



Case Study

Leading Services Provider, US Signal, Achieves Scale & Efficiency with SoftIron HyperDrive

SoftIron solves the complexity problem of rapid Ceph scale out for managed service provision



Who is US Signal?

Founded in 2001, US Signal is the largest debt-free, privately held, data center services provider in the Midwest, delivering industry-leading data center technologies, cloud solutions, data protection and managed services to help companies transform their IT operations and meet ever-changing technology and business needs. US Signal's data center solutions can address even the most unique or complex technical requirements, with all services being powered by their own robust, secure fiber network.

US Signal provides enterprises with a variety of hosting, colocation, and cloud-based services, which they sell into the Michigan region as an alternative to public cloud vendors such as Amazon AWS. Uniquely, they don't charge egress fees which is a key differentiator, and one of the many reasons that customers select them. Other managed services in high demand include ongoing support for a variety of workloads including Veeam and Cohesity backup targets and cloud native web apps.

The challenge of scaling future-proofed service delivery

US Signal has been using Ceph software-defined storage since 2012 so when the time came to scale their infrastructure to meet increasing customer demand, they took the opportunity to re-evaluate their incumbent solution against their evolving requirements. Derrin Rummelt, Executive Vice President of Engineering, Berant Lemmenes, Research and Development Engineer at US Signal summarized their challenges and requirements:

Cluster Management Across Multiple, Disconnected Sites

The challenges of maintaining disconnected data center sites with a lean team are many and varied, particularly during periods of high customer demand. These were only exacerbated by the COVID pandemic as access to sites was limited.

Integration with Services Billing

US Signal was already integrating Ceph reporting functionality into their services billing systems for both S3 and managed CephFS services, but was seeking a more efficient management tool to improve reporting integration and usability, and to enable a "full view" of the underlying hardware and its performance.

Stringent Cloud Service SLAs

Like all MSPs, especially those competing head-on with the likes of AWS, key components of their Service Level Agreement (SLA) were under pressure as demand increased. Typical components such as availability, questions about data ownership and expectations surrounding disaster recovery and backup needed to be considered. And, particularly in light of recent high-profile, global data hack events, users' awareness of software & hardware vulnerabilities were at an all-time high, raising questions about supply chain integrity that needed to be confidently addressed.

Limited Resources: Skills, Space and Power

As demand for US Signal's services grows, resourcing is a critical consideration. Limited budgets demand that they do more with less, and so the new solution had to aid in this endeavour, ensuring the system was efficient, compact, reliable, highly intuitive, low maintenance and easy to use and administer.

No Downtime During Phased Migration Program

Like any other mission-critical data service, it was essential that over the course of a conservative, phased migration program, there was absolutely no downtime. The new solution provider needed to be on hand to support the team throughout the duration of the program, from planning to implementation and beyond.

Ceph Interoperability

Finally, given the existing infrastructure was built on Ceph - whatever solution they chose would need to work alongside or integrate with their current environment. They were not considering any forklift replacements.

At A Glance

- More effective cluster management across multiple, disconnected sites
- Better resilience enabling stringent SLA adherence
- Improved integration with services billing
- More energy efficient storage appliances
- Superior support for zero downtime migration
- Interoperability with existing Ceph environment

Why US Signal Chose SoftIron

“Our strategic focus for this project was to ensure a truly future-proofed and seamless growth plan for US Signal. Our customers have high expectations and we have a reputation of being able to deliver. In a mission-critical environment like ours, and in such a highly competitive space, there is no room to fail. As such, we needed a partner who truly understood our challenges and end goals, a team who could support us in our aims, and who had our best interests at heart” said Derrin Rummelt, Executive Vice President of Engineering. “It was critical that our new partner and solution could not only slot in and grow with us, but who could deliver value over and above the hardware & software component and help us maximize our advantage. SoftIron ticked every box for us and continues to show their worth with expert guidance and support as we deliver on this project together.”

Outstanding performance & interoperability with a highly integrated, task-specific solution for Ceph

Unlike commodity hardware, SoftIron’s HyperDrive takes a ‘task-specific’ approach in that it’s purpose-built for Ceph. Because it’s designed and built from the ground up to exploit Ceph’s outstanding functionality, the result is a highly integrated and performant solution. Not only does this mean it’s interoperable with existing Ceph environments, but it has the added advantage of granular control over the hardware and software, making it incredibly easy to use.

