



## Alcatel-Lucent helps “kids of all ages” at Morgan’s Wonderland

Morgan’s Wonderland in San Antonio, Texas is the world’s first ultra-accessible theme park for the enjoyment of children and adults with special needs and disabilities, and Alcatel-Lucent provided the network infrastructure to turn vision into reality



## CUSTOMER AT A GLANCE

Morgan's Wonderland  
www.morganswonderland.com

Industry: Entertainment / Theme Park

Revenues: Not-for-profit charitable foundation

Number of Visitors (2010): 100,000 from 48 states and 14 countries

Number of VLANS/ Applications: 17

## CHALLENGES

- Required a multi-function, multi-platform converged TCP/IP network
- Required complete 'no holes' wireless coverage of a 25 acre property
- Need for fault tolerant architecture
- Ease of use
- Minimized building/ infrastructure requirements
- Ability to withstand large temperature variations

## Alcatel-Lucent helps Morgan's Wonderland bring happiness to thousands

Opened in 2010, Morgan's Wonderland is a non-profit theme park specifically designed for people with physical and cognitive difficulties, plus their friends, families and the community at large. With rides, interactive exhibits, a lake and fishing pier among its 25 activities, as well as an amphitheater for concerts and events, it's "Not just for kids in the strictest sense but, as we say, for 'kids of all ages,'" according to Bob McCullough, the park's communications director.

To create an exceptional experience for the park's many visitors – including military veterans who have returned from Iraq and Afghanistan and are under treatment at the nearby Brooke Army Medical Center – Morgan's Wonderland wanted to install some core safety features. Therefore, the park's management team sought a high-bandwidth network that would support a comprehensive park-wide visitor tracking system that could completely cover the park's 25 acres – a network that could also keep operating costs low and survive the rigors of the region's extreme weather conditions.

## An exceptional experience needs an exceptional network

The first safety requirement for the park was a Radio Frequency Identity (RFID) system, which is like Morgan's Wonderland's version of an internal GPS

system. Brandon Zumwalt, president of Morgan Wonderland's technology partner, Internet Contrasts explains: "The nature of guests' disabilities means not all of them are able to speak, and some are not fully aware of their surroundings and can become easily confused." The park knew that having the ability to track all visitors would provide much needed peace-of-mind for caregivers and family members, and would be a huge value-add to the overall experience.

Making the RFID system a reality, however, presented challenging security and bandwidth requirements: they needed an exceptional convergent network infrastructure in order to place IP-based devices throughout the park's 25 acres, and they needed to run a diverse range of voice, data and multimedia applications over the network while also ensuring that switches located in non-climate controlled cabinets around the park could stand up to the temperature extremes of the south Texas climate. "We looked at all leading vendors of network switches and routers around the world and Alcatel-Lucent's name kept coming up as being able to meet all those criteria," says Zumwalt. "None of Alcatel-Lucent's competitors had everything we were looking for, but Alcatel-Lucent did."

## Total coverage for RFID system

To support the RFID system, Morgan's Wonderland needed to cover every inch of the park with RFID readers. "There musn't be any dead spots, to avoid the chance that someone standing in a corner isn't picked up," Zumwalt explains. "The company that provided the RFID readers



laid out all the waypoints and mapped the park to ensure there was complete coverage, and we then supplied the infrastructure to allow them to place the readers wherever they needed to be placed and to tie them back into the RFID application located in the data center in the main building.” Providing such complete coverage has also allowed the park to make use of IP-based security systems and lighting systems which can be controlled through the Alcatel-Lucent network from a central point.

Now, every person who enters the park is required to wear an RFID tag that’s trackable within the boundaries of the park. If a parent loses a child or if people get separated, they can go to one of five kiosks around the park and find out the whereabouts of the missing person or the rest of their party in real time. The kiosks also act as a park directory to help locate amenities like restrooms, exhibits or refreshments, and people can use them to leave messages for other members of their group about such things as making arrangements for where and when to meet for lunch.

