Up with the L'Arc

With the development of Macao cautiously beginning to pick up speed again, L'Arc has opened with an extensive hotel and gaming complex – and advanced digital BGM and signage, as **Richard Lawn** discovers.

Opened in September 2009, New World Developments' L'Arc is the latest five-star hotel accommodation and casino to make an appearance on the Macao skyline. The 21-storey hotel contains 301 guest rooms together with two casino floors, offering 140 gaming tables and a host of F&B outlets. With a wealth of facilities to accommodate, Hong Kong-based systems integrator ASCL was contracted to design, install and supply the digital signage and background music systems for the public areas of L'Arc.

The hotel's facilities include The Coffee House, The Lobby Lounge, Chinese, Japanese and French restaurants and a round-the-clock Chinese diner. Additionally, there are sports, meeting and banquet facilities, and an entertainment centre. Overseen by senior project manager, Billy Wong, general contractor M&E pre-installed the cabling infrastructure prior to ASCL's arrival on-site in March 2009. The systems integrator has established an office in Macao in response to the development the island is enjoying, through which it can better serve local clients. Having spent several years working in Beijing in addition to living in Hong Kong all his life, Mr Wong enjoys the change in pace in Macao: 'There's a lot less traffic and it's not as congested – I find weekends relaxing,' he comments. 'For this application, we were late on site owing to other construction work, but were made aware by Dino Tech Limited [the project's consultant] that the client demanded quality background music and clear announcements, in addition to high-definition digital signage. It was quite an undertaking, given the scale of the job and limited time frame we had to complete it.'

Twenty-six media players serve the extensive number of 37-, 42-, and 52-inch Sharp LCD and plasma screens throughout the hotel and casino via an Opticis fibre-optic system. The servers are installed with Scala software, which schedules the running times of the programmes and advertising. Currently running on a 1360 x 768 HD platform, but capable of providing 1080, the digital visual interfaces (DVI) act as high-definition multimedia interfaces (HDMI) allowing DVI cable connection from source to screen. The fibre-optic cabling links the OVD12 two-channel DA on the servers to the screens with M1-201DA-TR digital visual interfaces via two ODM3636 matrix routers. 'The matrix routers are heat resistant,' said Mr Wong. 'Even in the absence of AC, they still work. I can't think of another brand that would still work without AC.' The ODM 3636 allows a cross-switch between up to 36 DVI sources

from host computers in distant locations and 36 digital displays using Opticis' dedicated software.

The result is an uncompressed data link between the host processor video card and display screen via the optical converter. Optical technology for this transmission stretches the performance beyond the limitations of copper wire with longer transmission lengths, data security, negligible RFI/EMI interference and the elimination of costly analogue distribution systems. Graphic data could be extended up to the distances required in L'Arc, while data security associated with RFI/EMI emissions and loss of video quality aren't an issue in the absence of copper.

The BGM system installed by ASCL covers the public areas on the ground floor and first seven floors of the hotel and casino. Although extensive in its reach, it was simplified in order to save installation time and costs. Sources are taken from 16 playback servers and fed to the multitude of Atlas Sound full-range FAP-82T and FAP-8CXT loudspeakers, and low frequency FAP-Sub ceiling speakers throughout L'Arc. The exception being some QSC Audio CI41T 4-inch ceiling speakers in the corridors of the fourth floor and some weatherproofed AD-282 T speakers outside the main entrance. Local feeds, such as MP3 players, can also be input where required. There are 12 local feeds on the fourth floor and five in the casino. In addition, live performances and live broadcasts can be hosted via a number of tie lines in the hotel and casino, directly over fibre.

MTS Communications COM6004D four-channel (600W/channel) amplifiers have been used exclusively for the 70V line system. In total, 200 channels of amplification are used. The circuit of each class-D amplifier includes an analogue VCA for remote level/mute control and a microcontroller with 12 AD converters. This enables remote monitoring of attenuator input signals, output current and voltage signals to the loudspeaker, including output clip, rear panel HPF switches, heat-sink temperature, short circuit, channel over current and DC conditions in addition to the remote relay muting/disabling of the amplifier channels. Fitted with CobraNet cards, the Ethernet and RS485 ports offers remote control and monitoring of all amplifier parameters, in addition to a serial bridging facility provided by the same protocol. The COM6004 amplifiers take their feeds via 3Com 5500 switches from eight QSC Basis 922uz DSP matrices. The BGM system is made central in operation by the integration of the QSC Venue Manager software, allowing amplifier and loudspeaker control, monitoring and protection, together with some DSP functions and CobraNet audio transport from a PC. Allowing this are MTS Ion 8.8 (eight-input/eight-output) audio bridges that have been installed to allow conversion of the analogue signals to CobraNet protocol.

The fourth floor of the complex is home to several F&B outlets including the Chinese Restaurant and ballroom, and is divided into eight distinct zones. The CobraNet signals have also been directed to particular areas under control of the AMX systems that are used throughout L'Arc. With 16-gauge high-voltage cabling running from the 21st floor, where the control room is located to the lower hotel public floors, amplifiers have been installed

on each of the seven public floors to further minimise cable runs. L'Arc Macau also features service apartments, including elegant clubhouse facilities such as a gymnasium, pool, health club and massage rooms, which are similarly equipped with digital signage and BGM systems installed by ASCL.

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