



Maximize Compute Resources and TCO With a Hybrid Cloud

Hybrid cloud solutions enable organizations to create flexible, secure, cost-effective environments tailored to their business and technical needs

“96% of polled executives said their hybrid cloud initiatives are delivering measurable results. On average, they have reduced IT costs by 24% with hybrid cloud.”⁴

Industry Strategic Challenges

Migrating to the cloud entirely or in part helps businesses distribute their resources effectively, respond to user and customer demand quickly, and become more agile overall. It also helps cut costs and reduce total cost of ownership (TCO). In fact, 95 percent of the IT professionals who responded to the 2017 RightScale annual State of the Cloud Survey are now using cloud.¹

No single cloud model or set of services is perfect for every organization. It's important to position workloads to take advantage of the varying benefits of public, hybrid, and private cloud solutions. Therefore, selecting the best cloud solution involves careful consideration of how each cloud implementation option would meet the needs of the overall organization and its specific workloads.

Some companies have chosen public clouds. These cloud services are maintained by a service provider off-premises and are readily scalable. Paying only for the services used allows an organization to use OPEX dollars and clearly track the costs to specific projects. But public cloud offerings, with multiple tenants using the same server resources, don't meet the workload performance needs or security requirements for some industries.

Other companies find that private clouds are better suited to their needs. These are on-premises with more controlled access to data, but not resource-flexible enough for some companies. They also require CAPEX infrastructure investments, which can end up being underutilized. It's challenging to wade through the complexities and find the right solution with the fewest tradeoffs.

Businesses have a third option that offers advantages from both public and private clouds, along with unique benefits that come from combining them. This solution is the hybrid cloud, which can deliver the best of both worlds. A hybrid cloud implementation lets the company decide where deploying workloads onto quick-scaling, fast-to-market systems makes sense versus accessing traditional and core business systems. This flexibility helps increase competitiveness and TCO.

Hybrid cloud is not merely a scenario where an organization uses a public cloud for some things and a private cloud for others, working separately in parallel, with data in silos. For maximum result, the two kinds of clouds must be integrated, with interoperable hardware, software, networking, storage, and services working seamlessly together. This architecture benefits from a layer of specialized software to orchestrate operations according to organizational IT policies and changing operational priorities.

Intel and its broad ecosystem of solution providers can help organizations get started by evaluating whether hybrid cloud is the best cloud strategy for their workloads (see “Steps to Setting an Optimal Cloud Strategy” section below for step-by-step guide) – and then implementing successful Intel® technology-based hybrid clouds, with security built in to every infrastructure component.

The Move to Hybrid Cloud

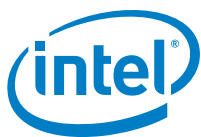
- 70% of enterprise-based IT professionals are considering a hybrid cloud strategy in the next 24 months²
- 85% of enterprises now adopt a multi-cloud strategy, while only 9% use a single public cloud and another 5% use a single private cloud¹
- 60% of IT decision makers have moved or are considering moving to a hybrid cloud platform.³
- 83% of IT leaders said they currently use a hybrid cloud or plan to do so in the future⁴

Considerations When Setting a Cloud Strategy

- **Business considerations:** Use cases; time to market; agility; legal and regulatory concerns; finance strategies including TCO and CapEx vs. OpEx tradeoffs; billing models; demand profile; scale of service; business continuity and disaster recovery; and geographic location of both users and data centers. See Table 1
- **Technical considerations:** Performance to meet workload demands and SLAs for application developers and end users, including specialized compute requirements and large datasets; existing applications' cloud-readiness and compatibility; security; integration; and licensing
- **Ecosystem considerations:** Evaluation of cloud service providers and service models, including Software as a service (SaaS), Platform as a service (PaaS), or Infrastructure as a service (IaaS)

Table 1. Business Considerations For Cloud Implementations

Attribute	Private/Hybrid Cloud Indicators
Organization Size and Maturity	<ul style="list-style-type: none"> • Large or mature organization • 500+ physical servers running at 50%+ capacity • Large in-house IT investment
IT Engineering Team	<ul style="list-style-type: none"> • Large in-house IT support • Deep cloud technical bench
Financial Strategy	<ul style="list-style-type: none"> • CAPEX and depreciation preferred • Large IT/capital budget • Large data volumes • Many customized business processes
End-User Location	<ul style="list-style-type: none"> • Country restrictions on Internet – private WAN connection to private data center required • End-user locations do not contribute to latency concerns • Large corporation with global but consolidated end-user locations – multiple private data centers are cost effective • Data sovereignty restrictions
Compliance and Control Regulations	<ul style="list-style-type: none"> • Major regulations or compliance requirements • Data sovereignty restrictions (PII or controlled technology)
Service Level Agreement (SLA) Flexibility	<ul style="list-style-type: none"> • Restrictive SLAs or 100% availability required at all times • Risk-adverse to SLA failures – trust private infrastructure over the Internet/service providers
Business Asset Control (Risk) Tolerance	<ul style="list-style-type: none"> • Requires absolute control of business data and intellectual property (IP) • Failing to maintain IP and data control may result in the loss of critical business assets



Enabling Transformation

Intel is working with industry partners to expand the options for cloud infrastructure and the benefits of hybrid cloud solutions. In addition, Intel® technologies are the foundation of software-defined infrastructure (SDI) solutions across platforms, from leading vendors and open source. SDI and hybrid cloud work hand in hand to build agile enterprises and enable cloud innovation.

Solution Summary and Ingredients

Hybrid cloud platforms from Intel ecosystem solution providers like AWS and VMware, combined with Intel® technology, enable hybrid clouds that deliver:

- **Performance.** Intel® Xeon® processors and Intel® Ethernet server adapters provide state-of-the-art performance and reliability for compute-intensive workloads.
- **Security.** Intel® Trusted Execution Technology (Intel® TXT) provides hardware-based security, while Intel® Advanced Encryption Standard-New Instructions (Intel® AES-NI) data encryption and McAfee security tools secure data during transition and storage.
- **Scalability.** Intel® Solid State Drives (Intel® SSD) deliver stable, reliable scalability for data storage.

Where to Get More Information

Please visit Intel.com/cloud.

Optimal Workload Placement for Public, Hybrid, and Private Clouds <http://www.intel.com/content/dam/www/public/us/en/documents/white-papers/optimal-workload-placement-for-public-hybrid-and-private-clouds-white-paper.pdf>.

¹ 2017 RightScale annual *State of the Cloud Report*, <http://www.rightscale.com/blog/cloud-industry-insights/cloud-computing-trends-2017-state-cloud-survey>

² The International Data Corporation (IDC) multiclient study, *CloudView 2016*

³ Study by Rackspace and Vanson Bourne, blog.rackspace.com/hybrid-cloud-is-the-future-for-60-percent-of-uk-and-us-enterprises-finds-rackspace-study

⁴ Paper by EMC and IDG Research Services, *Hybrid Cloud Computing: The Great Enabler of Digital Business*

Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration.

No computer system can be absolutely secure. Check with your system manufacturer or retailer.

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