White Paper

# The Business Advantages of Cloud Adjacent Oracle Databases on Exadata

An Optimized Balance of On-premises Performance with Public Cloud Usage Mandates

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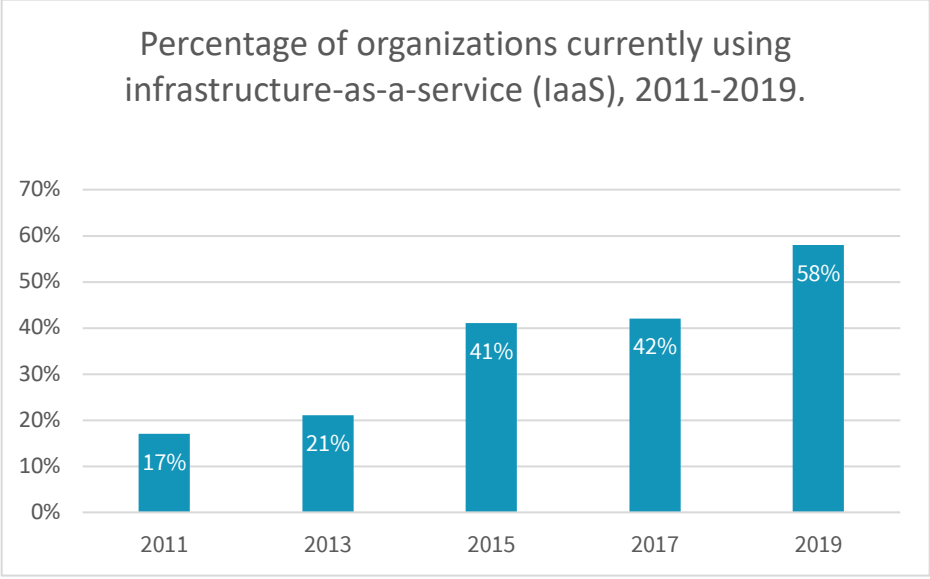
## The Generic Public Cloud and Mission-critical Oracle Databases: Not Necessarily a Perfect Match

Whether you prefer a phrase like "best tool for the job" or perhaps "horses for courses," it is abundantly true across all areas of life that one size rarely, if ever, fits all. That is as true in IT as anywhere. And yet it is also true that the "rush to the cloud" is sometimes built on a committed belief—corporate zeal, management directive, a "digital religion," if you will—that everything can simply move to the cloud if desired. Period. This faith holds that the only change will be in thereby achieving whatever horizontal benefit was intended—perhaps being more responsive to dynamic business conditions, maybe cost reduction, potentially greater application flexibility, or simply concentrating on core competencies.

But one size—or one generic approach—does not fit all. Whether there's a hybrid cloud initiative or an internal mandate to shutter data centers altogether, organizations are finding out that embracing the public cloud is easier said than done—especially for critical workloads on enterprise databases. Sometimes different public clouds work better for certain applications or business drivers; sometimes organizations end up force-fitting solutions into public cloud environments and making tradeoffs in application SLAs to appease the cloud-centric mantra. *But* real issues can also be associated with certain workloads; prime amongst these are the potential and significant challenges that can impact critical [Oracle] databases running on generic public clouds. These can include both *unexpected challenges* (such as issues with performance, scalability, security, and data sovereignty) as well as *unintended consequences* (whereby increased latency can lead to SQL time-outs, and high networking costs can be a budget shock).

The desired situation for many users is to "have their IT cloud cake and eat it too;" in other words, find a model—whether that is hybrid- or all-cloud—that allows the upside without the downside. After all, the public cloud (whether by need, default, or mandate) can be excellent for many applications. And ESG's research (see Figure 1) shows a continuing strong upward trend in the use of infrastructure-as-a-service (IaaS).[1] The question here is not whether hybrid and/or multi-cloud is here to stay, but what good choices users have if they know (or worse, find out after a failed attempt!) that generic public clouds aren't optimal for business-critical Oracle Databases, and yet have a cloud mandate in place. Can they keep the baby but get rid of the bathwater?

**Figure 1. Growth in Use of IaaS 2011-2019**




*Source: Enterprise Strategy Group*

### *"The rock and a hard place" conundrum*

*Overall, many IT professionals are looking for ways to address the challenging—and ever tougher—performance, scalability, availability, security, and cost requirements demanded of their mission-critical applications and technologies—such as Oracle Databases—while simultaneously enabling their organizations to embrace some amount of public cloud services, both optimally and on their terms.*

[1] Source: ESG Master Survey Results, *2019 Technology Spending Intentions Survey,* March 2019. All ESG research references and charts in this white paper have been taken from this master survey results set.

