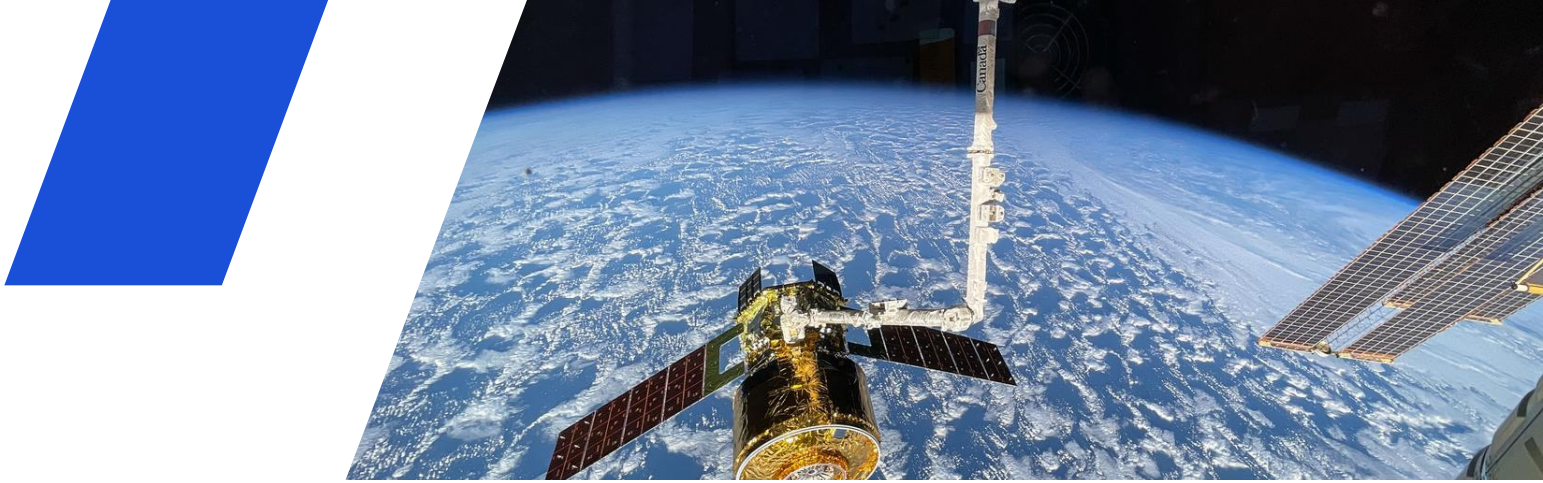




Customer Case Study

Powering space exploration: how NASA uses HP ZBook Fury mobile workstations onboard the ISS

The International Space Station is one of the most extreme workplaces on—and off—planet. Powerful computing makes work possible.

Industry

Aerospace & Defense
(government sector)

Country

United States

Objectives

- Deploy mobile workstations to power future phases of space exploration
- Meet the unique operational needs of the harsh environment aboard the ISS
- Extend the performance and endurance of Z technology for use in outer space

