Vector Security was selected as the CSAA member company to participate in the electronic alarm exchange. On October 22, 2004, the first data template was successfully completed following this collaboration. The XML standard was used for this initiative.

An Alerts Working Team was formed and met in Daytona Beach, Florida, in February 2006 to begin External Alert 2.0 Information Exchange Package Document (IEPD) development. This working team was formed by the IJIS Public Safety Technical Standards Committee (IPSTSC) to create external alerts and requests-for-service IEPDs using the GJXDM standard.

Following a two-year development effort that included extensive testing, the Alarm Interface Exchange 2.0 between York County and Vector Security went live on July 15, 2006. The initial exchange included only burglar and hold-up alarms.

The City of Richmond's Police Division of Emergency Communications authorized a development partnership with York County, since both localities were using the same CAD system. This partnership included APCO and the CSAA. APCO and the CSAA were anxious to collect as much data as possible surrounding the outcome of the alarm exchange interface and requested that the City of Richmond participate in the pilot. The alarm interface exchange went live between the City of Richmond and Vector Security on August 4, 2006. The initial phase of the pilot was so successful that fire and medical alarms became part of the pilot on October 24, 2006.

On September 11, 2007, the City of Richmond implemented a new Intergraph CAD system to replace the CAD system that had been written in-house and utilized for 27 years. Intergraph was tasked to continue with the alarm interface exchange seamlessly. This endeavor was successful.

In the spring of 2007, discussions began with Nlets—the International Justice and Public Safety Network, APCO, the Virginia State Police, and Vector Security to study the feasibility of routing all alarm interface exchange transactions via a site-to-site VPN between Vector Security and Nlets. All parties agreed to perform a proof of concept, and the necessary security and network NAT rules were put into place. On November 27, 2007, all alarm interface exchange traffic between Vector Security and the two Virginia PSAPs began being routed through Nlets and the state of Virginia switch.

On February 18, 2008, the External Alarm 2.0 schema was implemented at the City of Richmond, bringing the pilot to another milestone in achieving conformance with the GJXDM. GE Security implemented an enhancement to streamline the delivery of alarm data to the PSAP.

Because of the secure transmission path via Nlets and the state of Virginia switch, vulnerability and exposure to the Internet are no longer an issue. The new average time from when an alarm company operator transmits an alarm to a PSAP until the PSAP issues the final acceptance or rejection is 15 seconds or less.

The External Alarm Interface 3.0 IEPD, conformant with NIEM 2.0, was completed on August 28, 2008. The IEPD was listed on the IEPD Clearinghouse website on September 9, 2008, as an extension of the Public Safety Data Interoperability Project funded by the U.S. Department of Justice's Bureau of Justice Assistance. The IEPD was

subsequently submitted through the APCO American National Standards (ANS) process and was formally adopted as a new American National Standard on January 15, 2009, appropriately named the Alarm Monitoring Company to Public Safety Answering Point (PSAP) Computer-Aided Dispatch (CAD) External Alarm Interface Exchange APCO/CSAA ANS 2.101.1-2008.

On April 28, 2009, following the completion of final enhancements to the interface by both GE Security and Intergraph Corporation, the City of Richmond implemented the External Alarm Interface Exchange 3.0 schema and was 100 percent conformant with the ANSI standard and NIEM 2.0. This milestone effectively ended the pilot at Richmond as the interface exchange continues to operate in full production mode. This event has set the stage for all CAD providers and alarm monitoring company software providers to develop their products to a single standard that can be used by all alarm companies and 9-1-1 PSAPs nationwide.

RESULTS

After being in operation for two years, the IEPD has transmitted more than 6,000 alarm exchanges between Vector Security and the two Virginia PSAPs. The benefits resulting from these 6,000 exchanges include:

1. More than 6,000 fewer telephone calls to the two PSAPs, eliminating the need for the alarm monitoring company operator to converse with the PSAP call-taker.
2. Elimination of miscommunication between the alarm company operator and the PSAP call-taker.
3. A significant decrease in response times to alarm-related calls for service, with an increase in law enforcement apprehensions made, fires quickly extinguished, and lives saved.

The adoption of the Alarm Monitoring Company to Public Safety Answering Point (PSAP) Computer-Aided Dispatch (CAD) External Alarm Interface Exchange APCO/CSAA ANS 2.101.1- 2008 is important to software providers of CAD systems and alarm monitoring systems and customers (PSAPs and alarm monitoring companies) of these providers. Without an ANSI standard, these software providers traditionally have written proprietary applications and interfaces, and their customers have paid large sums of money for proprietary solutions. Now that an ANSI standard is available, these software providers need to write only one open-based solution that can be reused across many customer sites. The end result for the PSAPs and alarm monitoring companies is software that adheres to the ANSI standard without customization, reduced license costs, and a much quicker delivery by the software provider upon receipt of order. The amount of time to implement the software at the end-user level is significantly reduced.

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