

IAITAM ACE
 May 7-9, 2024 The M Resort Las Vegas, NV

Oracle Database Licensing and Best Practices for Optimal Usage

Milton Campomanes
 Oracle Corporation
 Software Investment Advisory (SIA)

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- General Database Licensing Rules
- Partitioning
- Virtualization
- Cloud Computing
- Choosing the Right License Metric
- Calculating License Requirements
- Know The Oracle Programs
- Optimization Opportunities
- Use Cases For Available Licenses
- Oracle and Microsoft Partnership

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Software Investment Advisory – Value Add

Oracle Software Investment Advisory
 Eliminate guesswork, make smart decisions.
 We work with you to optimize the value of your Oracle investment.

Investment Economics
 "How is our Oracle investment supporting the long-term goals of the business?"

Cloud Investment Services
 "What do we need to consider when moving parts of our existing environment to the cloud?"

Knowledge Transfer
 "Can you help us understand our license and subscription terms and conditions?"

Deployment and Consumption Optimization
 "How do we find if our Oracle TCO is optimized across on-premises and cloud?"

Entitlement Intelligence
 "How do we find out the current state of our contractual agreements with Oracle?"

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Here are some scenarios where SIA can deliver real value:

Cloud Migration
Take advantage of all the benefits cloud has to offer. Get expert support to drive down IT costs, increase security and accelerate deployments. We can help you develop a cloud migration plan and give advice and guidance throughout your migration project.

Adoption and Rollout
We'll assess how you use your on-premises and cloud resources to help you maximize their value. With full FinOps cloud support, we'll compare your environment with best-practice models and show you how you can extract greater value from your Oracle investments.

M&A Integration
Use our actionable, data-driven insights to create a targeted plan for M&A technology integration based on a clear view of your enterprise. We'll help you generate efficiencies and make recommendations on how your Oracle investment can best support your M&A success.

Strategic IT Review
Learn where you can unlock more value from your investments to turbocharge long-term growth. You'll get detailed information about how and where Oracle is being used across your organization and highlight any areas to get more value from your Oracle investment.

Enterprise Agreements
Learn how new licensing structures and changes to existing infrastructure can deliver a better return on your investment. SIA can work with you to access your future needs and discuss what available Oracle solutions would provide the most value to your business.



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General Technology Licensing Rules

All environments where an Oracle Technology program is installed and/or running must be licensed


This includes:

- Production
- Development
- Test
- Standby



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General Technology Licensing Rules

License Metric

- Processor
- Named User Plus (NUP)
- OCPU

License Type


- Full Use
- Restricted or Limited Use
- Application Specific Full Use (ASFU)
- Embedded Software Licenses (ESL)
- Limited use licenses for proprietary application hosting

License Term

- Perpetual
- Subscriptions In Cloud


Support

- Software Update License & Support
- Extended Customer Support
- Advanced Customer Support



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Deployment Scenario: Stand Alone Server

Oracle Database Edition: Enterprise
License Metric: Processor

Oracle Database Edition	Stand Alone Server	Processor Make/Model	Physical Processors	Cores Per Processor	Cores Factor	Oracle Processor Licenses Required
Enterprise	Dell	Intel Xeon E5-2620	2	10	.5	= ?

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Deployment Scenario: Stand Alone Server

Oracle Database Edition: Enterprise
License Metric: Processor

Oracle Database Edition	Stand Alone Server	Processor Make/Model	Physical Processors	Cores Per Processor	Cores Factor	Oracle Processor Licenses Required
Enterprise	Dell	Intel Xeon E5-2620	2	10	.5	= 10

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Named User Plus Licensing

Named User Plus: is defined as an individual authorized by you to use the programs which are installed on a single server or multiple servers, regardless of whether the individual is actively using the programs at any given time. A non human operated device will be counted as a named user plus in addition to all individuals authorized to use the programs, if such devices can access the programs. If multiplexing hardware or software (e.g., a TP monitor or a web server product) is used, this number must be measured at the multiplexing front end. Automated batching of data from computer to computer is permitted. You are responsible for ensuring that the named user plus per processor minimums are maintained for the programs contained in the user minimum table in the licensing rules section; the minimums table provides for the minimum number of named users plus required and all actual users must be licensed.

License all individuals and non-human operated devices accessing the program or the license minimum, whichever is greater regardless of whether they are using the program or not.

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Types of Partitioning – Soft Partitioning

- Segments the OS using OS resource managers (Hypervisor)
- The OS
 - limits the number of CPUs where an Oracle Program is running
 - by creating areas where CPU resources are allocated to applications within the same OS
- CPU capacity can be changed fairly easily
- Soft partitioning is not permitted as a means to determine or limit the number of software licenses required for any given server.

Examples: VMware, Oracle VM, etc.

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Oracle Licensing Policy – Virtualized Environments

- Processor License Metric Definition**
Processor shall be defined as all processors where the Oracle programs are installed and/or running
- Oracle Partitioning Policy**
 - Hard Partitioning:** Oracle-approved hard partitioning technologies are permitted as a means to limit the number of software licenses required for any given server, e.g., IBM LPAR, HP vPar, HP nPar, Fujitsu PPAR, etc.
 - Soft Partitioning:** Soft partitioning is not permitted as a means to determine or limit the number of software licenses required for any given server, e.g., Solaris 9 Resource Containers, AIX Workload Manager, HP Process Resource Manager, Affinity Management, Oracle VM, and VMware.

