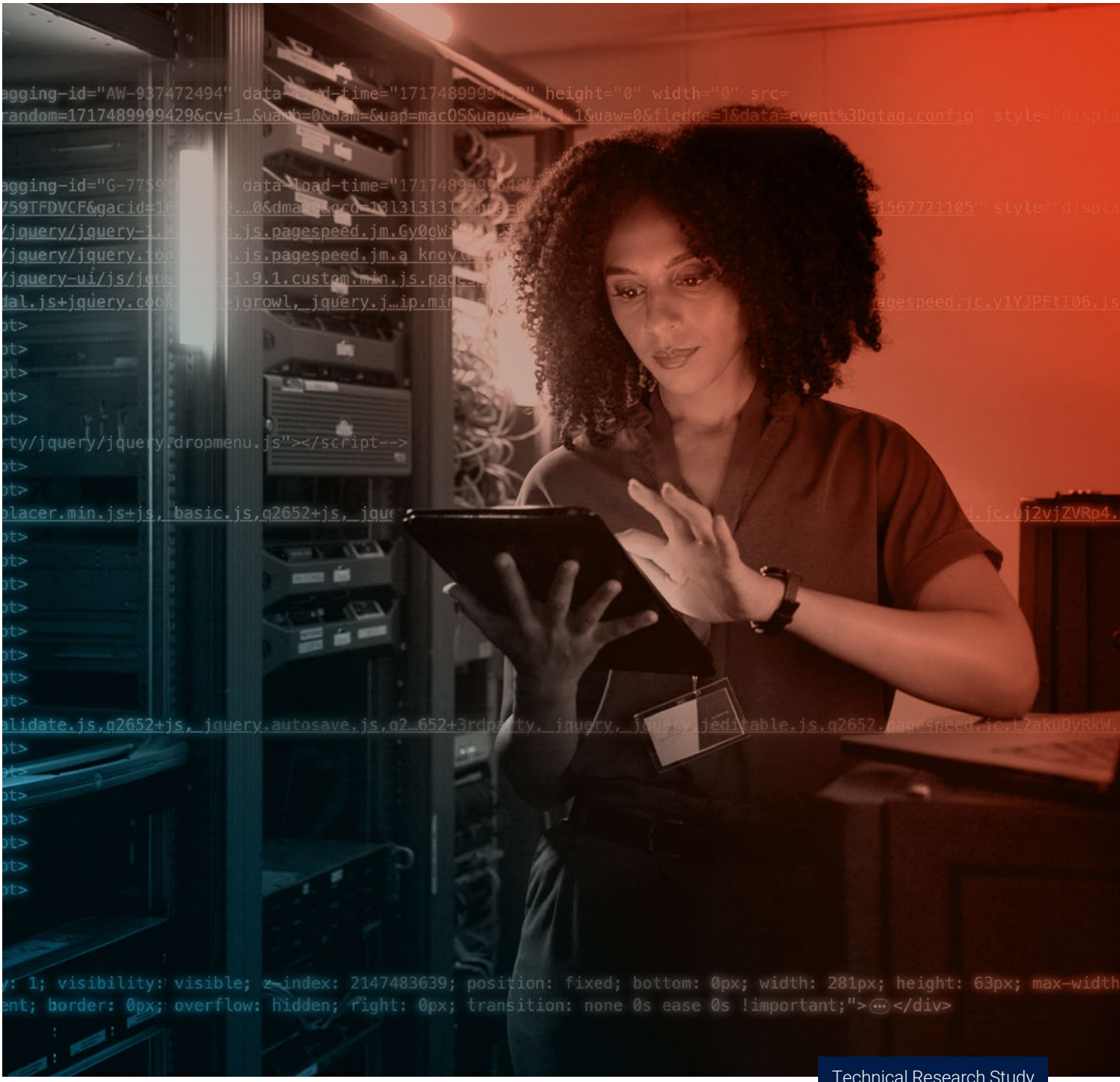

Technical Research Study

PROWESS DELL Technologies

Navigating the Modernization of Legacy Infrastructure

A comparison of two upgrade paths for legacy systems to evaluate the competing server refresh strategies across migration, compatibility, consolidation, and energy efficiency.