## Fault-tolerant network that delivers excellent uptime

Alcatel-Lucent’s switches enabled Morgan’s Wonderland to achieve this comprehensive coverage while keeping both construction and operating costs down and delivering excellent network fault-tolerance, by allowing Internet Contrasts to install an Ethernet ring protection network rather than traditional hub-and-spoke cabling, based on a ring of twelve strands of fiber laid around the park. “We sought bids for the fiber install for both traditional hub-and-spoke and Ethernet ring protection topologies. The hub-and-spoke configuration would have cost \$750,000 compared with around \$200,000 for the Ethernet ring protection configuration,” Zumwalt says. “We were able to save half a million dollars just in fiber and labor by using Alcatel-Lucent switches.”

Making use of Ethernet ring protection has also allowed Internet Contrasts to create a fault-tolerant network that delivers excellent uptime. “If the park suffers a cut in its fiber line or a switch needs to be taken down for maintenance, the park’s data and voice traffic still flows around the other side of the ring,” Zumwalt explains.

## SOLUTIONS

- Data Networks
  - 19 OmniSwitch 6850 & 6855
  - 2 OmniAccess 4504
- List of VLAN
  1. Workstations/ Workstation VM’s
  2. Point of Sale (POS)
  3. RFID –includes wireless handhelds
  4. Servers
  5. Vmotion — Main
  6. Vmotion — Failover
  7. IP Cameras
  8. VoIP
  9. Alarm System
  10. Guest Wireless — Captive Portal
  11. Management
  12. Lighting Controls
  13. Digital Signage
  14. Art Guild
  15. Mine Control
  16. LED Path
  17. Wireless AP & Controllers
  18. OmniVista Network Management

*“The park runs with a very small paid staff who all wear multiple hats, so they need to be pretty flexible. An HR person may be working in one building and then have to go to another building to facilitate a conference. They’re able to go to that other building and pull up all their information without having to carry a laptop around with them.”*

BOB MCCULLOUGH, COMMUNICATIONS  
DIRECTOR AT MORGAN’S WONDERLAND

*“Wherever there’s a network cable, there’s power with the cable, powered by the Alcatel-Lucent switch. That allows us to keep power consumption low; it reduces our carbon footprint by not having to install power outlets everywhere during construction; and it makes it very easy to move the security cameras and the phones around as the park changes through its lifetime and has different requirements. That provides significant cost savings for normal moves, adds and changes for the phones and will deliver huge cost savings during any future remodeling.”*

BRANDON ZUMWALT, PRESIDENT OF INTERNET CONTRASTS

“The systems suffer no packet loss and there’s no interruption of service to end users. All the phones, alarm systems, lighting controls, park exhibits, cameras: everything stays up without any degradation of service.”

Security was another key factor behind the choice of Alcatel-Lucent technology, with the network having to meet several exacting security standards. First, the network needs to be Payment Card Industry Data Security Standard (PCI) compliant to handle merchant services at the park, particularly for credit card transactions. With vending areas placed strategically to ensure refreshments are always nearby in the heat of the summer, Morgan’s Wonderland needs to be able to run credit card transactions on the far side of the park as well as in the main buildings.

The network also needs to be Health Insurance Portability and Accountability (HIPAA) compliant as the park collects some medical information about guests’ disabilities on arrival in order to ensure they have a safe and enjoyable visit. In addition, some of the exhibits identify guests through their RFID tags so they can address them by name and also e-mail photos of their experience at the park to them. The park needs to ensure that this personal information is not exposed to other guests. Finally, data coming from the park’s IP-based security cameras also needs to be segmented from other traffic to maintain the integrity of the recordings and ensure the park can replay video, if necessary. At the same time, the park wants to allow some use of the network by guests and by third-parties using the amphitheater and conference facilities.

The features built into the Alcatel-Lucent switches allow the network to meet these complex security needs.

“Alcatel-Lucent’s VLAN switching technology and firewalling solutions ensure that each kind of data and the applications that depend on it are kept separate and secure,” Zumwalt explains. “In addition, all devices at the park are authenticated on the switches. This way, if someone brings in a laptop, smart phone or other device they won’t be able to use them to access the park’s resources, although they can connect to the public wireless network that we’ve made available in certain parts of the park, also implemented using Alcatel-Lucent access points. Similarly, in the areas rented out to third parties for conferences, concerts and fundraisers, we can use the Alcatel-Lucent wireless solutions to control when the attendees have access and when that access terminates, and set all of that up before they even come on site.”