Business Outcomes

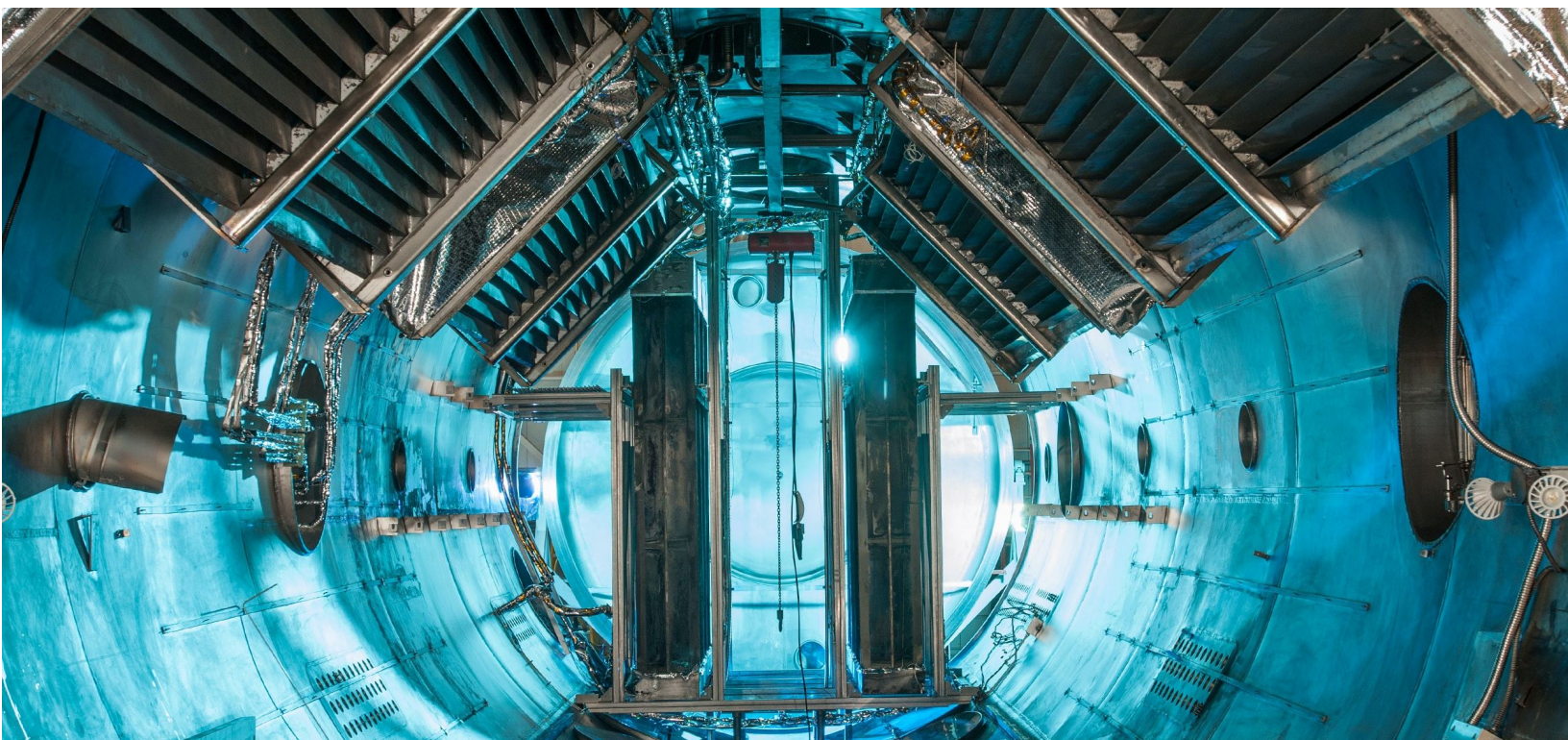
- Durable, reliable mobile workstations that can withstand the harsh environment
- Compute that powers day-to-day workstreams for astronauts
- Custom engineering to address unique power and battery requirements for ISS environment

Approach / Solutions

- Partner closely with NASA engineers on purpose-built design for the ISS
- Perform rigorous radiation testing and microgravity cooling challenges
- Extend the lifecycle of workstations by identifying failure points and optimizing replaceable parts



In the harsh conditions of space, where failure is not an option, HP workstations power continued exploration.



On October 26, 2025, 35 HP ZBook Fury mobile workstations were launched to the ISS, providing the computational power astronauts need to advance scientific exploration. For nearly a decade, HP has supplied NASA with workstations, PCs, printers, and hybrid solutions that power critical missions. But as space exploration pushes deeper into the universe—to the Moon, Mars, and beyond—technology must evolve, too.

Extended missions require systems that adapt to new scientific objectives, secure sensitive data, and deliver reliable performance across months of continuous operation in the harshest environments imaginable.

The partnership between HP and NASA started in 2014. At the time, NASA's primary concern was monitoring eye health to prevent astronauts' retinas from detaching during extended space missions. The agency selected an optical coherence tomography (OCT) machine for non-invasive imaging tests, but it required an HP device that had never been tested for space. NASA took the HP 8570W off the shelf, certified it within three weeks, and sent it into orbit. Eleven years later, the HP ZBook Fury is the primary computing platform onboard the ISS, powering everything from scientific research to turning on and off the lights.



Why the HP ZBook Fury was built for orbit

“By extending the endurance and performance of the same Z technology that drives breakthroughs on Earth, we’re helping researchers turn space into the next great laboratory for human progress.”

Jim Nottingham,

Senior VP and Division
President, Advanced Compute
Solutions at HP

Typically, consumer-grade is not designed for the unforgiving conditions of space. Vibrations during launch, extreme temperature fluctuations, microgravity cooling challenges, and even radiation have to be taken into consideration. Ultimately, hardware must be purpose-built and rigorously tested to withstand the harsh realities of working in space.

