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Lighting the 2014 Central American and Caribbean Games Opening Ceremonies

By: Richard Cadena

A large-scale event features new gear and sophisticated networking

The 2014 Central American and Caribbean Games are held every four years; much like the Olympics, athletes from around the region compete in a variety of sports, some of which can qualify them for the Pan American Games, scheduled in this July. The games date back to 1924, when the Mexican Olympic Society wanted to make participants more competitive. Last November, the games took place in a newly refurbished 30,000-capacity stadium in Veracruz, the first time they were held somewhere other than Mexico City. Approximately 5,700 athletes from 31 countries competed in 46 different sports in front of an audi-

All photos: Anime, Inc.

Solotech assembled and tested nine racks of data distribution, including MA Lighting nodes, 12 ELC dmXLAN Switch8GB switches and eight ELC dmXLAN Switch8LX Fast Ethernet switches, plus 24 ELC dmXLAN Node 8S gateways.

ence of more than a million people. David Grill, of David Grill and Associates, Inc. (DGA), designed the lighting for the opening and closing ceremonies and Montreal-based Solotech provided the gear and most of the crew.

Four weeks before the event, Solotech began loading in; programming began two weeks before the show, which included more than 500 automated moving lights, several LEDs, 12 followspots, and 14 haze machines. Paul Sonnleitner, of DGA, programmed the lighting using two grandMA2 full-sized consoles, two grandMA2 light consoles, and one grandMA2 onPC console with a command wing and fader wing. The two full-size consoles were used for the main and backup consoles in the control booth. The two grandMA 2 lights were deployed on the field, where Sonnleitner used them to focus from

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Eight large scaffold towers were built in the upper seating bowl, each of which housed 36 of the new Philips Vari*Lite VL4000 Spots and 36 VL3500 Wash or VL3500 Wash FX fixtures.

different locations. The onPC console was for the technicians.

"It's easier to take a [grandMA light] to the center of the Pyramid [Stage] than a full-size," Sonnleitner says. "As it's a stadium, so I usually spec two, so that one can be mobile from each side of the field. That way, I can program from one position and send the electricians to move the other focus desk to an alternate position without losing precious dark time. Moving anything in a stadium takes time. The onPC system was for the tech area; they used it to repair fixtures, and if I wasn't in until later in the day, they'd connect to the session, strike up, and check out the rig for me without making the lengthy trip to the booth."

The upper seating bowl features eight large scaffold towers, two in each of the four corners, each of which housed 36 of the new Philips Vari*Lite VL4000 Spots and 36 VL3500 Wash or VL3500 Wash FX fixtures. On the east side of the stadium, about 400' of the lower balcony rail was filled with 108 Clay Paky Sharpys and 32 Clay Paky A.leda B-EYE K20s, plus a variety of PARs. On the Protocol Stage, where the metal winners were awarded, four large flags were each lit by three Elation Professional ELAR 180 LED PARs, mounted under the stage and focused through Plexiglas-covered openings. The cauldron, on which a perpetual flame burned throughout the games, was a tall, beautiful structure backed by a geometric backdrop and handsomely lit by 55 ELAR 180 LED PARs.

Speaking of the VL4000s, which debuted at the fall trade shows, Grill says," The thing I was really thrilled to see was the iris. To have that along with all the other elements is sort of a rarity. Typically, when you get into multiple shutter blades, color wheels, animation wheels, and gobo wheels, your focal point gets so packed you wouldn't think an iris would be possible, but it is with the way Vari-Lite constructed the optics. When Paul Sonnleitner and I dropped in a gobo while in the 5° iris position and it read beautifully from 450' away, we knew this was going to be a fun light."

The centerpiece was a three-level tiered stage, about 30' high, complete with three pools, two of which were lined with eight Clay Paky A.Leda B-EYE K20s, and one of which was lined with 18 Sharpys. The all-white structure served both as a projection surface and a platform for performances during the opening and closing ceremonies. Four tall masts supported two long segments of truss, each of which had 15 VL4000 Spots. There were also eight big LED custom pan-and-tilt fixtures with ninety 10W RGBW LEDs, 24 Philips Color Kinetics ColorBlast 12s, 24 Color Kinetics iWhite Blasts, and, from MDG, eight theONE and six Atmosphere haze machines. On the followspot platforms were four Robert

Paul Sonnleitner, of DGA, programmed the lighting using two grandMA2 full-size consoles, two grandMA2 light consoles, and one grandMA2 onPC console with a command wing and fader wing. The two full-size consoles were used for the main and backup consoles in the control booth.

There were no elevators, so a crane was used to place the Vari-Lites, cabling, and power distros onto the scaffold on the upper bowl and in the bleachers.

Juliat Cyranos and eight Strong Gladiators. In all, there were 16,000 parameters under control, which required the use of about 30 universes of DMX.

One of the keys to pulling off this show and programming all these lights was the control network, which was primarily switched by 12 ELC dmXLAN Switch 8GB switches and eight ELC dmXLAN Switch8LX Fast Ethernet switches plus 24 ELC dmXLAN Node 8S gateways to convert from Streaming ACN back to DMX. Each group of fixtures had its own power and data distribution, Ethernet switch, and Ethernet nodes. The power was distributed using eight Solotech 72-way power distros, two Theatrixx 48-way distros, and six Theatrixx 24-way distros.

Because of the long data runs in the stadium, many of which were 200m (656'), much of the data was distributed using fiber-optic cable. The lower concourse of the stadium, field, and upper bowl were all ringed with a pair of fiber-optic cables, one active and one spare, using the two SFP cage connectors that are a standard feature of the ELC switches.

