Control Access and Protect Assets with Print-on-Demand Intelligent ID Cards

ZEBRA TECHNOLOGIES

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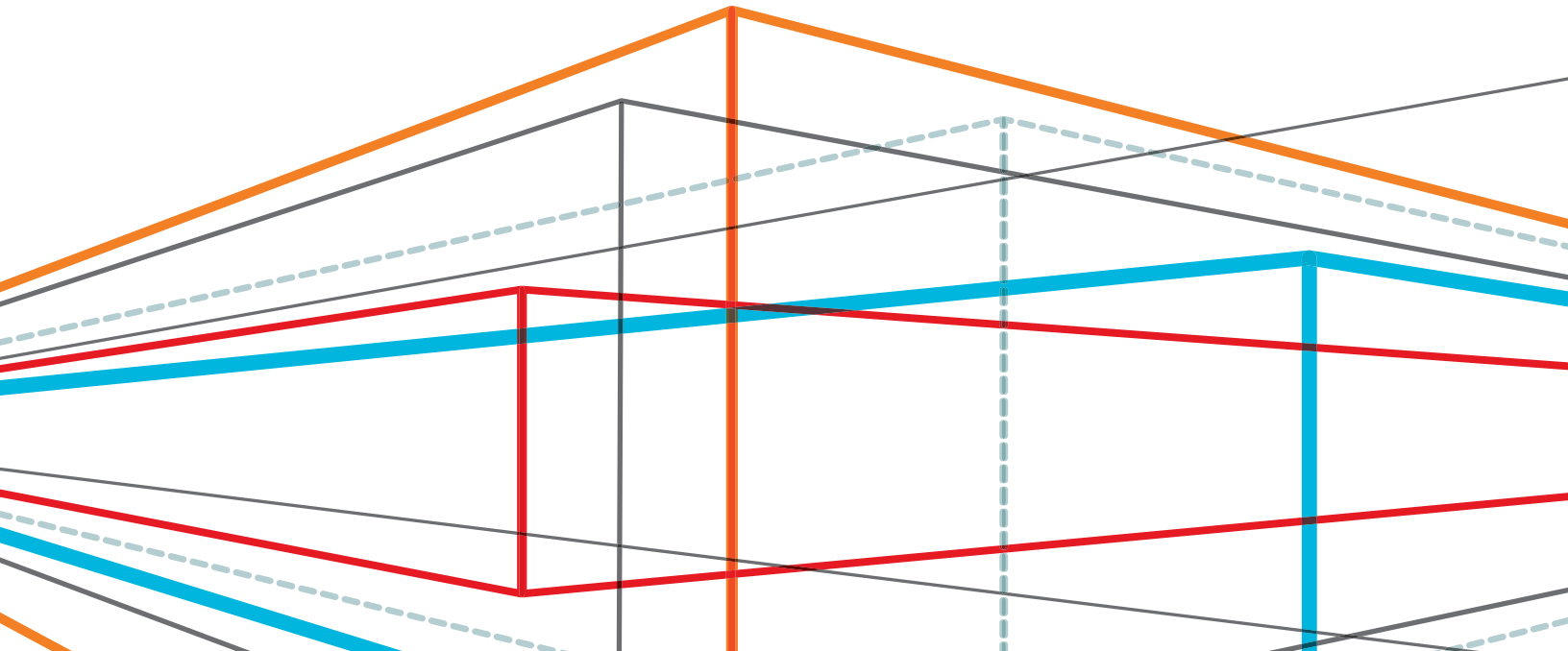


EXECUTIVE SUMMARY

Fraud and theft are constant threats to any organization, and the protections put in place against malicious activities must constantly evolve. To solve this challenge, businesses are deploying multiple levels of security, of which access cards are a critical component. Innovative, print-on-demand (POD) solutions enable a new generation of "intelligent" access cards that contain various technologies such as barcode, magnetic stripe, smart card contact and contactless, and radio frequency identification (RFID) technologies. Additional security can be applied to cards through tamper-resistant laminates and/or preprinted cards with security features.

This white paper defines how human resources and security departments can print intelligent ID cards to identify employees, visitors and patrons, and manage access to facilities, equipment and services through a range of "intelligent" access card technologies. The paper also presents several real-world examples of how companies have benefited from access cards that contain multiple layers of security for protecting people, products and property.

INTRODUCTION

BUSINESS SECURITY RISKS ARE ESCALATING

Whether the requirement is to control entrance to facilities, or specific areas within a building, businesses must find a way to limit who gains access to what, when and where. Locking down security is essential for reducing theft, ensuring compliance to safety regulations, and protecting employees.

