2023 Quest Oracle Community Database Priorities Survey: Database Management Continues to Move to the Cloud

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EXECUTIVE SUMMARY

There has been no shortage of attention on the advantages artificial intelligence and generative AI bring to enterprises—from real-time customer engagement to on-the-spot analysis and remediation of issues or anomalies. Behind all the wonders that AI brings, however, is the workhorse that must be attended behind the scenes—databases and associated data environments. Data managers acknowledge that in many cases, today’s current data environments inhibit progress, and improvement requires more targeted investment in automation and infrastructure. Data needs to be secure, highly available, and viable for AI and other advanced initiatives to succeed within enterprises.

A recent survey of data executives and managers identified these factors as many of their top-of-mind concerns, all well as actions they are taking to build data-driven capabilities in their enterprises. The survey of 217 companies was conducted by Unisphere Research, a division of Information Today, Inc., in partnership with Dell EMC, among members of the Quest Oracle Community. Conducted between December 2022 and January 2023, the survey includes the views and experiences of IT directors, architects/engineers, C-level executives, and database administrators. Industries represented include IT services, healthcare/life sciences, software development, and financial services. (More details about our respondents are found within the “Demographics” section at the end of this report.)

The following are key results and observations from the survey:

- **Competitiveness:** Most respondents say database management requirements still slow organizational advancement.
- **Data burdens:** Security is still the costliest activity, while more executives report cost burdens associated with maintaining uptime.
- **Abstraction:** Virtualization and Database-as-a-Service are viewed as the most promising solutions to most effectively align data to enterprises.
- **Choices and upgrades:** Performance and cost matter the most in vendor selection, and enterprises are accelerating efforts to keep ahead.
- **Security and business continuity:** For an overwhelming threatscape, more cloud, all the time.

Charts may not add up to 100% due to rounding.
COMPETITIVENESS

Most respondents say database management requirements still slow organizational advancement.

How important is a state-of-the-art and adaptable database environment to an organization's ability to compete in today's global digital economy? Extremely important. More than two-thirds of data managers, 67%, agree that the amount of time, money, and resources spent on ongoing database management—versus new project development or new initiatives—is affecting the competitiveness of organizations. However, this shows more confidence than the previous two surveys, in which 86% expressed concern about the drain on organizational advancement in 2022, and 71% in 2020. (Figure 1)

Figure 1: Do you believe the amount of time, money, and resources spent on ongoing database management—versus new project development or new initiatives—is affecting the competitiveness of your organization?

- Yes, the amount of resources spent on ongoing database management is severely limiting our competitiveness: 26% (2020), 43% (2022), 25% (2023)
- Somewhat, the amount of resources spent on ongoing database management is inhibiting our competitiveness: 45% (2020), 43% (2022), 42% (2023)
- No, the amount of resources spent on ongoing database management is not an issue in our competitiveness: 23% (2020), 12% (2022), 27% (2023)
- Don’t know/unsure: 6% (2020), 2% (2022), 6% (2023)
DATA BURDENS

Security is still the costliest activity, while more executives report cost burdens associated with maintaining uptime.

Building a data-driven enterprise is a team sport, involving business leaders and employees well beyond the bounds of the data management or IT departments. While data executives and managers need to work closer to their business partners than ever, they are encumbered by many operational concerns that take up the bulk of their time and resources.

Data security is one of those areas that requires a great deal of attention yet will likely go unnoticed and underappreciated—until a data breach occurs, of course. Security tops the lists of costliest and most time-consuming operational activities. Along with security, maintaining uptime and performance are considered the three costliest database management activities from an operational standpoint. Interestingly, maintaining uptime and availability has intensified as a concern over the past year, rising from 31% of respondents to 41%. (Figure 2)

When it comes to the most resource-intensive tasks—which includes time spent by data teams—security tops the list. Applying upgrades, fixes, and patches ranks second, which isn’t the costliest from an operational standpoint, as cited in Figure 2, but is nonetheless time-consuming for database managers. Performance tuning and diagnosis is ranked third as a time sink. (Figure 3)

Figure 2: What are the costliest database management activities from an operational standpoint?

