

EAFB – Edwards Air Force Base

EIZO's Re/Vue Reduces the Data Delivery Process at Edwards Air Force Base from 5 Hours to 5 Minutes

As a provider of air traffic services at its airfield and the safety functions associated with its test ranges, Edwards Air Force Base (EAFB), located north of Los Angeles, California, USA, is required to record and retain audio and surveillance data. This data ensures support functions like incident investigation, search and rescue, and training. Their previous problem was that their record and replay systems used an extensive amount of audio and video media to retain the data required to efficiently support any investigative playback functions. A number of procedural elements associated with their disparate recording systems and media handling made the time to review required data up to a lengthy five hours and involved multiple departments and personnel throughout. These limitations and their desire to drive efficiencies led EAFB to review the available products in the market in search of an alternative solution.



EIZO Re/Vue MG1 controller positions video and audio recording solution

The existing record and replay system suffered limitations including the length of time to retrieve data post incident, the inability to easily share the data to appropriate parties during the investigative/review process, and the large size of the files created from the system. The size of the recorded data made portability a significant issue. Since their audio and surveillance data was recorded on separate systems, it required users to manually synchronize the data during the playback process. Any substitute solution would need to address



F-35 Lightning II taking off at Edwards Air Force Base (Photo by Jet Fabara)

these issues while considering the security implications associated with the existing technology and software installation on the host systems. EAFB was looking for a solution which was entirely independent of their current operational systems which would not require regular costly updates as the operational systems changed, delivering an investment protection over time.

In April 2011 EAFB selected EIZO's Re/Vue, a stand-alone recording solution that consists of both video and audio hardware, supporting drivers, and control software. Re/Vue specifically fulfils the video capture, compression and data archive requirements needed to meet and exceed Federal Aviation Association and Department of Defence policies with the added benefit of synchronized audio recording.

After installing the EIZO Re/Vue system, EAFB immediately experienced how much easier it was to record, maintain, playback, and distribute recorded data in an efficient manner. Re/Vue's lossless video recording, with advanced compression of up to 20,000:1 for typical



Edwards air traffic controllers with the 412th Operations Support Squadron (Photo by Chad Bellay)

ATC data, relieved them of the tape storage issues they had been experiencing. They were also now able to store their video and audio data in an easy to manage electronic format while still maintaining a playback quality identical to that of the original source data. They discovered that Re/Vue greatly improved image quality at playback and made detail easier and clearer to view than before with the combination of the video recording quality and the zoom features of the playback application.

After comprehensive testing in their environment, EAFB established that the image data was of such high quality they could utilize a frame skip, a method whereby frames are deliberately discarded to reduce storage space. Based on their data recording requirements EAFB identified that by selecting a frame skip of 5, giving an effective 10 frames per second at the time of recording, no noticeable impact on the image quality was experienced during playback even though the recording was no longer technically lossless. The adoption of the frame skip resulted in compression ratio of up to 34,000:1 translating into storage of over 15 months of recordings on the internal one terabyte hard disk drive of the Re/Vue. This compression made the resulting data even smaller enabling an easier distribution of data across different departments.

Re/Vue's integrated audio record function also ensured that the controller position audio was perfectly synchronized with the video data and provided a significant overall improvement in the efficiency of the data analysis process. If an incident occurs, there is no longer a need to send separate requests for radar data and audio data to different programs. Synchronous playback

of audio and video can be achieved through the Re/Vue playback application leading to delivery of a playback request within 5 minutes instead of the historical 5 hours.

Additional considered criteria were those related to the physical interface and security aspects of deploying such a solution. Re/Vue effectively taps into the video feed between a graphics card and the display at the DVI level. By recording data via this graphics interface, any future changes to the software environment of the operating system have no effect on the Re/Vue recording system providing further investment protection to EAFB. A further benefit of this technology is that due to its passive nature, the Re/Vue recordings can be used to support validation and correct the functioning of connected systems during evaluation and subsequent operational periods.



The Edwards Control Tower (Photo by Senior Airman Julius Delos Reyes)



ADACEL control tower simulator. (Photo by Laura Mowry)

Due to security limitations, EAFB also had the challenge of not being able to install further software onto its operational systems and networks without a lengthy approval process. Re/Vue addressed this issue since the player application used for playback or streaming of recorded video and audio is an executable file. There is no requirement to install playback software onto their system. As a result, if an incident occurs, EAFB copies recorded data along with the player executable file directly to a single portable media device. The portable media is made available to the receiving party and runs directly with no requirement for software installation. Recordings can be played on any workstation, at any monitor resolution. This increased portability allows EAFB to move data on more quickly for review by additional personnel.

After six months in service, EAFB found that the Re/Vue perfectly addressed their recording and replay needs and is significantly more advanced than any solution they had considered previously. EAFB was especially pleased with the reliability of the solution, having experienced no hardware or software failures during the installation and implementation phase of the system.



T-38 formation flight over EAFB (Photo courtesy of Edwards Air Force Base)

Support during the integration and evaluation phase that ensures optimal performance in the operational environment was handled by EIZO's dedicated US-based support team. EAFB was quick to note that this integration process was seamless and is not the level of support that they have typically experienced in the past from other suppliers.

Significant efficiencies and savings have been made to a number of processes associated with the playback and distribution of recorded data. Investment protection is assured due to the methodology of recording at the video level rather than a software-based solution which may require regular updates in accordance with system modifications.

With the success of the Re/Vue, EIZO is confident that the Re/Vue Mini with its reduced footprint and power consumption is an even more attractive product for deployment in environments such as EAFB.

About Edwards Air Force Base

EAFB is situated north of the city of Los Angeles. The base consists of approximately 301,000 acres of largely undeveloped or semi-improved land that is used predominantly for aircraft test ranges and maintained and unmaintained landing sites.



Space Shuttle Endeavour being ferried by a modified 747 aircraft (Photo by Christian Turner)

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