## Virtualization and Power over Ethernet bring flexibility

The network also supports virtualization of the park’s applications so that staff can log into almost any computer around the park and see the same desktop as if they were in their office. “The park runs with a very small paid staff, who all wear multiple hats, so they need to be pretty flexible,” McCullough explains. “An HR person may be working in one building and then have to go to another building to facilitate a conference. They’re able to go to that other building and pull up all their



information without having to carry a laptop around with them.” These thin-client terminals use around a quarter of the power of standard computers, helping the park to save on energy costs. Back in the park’s data room, located in its main administration building, the Alcatel-Lucent switches can also provide the bandwidth and switching support needed by the park’s IBM Blade Center servers, allowing Morgan’s Wonderland to virtualize its applications in order to minimize the space required for IT equipment.

A further advantage of the Alcatel-Lucent switches is that they can supply Power over Ethernet (PoE) to devices such as IP-based security cameras and VoIP phones. “Wherever there’s a network cable there’s power with the cable, which is powered by the Alcatel-Lucent switch,” Zumwalt explains. “That allows us to keep power consumption low; it reduces our carbon footprint by not having to install power outlets everywhere during construction; and it makes it very easy to move the security cameras and the phones around as the park changes through its lifetime and has different requirements. That provides significant cost savings for normal moves, as well as adds and changes for the phones, and will deliver huge cost savings during any future remodeling.”

## Alcatel-Lucent switches take the Texas heat

Finally, Alcatel-Lucent was the only vendor that could provide a hardened switch with gigabit throughput, meeting both the bandwidth and environmental requirements at the park. “Because we want guests focusing on the exhibits and the natural beauty of the landscape and not looking at network equipment, we needed to hide all the equipment inside airtight boxes visually blended into the buildings or the landscaping,” Zumwalt explains. “We needed a device that was going to be able to withstand not only its own ambient temperature but the high summertime temperatures which can range up to 105 degrees Fahrenheit. When you add in the heat of the electronics, you’re pushing over 125 degrees. The Alcatel-Lucent switches are rated for up to 158 degrees, so we knew we could stick them in those hot boxes without worrying about the device malfunctioning. We’ve made it through one hot Texas summer and also a bad winter by our standards and the switches stayed up, so we’ve proved that the devices will survive in both extreme cold and extreme heat.”

## BENEFITS

- Half a million dollars saved in fiber and labor by using Alcatel-Lucent switches
- Significant cost-savings realized due to flexibility of Power over Ethernet (PoE)
- Alcatel-Lucent VLAN, firewall and authentication solutions ensure the network is totally secure, PCI and HIPAA compliant.
- The hardened Alcatel-Lucent switches kept working even when temperatures in the switch cabinets reached 125 degrees Fahrenheit.
- Network infrastructure supports 17 Virtual LANs providing all IT and telephony services

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**BRANDON ZUMWALT, PRESIDENT OF INTERNET CONTRASTS**

## Looking to the future

As well as meeting the park’s current needs, the Alcatel-Lucent convergent infrastructure provides plenty of room for future growth. The park is currently only using two out of twelve strands of the installed fiber, giving it the capability to add another 5GB bandwidth. “The investment was for the long-term and we’re not going to have to upgrade and change the equipment for a while,” says Zumwalt.

Finally, all of this could be delivered at the right price. “The focus on everything is to provide quality at a reasonable cost,” says McCullough. “As a non-profit, we have to watch our expenditure very carefully. Alcatel-Lucent and Internet Contrasts have helped us create a great park that functions smoothly, looks beautiful and is attracting a lot of attention from other cities in the U.S. and the rest of the world who want to do something similar in their communities. “We’re now looking forward to many more operating seasons, confident that the Alcatel-Lucent network will continue to support our operations.”

### BUSINESS PARTNER

Internet Contrasts is a strategic technology partner that serves businesses across the United States. Its team of certified IT technical specialists, strategic IT business consultants and internet specialists can assist businesses with its entire IT, Internet and business technology planning, offering comprehensive information technology management solutions tailored for small/midsize businesses. Services include Network Consulting, Server and Desktop Management, Managed Services, Managed Wireless Networks.

[www.internetcontrasts.com](http://www.internetcontrasts.com)

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