The advantage of using fiber-optics

LIGHTING CREW

David Grill, lighting designer
Paul Sonnleiner, lighting director
Lynda Erbs, lighting supervisor
Antoine Malette, technical coordinator, Solotech
Mathieu "El Gros" Lavallée, lighting crew chief, Solotech
Jean-Sébastien "Vince" Robillard, project manager, Solotech
Sylvain "EOM" Paquet, Lx tech - networking, Solotech
Pablo "PC" Cruz, Lx tech - towers, Solotech
Marc-Aurèle "Moogli" Ménard, Lx tech - towers, Solotech
Remy "Casseau" Parent, Lx tech - concourse, Solotech
Anthony "Antoche" Michon, Lx tech - concourse, Solotech
Yanick "Coach" Blais, Lx tech - field of play, Solotech
Jonathan "Pogo" Coulombe, Lx tech - field of play, Solotech

LIGHTING EQUIPMENT

126 Vari*Lite VL 4000 Spots
106 Vari*Lite VL 3500 Wash
94 Vari*Lite VL 3500 Wash FX
8 Solotech BIG LED (pan and til) w/ 90 RGBW 10W LEDs
126 Clay Paky Sharpys
58 Clay Paky Aleda B-EYE K-20s
24 Color Kinetics ColorBlast 12s
24 Color Kinetics iWhite Blasts
98 Elation Professional ELAR 180 LED PARs
36 Altman PAR 64, bars of six
56 Altman PAR 64s
4 Robert Juliat Cyrano followspots
8 Strong Gladiator III followspots
8 MDG theONE haze/fog machines
6 MDG Atmosphere haze machines
8 Solotech 72-way 20A 208V electrical distribution
2 Theatrixx 48-way 20A 208V electrical distribution
6 Theatrixx 24-way 20A 208V electrical distribution
2 MA Lighting GrandMA2 full-size desks
2 MA Lighting GrandMA2 light desks
1 MA Lighting GrandMA2 OnPC with command and fader wings
5 MA Lighting GrandMA2 NPUs
12 ELC dmXLAN Switch8GB
8 ELC dmXLAN Switch8LX
24 ELC dmXLAN Node8 Solo

instead of copper is that it can be run much farther than the 100m, or 328', limit of twisted-pair copper wire. It's also immune to electromagnetic interference (EMI) and it provides a huge amount of bandwidth. On the other hand, it is made of glass, and will break if it's stepped on, rolled over with a fork lift, or bent too tightly. Antoine Malette, technical coordinator for Solotech, who oversaw the project and mapped out the network, says his team used opticalCON fiber-optic cable, which meets EIA/TIA-455-25 military requirements for impact resistance and TIA/EIA-455-41 military requirements for crush resistance. It has a bandwidth of up to 2GHz for a 1km run.

Ordinarily, you can't form a complete loop with the data lines using a standard Ethernet switch, because it creates a situation where the data is sent around the loop in an endless cycle, flooding the network and eventually bringing it down. Some Ethernet switches have special protocols, like Rapid Spanning Tree, allowing you to loop the data runs so that there are two paths to any device in case any cables fail. In the ELC switch8LX, the ports can be programmed for looping, which makes one of the cables a backup. The backup output is detected by the switch and disabled until it is needed. During the show, in the event that any cables fail, the data is automatically re-routed through the backup port within 30 - 50Msec.

"With ELC, we don't have to concern ourselves with IP terms, because they just call it 'looping,'" Malette says.. "It was very easy to use."

All ELC switches and nodes were housed in two racks custom built by Solotech. Each included a 1,500W uninterruptible power supply, and one had a PC on which ELC's dmXLAN software was run. dmXLAN is used to configure the nodes on the network; it can be used to discover and monitor RDM fixtures on the network while the console is being programmed or while it is running a show. The software also gives you the ability to monitor DMX values for every universe in real time.

"It's very useful for a large system like this," Malette says. "It diagnoses the system to make sure everything is online, and if something goes wrong, you don't have to go to the node; you can fix it from the computer.

"In another project we did in Mexico, the programmer asked for Cisco switches, so we had to learn how to program the switch, how to make VLANs, make a trunk, and all that. For what we do, it's way overdesigned. It takes two weeks of training to get familiar with it. That's what's great about ELC switches. They make it really easy to understand and bullet-proof. It takes no time to go into the software and designate different ports or different VLANs, baud rates, or loops."

The entire network was set up beforehand in the Solotech ware-

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house, to make sure everything was running properly because the system mixed older ELC switches with newer gigabit switches.

"Even if an entertainment switch makes it easier," Malette says, "it's not always easy. But that's normal with new technology. ELC provides us with 100-percent great service. We were one of the first companies to use their gigabit switch and we had some issues. If we find a problem, Joost [van Eenbergen, ELC design engineer] usually sends us new firmware the next day."

Once on site, Malette says, the team had to use a crane to get all of the Vari-Lites, cabling, and power distros onto the scaffold on the upper bowl and up in the bleachers, because there were no elevators.

"It took about 20 trips per corner," Malette says. "It was about one day per corner, doing six lights at a time. We had a crew down, and a crew up. There were about 20 local crew taking the lights from the top of the stadium down the stairs, and using a rope to hoist them up to the scaffold. It took forever. But that was scheduled."

They also had to worry about the weather.

"We developed a rain cover with Vari-Lite to prevent water from getting into the ballast. But we had issues with heavy rain getting in through the screws and we had to swap a few ballasts. It is going to be a full-time maintenance job," he said before the event.

Despite the challenges, the opening and closing ceremonies came off without a hitch, thanks to lots of preparation, a great crew, and great gear. You can see more photographs at http://bit.ly/Veracruz2014 and video at http://bit.ly/Vera2014video.