Consider the following troubling facts:

- The U.S. Federal Bureau of Investigation reports that employee theft is the fastest growing crime in America.
- Employee theft is responsible for 30 percent of all business failures according to U.S. Chamber of Commerce estimates.
- A National Retail Federation (NRF) study found inventory shrinkage cost retailers 1.75 percent of annual sales, with losses from internal employee theft far exceeding losses from shoplifters.
- The U.S. Chamber of Commerce calculated that counterfeiting and piracy costs are directly responsible for more than 750,000 U.S. job losses, cost the U.S. economy between $200 and $250 million annually, and cost the global economy $650 billion.
- The U.S. Bureau of Labor Statistics reported that in 2007, workers suffered over 17,500 chemical-related injuries and illnesses related to chemical exposure, many of which were due to unauthorized employee access to hazardous areas.

Businesses feel the impact through higher loss-related write-offs and added infrastructure expenses—much of which passes on to the consumer.

Automatic access control and identification systems can significantly reduce the damages from these crimes. The best security is proactive, not reactive. By integrating access control into human resources, facilities and security departments, organizations can deter fraud and theft by making themselves unattractive targets for dishonest employees and opportunistic criminals. Access and identification systems are highly effective and visible deterrents that protect against many types of security threats. Businesses can use multi-layered identification and tracking systems to protect people, facilities, fixed assets, products and information.

INTELLIGENT ACCESS CARDS

WHAT THEY ARE, HOW THEY WORK

Access Security Applications

Many organizations use employee ID cards and access control systems to prevent unauthorized people from walking through their front doors. Unfortunately, most organizations suffer more losses from their own employees than they do from outsiders. With no way to associate an employee with a product, retail employees now steal 50 percent more merchandise than shoplifters, according to the NRF.

Businesses face even greater threats from white-collar crimes. Pilfered office supplies and unauthorized use of photocopiers, scanners, digital cameras, color printers and other equipment may seem innocent, but these acts burden employers with higher service and operating costs and untold lost productivity. Organizations should carefully consider their access policies and protections. ID cards with barcodes, magnetic stripes, or RFID provide seamless integration with readers and building infrastructure to control access to supplies, computer rooms, copy centers and equipment.

Access Control

Most losses do not occur from overt break-ins or elaborate employee fraud schemes, but from simple crimes of opportunity. Limiting access to facilities, equipment and supplies can prevent a significant amount of unauthorized activity. For example, the Renaissance Tower, a 56-floor office complex in Dallas, installed an RFID card printing system that not only permits employees to enter the building, but also controls access to specific floors with card readers on the elevators and stairways. After the ID cards replaced the honor system, the Renaissance Tower's director of security reported a significant decrease in thefts and an 80 percent improvement in operations.

Visitor ID

Companies can also extend their protection by issuing ID badges to visitors, temporary workers, service and delivery personnel, and contractors. With POD card-printing solutions, employees at reception desks, receiving docks, or guard stations can create professional-looking visitor passes on the spot. For example, the Aon Center in Chicago installed a thermal label printer in the lobby as part of an automated visitor management system. The result was a reduction in visitor lines by 86 percent. Tenants pre-registered expected visitors in the system using a Web application. Arriving visitors checked in at the reception counter, where a staff member consulted the software application, printed a secure visitor badge, and then notified the host of the visitor's arrival.

Thermal printers support a compelling range of additional features for security applications. Modern thermal printers can embed graphics, security marks and barcodes, and even encode digitized photos on low-cost adhesive labels, including expiring media that displays a "VOID" message a few hours after the security desk creates the pass.

Employee Tracking for Improved Safety

Area tracking coverage can save valuable time—and lives—in emergencies and is a key enabler for emerging personnel-tracking applications. For several years, businesses have used expensive, battery operated RFID tags to track workers in dangerous environments such as mines or areas where exposure to chemicals, gases, or radioactivity requires monitoring. The development of low-cost, standardized Gen 2 technology makes it practical to extend wireless area access card monitoring across many diverse environments.

Businesses can install Gen 2 readers outdoors or indoors, and use them in many ways to manage workers in hazardous and disaster environments. For situations where workplace regulations limit the amount of time workers can spend in an environment, businesses can install readers to cover the area and automatically record all entries and exits. System software can track the amount of time each individual worker spends in the area, calculate real-time cumulative totals, and automatically generate alerts as workers near their time thresholds.

Using RFID-enabled access cards completely automates the data entry and calculation processes and quickly generates and stores necessary records. A network of readers covering rooms, labs, test facilities, tunnels, mineshafts and other areas can produce a real-time view of employee locations, information that is invaluable in case of emergency.