<table>
<thead>
<tr>
<th>Activity</th>
<th>2022</th>
<th>2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security</td>
<td>40%</td>
<td>42%</td>
</tr>
<tr>
<td>Maintaining uptime and availability</td>
<td>31%</td>
<td>41%</td>
</tr>
<tr>
<td>Performance tuning and diagnosis</td>
<td>21%</td>
<td>34%</td>
</tr>
<tr>
<td>Applying upgrades, fixes, and patches</td>
<td>49%</td>
<td>29%</td>
</tr>
<tr>
<td>Testing and quality assurance</td>
<td>36%</td>
<td>20%</td>
</tr>
<tr>
<td>Creating and maintaining copies of databases</td>
<td>31%</td>
<td>19%</td>
</tr>
<tr>
<td>Root cause analysis</td>
<td>25%</td>
<td>19%</td>
</tr>
<tr>
<td>Implementing cloud strategies</td>
<td>18%</td>
<td></td>
</tr>
<tr>
<td>Running backups/DR planning</td>
<td>18%</td>
<td>16%</td>
</tr>
<tr>
<td>Unaware—we use managed services</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Don’t know/unsure</td>
<td>4%</td>
<td></td>
</tr>
</tbody>
</table>
### Figure 3: What are the most pressing database management activities that take up most of your resources?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security</td>
<td>46%</td>
</tr>
<tr>
<td>Applying upgrades, fixes, and patches</td>
<td>39%</td>
</tr>
<tr>
<td>Performance tuning and diagnosis</td>
<td>38%</td>
</tr>
<tr>
<td>Maintaining uptime and availability</td>
<td>37%</td>
</tr>
<tr>
<td>Testing and quality assurance</td>
<td>28%</td>
</tr>
<tr>
<td>Creating and maintaining copies of databases</td>
<td>25%</td>
</tr>
<tr>
<td>Root cause analysis</td>
<td>22%</td>
</tr>
<tr>
<td>Running backups/DR planning</td>
<td>16%</td>
</tr>
</tbody>
</table>
ABSTRACTIONS

Virtualization and Database-as-a-Service are viewed as the most promising solutions to most effectively align data to enterprises—particularly in today’s increasingly complex and heterogeneous environments.

A highly varied data environment—incorporating many data environments and requirements—cannot rely on a single brand of type of database. There needs to be a service layer and a common, standardized interface that will simplify access to and maintenance of increasingly complex data environments.

Data managers are increasingly turning to abstraction strategies and technologies to better and more cost-effectively manage data environments. The leading strategy being undertaken to mitigate time devoted to administrative overhead is virtualization or cloud solutions, which is occurring at half (50%) of respondents’ sites. Another 37% are adopting Database-as-a-Service options, while 31% employ Infrastructure-as-a-Service. (Figure 4)

When looking at enterprise/ERP applications supported within these data environments, Oracle E-Business Suite rates as the most pervasive environments. SAP follows with 32%, and PeopleSoft and SAS compete for a distant third place with 21% and 20% respectively. (Figure 5)

Consider all the environments supported by data executives and managers responding to this survey. There are a range of Oracle database editions that data managers employ in their data environments. Oracle 19c Enterprise Edition reigns supreme, employed at 34% of the sites covered. Oracle’s latest version, 21c, is now installed at 13% of sites for Enterprise Edition and 5% for Standard Edition (see Figure 6).

While survey respondents are primarily Oracle enterprise environments, they also incorporate a wide range of non-Oracle database technologies to address their burgeoning business requirements. Microsoft SQL Server is the platform most frequently seen within most Oracle-centric data environments (54%), but many open source and cloud databases are also seeing widespread adoption as well (see Figure 7).