Executive Summary

Organizations running legacy server infrastructure, such as HPE® servers powered by 2nd or 3rd Gen Intel® Xeon® Scalable processors, are at a crossroads. The demands of modern business are outpacing the capacity of these systems and maintaining them is no longer worth the cost. Combined with the complexity of mixed OEM environments and recurring refresh cycles, this legacy architecture has become a burden. Organizations running such legacy architectures have multiple ways forward, but this paper examines two popular paths:

- Upgrading within the Intel Xeon 6 processor and HPE® ProLiant® Gen12 server ecosystem
- Migrating to 5th Generation AMD EPYC™ processors running on 17th generation Dell™ PowerEdge™ servers

To evaluate these options, Prowess Consulting compared Intel Xeon 6 processors running on HPE servers with 5th Gen AMD EPYC processors running on 17th generation Dell™ servers. For this comparison, we examined the myths of migration, the impact of ISV compatibility requirements, the economics of server consolidation, and the role of energy consumption in long-term infrastructure planning. Our goal in this study was to determine how the competing platforms address both technical and operational considerations during a refresh and how each platform best aligns with business goals for modern applications and AI-driven workloads.

Highlights

Prowess Consulting found that when moving from legacy infrastructure, 5th Gen AMD EPYC™ processors running on 17th generation Dell™ PowerEdge™ servers offered greater benefits than Intel® Xeon® 6 processors running on HPE® ProLiant® Gen12 servers, notably providing:

Up to **20% HIGHER ENERGY SAVINGS** per processor[1,2]

Up to **19% LOWER TCO** per server[1,2]

BETTER SERVER-MANAGEMENT TOOLS in Dell™ OpenManage™ Enterprise (OME) and Integrated Dell™ Remote Access Controller 10 (iDRAC10)

The results show that 5th Gen AMD EPYC processors running on 17th generation Dell servers offer advantages over Intel Xeon 6 processors running on HPE ProLiant Gen12 servers in terms of performance, energy efficiency, lower total cost of ownership (TCO), and power savings potential. Additionally, we found that Dell servers offer benefits that extend beyond a standard hardware refresh through Dell™ OpenManage™ Enterprise (OME) and Integrated Dell™ Remote Access Controller 10 (iDRAC10). For organizations focused on maximizing the long-term value of their refresh investments, 5th Gen AMD EPYC processors running on 17th generation Dell servers emerged as the stronger option.

A Tale of Two Refreshes

Current IT environments are commonly built on 2nd or 3rd Gen Intel Xeon Scalable processors running on HPE® servers in a two-socket configuration. These environments rely heavily on virtualization using VMware® solutions, with virtual machine (VM)-dense architectures supporting a mix of line-of-business (LOB) applications and legacy cluster deployments.

Legacy infrastructure is running into a wall. Performance gains have slowed, while core count limits and memory bandwidth constraints are becoming harder to manage for modern workloads. In these data-heavy environments, the demands of sustained computing are pushing the architectural limitations of older systems.

AI usage accelerates these pressures. As workloads shift toward higher throughput and more frequent data movement, older-generation platforms struggle to keep pace. This struggle affects not only peak performance, but also operational consistency and long-term system durability as demands on the infrastructure grow.

The Fork in the Road

At this stage of the infrastructure lifecycle, a refresh is unavoidable, so enterprises are evaluating their options to choose a way forward. For this study, we focus on two paths: Path A involves continuing with existing architecture through generational upgrades, whereas Path B involves pursuing a broader modernization effort that changes the underlying platform. The operational effort required for either path is significant, but the cost of disruption is often weighed more heavily in decision-making than the longer-term technical and economic benefits, which could do a business a disservice. The key question is not how to avoid migration, but which architecture will best support the next five years of workload growth and operational demand.

Another key point to consider is the timeline and stages of a migration, which does not need to happen all at once. Hardware availability, in addition to budget and workload priorities, can make a phased approach more practical compared to a full migration. In this approach, organizations move selected workloads first or deploy new applications on the target platform while legacy systems continue to run. This way, the migration decision becomes as much a financial and planning exercise as a technical one, since the core process remains similar while timing, purchasing, and workload sequencing vary.

The Common Baseline

Both paths start at the same point: a typical enterprise that operates 2nd and 3rd Gen Intel Xeon Scalable processors running on HPE ProLiant Compute DL380 Gen10 servers using VMware virtualization solutions. Any modernization effort from this environment requires a plan for CPU compatibility, workload placement, and scheduled maintenance. The team must migrate existing VMs to new hosts, validate applications before production deployment, and coordinate maintenance windows to minimize operational disruption.

