Case Study

United States Air Force Leverages the Power of HyperDrive® for Critical Data Analysis of Aircraft

Eglin Air Force Base Chooses SoftIron's Ceph appliance to Capture Flight Data at the Edge for Quick Processing in Geographically Dispersed Data Centers

Eglin Air Force Base is a United States Air Force base in western Florida, and is the test and evaluation center for Air Force air-delivered weapons, navigation and guidance systems, Command and Control systems, and Air Force Special Operations Command systems focused on the F-15, F-16, C-130, CV-22 and UH-1 aircrafts.

The Information Technology team at Eglin uses high-performance computing to analyze audio, video, and telemetry data from test flights, and needed to consolidate their data on geographically dispersed production and dev-ops pods. With power, space, and management issues specific to edge deployments, as well as sensitive, mission critical data on the line, SoftIron's HyperDrive was the clear choice to deliver an efficient, secure, and supremely reliable storage platform that outperformed traditional, legacy infrastructure solutions.

Challenges

Performance, power, space, and security were critical factors behind the selection of SoftIron's HyperDrive solution in this challenging use case.

Performance & Flexibility

Previously, the organization had relied on outdated data collection methods to a central location for processing, however, in order to drastically reduce time to analysis, centralized SoftIron storage clusters were deployed to gather data from each aircraft, and transfer of the object-store data using the well-known S3 protocol.

Space & Power

Data gathering devices, or "canisters" are fitted to each aircraft to collect the audio, video, and telemetry data, equating to 5.4PB per aircraft, per year. Due to a smaller footprint and power constraints, the edge pods required a low power, but dense storage solution that was able to very quickly read, process, and convert the data. This allows the administrators to transfer data from the canisters and replace the devices into the aircraft for their next run, in a fraction of the time it previously took.

Security

With sensitive data being moved around physically as well as electronically, industry-leading security and encryption were mandatory.

Support and Management

Compounding these complexities was the added need for a supported solution with strong storage management tool capabilities. SoftIron's HyperDrive solution checked all the boxes and more.

"With the rise in classification and compartmentalization of real-time flight test missions and Modeling & Simulation (M&S), the current method of Periods Processing and Multiple Independent Levels of Security (MILS) architecture does not scale to support the growing mission and its data. Current testing produces Gigabytes (GB) of data per test mission and those numbers are projected to grow to Terabytes (TB) per test mission and virtual simulation." explains the Chief Test Engineer.

"One of the key factors for choosing object storage is the cost per GB is less than on-line storage like NFS or Lustre. SoftIron's product is the lowest cost, best packaged and uses the least amount of energy/cooling. SoftIron's integration of Ceph object storage has been key to solving storage scalability issues and allowing better support for future Test and Evaluation missions."

HyperDrive – Delivering Performance, Efficiency, Flexibility and Security

» HyperDrive is a family of task-specific storage appliances that can scale up to petabytes based on your organization's specific performance and capacity needs. HyperDrive is designed to optimize Ceph and take full advantage of its software-defined storage architecture and inherent support for object storage, offering an excellent solution for this unique use case. Because it delivered the flexibility required for the technical data challenges, the performance and efficiency needed for the physical challenges and security features that protect sensitive data, HyperDrive was the obvious choice among market leaders.

» HyperDrive is as much as 5x more energy efficient than current market-leading appliances, reducing energy usage by as much as 80% and producing as

little as 20% of the heat compared to legacy storage hardware, allowing for greater density to free up floor space and dramatically improving hardware and drive reliability due to "heat exhaustion".

» HyperDrive is custom-built to optimize the performance and management of Ceph and easily handles object, block, and file; a flexibility that separates it from other software-defined storage choices. The inherent scalability aligns well with a horizontal approach, so you can add HyperDrive clusters as demand dictates. HyperDrive has Ceph pre-installed, ready to plug-in and perform - removing complexity and unlocking its full potential.

» SoftIron's unique integrated approach simultaneously solves multiple edge infrastructure challenges including efficiency, performance, resilience and manageability in non-traditional data center environments.

» HyperDrive Storage Manager simplifies the management of Ceph by uniquely integrating common software management tasks with HyperDrive hardware. All of which can be centrally monitored and managed – as individual appliances and as clusters - offering visibility into storage health, current utilization and predicted storage growth. Reduced time to identify and physically locate specific failed drives within caddies in particular appliances means no downtime.

» SoftIron not only controls the entire design and build process, but designs, manufactures, and assembles all products in-house from the ground up, including electronics subassemblies, offering 100% transparency for secure provenance. There are no third party ODMs (Original Design Manufacturers) and we have authorship, ownership, and total responsibility for all code that goes on our appliances.

Key Benefits for Aerospace and Defense

» Increased efficiencies with reduced power and space requirements

» Versatility, scalability and hybrid cloud compatibility with Ceph

» Easier deployment and management with Storage Manager

» Faster data transfers between flights

» Increased resiliency - no downtime time due to loss of nodes

» Data security with SoftIron's unique Secure Provenance

Task-specific HyperDrive offers

» Scalable, wire-speed storage solutions

» Category defining management system

» Predictable, resilient performance in edge infrastructure deployments

» Total Ceph interoperability

» Floorspace requirements halved

» Super-efficient: 100W under full load

» Low heat output reduces cooling needs

» Radically reduced data center costs

» Full-stack Hardware and software support

» Secure Provenance

Take the next step

Is your data center being impacted by power and space constraints? Is archaic and inflexible infrastructure adding bottlenecks to your processing targets at the edge? Or, is performance being hampered by legacy storage solutions that are not keeping up with the complex and evolving requirements of modern-day workloads? Take HyperDrive for a test drive and discover what a secure, task-specific storage solution can do for your organization.

Visit **www.softiron.com** for more information, or book a discovery call to talk to one of our Solutions Architects at **bit.ly/SoftIronDemoRequest**

SOFTIRON®

SoftIron® is the world-leader in task-specific appliances for scale-out data center solutions. Their superior, purpose-built hardware is designed, developed, and assembled in California, and they are the only manufacturer to offer auditable provenance. SoftIron's HyperDrive® software-defined, enterprise storage portfolio runs at wire-speed and is custom-designed to optimize Ceph. HyperSwitch™ is their line of next-generation, top-of-rack switches built to maximize the performance and flexibility of SONiC. HyperCast™ is their high-density, concurrent 4K transcoding solution, for multi-screen, multi-format delivery. SoftIron unlocks greater business value for enterprises by delivering best-in-class products, free from software and hardware lock-in. For more information visit **www.softiron.com**

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