

Breaking Free From the Infrastructure Trap

How BYU Found a Better Way



BYU

INDUSTRY

Education

LOCATION

Provo, Utah

URL

<https://chem.byu.edu/>

SCALE

42 faculty, 14 technical staff, 400 TB data management

The Challenge Every Compute-Intensive Organization Faces

Does this Sound Familiar?

You're the CIO at a leading research institution. Your teams are producing groundbreaking work, but your infrastructure is holding them back.

This was exactly the situation facing Brigham Young University's Chemistry Department. As a newly recognized R1 research institution with a history of 150 years of academic excellence, BYU found itself caught in the same impossible choice that plagues organizations everywhere, caught between **The Cloud Trap**: Moving to public cloud and facing skyrocketing costs, vendor lock-in, and data hostage situations through egress fees, or

The On-Premises Nightmare: Stick with legacy infrastructure held together with "duct tape and baling wire," struggling with skilled labor shortages and constant maintenance.

Both paths lead to the same frustrating reality, where your organization's growth and operations get hampered by infrastructure limitations while vendors advance their own interests.

When Smart People Hit a Wall

BYU's Chemistry Department wasn't lacking in expertise. With 42 faculty members, 200-300 terabytes of research data across five sub-disciplines, with an average growth rate of between 2-5 terabytes per month, they knew exactly what they needed. The problem? Finding a solution that actually delivered it.

Their 15-year-old infrastructure was crumbling under the weight of modern demands:

- **Introduction of new scientific instrumentation** also caused a 10-fold increase in dataset size yielding 15-20 TB of new data every month with nowhere reliable to store it
- Faculty constantly asked to delete valuable data just to keep systems running
- **Zero redundancy** putting years of research at risk
- Managing workloads across Windows, Linux, and macOS with no centralized support

After three years of evaluating traditional solutions from Dell, NetApp, Nutanix, and others, they faced a harsh reality: even the "modern" solutions were built on the same old architectural foundations that created the problem in the first place — complex, multi-vendor systems that rely on yesterday's architecture, leaving customers stuck with the same limitations they were trying to escape.

The Breakthrough: Beyond First-Wave Thinking

Faced with this no-win situation, BYU Chemistry chose differently, and here's where their story gets interesting, **and where your organization's future might too.**

When most people hear "virtualization," they think of the first wave: slicing servers into virtual machines. That technology transformed IT for decades, but we've reached its limits. Organizations are still trapped between expensive cloud services and complex on-premises infrastructure because both sides are using the same underlying failed and failing approach.

BYU discovered something different at SoftIron: **the second wave of virtualization.**

Instead of just virtualizing software, what if you could virtualize the physical infrastructure itself?

The SoftIron Difference: Infrastructure That Thinks and Acts Like Software

SoftIron's approach fundamentally reimagines how infrastructure works:

Traditional Infrastructure: Hardware components are married to specific roles. Your storage server "knows" its storage, your compute server "knows" its compute. When something fails, everything stops.

SoftIron's Virtualized Infrastructure: Every piece of hardware becomes a stateless, interchangeable building block. The intelligence lives centrally in software, not locked inside individual components.

This isn't just another product. **It's a complete cloud experience delivered on-premises as a commodity, not a service.**

“ I don't have the concern or sleepless nights I used to have because my storage is doing weird things. Stress levels are way down. ”

RANDY MORGAN | IT MANAGER AT BYU

The result? BYU achieved:



Resilience: Hardware failures don't take down services because replacements slot in instantly.



Elasticity: Resources reallocate in real-time to match changing workloads.



Efficiency: Purpose-built nodes do exactly what they're designed for without carrying unnecessary overhead or requiring constant nursing by staff.

Real Results, Real Impact

Six months after deployment, BYU's transformation was complete:

From Sleepless Nights to Peace of Mind: "I don't have the concern or sleepless nights I used to have because my storage is doing weird things. Stress levels are way down," Randy Morgan, IT Manager at BYU.

From 40-Hour Fire Drills to Strategic Focus:

The Department's technical team stopped spending 40 hours a week moving data and fixing storage problems. Instead, they're advancing research and exploring new technologies.

From Fragile to Future-Ready: The Department now handles growing data volumes with confidence, knowing their infrastructure will scale linearly with their ambitions.

02 Purpose-Built Efficiency

- No wasted silicon or power on unnecessary hardware
- Ideal for dense deployments, edge environments, or anywhere resources matter

03 True Ownership, Reduced TCO

- Fixed pricing model eliminates variable cost surprises and reduces staff demands
- Self-healing automation minimizes human error and infrastructure fragility

04 Future-Proof Foundation

- Runs your legacy workloads today while preparing for tomorrow's demands
- Linear and flexible scalability that grows with your organization

What This Means for You

BYU found their better way. The question is: are you ready to break free from the infrastructure trap?

Whether you're managing research data like BYU, running mission-critical applications, or simply tired of choosing between expensive cloud services and complex on-premises infrastructure, there's now a different path forward.

The future of infrastructure isn't about choosing between cloud and on-premises, it's about taking the best of both and making it yours.

Ready to explore your better way? Let's talk about how SoftIron can transform your infrastructure story.



The Bigger Picture: Your Infrastructure, Your Terms

BYU's Department of Chemistry story illustrates something bigger than just a successful deployment. It shows there's a **better way** beyond the traditional either/or choice.

With SoftIron's approach, you get:

01 Cloud-Like Operations on Your Terms

- Same elasticity and self-healing behavior you'd expect from public cloud
- Deployed where you need it, controlled by you, able to run disconnected
- At a TCO that is a fraction of the old way of doing things



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