



How to Secure Oracle in 20 Minutes

A quick guide to securing an Oracle database

Pete Finnigan, Principal Consultant

SIEMENS

Insight Consulting

Introduction

- The premise
- Is it realistic to secure Oracle in 20 minutes?
- What can be done whilst under fire?
- Do you know that you are under fire?

The premise for this presentation

- A game of hackers and security chiefs
- The rules
 - Black hats attacked a single database
 - White hats tried to defend and secure the database
- What happened?
 - Chaos ensued
 - Panicked decisions
 - Loss of the database and server
- What was the result?
 - Attacking is faster than defending

What we learned

- What did we learn?
 - Attacking a database is easier than defending it, why?
 - Un-hardened database is an easy target
 - Canned exploits, easy to run
 - Attacking does not require excessive expertise
 - Database cannot be secured when under fire
 - Disconnect from the network, assess the damage
 - The database needs to be secured beforehand
 - Audit needs to be enabled

The modern Oracle database risks

- Oracle gets bigger and more complex with each version
 - Many database users
 - Many examples
 - Configuration issues
- SQL Injection (Built-in packages and custom code)
- Cross Site Scripting – e.g.
`http://hr:hr@hostnm:8080/oradb<script>alert('Hello')</script>/HR/DEP`
- Web facing services
 - Apache
 - XDB – ports 2100, 8080, 443
 - More...

Can you secure Oracle in 20 minutes?

- What did we learn from the exercise?
 - Attacking is easier than defending
 - Securing under fire is pointless
 - Knowing where the attacker has been is impossible without proper prior configuration
 - You cannot trust an insecure Oracle database
- The question again –
 - **Can you secure Oracle in 20 minutes?**
 - **No!**

A quick strategy

- Did what we tried to do have real world value?
- Isolation from the network
- Lock down the listener
- Stop all net facing services not needed
- Lock down all schemas
 - revoke create session, set impossible passwords, password management

A quick strategy

- Lock down paths to the data
 - Valid node checking
 - firewalls
- Lock down key packages
 - File access, net access, OS access, encryption
- Enable simple audit and logging
 - Connections, use of key privileges
- Re-connect to the network

Shut down services

- Some examples...
- Apache is often installed and enabled by default
 - Disable Apache
 - Remove the software installation
 - Beware Oracle versions lag
- If Apache is needed then it must be hardened
- Remove XDB
 - Many issues, SQL Injection, buffer overflows
 - Edit the init.ora or spfile

Lock down the listener

- The listener is an easy target
- No password management
- No failed login attempts
- No default logging
- Set a password – 10g has local authentication
- Prevent dynamic administration
- Turn on logging

Secure schemas

- Check for password=username
- Check for default passwords
- Brute force or dictionary attack – orabf, checkpwd
- Remove schemas not needed
- Enable profiles
 - Different per user / schema groups
 - Failed logins
 - Password ageing
 - Password complexity

Revoke privileges

- For schemas that have to remain
 - Revoke CREATE SESSION
 - Set an impossible password
 - Lock and expire the account
- Revoke system privileges
- Reduce the attack surface

Lock down key packages

- Revoke public privileges on key packages and views
 - 10G is better
 - UTL_FILE, UTL_HTTP, UTL_TCP and many more
 - How to find them!
- Each version of Oracle increases the number of objects
- Revoking access from PUBLIC is possible
 - Simple process to follow
 - Revoke, check, grant, use!

Lock down the paths to data

- Data can have many access paths
- From clients and application servers
- From DBA workstations
- Inside the database itself
- Use firewalls to block address ranges and services
- Use valid node checking at the database level
 - Applications, DBA's only
- Review data access duplications – not simple or quick
 - Views, tables, packages

Enable basic audit

- It is essential to audit the database
- Audit all connections
- Audit use of all system privileges
- Audit access to key data tables
- Use FGA for access to critical or regulatory data
- Define an audit procedure
- Create reports
- Purge and archive the data

Sources of information

- Oracle security information available is quite good now
- Web sites for information
 - www.petefinnigan.com, www.cqure.net, www.appsecinc.com
 - www.argeniss.com, www.red-database-security.com
- Books
 - SANS Oracle security step-by-step – Pete Finnigan
 - Effective Oracle database 10g security by design – David Knox
 - Oracle privacy security auditing – Arup Nanda
- Free tools
 - CIS benchmark - http://www.cisecurity.org/bench_oracle.html
 - Many tools listed on <http://www.petefinnigan.com/tools.htm>
- Training
 - SANS course, also Siemens are preparing a course

Plan for a proper Oracle security audit

- What did we learn – again?
- Build security in when the database and applications are designed and installed
- What if your database exists already?
 - Take some simple basic steps now
 - Plan to conduct a proper database security audit
- Data is often the target
- Firewalls often do not prevent access
- Get professional help to perform an IT health check on your Oracle database

Questions and Answers

- Any Questions, please ask
- Later?
 - Contact me via email peter.finnigan@insight.co.uk
 - Or via my website <http://www.petefinnigan.com>



www.siemens.co.uk/insight

+44 (0)1932 241000

Insight Consulting

Siemens Communications

**Security, Compliance, Continuity
and Identity Management**

SIEMENS



Choose with confidence
use with ease



INVESTOR IN PEOPLE



013