Integration Case Study

Shipborne - Vital Systems Control and Monitoring

Dual CompactPCI chassis with custom segmented backplane

Requirements

This application specified a central station for controlling, monitoring and storing critical shipboard systems and information. An extended display video wall was needed to display real time status information. Up time and reliability requirements demanded design strategies to meet the specification. High temperatures, shock and vibration requirements demanded a rugged design. Perform complete verification, validation, and qualification testing along with all supporting documentation.

Solution

The system includes network redundancy and hot swap in a dual star architecture. Shelf managers, alarm cards and power supplies feature N+1 redundancy with hot swap. Most major components including the SBCs, allow hot swap. Shelf manager and alarm modules provide IPMI based system status and control features for temperature, voltage and health monitoring to all major components. A custom graphical system representation allows visual feedback of system status. The system uses extended temperature 2.5” hard drives and is mounted in shock isolated cabinets at deployment.


SBCs


I/O


Software


Storage


Network

Chassis / Systems

Benefits

ACT/Technico is a single point of contact for warranties, support and spare parts sharply reducing MTTR. Extensive testing suite yields highly reliable performance of this critical shipborne system. Our experience leads to improved schedule adherence and reduces overall program risk.

This dual chassis solution is capable of operating at 0°C to +70°C :

Chassis One

- Custom 21 slot three segmented cPCI / 2.16 backplane
- One 6U Pentium SBC, 6U storage with 2.5” HD card per segment
- Dual 24 port PICMG2.16 Gig E switches for redundant high availability operation
- VGA I/O and NIC in PCI form factor via 6U PCI to cPCI adapter
- PICMG2.9 compliant system manager with IPMI

Chassis Two

- Six slot cPCI backplane
- One 6U Dual Xeon SBC w/ graphics PMC
- Two 6U cPCI storage cards with 2.5” HD
- Eight port Gig E switch
- Audio PMC via PMC to cPCI adapter
- System alarm card