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SGI at the Pepsi Center

Video-on-Demand in Denver’s State-of-the-Art Arena

It’s Friday night at the Pepsi Center, and the Avalanche have just tied the Sharks at 8:08 in the second period. In their luxury suite far above the ice, a group from the office cheers wildly. Using a Silicon Graphics® flat panel display with a MicroTouch touch screen, they order hot dogs, Pepsi, and beer, which arrive at the end of the period. Food and drinks in hand, they touch the screen to pull up second-period highlights.

They cheer again as an SGI™ server streams video clips of outstanding plays to the monitor with spectacular color and sharpness. Somebody remembers a great play from last week’s home game and brings up the highlight for all to see. Two of the fans use the touch screen to order Avalanche sweatshirts; their touches generate pull tickets in the retail store, and a runner delivers the sweatshirts to the suite at the end of the game. As they stream out of the arena, other fans are watching the replay of the game-winning goal on touch-screen kiosks around the arena. A great night has been made better by SGI video-on-demand technology solutions.

The New Pepsi Center: An Instant Sellout

Denver’s \$160-million Pepsi Center opened October 1, 1999 to become the new home of the NHL’s Colorado

Avalanche and the NBA’s Denver Nuggets and to give Denver sports fans a venue that is unequalled for amenities and high-tech flourishes. The center, which seats between 17,000 and 20,000, has scheduled concerts by Celine Dion, the Backstreet Boys, Ricky Martin, and Neil Diamond.

“SGI brought its streaming media and e-commerce expertise to the table to create a unique partnership with us,” says Pepsi Center Premium Services and Sales Director Todd Goldstein. “We were looking for a company that could deliver a technology that is unparalleled at any sports and entertainment venue.”

They were also looking for a company that could deliver the project quickly. SGI Professional Services was given only 16 weeks to design, develop, and implement this groundbreaking content delivery system. Moreover, the arena’s new media-streaming technology had to integrate smoothly with that of several third-party vendors, who were already on board when the project began.

“Being able to provide a complete package of consulting and management services was vital to delivering this solution on schedule,” says SGI Project Manager Terrence Hancock, who handled vendor and team coordination. “Every time a vendor made a change, its impact on the rest of the solution had to be assessed and shared with the other players involved. However, everything came together, and in fact we were able to deliver the event-ready stadium two weeks early.”

“The people of Colorado have really embraced the building, its amenities, and its features,” agrees Goldstein, pointing to the fact that all 1,854 club-level seats and 95 luxury suites are sold out on multi-year contracts.





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A World-Class First: Video, Refreshments, and Souvenirs on Demand

The Pepsi Center’s complete Web-based video streaming solution is unmatched at any sports or entertainment facility. Each of the 95 luxury suites includes a Silicon Graphics visual workstation and a Silicon Graphics 17-inch 1600x1024 flat panel display—the world’s first all-digital, high-performance display system. The system delivers spectacular color and eye-popping resolution unachievable on ordinary desktop systems.

Video of each game is captured by the center’s regular production crew for team analysis and training. During the game, editors select highlight clips to build reels that are played on scoreboard screens during period breaks or time outs. The same reels are MPEGI-encoded and stored on an SGI server. When a period ends, the server utilizes Mediabase® software to stream broadcast-quality, 3Mb-per-second MPEGI video highlights to the luxury suites on demand. Silicon Graphics visual workstations deliver this massive flow of video data to the flat panel displays.

“The solution is based on an exact analysis of the workflow for the arena’s broadcast producers and editors,” says SGI Solution Architect Tyrone Lindsey. “The system had to enable capturing large amounts of video content, sending it to the broadcast booth, editing it, getting it back out into the system quickly, and making it easy to access. Our consulting team brought all these capabilities together and customized them for this environment.”

Each monitor is fitted with a MicroTouch system that allows users to interact with Pepsi Center Web pages by simply touching the screen. They can view highlights, order refreshments or souvenirs, or access a wealth of information about the center and its attractions. “Most people are used to VCR controls, so we developed a user interface to recreate a VCR-type environment,” Lindsey says. “Our goal was ease of use both for the broadcast booth and the sports fans and concert-goers.”

“It’s amazing how many people use this system now to see the great save at the end of the period or the basket at the buzzer,” says Goldstein. “People tell us they look forward to using the replay as much as the event itself. The high-resolution screens are phenomenal. People say, ‘I wish we had that at home.’”



Streaming to Kiosks and Video Walls

In addition to the luxury suites, video is streamed on demand to 13 public kiosks distributed throughout the arena. Video walls made up of projection screens in 3x6 or 1x3 format display paid advertising messages above escalators and on concourse walls. The SGI system streams the video in MPEG2 format to a Vela Research decoder, which breaks it down into the NTSC analog video streams required by the video walls.

No other facility in the world enjoys this combination of broadcast-quality video and e-commerce applications—a totally integrated solution, designed and implemented by SGI Professional Services, that includes image generation, video streaming, flat panel displays, and touch screen access.

“With this project, SGI and the Pepsi Center have raised the bar for sports arenas and large entertainment spaces,” says Randy Stefano, vice president of SGI Professional Services, Americas. “This is our objective—to use tomorrow’s technology to enable our customers to become market leaders today.”



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