Conceptron Associates

T E C H N I C A L • S E R V I C E S

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AV PROJECT PROFILE

Project: **Staples Center Arena, Los Angeles**

Project Type: Live video production facility for sports venue.

Dates: April 1999 to October 1999

Summary: Production control room layout. Monitor wall and control console millwork design. All-digital live video production system design, specification, tendering and procurement, installation review, contract management, and acceptance. This video system allows live shows to be cut and fed to several large-format video displays during games, and provides content for in-house CATV channels. The budget for the control room was about $1.2Million US.

Also evaluated bids for large-screen displays and performed acceptance of videoboards and scoring systems.

Site Statistics: Staples Center Arena was constructed in a record 18 months (24 months is typical) for about US$375 million, and opened in October, 1999. It is the home of two NBA teams (the L.A. Lakers and the Clippers) and an NHL team (the L.A. Kings). It is a 900,000 square foot facility seating 20,000 for basketball and 18,500 for hockey. It features 160 luxury suites (on three levels), 32 party suites, 2,500 club seats, and 22 concession stands.

Design Criteria

Growing expectations from fans have put pressure on arenas to greatly enhance the visitor experience both before the game and during breaks – the name of the game is entertainment. To this end, it is important to provide more than just replays of goals and baskets between periods. The mandate for Staples Center was to be able to produce a high-energy live show during a game, including the ability to go down into the crowd with roving camera and talent and do fan interviews and contest segments live to the display boards. The result is that a modern video control room in an arena must grown from the very basic systems installed a few years ago to a sophisticated live production facility.

The challenge, as with all live broadcast production, is to provide a sophisticated set of sources and effects that can all be operated quickly and easily in a “live to air” environment. The producers and directors need to be able to continuously change the look of the displays, while being able to rapidly assemble highlights from play that has just ended, interspersed with appropriate archival material – often in only a few minutes.

While video tape must still be used (we specified two digital VTR’s in addition to BETACAM SP and S-VHS legacy decks), we decided that the bulk of the storage and playback would be from hard disk.

At the time of designing the control room for Staples Center, the industry was at a crossroads with analog, digital, and HDTV all as possible directions. While many arenas were still installing and operating analog technology at this time, we felt that a new analog installation would be virtually obsolete within two years and, therefore, made the decision to go digital. We opted for SDI (SMPTE 259M at 270 Mb/S) rather than HDTV due to both cost and practicality – the output of the room will never be broadcast, and the resolution of the center LED video displays is a little less than 640 x 480. The only analog signals are inputs and outputs to two analog VTR's (to support legacy tape formats) and the wireless camera system. Even the Triax camera CCU's are equipped with SDI outputs.

We further tried to future-proof the design by ensuring that the bulk of the processing and storage equipment was 16:9 compatible, and that the cameras and monitors were all 4:3/16:9 switchable wherever practical. The Ross production switcher has a built-in aspect ratio converter that will allow mixing of formats and scaling the final output to a 16:9 format. Since the center screens are 4:3 displays, the switcher can fill in the blanked horizontal strip with graphics (typically advertisements).

Functional Description

The principal function of the room is to produce live clips during games for viewing on the jumbo display screens that are hung in the center of the arena. These clips will generally consist of live interviews from the floor, game replays, game highlights, and advertisements. The display screens are mounted on four sides of an eight-sided scoreboard, and consist of Mitsubishi Diamond Vision LEDer displays. Each is about 15' x 12', has a brightness of 2,400 Nit, a dot pitch of 8mm, and a resolution of about 576 x 480.

An auxiliary function of this room is to generate content for display on five in-house CATV channels (for display on concourse monitors and in the suites), as well as three additional LED display screens (one in each of two main lobbies and one on the outside of the building).

The final function of this room is to provide basic non-linear editing to produce highlight reels, etc.

System Highlights

All video signals within the control room are SDI (serial digital), except for monitoring and the input/output connections to two analog VTR's (for legacy compatibility). External camera, video, and audio signals from the central patch room are distributed to a set of ten equipment racks via an overhead cable tray system. All cable distribution from the equipment racks to the equipment consoles and monitor wall is via a raised computer floor system. A 26-monitor monitor wall and custom operator consoles were provided for production staff.

The heart of the system is a Ross Synergy digital production switcher. This switcher has a number of unique features including: "Squeeze and Tease" (a 2-D DVE built into each bus); a built-in aspect ratio converter that allows seamless switching and mixing of 4:3 and 16:9 signals, with the output of the switcher being in either format; and very tight control and integration with the Pinnacle DVExtreme so that DVE moves can be operated from the switcher joystick, programmed into console macros, and layered with the internal T&S DVE.

Another key system is the clips/replay package from Dixon Sports Computing. This consists of four channels of Leitch VR-300 video servers with a central storage array controlled by a custom software application running under Windows NT. This application allows one operator to capture and log up to four active camera feeds live during a game. This material is available instantly for replay – recording can continue while replay is in progress. Clips are automatically entered into a database, and collections of clips based on various parameters (player number, type of play, ranking, etc.) can be instantly assembled for air.