This means that a system performance upgrade on either path has similar requirements regardless of the destination platform. With this understanding, an upgrade to Intel Xeon 6 processors running on HPE servers will follow similar operational steps as a migration to 5th Gen AMD EPYC processors running on 17th generation Dell servers. This keeps the overall migration process fundamentally similar and offers a clear baseline.

Path A: Upgrade with Intel and HPE

To remain within the existing vendor ecosystem would appear to be the path of least resistance. Upgrading to Intel Xeon 6 processors running on HPE ProLiant Gen12 servers maintains architectural continuity and provides performance gains with minimal friction. This incremental approach is best for businesses that seek minimal change to existing operational models, tools, and support structures.

The “False Continuity” Assumption

Unfortunately, many infrastructure strategies are stuck in the past, where generational upgrades delivered modest (but consistent) gains and carried limited risk, as is the case with Path A. That legacy has led to a “false continuity” assumption, where it’s believed that staying within the same vendor ecosystem is the least disruptive approach to architectural refreshes. In practice, however, most enterprise environments already operate in mixed infrastructure states. That makes both incremental upgrades and cross-vendor migration technically viable. It’s important to note that *both* approaches can involve meaningful disruption, including reboots, application cutovers, and VM cold migrations.

Path B: Migrate to AMD and Dell

This path entails a move to 5th Gen AMD EPYC processors running on 17th generation PowerEdge servers. It introduces changes in infrastructure, tools, performance, and licenses. It also enables different consolidation models and changes in how infrastructure is managed and monitored through Dell server management systems, offering additional options for customization and fine-tuned configuration.

The Four Pillars

To best determine the ideal path forward, we evaluated both platform options across four areas:

- Migration myths
- Consolidation and licensing economics
- ISV compatibility
- Energy and sustainability

Across both paths, we analyzed energy efficiency, performance, licensing costs, and system density as the primary measures of operational efficiency. We then determined consolidation outcomes based on cost implications, downtime requirements, tool alignment, and expected future state under each approach. Together, these factors provide a structured view of both technical and operational tradeoffs across the two paths.

Initial Conclusions

Based on the analysis in this study, we found that 5th Gen AMD EPYC processors running on 17th generation Dell servers can provide stronger outcomes across the evaluated metrics. Additionally, the Dell and AMD platform includes improvements in system efficiency, workload consolidation potential, and server management capabilities that exceed those available with the HPE and Intel platform.

Migration Myths

A common myth is that changing server vendors significantly increases migration complexity. The perception is that, in the scenario evaluated in this study, moving from the existing Intel Xeon processors running in the HPE system to AMD EPYC processors running on a Dell system would require widespread software changes, extensive downtime, and a complete redesign of the environment. As a result, many organizations view remaining within their existing vendor ecosystem as an inherently lower-risk option.

The reality is that most of the migration effort comes from the platform refresh itself, rather than the server vendor. Whether the destination platform is Intel Xeon 6 processors or AMD EPYC processors, organizations still need to provision new hardware, validate applications, migrate workloads, and schedule maintenance windows. The required activities to keep the software stack functional remain the same, such as application cutover, firmware validation, and post-migration testing, regardless of the vendors selected. Even in the current hardware shortage, the benefits of a migration are worthwhile, especially considering the long-term outcomes, and this should be a factor when choosing how and where to upgrade.

Path Comparison

This section compares the reality of each upgrade path, without regard for the vendor family as a factor within the migration.

Path A: Intel® Xeon® 6 Processors Running on HPE® Servers

A system upgrade within the existing HPE and Intel ecosystem preserves operational familiarity. Existing administrative processes, firmware management practices, and vendor support relationships would remain largely unchanged. Any organization with established procedures built around the existing tools might experience fewer management changes after the deployment.

Intel offers a unique live migration feature that allows VMs to be migrated with no impact on current application workloads and zero downtime, though there will be adjustments needed to compatibility settings across processor generations. The additions of HPE® Morpheus® VM Essentials software and HPE® OneView® assist in a smooth migration from legacy HPE infrastructure to maintain existing operational workloads.

Path B: 5th Gen AMD EPYC™ Processors Running on 17th Generation Dell™ Servers

A migration to 5th Gen AMD EPYC processors running on 17th generation Dell PowerEdge servers changes the hardware vendor, but the underlying software platform remains the same. Both Intel Xeon processors and AMD EPYC processors implement x86 architecture, which means the software stacks, including operating systems, enterprise applications, and VMware environments, are compatible across hardware vendors.