## State of the Public Cloud Market

It's not just that the adoption of IaaS is increasing; 49% of IaaS users are running *production* applications. And two other factors add tension to the conundrum mentioned above: Firstly, the existence of a "cloud-first" policy for new applications at organizations grew from 29% to 39% between 2018 and 2019. ["Cloud-first" simply means that the public cloud will automatically be chosen for new applications unless there's a compelling reason to stay on-premises.] By the same token, the share of committed "on-premises first" organizations declined from 24% to 14% over the same period. And secondly, more than three-quarters of users of public cloud infrastructure services (IaaS or PaaS) have two or more cloud service providers (CSPs) and two thirds of *those* organizations have three or more CSPs; moreover, and whether it's to avoid vendor lock-in, to remain cost-competitive, or simply to use the right cloud for a given application/situation/preference etc., users will not only *use* a range of CSPs but may increasingly want to *move* between them.

Cloud is a reality, a growing one, and one that is also growing in complexity. Vendors can either work with it or stick their heads, ostrich-like, into the sand. As already mentioned, databases present their own issues when run on generic public clouds; Oracle—with what it calls "Cloud Adjacency," driven in association with Equinix data centers—is firmly adopting a pragmatic "play-nice" approach that optimizes what users want (chiefly lower latency and/or transmission costs), and efficiently addresses the "rock and a hard place" conundrum.

### More about Databases in the Cloud

Before examining the Oracle Exadata-based solution itself, let's investigate what motivated "Big Red" to take its pragmatic approach? First, to restate: Many organizations deem their mission-critical Oracle Database as an absolute foundation of their business. In this light, the Oracle move is both an offensive and defensive one for the vendor. Offensive inasmuch as it can help to keep Oracle at the infrastructure-platform-forefront of a software space that it dominates; defensive inasmuch as it helps its customer base to avoid having to confront and accept some of the limitations that non-Oracle, generic public clouds can apply to their databases running there. *The sum of these points for Oracle's users is that it allows them to avoid much of the "shadow" that the generic public cloud can cast when running Oracle Databases.*

This "shadow" that the generic public cloud can cast includes many things, such as:

- Limitations on available cores or noisy neighbors can impact scalability and performance.
- Computational and IOPS performance requirements for key applications may not be able to be met.
- Data transmission costs can be [much] higher than expected or budgeted for.
- Database features that organizations have come to expect on-premises, such as sophisticated high availability (HA) options, might not exist or properly function.
- DIY approaches can create security and/or availability holes and add complexity and expense.
- There may be unsupported software functions, less control and insight; furthermore, over time, the need to re-write software for compatibility and efficiency can become a frustrating reality.
- SLAs related to business application availability may not be met (meaning exceeding outage events and/or duration on applications that are invariably business-crucial).
- Database license costs can increase by as much as 3X due to the need for more cores.
- Overall increased complexity and management can demand a significant (maybe 2-3X) increase in support staff.

The bottom line is that using the generic, non-Oracle Database-specific public cloud can introduce *business risk*, simply because these databases are extremely critical, and therefore inextricably tied to an organization's degree of business success. So, how can organizations address their challenges with database size, performance, scalability, security, and compliance, all while supporting new applications and/or end-users across cloud environments? It's not as simple as just linking public cloud applications and facilities to an Oracle Database on the user's premises; this may seem workable and tempting—especially if those Oracle Databases are running on Oracle's purpose-built Exadata engineered systems (more on this below)—but will invariably also be sub-optimal because this will almost always add latency and networking costs.

Enter Cloud Adjacent Oracle Databases…

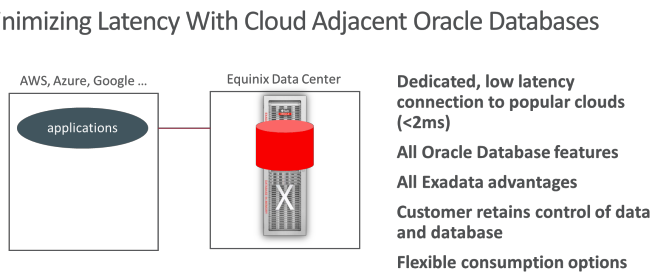
## Oracle, Equinix, and Cloud Adjacent Oracle Databases on Exadata

For organizations that rely on Oracle Databases and are moving to the public cloud, whether by choice or by mandate, Cloud Adjacent Databases on Exadata look to enable organizations to check all the boxes on their requirements list. No compromise, no cloud "shadow," no rock or a hard place!