The same access card principles also apply to non-hazardous environments where security departments require accurate, real-time information about where people are in the building or campus. Including access cards in daily guard tour inspections enables theft detection and prevention and unauthorized borrowing. In typical applications, security departments apply permanent barcode or RFID labels to locations and assets within a facility. Security guards read the tags with mobile computers as they make their rounds. The application helps ensure guards complete their rounds and encourages prompt detection of missing items, which improves the chances of recovery.

The Intelligence of Embedded UHF Technology

Today's RFID technology enables readers to detect and scan RFID-embedded ID cards up to 10 meters away for secure tracking and access control. EPCglobal developed the Gen 2 UHF standard so users could accurately identify multiple items simultaneously at distances not possible with legacy RFID technology. While Gen 2 is widely used for asset management and product identification applications, it is now gaining widespread use as a contactless access control solution to track people.

The read range of Gen 2 and fast identification capabilities deliver key benefits for access card applications. Magnetic stripe, barcode and even smart cards require swiping or line of sight scanning through a reader. Deploying Gen 2-enabled access technology eliminates the need for single-file, one-at-a-time card reads. Groups of people can move through large, open entry and exit points, rather than having to pass through narrow doorways, gates, or turnstiles. Security departments can track employees and visitors throughout a facility, and know exactly who is where and how long they remain in a location. In addition, security provisions in the Gen 2 standard include multiple levels of data protection and device authentication to prevent unauthorized reads.

Globally, RFID technology is rapidly gaining momentum for use in personnel identification. At the federal level, the U.S. government's PASS Card program uses Gen 2 RFID to replace traditional passports to improve the security and convenience of border crossings. At the state level, Arizona, New York, Washington and Vermont are deploying RFID-enabled, enhanced driver's licenses (EDL) by the millions.

IDENTIFICATION PRINTING TECHNOLOGIES

All the access card technologies described in this paper including barcode, RFID, magnetic stripe, smart card, graphics and photo security features can be printed on demand at the user's own facility—wherever and whenever. Switching from preprinted access cards, temporary IDs, and passes to on-demand identification printing systems provides an immediate benefit by removing the worries related to managing and securing costly materials.

A barcode is the most widely used data storage format for security printing applications, and RFID is the fastest growing. Common linear barcodes easily meet most needs for encoding employee and visitor identification. Two-dimensional (2-D) barcodes can encode significantly more text than linear codes and store digitized photos, graphics, fingerprint files, and other biometric data. ID card printing solutions provide multiple encoding and security technologies, including holograms and magnetic stripes.

Card Printers

Digital plastic card printers offer the ability to create custom cards tailored to the application, at the point of issuance. System administrators can invalidate lost or stolen cards and issue replacements immediately. Unlike traditional ID card systems that lacked customization or required time-consuming photo processing, cutting and laminating, today's digital POD systems enable completely automated production of highly customized, secure cards. A wide variety of card printers exist to meet user needs, including high duty cycle models for applications that require thousands of cards annually.

Digitally printed plastic cards provide numerous technological features, but start with a blank plastic card customizable with any combination of artwork, graphics, text, digital photographs, barcodes, logos and more. The printer can encode additional machine-readable information, such as magnetic stripes, RFID, and smart card chips. The image quality of plastic photo ID cards produced with digital printing technology is far superior and tamper-resistant compared to those produced through the traditional method of trimming printed photos and laminating them onto the card. Different card materials and laminates provide additional protection from tampering.

Magnetic stripe cards carry more data than standard barcodes, but require media that costs more. Card issuers stock blank magnetic stripe cards and encode them on demand. Smart cards enabled with a smart chip can hold the most data of any medium, up to 100 times more than a magnetic stripe card, and often include a processor chip that enables multiple applications. Security departments can use intelligent ID cards to securely store employee access records and facility privileges for later use.

Access Card Security Features

Adding tamper-resistance and visual verification aids to prevent counterfeiting and unauthorized alterations improves access control security to facilities. Today's on-demand card printers can print variable text, and create vibrant ID photos for visual ID confirmation.

For higher card security and durability, forensic features can be preprinted directly to the card, or added to the card through laminates. There are numerous forensic security features that fall into the following categories:

- **Overt** visual security elements (holographic foil, complex patterns, and photos), which are visible to the human eye, are easy to authenticate and very difficult to forge.
- **Covert** elements (micro-text and hidden imagery) require a device to make them readable by the human eye.
- **Forensic** elements are microscopic (nano-text) and the most difficult for a counterfeiter to detect and replicate.