The single-VM migrations for this path can be completed in **less than 10 minutes, with batch migration taking less than 15 minutes total.**[1,3] After migration, PowerEdge servers with 5th Gen AMD EPYC processors can support triple the VM load while delivering 23% faster single-query speed on average per VM, as compared to 2nd Gen Intel Xeon Scalable processors running on HPE ProLiant Gen10 servers.

For the migration itself, OME and iDRAC10 can support a cross-platform migration between hardware vendors and can enforce a baseline BIOS state to simplify the migration process.

Key Takeaway

From a migration perspective, the differences between these two paths are minimal. Both require application cutovers, maintenance windows, workload validation, and VM migration. These processes are unavoidable, and so they are less important factors in the decision compared to which platform provides the strongest operational outcome after deployment.

While HPE and Intel offer live migration for VMs with zero downtime, the 15-minute window for batch VM migration from Dell and AMD isn't far behind. HPE OneView and HPE® Integrated Lights-Out (iLO) 7 are best at moving between HPE infrastructure, whereas OME and iDRAC10 can manage cross-platform migration. This makes the Dell and AMD system a strong choice when considering the long-term outcomes of a migration, especially for environments with varied infrastructure.

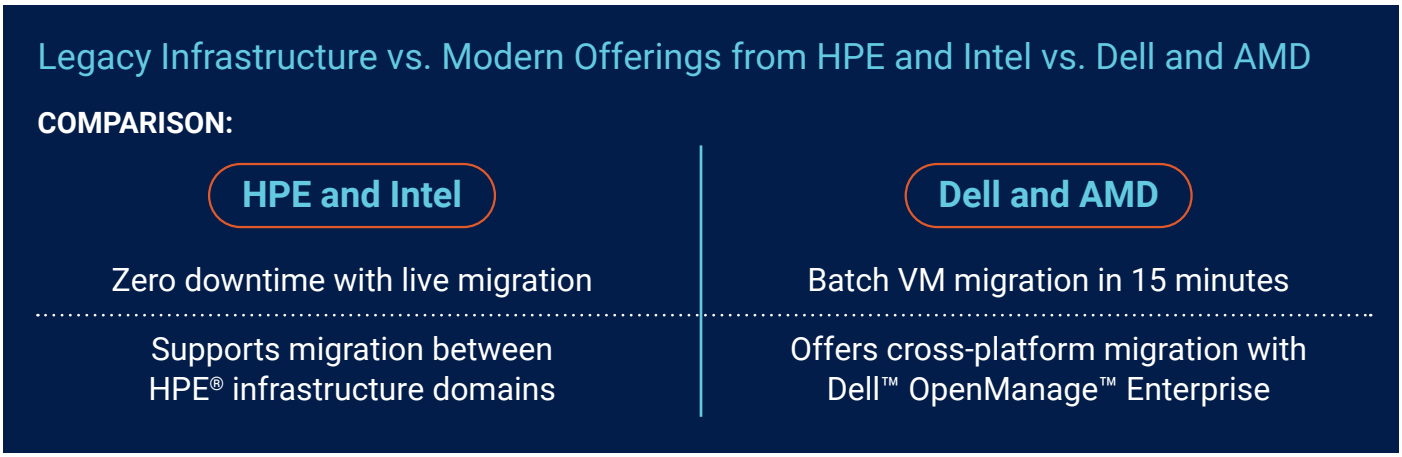

Figure 1 | A comparison of HPE and Intel vs. Dell and AMD migration benefits[1,3]

Consolidation and Licensing Economics

A legacy infrastructure refresh is the best time to reduce server count, improve resource utilization, and lower long-term operating costs. Whether an organization upgrades to Intel Xeon 6 processors running on HPE ProLiant Gen12 servers or migrates to 5th Gen AMD EPYC processors running on 17th generation Dell servers, both platforms provide a substantial increase in compute capability over a baseline of legacy servers powered by 2nd or 3rd Gen Intel Xeon Scalable processors. With that additional capacity, servers and workloads can be consolidated, which enables support for more VMs and applications on fewer physical systems.

However, consolidation doesn't only provide benefits in hardware utilization. By reducing server count, rack space requirements are lowered, which in turn lowers power and cooling demand and decreases software licensing costs, which are sometimes tied to core counts. This all culminates in operational savings across the board, with lower TCO and reduced financial impact from legacy server hardware.