There is no single dominant platform on which data managers run mission-critical Oracle at this time. Amazon Web Services, Microsoft Azure, and Microsoft Windows are considered as the top environments seen within Oracle sites. (Figure 8)
Figure 4: What are the top strategies you are using or planning to use to reduce time and money spent on ongoing database management activities?

- Virtualization or cloud solutions: 50%
- Database-as-a-Service: 37%
- Infrastructure-as-a-Service: 31%
- Faster storage (e.g., NVMe, SCM, etc.): 29%
- Platform-as-a-Service: 28%
- Upgrading or modernizing hardware and processors: 27%
- Leveraging managed services: 22%
- Develop database/data center automation (e.g., Chef, Puppet, Ansible, etc.): 19%
- Containers-as-a-Service: 18%
- Purchase off-the-shelf automation tools (Delphix, Actifio): 10%
- PMEM for Oracle databases: 6%
- Don’t know/unsure: 6%

Figure 5: Which, if any, enterprise/ERP applications do you use?

- Oracle E-Business Suite: 34%
- SAP: 32%
- Peoplesoft: 21%
- SAS: 20%
- Hyperion: 17%
- EPIC: 11%
- JD Edwards: 11%
- Banner: 6%
Figure 6: What Oracle database technologies do you use in your data environment?

- Oracle 21c Enterprise Edition: 13%
- Oracle 19c Enterprise Edition: 34%
- Oracle 18c Enterprise Edition: 14%
- Oracle 12c Enterprise Edition: 20%
- Oracle 11g Enterprise Edition: 10%
- Oracle 21c Standard Edition: 5%
- Oracle 19c Standard Edition: 10%
- Oracle 18c Standard Edition: 4%
- Oracle 12c Standard Edition: 9%
- Oracle 11g Standard Edition: 7%
- Oracle database pre 11g: 7%
- Active Dataguard: 9%
- Multi-Tenant/Pluggable databases: 7%
- ACO/Advanced Compression: 4%
- ASO/Transparent Data Encryption: 2%
- Oracle RAC: 13%
- Oracle In-Memory: 10%
- OEM: 14%
- Cloud Control: 8%
- Partitioning: 10%
- GoldenGate: 7%
- TimesTen: 1%
- None of the above: 17%
- Other: 1%
### Figure 7: What non-Oracle database technologies do you use (or plan to use) in your data environment?

<table>
<thead>
<tr>
<th>Database Technology</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft SQL Server</td>
<td>54%</td>
</tr>
<tr>
<td>MySQL</td>
<td>39%</td>
</tr>
<tr>
<td>Amazon Cloud Databases</td>
<td>31%</td>
</tr>
<tr>
<td>PostgreSQL</td>
<td>23%</td>
</tr>
<tr>
<td>MongoDB</td>
<td>22%</td>
</tr>
<tr>
<td>Apache Hadoop</td>
<td>19%</td>
</tr>
<tr>
<td>IBM DB2</td>
<td>17%</td>
</tr>
<tr>
<td>SAP HANA</td>
<td>16%</td>
</tr>
<tr>
<td>Cassandra</td>
<td>13%</td>
</tr>
<tr>
<td>Teradata</td>
<td>13%</td>
</tr>
<tr>
<td>Sybase</td>
<td>11%</td>
</tr>
<tr>
<td>CouchDB</td>
<td>9%</td>
</tr>
<tr>
<td>Redis</td>
<td>6%</td>
</tr>
<tr>
<td>Memcached</td>
<td>3%</td>
</tr>
<tr>
<td>SingleStore</td>
<td>3%</td>
</tr>
<tr>
<td>None of the above</td>
<td>7%</td>
</tr>
<tr>
<td>Other</td>
<td>5%</td>
</tr>
</tbody>
</table>

![Bar chart showing database technology usage percentages.](chart.png)
Figure 8: What platforms do you run mission-critical Oracle on today?