“ We’ve been working with Ceph for a long time, and it’s rare that a vendor comes along who is able to genuinely improve the experience. ”

Berant Lemmenes,
Research and Development Engineer.

Zero down-time due to Ceph’s innate resilience, infinite scalability and self healing capabilities

Because it removes many of the traditional limits on system expansion, Ceph based configurations allow your storage to scale linearly, to infinity. Any number of new resources can be added to the cluster at any point in time, whether that be a steady addition of a few nodes at a time to keep up with consistent and expected growth, or a large, one-off inclusion to handle large spikes in demand.

Ceph’s architecture delivers extraordinarily high throughput by parallelizing reads and writes, and very high resilience by combining ‘replicate on write’ functionality with ‘self-healing’ capability. When coupled with HyperDrive, Ceph’s fully fault-tolerant, self-healing, parallel processing environment, this delivers outstanding resilience and performance.

Easy, remote management enabled by HyperDrive Management Tool

SoftIron’s HyperDrive Storage Manager radically simplifies the management of all Ceph software and storage hardware. HyperDrive Manager enables the set up and administration of an entire Ceph cluster with the click of a few buttons, no longer requiring highly skilled Ceph experts to delve into the command-line.

Low Heat, Low Power, Low Space = highly efficient

Due to HyperDrive’s unique task-specific design, the appliance is incredibly energy efficient, drawing up to 80% less power than comparable appliances. The result is massive savings on power and subsequent cooling costs, as HyperDrive produces as little as 20% of the heat of other legacy storage hardware. Coupled with high-density configuration options, HyperDrive’s low-power, 1U form factor means you can fill your entire rack without hitting rack-level power limits and optimize all that space. All of this translates into a managed service that is both highly competitive and profitable.

No vendor lock-in due to open-source Ceph

HyperDrive is designed to optimize standard Ceph. The benefit is complete interoperability with existing Ceph storage environments, and absolutely no vendor lock-in.

Expert help and peace of mind with end-to-end support for hardware & software

SoftIron supports both the software and hardware, which means continuity of support across the stack. When it came to US Signal’s need for trusted support throughout the planning and implementation of their new cluster, plus their requirement for a non-disruptive migration, SoftIron’s support structure provided that peace of mind.

Completely transparent & auditable supply chain with Secure Provenance

US Signal is proactively staying ahead of the game in paying more attention to the increased threat of cyber attacks, and considering ways to mitigate their risk and that of their customers. With low trust in their incumbent vendor when it came to potentially compromised solutions resulting from hardware not built in the USA, SoftIron’s “Secure Provenance” promise of transparency and auditability was appealing.

SoftIron designs and manufactures HyperDrive from scratch, in our own facilities. That includes the compilation of all code (including firmware) from source. The benefit is what we call “Secure Provenance.” We can prove the provenance of every component, and can demonstrate that every assembly and subassembly is an accurate manifestation of design intent – a claim no other vendor can make.

Conclusion

In summary, the versatility of open-source Ceph and SoftIron's task-specific HyperDrive storage platform is the ideal solution for any organization providing Storage As A Service (STaaS), including Disaster Recovery, Backup and numerous other use cases. Its unique ability to support block, file and object storage along with multi-protocol environments make it an outstanding solution for any storage need, at any scale.

"We've been working with Ceph for a long time, and it's rare that a vendor comes along who is able to genuinely improve the experience" says Berant Lemmenes, Research and Development Engineer. "SoftIron has certainly demonstrated the commitment to their vision to simplify and enable the adoption of Ceph at scale, and we've reaped the benefits of their solution already, allowing us to seamlessly expand and improve efficiencies across the board."



The graphic features a dark blue background with a stylized illustration of two people in a server room. One person is pointing at a large screen displaying data charts and graphs. The text "Software-Defined Storage for MSPs" is prominently displayed in white. Below the illustration, a dark blue box contains white text: "Are you an MSP looking to learn more about how a software-defined storage strategy can add value to your organisation? Read more in our free eBook" and a green link "Download eBook".

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



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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 transparently, and they are the only manufacturer to offer secure 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™, built on FFmpeg, 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 SoftIron.com

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