

Database Consolidation with HPE, Oracle 12c and FedCentric

Overview

Customers have spent decades of time and untold millions of dollars deploying dozens-to-hundreds of large, complex database systems to run mission critical applications. Either through organic growth, acquisition, or a more random process where interesting new database processing tasks grow into large production systems unexpectedly, the sheer number of database systems deployed into the enterprise guarantees a number of inefficiencies. These customers deploy servers of all shapes and sizes characterized by inefficient processor, memory and I/O utilization, unpredictable performance, and worst of all, significant hidden maintenance and support costs, for the servers, storage and database software.

Customers are always looking for solutions that will “do more with less” and enable both higher performance and simplified deployment with lower overall total cost. For most large organizations, contained in the annual support costs of Oracle software is excess spend for software maintenance. Database consolidation offers a path forward away from lots of smaller, inefficient servers and toward fewer bigger systems which can create greater levels of efficiency and performance at lower costs.

The Challenge

Imagine an enterprise customer running dozens to hundreds of applications, each with its own Oracle database. Each of these systems requires servers of various shapes and sizes, storage, Oracle software and an army of IT professionals to install, maintain, administer and tune. Oracle charges a license and maintenance fee based on the deployed number of CPU cores on the server, regardless of how much those core are actually used. This can lead to “over subscription” of licensing costs and underutilization of hardware resources.



- Many systems = underutilized hardware
- Excess capacity goes unused
- Large cost for Oracle licensing and maintenance
- Infrastructure inefficiencies in space/power/cooling
- Extensive operational labor functions & cost (DBA, backup, patching, upgrade, etc.).
- Extended maintenance costs for hardware
- Server OS virtualization creates complex support issues



The Solution

Customers considering database server consolidation will ask a number of tough questions:

- How many new servers will we need, and how will they be configured?
- How much money will we save or our Oracle spend?
- How can I know that the new servers will meet current service-level agreements?

There is no one-size-fits-all answer to these important questions. The answer to these questions involves a customer-focused use of the HPE Database Performance Profiler tool, coupled with customer proof of concepts run on HP SuperDome X and/or HPE Integrity MC990 X Servers with Oracle 12c Multitenant database.

The Proof

FedCentric put Oracle 12c Multitenancy to the test inside FedCentric Labs. We loaded up 10 x 1 TB non-container databases running in 32 core/1 TB RAM systems, ran a variety of workloads and captured system performance data, then consolidated them into a container database, re-ran a variety of workloads and captured system performance data again this time running on 128 core/12 TB RAM system. Some before and after database consolidation metrics are captured in the chart below.

The diagram illustrates Oracle Multitenant architecture. On the left, a vertical stack shows 'Application 1', 'Application 2', and 'Application N' in green boxes, connected by a vertical line. Below these are three red boxes labeled 'Oracle 12c', representing the database instances. To the right, the text 'Oracle Multitenant' is displayed above a list of benefits:

- Increase scalability and server utilization
- Manage many databases as one
- Meet service-level expectations with built-in workload resource management
- Retain the isolation of separate databases without changing applications or access rights

At the bottom of the slide, contact information for FedCentric is provided: 4511 Knox Road Suite 300 • College Park, MD 20740 • 301.263.0030 (o) • 301.263.0032 (f) • www.fedcentric.com. The FedCentric logo and a small number '4' are also present.

Before Database Consolidation	After Database Consolidation
10 x 1 TB databases	1 x 10 TB database
1.2 hours to load	1.2 hours to load
Full table scan: 10 minutes	Full table scan: 10 minutes
2045 processes on 10 servers	205 processes on 1 server
8 – 17 % CPU utilization/server	85 – 90 % CPU utilization/server
320 licensable core	128 licensable core (60 % less)
Need 3.5 DBAs	Need 1 DBA

About FedCentric Technologies

FedCentric is an HP value-added reseller and boutique integration company. We specialize in designing, developing and delivering high value systems for enterprise customers including mission-critical Oracle database systems. FedCentric is a Service-Disabled Veteran Owned Small Business (SDVOSB) and a Historically Underutilized Business Zone (HUB Zone) business.