Path Comparison

Given the benefits of consolidation in both paths, this section considers the long-term impact of both options.

Path A: Intel Xeon 6 Processors Running on HPE Servers

With a 7:1 consolidation ratio from HPE ProLiant Compute Gen10 to HPE ProLiant Compute Gen12, the benefits of newer-generation HPE and Intel hardware are significant compared with the established baseline. HPE Morpheus VM Essentials software also delivers up to 90% cost savings on virtualization licensing compared to VMware vSphere® Foundation.[4]

For businesses that remain within the HPE ecosystem, this upgrade would offer significant consolidation benefits, allowing workloads to be managed by fewer systems while maintaining existing operational practices. Intel Xeon 6 processors offer up to 58% lower fleet core count compared to legacy 2nd Gen Intel Xeon Scalable processor–based systems,[2] and up to 20% increased performance per core compared to 5th Gen Intel Xeon processors.[5]

The benefits within this path lie in remaining with what is familiar. While organizations can expect meaningful reductions in server count compared to legacy infrastructure, license costs and infrastructure footprint remain closely tied to how efficiently workloads can be consolidated. There are consolidation gains in either path, but the rationale for remaining with HPE and Intel lies in familiarity.

Path B: AMD EPYC Processors Running on 17th Generation Dell Servers
5th Gen AMD EPYC processors in a 17th generation PowerEdge server deliver a 7:1 consolidation ratio compared to a legacy 28-core Intel Xeon Platinum processor, the same ratio offered by HPE and Intel, with a notable reduction in licensing costs up to 34% per core.[1] Additionally, 5th Gen AMD EPYC processors offer up to 37% increased performance per core and up to 66% higher CPU performance at the top of the stack compared to 4th Gen AMD EPYC processors.[1]

Notably, a consolidation from an HPE ProLiant Gen10 server to a PowerEdge server running 5th Gen AMD EPYC processors can cut five-year TCO costs by up to 64%, a 19% increase compared to the HPE and Intel solution's claimed TCO.[6]

As server count decreases, organizations can also reduce associated infrastructure costs, including rack space, power consumption, cooling requirements, and software licenses, though the presence of multiple hardware vendors is still extremely likely. This makes consolidation with Dell a more appealing choice, given that OME can operate in heterogeneous environments and discover, monitor, and report on non-Dell infrastructure.

Key Takeaway
For organizations that seek to reduce platform sprawl over time and improve workload performance, a move to Dell servers powered by AMD infrastructure is a strong choice to enhance operational efficiency while reducing environmental costs.

Both refresh paths offer substantial improvements in consolidation potential over legacy infrastructure at a similar 7:1 ratio compared to legacy infrastructure. Both offer significant cost savings in licensing, with HPE and Intel reducing virtualized licensing costs by up to 90% and Dell and AMD reducing per-core licensing costs by up to 34%. Dell and AMD offer a 19% higher TCO reduction compared to the HPE and Intel solution, in addition to higher CPU performance at the top of the stack. Additionally, OME offers the unique ability to monitor and report on non-Dell infrastructure, which OneView does not offer.

