# Enabling Critical Industry Workloads with an Edge Private Cloud

The 451 Take

Enterprises are increasingly turning to edge venues to support their critical industry use cases – in particular, workloads that require high-performance compute at very low latency to power mission-critical business, at scale. Be it the always-on needs of the most demanding business applications such as manufacturing automation, predictive maintenance and intelligent logistics, or the compute-intensive requirements of new technologies like artificial intelligence and robotic process automation, enterprises today know that to get the job done, they must deploy their workloads to the right venue, via the most capable infrastructure, in the most cost-effective manner.

To support such use cases and applications (see figure below), enterprise respondents to a recent 451 survey said they consider cost (cited by 45% of enterprises), availability of supporting compute, storage and connectivity (44%), data sovereignty protection (42%) and location security (40%) as their top concerns when choosing a venue to execute their digital workloads. Those are best thought of as baseline requirements for all enterprise applications, needs that are often – but not always – best met via edge computing locations. Beyond that, a growing number of enterprises today are deploying industry uses cases that require low latency (28% of respondents) and highly resilient (27%) infrastructure, which more clearly demands the nearby compute and performance of an edge venue.

Most Important Venue Requirements for Supporting Critical Industry Workloads
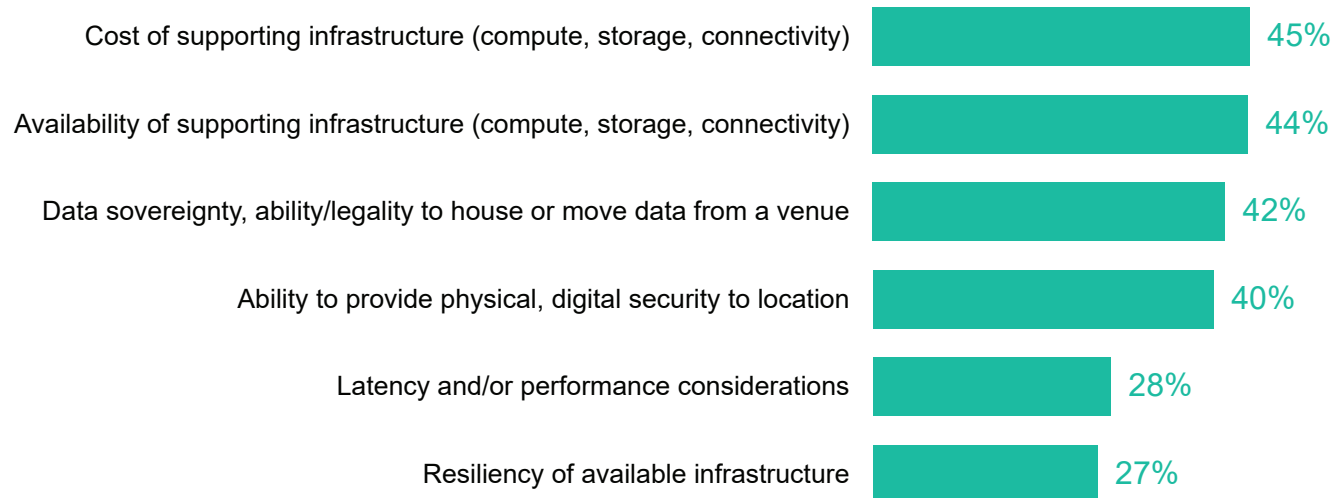
Q: In general, which factors are most influential when determining the best execution location or venue for an IoT workload?
Please select all that apply.
Base: All respondents (n=444)
Source: 451 Research's Voice of the Enterprise: Internet of Things, Workloads and Key Projects 2021

In the past, enterprises requiring such edge computing capabilities had several options. Many times, operational teams deployed edge 'boxes' on their own, but these had limited capabilities and were often outside the purview and management of IT. More recently, IT has attempted to extend typically centralized cloud or datacenter resources out toward the endpoints, approximating but never truly delivering the edge proximity, performance and security required.

Now, enterprises have another option. Edge private cloud infrastructure has emerged to offer a best-of-both-worlds hybrid approach that delivers significant technology and business benefits to support critical industry edge workload scenarios. Edge private clouds combine the dynamic, flexible, scalable and cost-effective characteristics of the cloud with the security, low latency and high performance of an edge venue.

Business Impact

An edge private cloud delivers a range of critical technology and business benefits:

A modern IT environment guaranteeing scalability, resiliency and security. With an edge private cloud, there is no more 'edge computing' delivered via boxes on the shop floor or servers under the breakroom desk. Critical edge applications require critical infrastructure that is managed by experts in IT (not OT or line-of-business personnel), scalable and resilient to meet growing demands, and secured to keep the edge from becoming a highly vulnerable cyberattack surface.

On-demand, cost-controlled cloud infrastructure – delivered where it is needed…at the edge. Modern IT has become accustomated to spinning up new applications – and supporting storage and compute – on demand via hyperscale public clouds. The industry edge must operate no differently, with managed infrastructure-as-a-service available when and where it is needed yet fully under enterprise control.

Digital execution of mission-critical operational workloads intolerant of delays. The real-time or near-real-time nature of many industry workloads requires a nearby edge venue that delivers low latency and high performance. When this is delivered as an edge private cloud, enterprises not only get edge performance but the full control, security and flexibility of private, hybrid infrastructure.

Nearby compute with integrated connectivity for performance and data sovereignty. An edge private cloud is situated 'on-net' for fast access and supporting large-scale data backhaul with adjacent compute resources capable of sub-millisecond response times. This allows delivery of the performance required for operational workloads and keeps data local – rather than in a remote cloud – when security, compliance or other enterprise requirements demand it.

Looking Ahead

Enterprise IT infrastructure is evolving rapidly. The cloud brought new scale, availability and cost dynamics. The Internet of Things and Industrial IoT unleashed millions of machine and sensor endpoints – and petabytes of data capable of delivering critical business insights. For a time, technology conversations became a question of whether enterprises should place a workload in the cloud OR at the edge.

Time and hard-earned experience have shown that it doesn't have to be an 'either or' choice at all. Enterprises today require the flexibility to deploy a hybrid IT environment so that they can place some applications in a public cloud, others on-premises, and a growing number of particularly mission-critical industry workloads in an edge private cloud – a venue that is more operationally suitable for some workloads because it combines modern technologies and the IT/cloud ecosystem with the ability to flex to meet growing workload performance requirements and evolving business demands at scale.
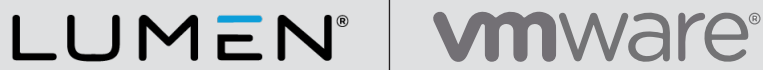
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