The University of Sharjah,
United Arab Emirates

At a Glance

This case study showcases the capabilities of Mircom's flagship FleX-*Net* and OpenGN solutions, retrofitted to existing infrastructure at The University of Sharjah, in the United Arab Emirates. The install was completed in two phases in order to convert all 64 campus buildings to the FleX-*Net* system. The campus buildings collectively span an area of 36,328 m², which is spread among three floors in each building. **Unique features of this project include the usage of a LAN connection to network individual buildings to a central monitoring location and the modification of firmware to accommodate existing older hardware and complicated IT multi-layer design.**

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Project Background

The University of Sharjah is an Emirati private national university located in the city of Sharjah, southeast of Dubai. Sharjah is the third largest city in the United Arab Emirates, and a leading center of education in the Middle East. The Emirate of Sharjah is renowned for its vibrant multicultural ambiance and diverse museums, reflecting both rich cultural heritage and contemporary artwork.

The city also hosts a charming blend of historical and modern architectural sites. The University was founded in 1997 by the then ruler of Sharjah, HH Sheikh Dr. Sultan bin Mohamed Al-Qasimi with the goal to "become a leading academic institution in the Middle East and worldwide." When it came time to reevaluate the main campus' fire protection system in 2013, the project coordinator tasked Mircom with the job of providing intelligent fire protection on campus. As a leader in the life safety industry, Mircom solutions were the best fit and the intuitive choice for the project.

Challenge

Prior to Mircom's retrofit installation of FleX-*N*et, the University's fire protection system was located and operated independently within each of the sixty four buildings on campus. No infrastructure existed for the network between the fire alarm panels. Connecting the buildings in order to centralize the

monitoring in one location proved to be a challenge that had to be expertly solved prior to installation. The team ultimately chose to use a LAN connection to create the network. However, using the LAN presented some complications. The Building LAN was set up so that each individual building on campus was assigned a multilayered IT design to increase the LAN security level. Using the LAN ports meant that Mircom engineers had to modify the firmware to match the multilayered format unique to each building.

As with most retrofits, it was a challenge to achieve harmony between the existing hardware and the new hardware. During this project, Mircom engineers were required to visit the site and assist Mircom ESD's in configuring the OpenGN system.

The Mircom Solution

Typically, a network of buildings such as a university campus would be tied together via buried fire alarm cabling. In the case of Sharjah University, this infrastructure was not available. Rather than installing the infra-structure and the cabling at great cost and disruption to the client, the Mircom team implemented another solution. Since the FleX-*N*et system has a built in Ethernet port on its motherboard, the FleX-*N*et system was retrofitted into the existing infrastructure by using the LAN connections that connected each building to the main network. Mircom's OpenGN facilitated

connection from each individual building to the main command center, via the existing IT network.

Additionally, in order for the system in the building to be able to communicate with the main command center, Mircom engineers rewrote some of the firmware to match the existing IT multilayer design. They also worked with existing hardware to remedy difficulties in translating electronic code between the old system and the new.

Benefits and Value Added

Technical considerations which placed Mircom above the competition include the fact that Mircom's FleX-Net system uses native BACnet technology and houses a BACnet ethernet port. This results in standardized coding language. The Ethernet port eliminates the need for additional hardware as opposed to competitor systems which require external gateway boxes to operate BACnet. FleX-Net also supports a variety of languages, including standard English and French.

Mircom's OpenGN software offers a 3-Dimensional view of the premises, which was an advantage for the client. Furthermore, FleX-Net is a fully integrated UL listed fire alarm and voice evacuation mass notification system. Our systems are 100% manufactured in North America and satisfy the UL/ULC product safety requirements.

In order to ensure that the system continues to operate effectively, Mircom has created an innovative fan damper display which is integrated into the panel. This damper display can act automatically; however, it was installed to allow for manual override control of the smoke control system and/or the damper and pressurization fans.

Additionally, it was crucial for our client that security be constantly in operation. Again, the FleX-Net system was a perfect fit for the product requirements because FleX-Net panels remain online even while loading new configurations, which means that the buildings remain protected during periods where changes are being implemented.

Finally, for increased security, FleX-Net can support up to three levels of password protection. This unique feature allows the installer to determine what functions are accessible at each password level. If a mistake

occurs while programming a new configuration or the owner is not satisfied with new configuration, FleX-Net's "hot swap" support allows the user to immediately return to a stored version of the previous configuration.

In summary, Mircom products were chosen for their high levels of sophistication, security, control, and customization which set them apart from the competition.

The System

The FleX-Net base panel consists of one intelligent loop controller capable of supporting 99 Analog sensors and 99 addressable Modules which can be wired in Class A (style 6 or 7) or Blass B (Style 4). The system can be expanded through the use of additional analog Loop Controller Modules.

The system is equipped with a back-lit alphanumeric LCD display and utilizes a simple Menu system complete with directional keypad, common control switches and LED's, Alarm Queue switches, and two configurable input switches.

The FleX-Net is a very flexible system which supports both internal and external annunciation modules. The internal annunciation modules consist of the RAX- programmable zone LED annunciator, the IPS-2424DS programmable input switches module, the FDX-008 Fan Damper Module and the AGD-048 Adder Graphic Module.

All input circuits can be configured for non-verified alarm, verified alarm, water flow, latching/non-latching supervisory, monitor, trouble only, or remote switch inputs. The system has the capacity to function as a series of multiple panels together as one single operation. In addition to these adder modules the FleX-Net also supports the UDACT-300A Digital Communicator Module and the PR-300 Polarity Reversal/City Tie Module. The FleX-Net also supports an RS-485 interface to the QX-5000 Emergency Zoned Audio System.

System Summary

- FX-2003-12NDS/ UB-1024DS
- ALCN-792M/ALCN-792D/FOM-2000-SP UDACT 300A/ RAX-1048TZ/ IPS-2424/ MGD-32AGD-048
- INX-10A/ OpenGN/ MGC-LIC-BACNET
- MIX-2000 Series field devices
- MIX-M500 Series field devices
- MS-710ADU

Installation and Team

The installation of the project spanned a total of three years, beginning in 2013 and ending in 2015. A second phase began in March 2015 to convert the remaining buildings on campus over to the FleX-Net system. Phase II is ongoing. There were no significant issues or delays during installation of Phase One, and we have not encountered any problems during Phase II. The successful completion of this contract was a result of cooperation between Mircom and Concorde Trading Company, a part of Concorde Corodex Group. The team comprised of our Engineered Solutions Distributor (ESD) team of 3 engineers and 15 technicians as well as installation and technical support assistance from the Mircom Global Head Office.

Conclusion

The retrofit of the existing system at Sharjah University was a success for Mircom and the University Administration. The unique demands of the administration were met in the most cost effective and efficient way possible through the innovation of Mircom engineers. As a result, the update of the existing system resulted in a safer, smarter, more livable campus.

About Mircom

Founded in 1991, Mircom is a global designer, manufacturer and distributor of Intelligent Building Solutions. Reaching customers in over 100 countries worldwide, Mircom's portfolio includes: fire detection & alarm, communications & security, mass notification, nurse call, and building automation & smart technologies. Mircom's vision is to make buildings worldwide safer, smarter, and more livable.

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