About XENEX

XENEX is a world leader in UV technology-based infection prevention strategies and solutions. The company’s mission is to save lives and reduce suffering by destroying the deadly microorganisms that can cause healthcare associated infections (HAIs). XENEX LightStrike™ Germ-Zapping Robots™ go beyond physical and chemical cleaning processes by deactivating viruses, bacteria, and spores that frequently lurk on high-touch surfaces. LightStrike robots are used by hospitals as an important additive measure to help achieve their infection reduction goals to safeguard their patients, employees, and bottom lines.

The situation

Developed about a decade ago, early versions of XENEX robots operated without connectivity, and later with standard business SIM cards. While the robots were gathering vitally important information used by hospitals in their infection prevention programs, there was no easy way to transmit that information to XENEX so it could be shared with hospital officials. XENEX wanted to augment its robots’ capabilities by upgrading their connectivity.
Solution

XENEX chose the AT&T Global SIM to power its revolutionary IoT-enabled robots. The Internet of Things (IoT) SIMs help automate the robots’ data transfer/communication processes, delivering much richer performance data and enabling the devices to accommodate future technologies. With AT&T wireless connectivity, XENEX is able to easily and reliably communicate critical information which can then be used by the hospitals to ensure compliance with infection prevention protocols and strategies and thereby advance the hospital’s efforts to reduce HAIs, protect patients and staff, and safeguard their bottom line. AT&T Control Center enables XENEX to deploy and manage the robots’ operational status to help ensure peak performance, document the areas cleaned, and control software upgrades without interrupting customer operations.

A quest to save lives

Healthcare-associated infections, which some patients contract while receiving treatment for medical or surgical conditions, are the bane of hospitals and other healthcare facilities. “Nearly 100,000 people die in the U.S. every year from healthcare-associated infections,” said XENEX CEO Morris Miller. “That is more than 300 people dying every day from an infection they acquired during their hospital stay.”

Keeping hospitals as germ-free as possible is a critical patient safety issue and an ongoing challenge. For decades, manual cleaning with chemicals has been the standard in the healthcare environment. Unfortunately, some superbugs are becoming resistant to cleaning chemicals. Despite the hard work and best efforts of cleaning crews, studies show that only about half of all hospital surfaces are adequately disinfected, leaving dangerous pathogens behind that could infect the next room occupant.

The founders of XENEX set out to save lives and reduce suffering by destroying deadly microorganisms that can cause HAIs. XENEX disrupted the industry when it introduced its LightStrike Germ-Zapping Robots, which perform environmental disinfection. With more than 500 hospitals as customers and multiple peer-reviewed studies confirming significant hospital infection rate reductions (50-75%) when using the LightStrike robot and associated infection prevention strategies and protocols, XENEX LightStrike room disinfection robots are now considered the environmental gold standard in many of the nation’s leading hospitals.

Germ-zapping robots to the rescue

Miller calls the XENEX approach a paradigm shift in the way hospitals think about antibiotic resistance and superbugs. “Kill the pathogens before they make people sick and then you don’t need antibiotics to treat the infections,” he said. “That’s what LightStrike Germ-Zapping Robots can help accomplish.”
XENEX robots, which resemble a popular movie droid, create intense flashes of pulsed xenon ultraviolet (UV) light that quickly destroys pathogens so they can’t reproduce, mutate, or cause infections. Hospital cleaning teams operate the robot after they’ve physically cleaned the rooms by removing trash and visible dirt and changing the linens.

“The cleaning team brings in our robot to destroy pathogens you can’t see but may have been missed during the manual cleaning process,” Miller said. “The robots have been proven effective against the most dangerous microorganisms like Ebola and anthrax as well as the most common, like MRSA (methicillin-resistant Staphylococcus aureus) and influenza.” The robots can disinfect an entire patient room in as little as 10 minutes.

While the robots were initially deployed in acute care hospitals, where the most vulnerable patients are treated, they are now also utilized by outpatient surgery centers, long-term acute care and skilled nursing facilities. As recognition of the efficacy of XENEX’s pulsed xenon UV technology has grown, other industries such as hotels, pharmaceutical companies, and government agencies have begun using LightStrike disinfection robots.

**Effective against even deadly pathogens**

Multiple studies have affirmed the efficacy of XENEX’s LightStrike robot, including one by the U.S. Department of Veterans Affairs that recommended hospitals integrate the robots into daily operations. Researchers from the VA found that hospital rooms cleaned by XENEX’s device had a 75% lower count of MRSA than those that were cleaned manually, and aerobic bacteria colony counts that were reduced by 84%.

Researchers at The University of Texas MD Anderson Cancer Center documented that XENEX technology significantly reduces the number of pathogens—even after the hospital Environmental Services (EVS) staff does the most thorough cleaning possible. “The study found that the LightStrike robot was able to get a room 22 times cleaner than traditional cleaning methods,” said Irene Hahn, XENEX vice president of sales.

“Less than 50% of the surfaces in a hospital room are properly disinfected when a room is being prepared for the next patient,” Hahn said. “So it might look clean and smell clean, but there’s still enough contamination in that room to make the next patient or healthcare worker very sick. Our technology is brought in after the room is visually clean, and the robot’s intense flashing UV light deactivates germs that may have been left behind.”

**Additional real-world results**

The Mayo Clinic conducted a controlled trial/study of XENEX robots’ efficacy in destroying the life-threatening bacterium Clostridium difficile (C. diff) and found that adding LightStrike to the hospital’s disinfection efforts resulted in a 47% reduction in C. diff infection rates on the intervention units. Based on the significant C. diff infection rate reductions in the intervention units, the Mayo Clinic expanded LightStrike room disinfection to 14 additional hospital units—and then to additional Mayo Clinic hospitals.

