University Improves Access Control in Residence Hall

Customer Case Study

EXECUTIVE SUMMARY

University of San Francisco
Higher Education
San Francisco, California
~10,000 Students

Challenge

- Improve physical security in residence halls
- Minimize costs
- Increase convenience for residents

Solution

- Recognizes faces of residents and alerts front-desk attendant people when nonresidents enter
- Built solution from existing Cisco® Video Surveillance solution, existing ID card system, and iOmniscient video analytics software

Results

- Created accurate record of who enters residence halls
- Increased value of existing video surveillance solution
- Improved experience for residents and front-desk attendants

University of San Francisco uses existing video surveillance solution to distinguish between residents and visitors.

Challenge

Controlling access to college residence halls is a notorious challenge. "Students tend to move around campus in groups," says Jason Rossi, director of One Card and Campus Security Systems for University of San Francisco (USF). When one student uses an ID card to open the front door, a mob of others might follow without presenting their own cards. "Tailgating is very common, and difficult to control," Rossi says. "That makes it hard to know who is in the residence hall at any given time."

That's a problem. An accurate occupancy record is important for incident investigation and for making sure everyone evacuates during an emergency.

USF already controlled access to residence halls in the traditional ways. Video surveillance cameras monitored the front entrances. Campus security used Cisco Video Surveillance solution to view live and recorded video. Students presented an ID card to open the front door. And the front-desk attendant was supposed to ask everyone else who followed through the open door to show their ID. "But checking every ID card just isn't practical when 20 students enter the building at the same time," Rossi says. "We decided to use technology to do the job better."

The university's physical security committee studied the challenge. They concluded that most access control solutions did not meet the requirements. For example, optical turnstiles cost US$100,000 apiece, not in the budget. Physical trip wires do not work if people walk in side by side. Iris readers make people uncomfortable.

So the committee decided to put the existing Cisco Video Surveillance solution to work in a new way: facial recognition. Because students move in groups, the solution would need to recognize multiple faces, not necessarily facing the camera squarely.

"Now the attendant only needs to ask for ID from people who the system doesn't recognize. We've made an unmanageable situation manageable."

Jason Rossi
Director, One Card and Campus Security Systems
University of San Francisco

Solution

Now USF has an accurate record of who entered the residence hall. Students did not need to change their behavior. They still walk into the building in a group after one person opens the door. But now any student who lives in the residence hall is automatically checked in.

"Their face works like an access card," Rossi says. And if someone walks in who doesn't live in the residence hall, the front-desk attendant is shown their image and alerted to ask for their ID. "Now the attendant only needs to ask for ID from people who the system doesn't recognize," says Rossi. "We've made an unmanageable situation manageable."

The solution is built from USF's existing Cisco Video Surveillance system, the existing CBORD ID card system, and new facial recognition software from iOmniscient. "We already had a video surveillance camera at the residence hall entrance," Rossi says. "Now it's doing double-duty. We still use it for incident review. And now we also use it for facial recognition."

The university keeps a list of people who are unwelcome in the residence halls. If someone on the list tries to enter the building, Cisco IP Interoperability and Collaboration System (IPICS) notifies Campus Security. The alert includes a video image of the person, which makes it much easier to identify the person than a verbal description like, "Tall male wearing a black sweatshirt."

Enrolling in the system is easy. On move-in day, students are asked to look at a video camera to have their image captured. It's just one more process, like getting their ID badge or agreeing to residence hall rules. The software looks at facial structure, analyzing 1000 features, such as the distance between pupils. A different camera angle doesn't fool it, nor do superficial changes such as beards, hairstyles, and eyeglasses.

Results

The pilot program was a success, and four more undergraduate residence halls are now being added to the system.

"Checking the facial profile for access control increases security," Rossi says. "It makes our existing video surveillance solution more valuable. And it improves the experience for residents when they walk into their building."

- **Increased safety and security:** Now Campus Security has an accurate record of who enters the residence hall. Some people call this "occupancy assurance." The cameras are mounted near the entrance because students tend to look up from their phones when they go through a door. For seven out of ten people entering, the solution sees enough of the face to make a decision. Accuracy is 100 percent. Students who are looking away from the camera or wearing a hat over their eyes are flagged as "unrecognized" so that the attendant can ask for ID.
- **Cost avoidance:** The facial recognition solution achieves the same goals as an optical turnstile, for a fraction of the cost. It takes advantage of the same equipment and software that USF had already invested in for incident investigation.
- **Better experience for students:** Residents who walk into their building without swiping their ID card are no longer asked for their ID. Their facial profile works just like a card swipe.

"We already had a video surveillance camera at the residence hall entrance. Now it's doing double-duty. We still use it for incident review. And now we also use it for facial recognition."

Jason Rossi
Director, One Card and Campus Security Systems
University of San Francisco

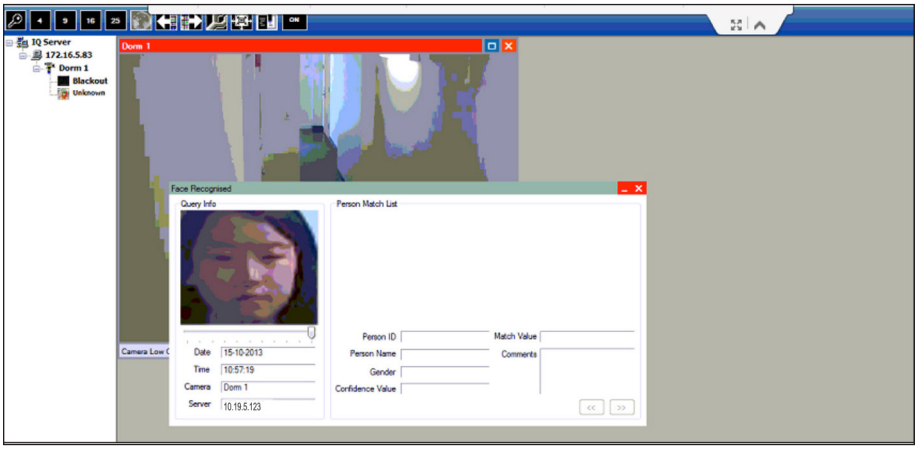
Students like the solution. They understand that their facial profile is just another form of access control, like a fingerprint or access card. "People are more comfortable with photos than fingerprints," Rossi says. "We live in a video culture. If your photo goes up on the big screen at a football game, you cheer."

Technical Implementation

The solution works like this:

- A high-definition video surveillance camera at the entrance sends one video stream to Cisco Video Surveillance Manager. Campus Security can view live or recorded video to respond to or investigate an incident.
- The camera sends another stream to the iOmniscent facial recognition solution. Even if 20 people walk in at the same time, the software can distinguish those it recognizes from those it does not recognize.
- Both systems (video surveillance and facial recognition) update the CBORD CS Gold campus card ID system every few minutes. This creates an up-to-date record of who entered the residence hall.
- If the iOmniscient solution detects an unknown face in a group, it sends an alert to the front-desk attendant, who has Cisco Video Surveillance Manager open (Figure 1).

Figure 1. Front-Desk Attendant Alerted When Unrecognized Visitor Walks In



PRODUCT LIST

- Cisco Video Surveillance Manager
- Cisco IP Interoperability and Collaboration System (IPICS)
- iOmniscient IQ Face Solution
- CBORD CS Gold Campus ID Solution

For More Information

To learn about Cisco IoT Solutions for Connected Safety and Security, visit: www.cisco.com/go/safesecure.

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV Amsterdam,
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at **www.cisco.com/go/offices**.