

# Why Choose Oracle? Transparent Data Encryption

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Oracle Advanced Security Transparent Data Encryption (TDE), part of Oracle's extensive defense-in-depth strategy for database security, improves security and simplifies administration. TDE encryption is applied inside the database so security follows the data and there's no additional infrastructure or management overhead.

## WHY CHOOSE ORACLE TDE?

### Oracle TDE is More Secure

Your most sensitive data is likely stored in Oracle Databases. Risk management best practices dictate that we focus on threats that are *likely* and *impactful*. Most attacks focus on databases. And since that's where your most sensitive data resides, a breach could have a huge impact to your brand and your finances. So, it is absolutely critical to protect your databases by eliminating as many potential attack paths as possible.

The IT landscape has become porous. There is no external perimeter and most breaches take advantage of either human error or compromised credentials. So, many are adopting a zero-trust approach where even admin accounts are no longer blindly trusted. This zero-trust approach is at the heart of why Oracle TDE is the best option for database encryption.

Oracle TDE is built into Oracle Database and its protections are applied inside the database file, staying with the data even when backed up or copied. This internal approach provides better security than bolted-on encryption solutions that are applied externally, for example at the OS, disk, or storage layers. External solutions may appear compelling because they protect multiple file types. However, they are limited to protecting files on the specific volumes on which they're deployed. So, for example, if someone were to create database backups, archives, or copies and move those files to any unprotected volume, the data is no longer secure. In short, external file encryption solutions leave open a significant portion of the attack surface relying on trust that OS-level credentials will not be compromised and that humans won't make the mistake of leaving database copies in unprotected locations. Those are risks that you don't have to take if you encrypt with Oracle TDE.



## Simpler to Deploy and Own

Oracle Database deploys with TDE encryption already installed inside the database kernel. There's no additional hardware or software to deploy and upgrades and patches are applied through existing Oracle Database upgrade and patch processes. Competitive approaches typically require additional hardware and/or virtual appliances, software installation and management, and agent deployment. Also, customers may experience delays getting updates or patches which must be tested with each new Oracle Database update. This may negatively impact security and SLAs.

## Fully Integrated

Oracle TDE encryption is fully tested and supported with complementary Oracle Database technologies including Real Application Clusters, GoldenGate, DataGuard, Oracle Advanced Compression, Oracle Real Application Testing, DataPump Import/Export, Oracle Recovery Manager (RMAN), and Oracle Engineered Systems.

RMAN leverages TDE to maintain encryption during backups and/or to encrypt entire databases upon backup. RMAN compression works with TDE for compact and secure backups. Encrypted backups are decrypted automatically during restore and recovery. And RMAN can even compress already-encrypted backups.

Unlike competitive approaches, TDE does not create issues with other agents or components on the same host machine. Competitors typically intercept the I/O path to evaluate policies and perform crypto in-line introducing latency. Because Oracle TDE is built into the Oracle database kernel, there are no additional network hops or noticeable latency introduced.

## Fully Supported

Oracle TDE fully supports Oracle Database, Oracle Exadata, and Oracle Engineered Systems technologies including Smart Scan, Hybrid Columnar Compression (HCC), and Smart Flash Cache. Competitive encryption solutions are not supported for use on Oracle Database or Engineered Systems. Oracle does not support any third-party kernel/user modules, libraries, or filters that inspect or change the behavior of the Oracle Database. This includes any technology that modifies the way the database interacts with the file system. Third-party agents may also introduce support issues related to OS kernel-level drivers which may impact system availability and SLAs.

## Optimal Performance

Oracle TDE's native built-in encryption is more performant, scalable, manageable, and complete than competitive bolt-on approaches. TDE typically introduces no noticeable performance impact.

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