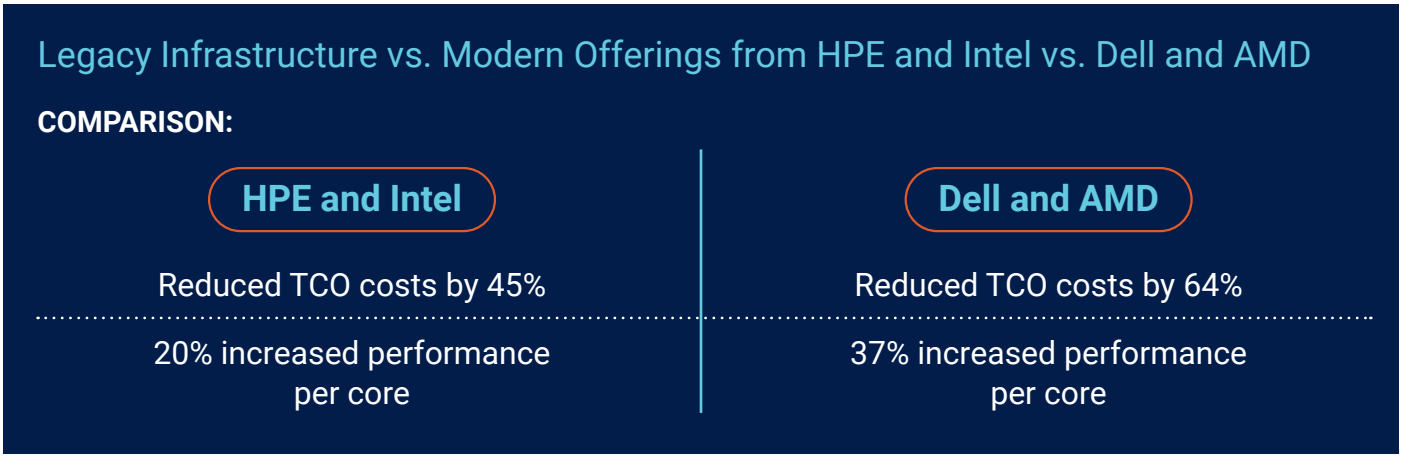

Figure 2 | A comparison of HPE and Intel vs. Dell and AMD consolidation benefits[1,6]

ISV Compatibility and Ecosystem

For enterprise workloads, ISV compatibility is determined at the operating system and application layer rather than by the underlying x86 processor vendor. Any virtualized applications can run on either hardware platform, which makes it easy to operate within standardized software environments, regardless of whether the host server is powered by Intel Xeon 6 processors or AMD EPYC processors. As a result, compatibility considerations are consistent across both refresh paths, as most ISVs ensure their software is compatible with all x86 architectures.

Path Comparison
Organizations that upgrade to Intel Xeon 6 processors running on HPE servers can typically maintain existing application deployments without additional certification requirements beyond those associated with a normal hardware refresh. Likewise, organizations that migrate to 5th Gen AMD EPYC processors running on 17th generation Dell servers would continue to operate within the same x86-64 ecosystem, where their existing operating systems, hypervisors, and software stack would continue to function as usual.

While specialized workloads or vendor-specific software might require validation as part of any infrastructure modernization project, those requirements are not unique to either platform. In most enterprise environments, application portability, operating system support, and ISV certification considerations remain broadly equivalent regardless of the processor vendor selected.

Key Takeaway
For organizations evaluating these refresh options, ISV compatibility is unlikely to be a deciding factor. Both Intel Xeon 6 processors and AMD EPYC platforms operate within the same mature x86-64 software ecosystem, allowing enterprises to modernize their infrastructures without introducing meaningful differences in application compatibility. With software support largely equivalent across both paths, the decision is better informed by long-term operational considerations such as consolidation potential, licensing efficiency, and infrastructure management.

Energy and Sustainability

Energy efficiency is now a core infrastructure decision. To keep pace within existing power and cooling limits, organizations need platforms that improve compute efficiency, increase utilization, and support more workloads on fewer systems.

Path Comparison

Both paths improve energy efficiency and reduce infrastructure requirements compared to legacy servers powered by 2nd and 3rd Gen Intel Xeon Scalable processors, but there are distinct differences between the two choices.

Path A: Intel Xeon 6 Processors Running on HPE Servers
An update to an HPE ProLiant Compute Gen12 server from an HPE ProLiant Compute Gen10 server provides up to 40% better performance-per-watt, with a single-socket Intel Xeon 6 processor upgrade providing up to 45% energy savings compared to 2nd Gen Intel Xeon Scalable processor infrastructure.[2,5] Considering the 7:1 consolidation ratio mentioned earlier, increasing performance and lowering the number of physical systems would have a meaningful impact on overall cooling and power consumption for HPE and Intel users. The gains in energy efficiency over legacy infrastructure are significant, making the choice of staying within the HPE and Intel family a viable option for businesses familiar with the infrastructure and not wishing to create too much change in their hardware.

Path B: 5th Gen AMD EPYC Processors Running on 17th Generation Dell Servers
Compared to 14th generation PowerEdge R7425 servers, 17th generation PowerEdge servers deliver up to 3x greater energy efficiency at high loads, with even greater potential gains at lower load levels, where most servers typically operate.[7] In one test, two 17th generation PowerEdge servers consumed up to 44% less power than ten 14th generation PowerEdge servers, which would drastically reduce the cost and power consumption per server over the year. Notably, a single 5th Gen AMD EPYC processor offers power savings of up to 65% compared to seven 2nd Gen Intel Xeon Scalable processors, and an up to 20% increase over Intel Xeon 6 processors.[1]

The addition of flexible power monitoring with iDRAC10 and OME Power Manager's ability to set power caps and track energy trends provides administrators with unique visibility into system power consumption across servers. This provides an extra edge to Dell and AMD users wanting to align performance and power consumption with workload requirements, rather than relying on static operating profiles.

