To meet market demands for high-performing products in less time, aerospace companies must use simulation to gain insight on product behavior from the beginning of the design process. The ability to predict how a technology will perform offers a crucial competitive advantage. But it requires high-fidelity simulation and robust design techniques — all while maintaining tight design schedules. To satisfy these combined demands, aerospace companies depend on scalable, reliable high-performance computing (HPC).

Make smarter decisions and gain a competitive advantage with Cray.

Cray systems deliver extreme CAE application performance and provide industry-leading scalability and reliability to the aerospace industry’s data-intensive and time-sensitive computing tasks. Additionally, Cray offers a complete, single-vendor solution with systems to meet any extreme challenge in computing, storage, and analysis (“big data”).

HPC users in aerospace get the following advantages with Cray solutions:

**Scalability.** As CAE applications grow in size and complexity, so does the demand for scalability. Cray optimizes hardware and software for scalability and builds systems customized to the application. It means Cray solutions can simulate larger and more detailed physical models faster.

**Reliability.** Suspending work to identify the source of a computer problem can threaten design schedules. Cray brings seasoned technical expertise to every solution, eliminating integration issues with components that are specifically designed to work together. Combined with Cray’s world-class customer support, Cray systems minimize work interruptions.

**Applications Support.** Active support of CAE applications is critical to maximizing the value of an HPC environment. Cray’s worldwide team of application specialists and Centers of Excellence work directly with ISVs and leading CAE users to increase system performance and architect the best solution for CAE workloads.

**Upgradability.** Time is money and Cray’s adaptive computing and storage architectures are engineered for easy upgrading, meaning you maximize your investment while also deploying new technology and getting back to work quickly.

**HPC Experience.** It takes many years and many generations of technology developments to be a successful HPC provider. With every system, Cray customers get Cray’s decades of HPC experience and intimate understanding of customer needs — from a mature solution delivery system to long-term supportability.

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**Cray Solutions for Aerospace**

**Cray Solutions**

**Computing**

Solutions range from the highly configurable Cray® CS400™ cluster systems to the extremely adaptive and scalable Cray® XC40™ capability supercomputer.

**Storage & Data Management**

Complete and open storage solutions include the integrated Cray® Sonexion® scale-out Lustre® storage system and the Cray Tiered Adaptive Storage (TAS) open archive and tiered storage system for supercomputing and big data.

**Data Analytics**

Cray technologies deliver massive analytic processing power. Solutions include the Urika-XA™ pre-integrated platform for big data analytics and the Urika-GD™ data discovery appliance for performing real-time analytics on big data graph problems.

**Cray Advantages**

- Scalability
- Reliability
- Applications Support
- Upgradability
- HPC Experience

**Cray CAE Customers**

- High Performance Computing Center Stuttgart
- National Center for Supercomputing Applications
- Oak Ridge National Laboratory
- Swift Engineering
- U.S. Army Engineering Research and Development Center
- Commercial aerospace organizations

**Aerospace Simulation Fields**

- Computational Fluid Dynamics
- Multi-disciplinary Optimization
- Aero Acoustics
- Fatigue Analysis
- Impact Simulation
- Computational Electromagnetics

**Key ISVs**

- Altair
- ANSYS
- LSTC LS-DYNA
- CD-adapco
- Metacomp
- Simulia

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Full Range of Solutions

Computing

Efficient scalability and effective I/O performance are critical to design optimization. As design optimization demands more fidelity, more complete physical models and exploration of design space, so do compute and data requirements. Cray offers a full spectrum of data-intensive computing solutions built and proven to meet scale-up and scale-out computing needs.

The tightly integrated Cray® XC™ series supercomputer provides extreme application scalability and sustained real-world performance. In particular, its focus on scalability — highlighted by the custom high-performance Aries interconnect and Dragonfly network topology — make it well-suited to applications challenged by message passing and data movement. With best-in-class hardware and software, the Cray® XC40™ system delivers greater image fidelity in less time. It excels at large-scale simulations involving thousands to tens of thousands of cores and reduces processing times on earth sciences domains such as observation and prediction. Additionally, the Cray XC series boasts an adaptive platform that users can upgrade quickly. For additional choice, the Cray® XC40-AC™ (air cooled) supercomputer delivers all the advanced HPC technologies of the high-end XC40 system while economizing the packaging, networking, cooling and power options for a balance of features and footprint.

For scale-out computing needs, the Cray® CS™ cluster supercomputer series offers industry standards-based, highly customizable and reliable high performance computing designed to handle the broadest range of medium- to large-scale simulation and data analytics workloads. CS series clusters feature the latest processor and interconnect technologies, innovations in energy efficiency, and compelling price/performance — all in a flexible, easy-to-manage package.

Storage and Data Management

Our storage solutions address all aspects of data-intensive workflows, from high-performance storage to deep tape archive. Our holistic knowledge of parallel file systems, storage networking, storage systems and archiving means you solve your most challenging problems faster — reducing time-to-results by up to 24 times — while preserving all that data.

Our open archive and tiered storage system, Cray Tiered Adaptive Storage (TAS), includes everything you need for migrating, delivering and sustaining archives now and into the future. The Cray® Sonexion® scale-out Lustre® storage system is our integrated, modular and compact storage system. It offers simplified deployment and management, precision performance, and balanced scalability. It scales large I/O performance incrementally from 5 GB/s to 1 TB/s in a single file system. Cray Cluster Connect (C3) is a complete Lustre storage solution for x86 Linux® clusters. Use your Linux compute environment of choice through the Lustre Client by Cray and choose options for data and storage management.

Data Analytics

Harness the power of your data. We offer a portfolio of products suited for a range of big data analytics problems.

Our Urika-XA™ extreme analytics platform gives you unmatched flexibility and performance on the most advanced analytics workloads. This turnkey architecture comes pre-integrated with Apache Hadoop® and Apache Spark™ frameworks yet is versatile enough to support next-generation environments as well. Optimized for compute-heavy, memory-centric analytics, the Urika-XA platform delivers excellent performance on the widest range of analytics applications.

Our Urika-GD™ data discovery appliance delivers the power of real-time data discovery in an enterprise-ready package. Use it to discover unknown and hidden relationships in big data, perform real-time analytics, and realize rapid time-to-value on big data solutions.