- Amazon Web Services: 32% (2022), 23% (2023)
- Microsoft Windows: 25% (2022), 23% (2023)
- Microsoft Azure: 23% (2022), * (2023)
- IBM AIX: 16% (2022), 22% (2023)
- Linux (non x86): 20% (2022), 21% (2023)
- VMware ESX: 16% (2022), 20% (2023)
- Kubernetes: 16% (2022), * (2023)
- Google Cloud Platform: 15% (2022), 16% (2023)
- Docker: 13% (2022), 12% (2023)
- Linux x86 (not Oracle Engineered): 24% (2022), 12% (2023)
- Oracle Exadata (any version): 14% (2022), 11% (2023)
- Solaris SPARC: 15% (2022), 10% (2023)
- Oracle KVM Hypervisor (OLV/RHV): * (2022), 9% (2023)
- Solaris x86: 16% (2022), 8% (2023)
- Oracle Cloud Appliance: 14% (2022), 8% (2023)
- Xen Hypervisor: 20% (2022), 4% (2023)
- None of the above: 5% (2022), 12% (2023)
SECURITY AND BUSINESS CONTINUITY

For an overwhelming threatscape, more cloud, all the time.

As mentioned at the beginning of this report, security tops the lists for costs and time spent by today’s database executives and managers. From a security standpoint, ransomware is a concern for many data managers in this survey as well. Only 7% of respondents indicate they are “not concerned” or not considering preventative or remedial actions for possible ransomware incidents against their Oracle data environments. (Figure 9)

To ensure business continuity in case of a major failure—such as a ransomware attack—backing up data is the key. The most oft-cited solution is replication of data to an offsite data center or partner location, cited by 46%. It’s also notable that public cloud is now the second-ranked backup choice—25% now look to public clouds as backup sites for their data. Related to that is hypervisor replication, cited by 15%. Oracle’s traditional RMAN environment is the third-ranked method. (Figure 10)

Data managers are turning to several technologies to back up their Oracle databases today. The top choice is SAN replication, cited by one-third, followed by storage snapshot, seen at 28% of sites, and RMAN at 27%. (Figure 11)
Figure 10: How are you ensuring business continuity in case of a major failure?

- Backup replication offsite: 46%
- Backup to the public cloud: 25%
- RMAN: 21%
- Stretched RAC clustered databases across two data centers: 19%
- RAC clustered databases in a single data center: 18%
- Logical replication (e.g., Goldengate, Shareplex, Streams, etc.): 18%
- Dataguard or Active Dataguard replication to a remote data center: 16%
- Hypervisor replication: 15%
- BC in the Cloud: 15%
- SAN replication to a remote data center: 14%
- None of the above: 9%
- Other: 1%
Figure 11: What technologies are you using to back up your Oracle database today?

- SAN replication: 33%
- Storage snapshot: 28%
- RMAN: 27%
- Veeam: 21%
- Datapump: 20%
- Exagrid/Tivoli/Netbackup: 20%
- Data Domain: 18%
- Avamar: 8%
- Other: 9%

0 20 40 60 80 100
CHOICES AND UPGRADES

Performance and cost matter the most in vendor selection, and enterprises are accelerating efforts to keep ahead.

As discussed in the previous section, there is a wide variety of choices—often bewildering—available to today’s data executives and managers. When looking to purchase new database systems and other infrastructures, performance and cost matter the most. Close to 60% cite performance as the driving factor for their purchasing decisions or recommendations. Another 54% seek to keep costs down, while close to half are concerned with the reliability of their infrastructures. Performance, cost, and reliability also ranked as the top three considerations in last year’s survey. (Figure 12)

The largest number of sites, 43%, acquire their Oracle licenses through Oracle Enterprise Edition. Interestingly, 19% now license Oracle through Microsoft’s Azure cloud service. (Figure 13)

