



WHEN SECURITY IS CRITICAL

LOCKHEED MARTIN BOOSTS SECURITY AND REDUCES HPC COSTS WITH ALTAIR

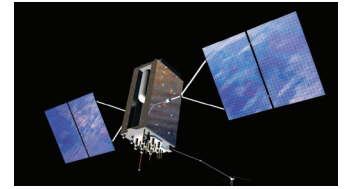
About the Customer

Lockheed Martin is a global security and aerospace company that employs approximately 114,000 people worldwide and engages in the research, design, development, manufacture, integration, and sustainment of advanced technology systems, products, and services. The majority of Lockheed Martin's business is with the U.S. Department of Defense and U.S. federal government agencies, and its mission is to solve complex challenges, advance scientific discovery, and deliver innovative solutions to help their customers keep people safe. Lockheed Martin uses high-performance computing (HPC) to support this mission.



We chose Altair thanks to PBS Professional's rich set of queuing, managing, and reporting capabilities and the company's willingness to innovate with us."

Joseph Swartz, Program Chief Scientist, Lockheed Martin



Their Challenge

Because security is critical for government computing systems, the experts at Lockheed Martin use Red Hat® Enterprise Linux® (RHEL) cross-domain system configurations for multi-level security (MLS), enabling users and data at different security levels to share the same resources including hardware, operating systems, and disks. The MLS policy and other RHEL features enable role-based access control, automated auditing, and more security features. The MLS configuration helps control hardware costs by **efficiently combining users at different security levels on the same HPC system**. This is particularly useful for the U.S. military and intelligence communities, where systems supporting multiple data sets such as Secret, Top Secret, and Confidential have historically been physically separated for security. “Without a workload manager that can use RHEL cross-domain security, we were forced to install a version of our scheduler at each security level and manage the HPC resources by whiteboard,” says Joseph Swartz, program chief scientist at Lockheed Martin — which was a waste of time and resources.

Lockheed Martin's mission is to solve complex challenges, advance scientific discovery, and deliver innovative solutions to help their customers keep people safe.

Our Solution

Lockheed Martin evaluated various HPC resource management solutions and investigated vendors' ability to not only meet their queuing and prioritization requirements, but also their willingness to work with Lockheed Martin to customize the code and make the scheduler compatible with Red Hat cross-domain configurations. “We chose Altair thanks to PBS Professional's rich set of queuing, managing, and reporting capabilities and the company's **willingness to innovate** with us,” says Swartz. “The PBS Professional implementation with Red Hat offered broad flexibility in setting queue and job priorities, and it provided the automated accounting information and many other capabilities we needed to ensure each user gets his job completed in the appropriate time and with the appropriate priority.” Altair experts worked closely with Lockheed Martin to ensure the software met the **highest levels of security requirements** in a Red Hat Enterprise Linux cross-domain environment.

Results

Thanks to the PBS Professional installation supporting cross-domain security, Lockheed Martin can **easily and securely manage HPC resources in real time** across more than 20 different security levels and compartments, ensuring full system utilization. In addition, by providing a cross-domain supercomputing platform, the Altair-Red Hat solution enabled Lockheed Martin to dramatically reduce HPC procurement costs in support of a large U.S. government program. Rather than maintaining individual HPC systems, Lockheed Martin consolidated resources into two supercomputers, resulting in **tens of millions of dollars in up-front savings**, reduced datacenter footprints and power consumption, and a simplified IT architecture.