

# Client Success Story



## Modernizing High-Performance Computing at a leading Midwestern University

### THE STORY & GOAL

An academic Division's IT Team within a leading Midwestern university undertook a major refresh of its high-performance computing (HPC) environment to support growing research demands across data-intensive, simulation, and AI-driven workloads. The initiative required not only a next-generation cluster architecture, but also careful integration into existing campus facilities, power and cooling constraints, and network architecture.

The goal was to achieve three ambitions simultaneously: first, lower barriers to HPC for some researchers while providing high-performance resources to computationally advanced peers. Second, to transition legacy systems toward industry-standard workload management. Third, and most critical, the university needed to be good neighbors in a crowded datacenter. The Direct Liquid Cooled architecture allowed the university to keep its solution all within a tight physical footprint.

### CLIENT BACKGROUND

The Division's IT department operates a centralized HPC environment supporting a broad range of academic and research activities. The existing cluster had reached the limits of its useful life, constraining performance, scalability, and the ability to support modern workloads such as GPU-accelerated research and emerging AI use cases.

To address these challenges, the engineering department issued an RFP seeking a comprehensive refresh of its HPC environment, including:

- CPU and GPU resources
- High-performance cluster interconnects
- Cluster management software
- Rack, power, and cooling infrastructure
- Integration, installation, and ongoing support services

Performance, scalability, and seamless integration into existing campus facilities were identified as critical success factors.

### BUSINESS AND TECHNICAL CHALLENGES

Key challenges identified during the RFP and discovery process included:

- Performance: Supporting diverse HPC workloads with predictable performance across CPU-, Memory-, and GPU-intensive jobs.
- Scalability: Designing a solution that could grow over time without requiring disruptive re-architecture.
- Facilities integration: Aligning power density, cooling approaches, and rack layouts with existing data center constraints.
- Operational simplicity: Ensuring the environment could be efficiently managed by university IT staff.
- Value optimization: Balancing performance, cost, and long-term flexibility rather than treating the solution as a static bundle.

## WHY AMERICAN DIGITAL WAS CHOSEN AS THE TRUSTED ADVISOR AND SOLUTION INTEGRATOR

American Digital Corporation was selected as the solution integrator and trusted advisor for this initiative, working in close partnership with Hewlett Packard Enterprise (HPE) to design, deliver, and integrate a fully engineered HPC solution. The engagement went beyond a traditional hardware procurement, encompassing **solution architecture, trade-off analysis, facilities planning, factory integration, white-glove installation, and ongoing support.**

Throughout the RFP and proposal process, American Digital acted as a trusted advisor to the university's engineering department, working closely with stakeholders to:

- Translate research and operational requirements into a concrete technical architecture
- Evaluate and manage trade-offs between performance, cost, feasibility, and expandability
- Align solution design with immediate computing needs while accounting for long-term scalability, flexibility, and facilities considerations
- Coordinate closely with HPE engineering and product teams to ensure the optimal use of their solutions and technologies

Our 40+ year partnership with HPE and deep expertise in their HPC portfolio enabled American Digital to provide guidance that went beyond product selection, focusing instead on delivering the best overall outcome for the university.

## SOLUTION OVERVIEW

The final solution was delivered as a fully integrated HPE-based HPC platform and included:

### Compute and Acceleration

- Multiple compute node tiers optimized for different workload profiles
- Dedicated GPU nodes to support accelerated computing and AI workloads

### Networking

- High-performance, low-latency interconnect for cluster communications
- Management switching for cluster operations
- Enterprise switching to integrate the HPC environment into the broader campus network

### Infrastructure and Cooling

- Purpose-built rack infrastructure
- Direct liquid cooling and rear-door heat exchanger technologies to support high-density compute while aligning with existing facilities constraints

### Software and Services

- Cluster management software for provisioning, monitoring, and lifecycle management
- Factory integration services to deliver the system as a pre-integrated solution
- White-glove installation services, including dedicated project management
- Ongoing vendor and partner support

The system arrived on site as a **fully engineered and integrated solution**, significantly reducing deployment risk and time to value.

## IMPLEMENTATION AND ONGOING ENGAGEMENT

American Digital's engagement with the university did not end with contract award. Post-order, we remain deeply involved across multiple phases:

- Facilities planning: Coordination around power, cooling, rack layout, and data center readiness
- Training: Knowledge transfer to university staff to ensure operational confidence
- Installation and integration: Active participation during on-site installation, including network integration and coordination across teams
- This hands-on involvement ensured a smooth deployment and minimized disruption to ongoing research activities.

## RESULTS AND OUTCOMES

- Delivery of a high-performance, scalable HPC environment aligned with current and future requirements
- Reduced deployment risk through factory integration and white-glove installation
- Improved alignment between compute density and facilities capabilities
- A strong foundation for future initiatives, including storage expansion and AI-focused platforms

## CONCLUSION

By combining deep technical expertise, a trusted advisory approach, custom managed services and a close partnership with HPE, American Digital helped the engineering department modernize its HPC environment in a way that balances performance, scalability, and operational practicality.

The result is not just new infrastructure, but a durable platform and partnership that will support the university's research mission for years to come.



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Need help with an upcoming project or migration? We offer complementary assessments and consultations to fully understand your unique IT environment. **Contact American Digital at 847-637-4300 or [info@americandigital.com](mailto:info@americandigital.com).**

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