Astronauts wear many hats (helmets) onboard the ISS. Beyond conducting missions, they must repair hardware when it fails. Earlier, HP ZBook Fury G2 systems couldn't be serviced within the station's limitations. Critical components like memory weren't accessible for replacement, forcing astronauts to retire malfunctioning hardware entirely. HP solved this problem in the ZBook Fury G9 design, creating a modular system with swappable parts—memory, hard drive, and battery—thus extending the lifespan of workstations onboard the ISS. These types of lessons learned from NASA's experience with the G2 model were critical in the two years HP and NASA spent preparing the ZBook Fury G9 for space. Life on the ISS does not allow for typical upgrade cycles or external repair support, so the workstations had to be engineered for long-term reliability and local maintainability. The G9 also underwent rigorous radiation testing to confirm it could withstand the harsh environment of space. Through joint engineering, HP and NASA prepared the device to pass the Certification of Flight Readiness, the final stamp of approval that the workstations are safe, reliable, and ready to fly.

How HP workstations are used onboard

Astronauts on the ISS depend on HP ZBooks for station operations, communications, and scientific experimentation. Here's how these workstations help advance NASA's work in space and on Earth.



Real-Time Science in Orbit

Astronauts conduct biological, medical, and environmental experiments directly on the ISS from cell growth monitoring to DNA sequencing and protein crystallization. These studies support deep-space exploration and yield new treatments for diseases on Earth, powered by real-time data processing on HP ZBook workstations.



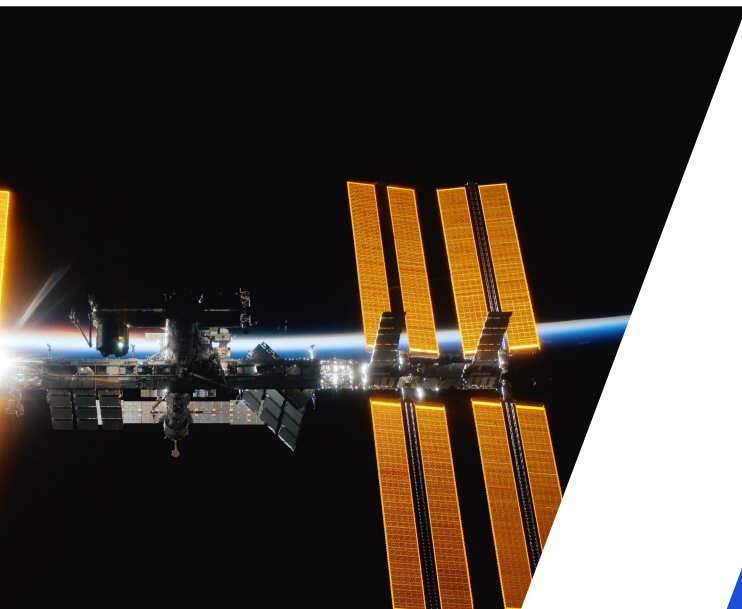
Microgravity Modeling & Simulation

NASA astronauts use HP ZBook-powered modeling and simulation to study how fluids, materials, and combustion behave in microgravity. These insights improve spacecraft design and can optimize manufacturing processes on Earth, giving researchers capabilities not possible in ground-based labs



Advanced Workflows & Autonomous Research

HP Z workstations can be used to run simulations and analyze data in real time. This leads to faster discoveries, more autonomous research, and reduced reliance on ground support.



Solution at a glance

- HP ZBook Fury
- Intel® Core™ Ultra 9 vPro HX processor
- NVIDIA® RTX PRO Blackwell laptop GPU



Engineered for space, ready for earth

The same capabilities that make ZBook workstations mission-ready in space (high-performance processing, secure local data handling, and real-time analysis) are just as critical for federal agencies and research teams on Earth.

- **AI-Enabled Research:** GPU-accelerated ZBooks power complex simulations, modeling, and machine-learning workloads. With FIPS 140-2 encryption and secure local processing, agencies get faster insights while keeping sensitive data protected.
- **Reliable Performance in Every Environment:** HP Z workstations undergo up to 360,000 hours of testing and are ISV-certified to deliver dependable performance where traditional systems fail. These workstations support long lifecycle demands.
- **Secure, Zero-Trust-Ready Workflows:** Built-in manageability, local data processing, and zero-trust-aligned architecture reduce exposure to cyber threats. HP's diversified supply chain improves component availability and minimizes risk across environments.

Today's employees need technology that empowers them to thrive, whether their work is in outer space or in the public sector. HP Work Relationship Index¹ shows only 28% of people consider their relationship with work to be positive. By delivering secure, innovative, and reliable solutions, HP enables the federal workforce to push the limits of what is possible, for better purpose and fulfillment.

See how HP Z enables secure, higher performance computing for federal customers: discover.hp.com/missionready-workstations.

¹ HP Work Relationship Index, 2025 <https://h20195.www2.hp.com/v2/GetPDF.aspx/4AA8-5131ENW.pdf>