Key Takeaway

5th Gen AMD EPYC processors running on 17th generation Dell servers provide a strong choice for energy and sustainability. Both paths improve energy efficiency relative to legacy infrastructure, though 5th Gen AMD EPYC processors offer up to 20% greater power savings compared to Intel Xeon 6 processors.[1] A similar 7:1 consolidation ratio would reduce the infrastructure footprint significantly in either path, but the 3x better energy efficiency of 17th generation PowerEdge servers is far greater than HPE ProLiant Gen12 servers and Intel Xeon 6 processors, given the higher power draw of the Intel processors.[7]

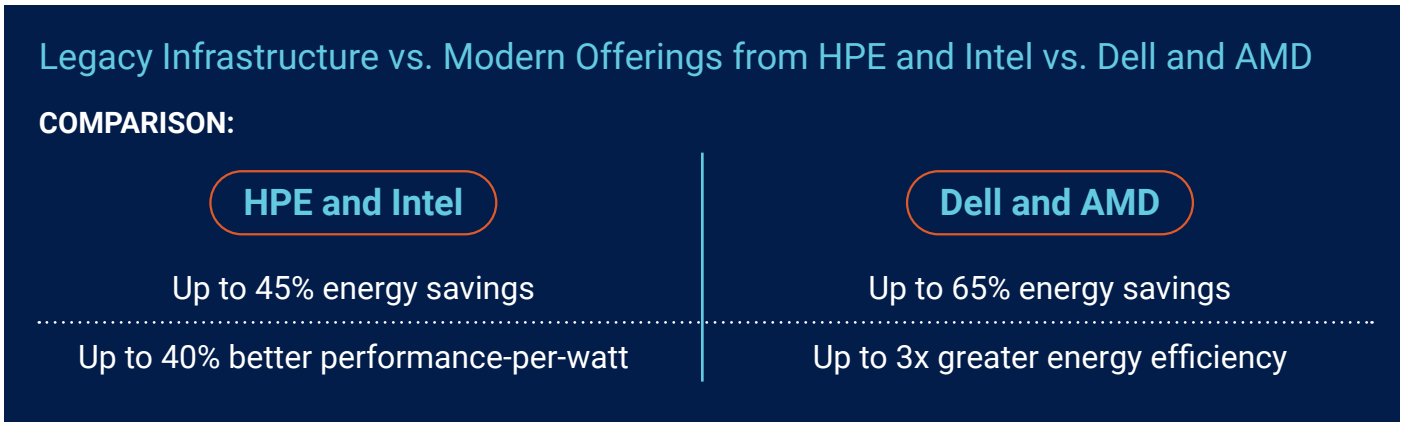

Figure 3 | A comparison of HPE and Intel vs. Dell and AMD energy and sustainability benefits. Energy savings compares an upgrade from 2nd Gen Intel® Xeon® Scalable processors; performance-per-watt and energy efficiency compare an older-generation family upgrade for each processor.[1,2,5,7]

Decision Framework: Choosing Your Path

Both refresh paths evaluated in this study represent substantial improvements over legacy infrastructure based on 2nd or 3rd Gen Intel Xeon Scalable processors.

When Intel Xeon 6 Processors Running on HPE Servers Make Sense

Organizations that place a high value on architectural continuity might find the Intel and HPE refresh path to be the better fit. With a 7:1 consolidation ratio, up to 45% reduced TCO, and up to 45% energy savings per processor, HPE and Intel offer clear benefits in upgrading, combined with minimal disruption to existing operational procedures, administrative experience, workflows, and vendor relationships. This approach is well-suited for organizations that prioritize predictable upgrades and standardized operational processes within an established infrastructure strategy.[2,5]

When 5th Gen AMD EPYC Processors Running on 17th Generation Dell Servers Make Sense

Organizations that focus on maximizing infrastructure efficiency might find greater long-term value in a migration to 5th Gen AMD EPYC processors running on 17th generation Dell servers. The up to 65% reduced TCO, per-core license cost reductions of up to 34%, and 3x greater energy efficiency make the AMD solution running on Dell servers a compelling option for organizations that aim to improve virtualization density and prioritize AI-enabled workloads.[1,7]

Conclusion

Businesses will always need to refresh their architecture every few years. Any organization still operating legacy server infrastructure knows a platform refresh is on the horizon and must plan accordingly. Whether driven by virtualization growth, AI adoption, rising operational costs, or limited rack space, the decision is no longer whether to modernize, but how.

