

The Challenge: Complex System, Compact Size, Contain Costs

Video Broadcast Server

The Client

The client is the leading provider of integrated live video production systems. A young, technically innovative company, the Client's systems are used by leading broadcasters worldwide in a wide variety of live video production applications.

The video broadcast server provides advanced features at dramatically lower cost than traditional broadcast systems and incorporates a streamlined user interface that simplifies operation and reduces the number of operators required to manage live broadcast streams.

The Business Problem

To keep hardware costs down, the client chose to build their system using commodity IT components wherever possible. Additionally, the client wanted to keep the systems small - 2RU (3.5" high by 19" wide).

The final design utilizes off-the-shelf server components, semi-custom parts and several customer-designed, specialty PCI cards.

Due to the nature and number of components included in the system, close attention to ventilation and cooling were required.

Because the client serves a global market, world-wide shipments were anticipated and custom, heavy duty packaging for the completed systems was developed.

Client Requirements

- ▶ Develop a system within a 2RU server chassis that can support 6 hard drives, a high performance graphics card, an Ethernet expansion card and multiple custom PCI cards
- ▶ Provide sufficient power and cooling for the required components
- ▶ Recommend and implement cost-effective components with sufficient lifespan to meet the anticipated product life and release roadmap



- ▶ Provide revision control and software update procedures that maintain product control and allow for frequent software updates
- ▶ Provide component roadmap information and inventories of high-change components such as graphics cards and hard drives
- ▶ Develop packaging that will survive international shipment, likely including multiple trans-shipment points

The Solutions

Design Challenges: The ConRes pre-sales engineering team worked with the client's development team to identify all the requirements of the system.

Once the requirements were fully documented, ConRes worked with a favored computer chassis supplier to review the size and cooling issues of the system.

After careful evaluation, the supplier provided plans for a design that would meet all system requirements. In modifying one of the suppliers existing chassis, ConRes was able to save on tooling costs, making the chassis economical to build.

Due to the number and wattage of the components involved, a customized power supply was required.

After testing and some modifications, a final design was agreed upon. The final system conforms to the size requirements, meets the cooling specifications, and is visually attractive.

International Shipping: To achieve international shipping requirements, ConRes worked with a local packaging supplier experienced with electronic equipment shipping and able to perform ISTA testing.

Incorporated into the box design is a custom foam pocketing system that allows the system's hard drives (which are removable from the front of the server) to be shipped out of the server and inserted when the system is installed. In addition, all packaging bears the Client's branding.

Inventory Pipeline: With the design finished and the production documents agreed to, ConRes and the client developed a production and inventory plan that maintains a pipeline of materials and an inventory of finished goods in several configurations.

Benefits

- ▶ Maintained cost objectives through the use of low-cost commodity components wherever possible.
- ▶ Reduced engineering and one-time charges by leveraging relationships with suppliers and using modified existing designs rather than all-new designs, which would have incurred significant tooling costs.
- ▶ Provided an ISTA-tested packaging solution at a reasonable price.
- ▶ Achieved a balance of costs, quality and on-going availability that maintains a low production cost for the system and meets lifecycle requirements.
- ▶ Improved client cash flow through the use of small finished goods inventories and pipelining of critical components, which eliminates the need to hold large quantities of unfinished goods.

The capabilities and expertise ConRes provided in designing and producing the system aided the client in meeting their production cost targets and market release dates.

By leveraging ConRes, and ConRes' partners, the client was better able to utilize its core engineering team, keeping them focused on the development of new features and new products. The hardware integration, system assembly and product logistics became the responsibility of ConRes, an economical out-source partner for this project.

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