Oracle and Equinix have partnered to place Oracle's flagship Database running on Exadata platforms directly in Equinix data centers—*uniting the joint competitive advantage of an on-premises architecture with generic public cloud services.*

Organizations gain on-premises types of performance predictability (sub 2 m/s response times), scalability, and HA features, as well as improved control, increased data sovereignty, and higher security, all while still being able to embrace the public cloud. In other words, no more tradeoffs. This means organizations also get the agility, and on-demand computing ability that is most desired from the public cloud environments of their choice, without sacrificing Oracle Database performance, scalability, or security.

**Figure 2. Cloud Adjacent Databases**




*Source: Oracle*

***Exadata***

*The flagship Oracle Engineered System, Exadata Database Machine, delivers the highest-performing and scaling infrastructure to support Oracle Databases; beyond performance, IT organizations will gain simplified management and unique Oracle-only features, together with an extensive choice of consumption models.*

Beyond the fact that the databases will be running on the optimized Exadata platform, and that being in Equinix data centers allows most cloud needs or mandates to be met, the Cloud Adjacent solution also delivers the type of flexibility that is so compelling to—and increasingly common amongst—public cloud users. This is because the cross-connected cloud cages in the Equinix data centers not only enable high performance (with what is essentially server-to-server connectivity over the extreme speed of the Equinix network), *but also* that same cross-connectivity allows users to link their Oracle Databases to the *public cloud IaaS, PaaS, or SaaS providers of their choice*…perhaps one for dev/test, one for marketing, one for accounting and so on; *and* this choice can flex over time as attitudes, applications, and business offers morph.

In other words, by placing Oracle Database on Exadata in Equinix facilities, organizations can leverage Equinix's high speed interconnects to any and all of the public clouds available directly in their facility, eliminating the high cost of the direct networking pipes that organizations must otherwise pay *each* public cloud provider to meet their required Oracle Database SLAs. In fact, users of this solution have reported saving up to 70% on their networking costs by connecting to public clouds within an Equinix data center rather than trying to reach these clouds from their own data centers.

*Moreover, and crucially, this Cloud Adjacent solution represents a zero-change architecture to optimally and simultaneously address on-premises performance and security needs and multi-cloud operational strategies*.

## The Bigger Truth

While the Oracle Autonomous Database is an ideal solution for organizations leveraging the Oracle Cloud, Oracle is showing that it also recognizes the existence of a hybrid-cloud world (where many applications run just fine) and the need for multi-cloud support (not everything will be on Oracle!). And it is not doing so half-heartedly, instead sending its MVP (Most Valuable Platform), Exadata, on this mission. It reports strong customer adoption across a broad range of vertical industries, with large enterprises adopting its Cloud Adjacent architecture with Oracle Database on Exadata in Equinix data centers, or other colocation facilities.

Whether addressing different business unit preferences, or next-generation applications that are ideally suited for a specific public cloud, Exadata can serve as the foundational Oracle-Database-serving technology and multi-cloud connector. Organizations not willing to sacrifice the unique features, performance, and scalability of Exadata by force-fitting the Oracle Database into a generic public cloud provider can instead place Exadata "adjacent" in an Equinix data center, and thereby check all their "required cloud" boxes.

The Cloud Adjacent solution is so obviously pragmatic and appealing, that it can stand a couple of "cross-connected colloquialisms" of its own: Avoiding the potential "cloud database shadow" allows the baby of performance to be kept as the bathwater of risk is drained; the Exadata will twin turbo-charge both its database engine *and* other cloud-based applications that use it; and placing the Oracle Database on Exadata in Equinix cloud data centers is akin to a picky family arriving in a restaurant to find that *both* Coke and Pepsi products are available!

The unstoppable force paradox is often formulated as "what happens when an unstoppable force meets an immovable object?" The strained and seemingly irreconcilable tensions of a public cloud mandate and optimized Oracle Database function might well have previously met this description. But with Oracle Cloud Adjacent Databases on Exadata, the paradox is solved for both sides. Users gain on-premises levels of speed, scalability, control, and security, yet with improved application availability, multi-cloud integration, and lower risk—all while reducing costs and complying with a public cloud mandate *and* perhaps even eliminating their own data centers. Best of all, customers can choose who manages the data—whether it's the customer, a partner, or a systems integrator—and how it gets done…providing total flexibility and enabling customers to retain control of their Oracle Database licenses and their data.