In this study, we laid out two paths:

- **Path A** upgrades from older 2nd or 3rd Gen Intel Xeon Scalable processors running on ProLiant servers to Intel Xeon 6 processors running on HPE ProLiant Gen12 servers, representing a logical continuation of the existing Intel-based environment. Strong reasons to choose this path include:[2,5]
  - Up to 45% power savings
  - Up to 45% lower TCO
  - Up to 20% increased performance per core over 5th Gen Intel Xeon processors

  Architectural continuity and familiar operational practices are a viable reason to maintain vendor relationships while investing in significant gains in compute performance from the upgrade. For environments where minimizing organizational change is a primary objective, this approach offers a predictable path to modernization.

- In **Path B,** we examined upgrading from 2nd or 3rd Gen Intel Xeon Scalable processors running on HPE ProLiant servers to 5th Gen AMD EPYC processors running on 17th generation PowerEdge servers. We found that such a migration can deliver greater long-term operational advantages:[1,6]
  - Up to 65% power savings, with up 20% higher power savings than Path A
  - Up to 64% lower TCO, with up to 19% lower TCO than Path A
  - Up to 37% increased performance per core over 4th Gen AMD EPYC processors, with an up to 17% generational increase compared to Path A

  Combined with workload consolidation and a reduced infrastructure footprint, the AMD processor running on the Dell server presents a strong candidate for a generational upgrade. Beyond the underlying hardware platform, this environment also benefits from Dell server management solutions in OME and iDRAC10, which can provide additional value through automation, platform management, system monitoring, and thermal profiles to simplify administration in the enterprise.

Our findings demonstrate that migration complexity should not be viewed as the defining factor in platform selection. Both approaches modernize legacy infrastructure and provide meaningful improvements over previous-generation systems. Especially in the current state of hardware scarcity, a business must weigh the costs of upgrading even more against the performance and outcomes of the upgrade. For the enterprise profile evaluated in this study, 5th Gen AMD EPYC processors running on 17th generation Dell servers provide a strong overall combination of performance, efficiency, consolidation opportunity, and operational value, making them a platform well-suited for organizations undertaking a comprehensive infrastructure modernization initiative.

Learn More

Learn more about PowerEdge servers powered by AMD EPYC 9005 Series processors, including high-core-count models such as the AMD EPYC 9755 processor (OPN 100-000001443), to find the configuration that best suits your business.

Appendix A

These tables include the model and SKU numbers for every product listed in this paper along with the relevant hardware vendor for each product. All comparisons in this paper used these products in various configurations.

Vendor	Model
Dell Technologies	Dell™ PowerEdge™ R7725 server
HPE	HPE® ProLiant® DL380 Gen10 server
HPE	HPE ProLiant DL380 Gen12 server

Vendor	Generation	Model
AMD	4th Gen AMD EPYC™ processor	9004
AMD	5th Gen AMD EPYC processor	9965
Intel	2nd Gen Intel® Xeon® Scalable processor	8280
Intel	3rd Gen Intel Xeon Scalable processor	8380
Intel	5th Gen Intel Xeon processor	8592+
Intel	Intel Xeon 6 processor	6980P

Endnotes

[1] Based on data gathered from internal Dell Technologies testing.

[2] Intel. "**Improve I/O Performance and Cost Efficiency with Single-Socket HPE ProLiant Servers with Intel® Xeon® 6 Processors**." March 2026.

[3] Dell Technologies. "**Migrating your VMWare Environment to Dell PowerEdge with 5th Gen AMD EPYC**." June 2026.

[4] HPE and Intel. "**Empower your enterprise with next-gen compute and virtualization solutions**." 2026.

[5] See [9G4] at **intel.com/processorclaims**: Intel Xeon 6. Results may vary.

[6] Principled Technologies. "**Preserve workload integrity during cross-architecture migration**." February 2026.

[7] Dell Technologies. "**The Dell PowerEdge R7725 Delivers 3x the Performance per Watt of its Predecessor**." May 2026.

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