



**ENTRUST**

# Entrust nShield HSMs and Oracle Key Vault deliver secure and transparent database encryption



Solution provides the root of trust that protects master keys and facilitates auditing and compliance

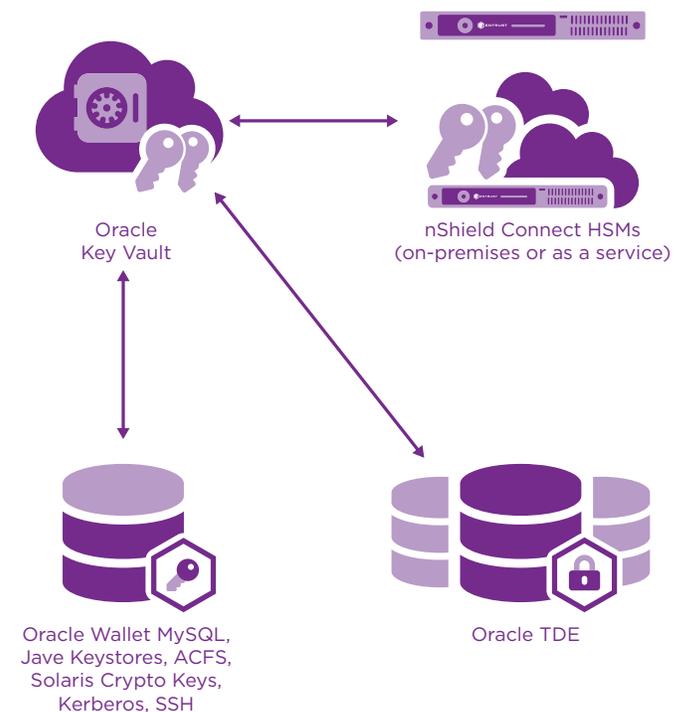
## HIGHLIGHTS

- Protect data at rest across Oracle Database deployments
- Manage Transparent Data Encryption (TDE) master keys
- Prevent key loss due to forgotten passwords and deletion
- Address the market need for reduced risk and compliance
- Certified to FIPS 140-2 Level 3 and Common Criteria EAL4+

Therefore, a robust root of trust is required to not only protect the data, but also facilitate security auditing and regulatory compliance.

## The problem: growing volume of database keys are hard to secure and manage

As organizations store growing volumes of sensitive assets in databases, protecting and managing the encryption keys that secure these becomes increasingly important. Database keys underpin the security of an organization's stored resources. Research shows that attackers seek encryption keys.



Entrust nShield hardware security modules (HSMs) integrated with Oracle Key Vault (OKV) adds a layer of security that safeguards master keys.

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# Delivering secure and transparent database encryption

## The challenge: establishing consistent security policies over the use of database keys and ensuring their availability

With more database encryption keys to protect and manage, organizations need to ensure that key lifecycle policies are consistently applied for auditing and compliance. Equally important, organizations need to ensure database keys are available when needed by the applications. Theft, loss, or accidental deletion of keys can have severe operational consequences. Master keys used to secure operational keys require the highest level of protection to ensure they are isolated from physical and software attacks.

## The solution: Oracle Key Vault with Entrust HSM root of trust

Oracle Key Vault (OKV) is a master key manager that stores encryption keys for thousands of on-premises and/or cloud-based databases. As the recommended key manager for Oracle Database, OKV centrally manages TDE keys, Oracle Wallets, Java Keystores, and credential files such as SSH, Kerberos keytabs, and others.

OKV supports Entrust nShield® Connect HSMs on-premises or in the cloud as its root of trust for enhanced security and to facilitate auditing and regulatory compliance. Safeguarding users' keys and credentials, nShield HSMs generate and store the master key that protects OKV encryption keys. The FIPS 140-2 Level 3 and Common Criteria EAL4+ certified nShield HSMs enable customers to meet compliance requirements using practices recognized by auditors.

## Why use nShield HSMs with Oracle Database and Oracle Key Vault?

Encryption keys handled outside the cryptographic boundary of a certified HSM are significantly more vulnerable to attacks, which can lead to compromise of critical keys. nShield HSMs are a proven and auditable way to secure valuable cryptographic material. Entrust nShield HSMs together with Oracle Key Vault deliver comprehensive logical and physical protection of the master keys. nShield Connect HSMs and nShield as a Service (nSaaS) enable Oracle Database customers to:

- Secure the OKV master key within a carefully designed cryptographic boundary that uses robust access control mechanisms, so the key is only used for its authorized purpose
- Ensure master key availability by using sophisticated management, storage, and redundancy features to guarantee it is always accessible when needed by Oracle TDE
- Deliver superior performance to support demanding on-premises and cloud based database applications



# Delivering secure and transparent database encryption

## Entrust HSMs

Entrust nShield HSMs are among the highest-performing, most secure and easy-to-integrate HSM solutions available, facilitating regulatory compliance and delivering the highest levels of data and application security for enterprise, financial and government organizations.

Our unique Security World key management architecture provides strong, granular controls over access and usage of keys.

## Oracle

Oracle is a global provider of enterprise cloud computing. The company empowers businesses of all sizes on their journey of digital transformation. Oracle Cloud provides leading-edge capabilities in software as a service, platform as a service, infrastructure as a service, and data as a service. The purpose built Database solution:

- Enables compatible cloud and on-premises deployments
- Secures data at all layers - off-line, on-line, and in transit
- Provisions quickly to supports high-performance workloads

[www.oracle.com](http://www.oracle.com)

## Learn more

To find out more about Entrust nShield HSMs visit [entrust.com/HSM](http://entrust.com/HSM). To learn more about Entrust's digital security solutions for identities, access, communications and data visit [entrust.com](http://entrust.com)

To find out more about  
Entrust nShield HSMs

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**entrust.com/HSM**

## ABOUT ENTRUST CORPORATION

Entrust keeps the world moving safely by enabling trusted identities, payments and data protection. Today more than ever, people demand seamless, secure experiences, whether they're crossing borders, making a purchase, accessing e-government services or logging into corporate networks. Entrust offers an unmatched breadth of digital security and credential issuance solutions at the very heart of all these interactions. With more than 2,500 colleagues, a network of global partners, and customers in over 150 countries, it's no wonder the world's most entrusted organizations trust us.



Learn more at

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