Such features are critical when security mandates call for a mix of remote employee traceability coupled with a need to verify that the access card belongs to the intended person. Tamper resistance makes it much more difficult for criminals and dishonest employees to counterfeit or duplicate access cards. This is a critical requirement for businesses in a wide range of industries including the financial sector, Department of Defense (DoD) contractors and other security-sensitive enterprises.

CONCLUSION

Intelligent access card technologies offer several easy and cost-effective ways for organizations to raise the level of protection for their people, products, and property. Raising the bar on security prevents many problems by forcing opportunistic perpetrators to seek easier targets. Today's contactless access card technologies provide superior range and read performance so that organizations can:

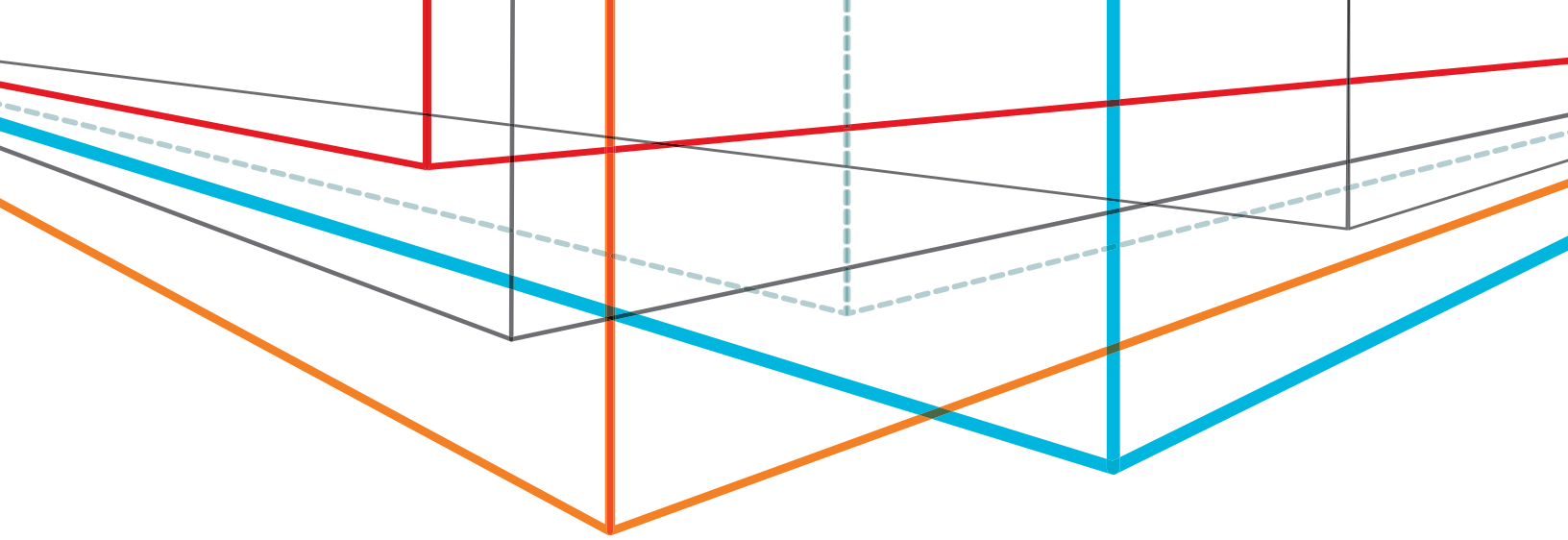
- Relieve congestion or enable identification where it isn't practical to install a short-range reader
- Conveniently support a second form of identity validation, such as facial recognition
- Provide high-throughput entry/exit for convenience and crowd control
- Automatically monitor specific zones and areas
- Associate people with assets

Zebra Technologies delivers innovative POD access and ID card printers that integrate a wide range of intelligent access card technologies and security features. The cards, printers and encoders support all EPCglobal, ISO and other applicable standards. With Zebra, businesses can feel more secure that their facilities, employees, and assets remain protected—today and tomorrow.

A global leader respected for innovation and reliability, Zebra offers technologies that illuminate organizations' operational events involving their assets, people and transactions, allowing them to see opportunities to create new value. We call it the Visible Value Chain.

Zebra's extensive portfolio of marking and printing technologies, including barcode, RFID, GPS and sensoring, turns the physical into the digital to give operational events a virtual voice. This enables organizations to know in real-time the location, condition, timing and accuracy of the events occurring throughout their value chain. Once the events are seen, organizations can create new value from what is already there.

For more information about Zebra's solutions, visit www.zebra.com.



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