Is Oracle still a top choice among enterprise Oracle managers? Not overwhelmingly. In a world rimming with databases for every purpose, it’s notable that only about one-third of Oracle customers, 34%, are fully on board with the idea of buying Oracle for new projects. Significantly, 56% are either not likely or only somewhat likely to purchase Oracle for new initiatives. (Figure 14)

Data managers working with production Oracle databases tend to see large volumes of data maintained within their environments. More than one-quarter, 28%, have data environments exceeding 25 TB in size. (Figure 15)

As was the case with last year’s survey, keeping up with database upgrades continues to take time, the survey shows. At the same time, there has been a quickening of these upgrades. About 45% of data managers report that they anticipate periods of six months or more after a major release until they begin the upgrade process. Last year, 55% reported such lag time. (Figure 16)
Figure 12: What factors do you consider when selecting infrastructure for your Oracle environment?

- Performance: 59%
- Cost: 54%
- Reliability: 48%
- Ease of use (cloud or cloud-like experience): 35%
- Integration to existing infrastructure: 28%
- Integrated support for features such as encryption, compression, and replication: 22%
- Availability of training: 22%
- Established vendor: 20%
- Integration to OEM, OVM, etc.: 17%
- Solutions available for integration with other vendors (build your own approach): 17%
- Vendor support of IOUG: 14%
- Proof of Concept/Bake Off: 14%
- Integrated support for regulatory standards such as GDPR: 14%
- Published References: 14%
- Open, no vendor lock-in: 14%
- Oracle’s HCL list: 13%
- Word of mouth/social media: 12%
- Solutions available as an integrated appliance: 12%
- Other: 2%
Figure 13: How do you license Oracle?

- Oracle Enterprise Edition: 43%
- Through Amazon RDS: 19%
- Through Azure: 19%
- Unlimited (ULA): 18%
- Perpetual per-processor: 17%
- Oracle Standard Edition 2: 16%
- Named User/Names User Plus: 13%
- Through Google: 13%
- Other: 6%

Figure 14: If you were to start/deploy a new project today that required an RDBMS, how likely would you be to choose Oracle?

- Not likely at all: 19%
- Somewhat likely: 37%
- Likely: 20%
- Very likely: 14%
- Don’t know/unsure: 9%
Figure 15: How large is your largest production Oracle database?

- Less than 1TB: 12%
- 1TB to 5TB: 16%
- 5TB to 25TB: 26%
- 25TB to 50TB: 14%
- Greater than 50TB: 14%
- Don't know/not sure: 19%

Figure 16: How long after a major release (e.g., 12cR1, 19c) do you expect to have most of your mission-critical databases upgraded to the current release?

- <3 months: 8%
- 3-6 months: 30%
- 6-18 months: 28%
- >18 months: 17%
- Don't know/unsure: 17%
SURVEY DEMOGRAPHICS

Figure 17: What is your primary job title?

- Director/Manager of IS/IT/computer-related function: 19%
- Chief/VP (CIO, CSO, CTO, IT, IS, etc.): 12%
- Architect/Engineer (security, systems, data, etc.): 12%
- Database Administrator (DBA): 11%
- IT Consultant: 9%
- IT Operations Manager: 8%
- Project Manager: 7%
- Manager of a business unit (non-computer-related): 6%
- Executive management level for the business: 5%
- Systems Administrator: 5%
- Programmer/Developer: 4%
- Analyst/Systems Analyst: 2%
- Security Manager: 1%
- Other: 2%
Figure 18: What is your primary industry?

IT Services/Consulting/System Integration: 21%
Healthcare/Medical/Life Sciences: 11%
Software/Application Development: 11%
Financial Services: 10%
High-Tech Manufacturing: 7%
Government (all levels): 6%
Manufacturing: 6%
Retail/Distribution: 6%
Business/Consumer Services: 5%
Education (all levels): 5%
Insurance: 4%
Utility/Telecommunications/Transportation: 4%
Non-Profit: 3%
Energy (oil, gas, etc.): 1%
Other: 4%