“The peer-reviewed and published Mayo Clinic study showed that C. diff rates on the unit using our robots
fell dramatically, while infection rates on the units without LightStrike disinfection went up,” Miller said. “The Mayo Clinic has a world class infection prevention program that is extremely well run and well monitored. Their success in reducing C. diff rates is strong evidence that LightStrike room disinfection is a very effective tool in a hospital’s infection-prevention bundle.”

Hospital studies are important to XENEX because of the real-world implications. “We are an evidence-based company. We do not make claims unless they are backed up by science, evidence, and data,” Miller said. “That’s what’s really rewarding about the published studies concerning reductions in hospital infection rates.”

“It’s not just in scientific lab experiments that the technology works. Hospitals are finding that they see fewer infections after they implement this technology, which is a win for everyone,” Miller added.

More control, better data

Early versions of the XENEX LightStrike Germ-Zapping Robots lacked wireless communications capability. XENEX officials would ask hospital staff to download data from the robots and then upload the data to XENEX. “The people in charge of infection prevention and cleaning already had too much on their plate,” said Paul Froutan, Chief Operations Officer for XENEX. The company needed the robots to be able to communicate wirelessly.

Later models were equipped with standard business SIM cards. The cards, while state-of-the-art at the time, didn’t provide the management tools that IoT SIMs now offer. XENEX officials could read the SIM reports and see only the amount of data each used.

XENEX engineers wanted to be able to extract more data from the robots. To accomplish this, the company needed to retrofit its existing robots to enable them to run the newest and best available network technology and ensure that they could incorporate future innovations.

In addition, the company wanted to find more cost-effective connectivity. The robots’ business SIMS were expensive. Depending on where the robots were deployed, they could generate significant roaming charges. XENEX needed to augment its robots’ capabilities by upgrading their connectivity without increasing costs.

“I normally we celebrate when we have a big sale. But in these times, it’s not a celebratory environment. We are just so humbled to be able to help.”

Irene Hahn
Vice President of Sales, XENEX
Peak performance, near-real-time information

XENEX chose AT&T Global SIM cards to migrate its robots to the best possible environment and ensure that they operate at peak performance. With AT&T wireless connectivity, XENEX’s infection prevention strategies and solutions can help hospitals reduce infection rates so that they can accomplish their goal of protecting patients and staff as cost-effectively as possible.

The IoT-enabled AT&T SIMs help automate robots’ processes and give the company access to rich performance information. For instance, the company can easily document each room the robots disinfect and for how long the robot was operated. If the number doesn’t meet the hospital’s utilization goals, the staff member operating the robot may need more training. “With the data we can work with the hospital to help meet their operating protocol goals,” Froutan said.

Officials can also view machine diagnostics to ensure that the robots perform properly, and proactively receive real-time maintenance information to ensure that the valuable equipment is in good working order. Upgrading the robots’ connectivity also adds speed and reliability and makes it easier for the robots to accommodate new technologies as they are introduced. The robots are equipped with predictive-maintenance capabilities which provides XENEX team members with information about when the robot will need new parts—a new xenon lamp, for example.

In addition, XENEX can more easily manage wireless charges. AT&T helped select the best IoT data plans for each robot, making the process of managing connectivity more efficient and affordable. AT&T Control Center automation enables XENEX to select the most appropriate rate plan for each device every month. The company now pays much less for the data its robots use. “With IoT service from AT&T, it’s a much more efficient process, which provides us greater efficiency and security,” Froutan said.

Humbled to be able to help

The global COVID-19 virus has created unprecedented demand for XENEX’s LightStrike Germ-Zapping Robots. “Coronaviruses are a large family of viruses. Middle Eastern Respiratory Syndrome (MERS), SARS (Severe Acute Respiratory Syndrome), and COVID-19 are examples of coronaviruses,” Miller said. “The LightStrike robot has been proven effective at quickly deactivating MERS coronavirus, just as it was proven effective at destroying Ebola virus and the fungus Candida auris.”

The COVID-19 pandemic is driving sales of XENEX robots; the first quarter of 2020 outpaced sales for all of 2019.
and the trend is expected to continue. Staff are working seven days a week to meet the need, shipping hundreds of units throughout the U.S., Asia, and Europe. Employees understand that the higher recent demand for their robots comes as the result of a global tragedy.

“Normally we celebrate when we have a big sale,” Hahn said. “But in these times, it’s not a celebratory environment. We are just so humbled to be able to help and we are continually discussing how we can do more.”

**A very good business relationship**

Meeting the increased demand brought on by COVID-19 has complicated life for many XENEX staff members. “As a small company that’s growing at such an incredible rate, we really count on our business partners to provide us with strategy and counsel, and that’s certainly what AT&T Business has provided,” Froutan said. “They’re thinking ahead for us and looking at ways they can help us help others. And that’s the sign of a very good business relationship.”

The data XENEX receives from its robots is essential to the company’s epidemiologists, researchers, and engineering team. “Our ability to receive the data quickly and know that it is accurate is of utmost importance because it helps us analyze how our customers’ disinfection programs are going, which equates to their ability to reduce the number of infections,” Froutan said. “That data is provided to us through AT&T Business.”

“**As a small company that’s growing at such an incredible rate, we really count on our business partners to provide us with strategy and counsel, and that’s certainly what AT&T has provided.**”

**Paul Froutan**  
COO, XENEX