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Oracle Approved Third Party Cloud Vendors

Licensing Oracle Software in the Cloud Computing Environment consists of (2) Non Oracle cloud providers

- Amazon Web Services
 - Amazon Elastic Compute Cloud (EC2)
 - Amazon Relational Database Service (RDS)
- Microsoft Azure Platform

For the purposes of licensing Oracle programs in an Authorized Cloud Environment, Oracle customers are required to count vCPUs as follows:

- If hyper-threading is enabled, two vCPUs as equivalent to one Oracle Processor license
- If hyper-threading is NOT enabled, one vCPU as equivalent to one Oracle Processor license

Note: When counting Oracle Processor license requirements in Authorized Cloud Environments, the Oracle Processor Core Factor Table is not applicable.

<http://www.oracle.com/us/corporate/pricing/cloud-licensing-070579.pdf>

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Deployment Scenario: Authorized Cloud

Oracle Database Edition: Enterprise
License Metric: Processor

Oracle Database Edition	Cloud	vCPUs	Multi-threading	Oracle Processor Licenses Required
Enterprise	Amazon AWS	2	No	= ?
Enterprise	Microsoft Azure	2	Yes	= ?

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Deployment Scenario: Authorized Cloud

Oracle Database Edition: Enterprise
License Metric: Processor

Oracle Database Edition	Cloud	vCPUs	Multi-threading	Oracle Processor Licenses Required
Enterprise	Amazon AWS	2	No 1 Vcpu : 1 Proc	= 2
Enterprise	Microsoft Azure	2	Yes 2 Vcpu : 1 Proc	= 1

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Oracle Cloud Infrastructure (OCI)

Oracle OCPU

- An OCPU provides CPU capacity equivalent of one physical core of an Intel Xeon processor with hyper threading enabled.
- Each OCPU corresponds to two hardware execution threads, known as vCPUs

2 vCPU's 1 OCPU

Processing Power Equivalent

<http://www.oracle.com/us/corporate/pricing/cloud/licensing-070573.pdf>
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Deployment Scenario: Oracle Cloud

Oracle Database Edition: Enterprise
License Metric: Processor

Oracle Database Edition	Cloud	OCPUs		Oracle Processor Licenses Required
Enterprise	Oracle OCI	2	=	?

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Deployment Scenario: Oracle Cloud

Oracle Database Edition: Enterprise
License Metric: Processor

Oracle Database Edition	Cloud	OCPUs		Oracle Processor Licenses Required
Enterprise	Oracle OCI	2	2 OCPU - 1 Proc	= 1

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Oracle ECPU (Elastic Compute Processing Unit)

OCPU

- a physical measure of compute resources

ECPU

- an abstracted measure of compute resources based on the number of cores elastically allocated from a pool of compute and storage servers
- provides a consistent price metric independent of the underlying hardware (independent of exact make, model, or clock speed of the underlying processor)

NOTE: ECPU is the default pricing metric for new Autonomous Databases.

- Customers can optionally choose to create their new databases using the OCPU pricing metric until January 2025
- the OCPU billing metric has been retired on Autonomous Data Warehouse and Autonomous Transaction Processing as of January 2024
- it will be retired on Autonomous JSON Database and APEX Service soon thereafter

https://support.oracle.com/knowledge/Oracle%20Cloud/2958762_1.html
<https://www.oracle.com/ai/ocm/occp/autonomous-database-ecpu-faq.pdf>

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Oracle ECPU (Elastic Compute Processing Unit)




Aside from only paying for what you consume, updating to the ECPU billing metric provides the following additional benefits:

1. 50% lower entry cost
2. Finer granularity for database scaling
3. Lower storage costs
4. Up to 87% lower costs with database consolidation
5. New features for Autonomous Database may only be available with ECPU's

Updating your Autonomous Database Serverless to the ECPU billing metric will have no impact to your service and incur no downtime.

https://support.oracle.com/knowledge/Oracle%20Cloud/2998743_1.html
<https://www.oracle.com/iaas/oci/autonomous-database-ecpu-faq.pdf>

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Choosing The Right Metric – Processor vs NUP

Environment Type | Unit Price | Visibility Of Users | Cost Analysis

Where to start:
 Can I count the number of users?

- If Yes
 - Determine number of users
 - Calculate number of processor licenses required
 - Determine license minimums
 - Calculate number of NUPS required
 - Multiply cost of proc license by proc license requirement
 - Multiply cost of NUP license by NUP license requirement
 - Compare cost of processor license vs NUP license
- If No
 - Move to processor licensing

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Choosing The Right Model – BYOL vs License Included

License Availability | OCI Usage | Calculate Need | Cost Analysis

Where to start:
 Do you have available on premises license?

- If Yes
 - Calculate how many processor licenses you have available
 - Calculate how many OCPU's you need or are using
 - Apply 1 Processor license to each 2 OCPU's
 - Determine cost savings by using or switching to BYOL SKU
 - Direct workload owner to select or switch to BYOL SKU
- If No
 - Determine which is more cost effective (purchasing perpetual licenses and utilizing BYOL vs license included)



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Support and Updates

Premier Support (5years from general availability date)	Extended Support (Extends Premier Support for additional 3 years)	Sustaining Support (Indefinite Period)
Major product and technology releases Updates, fixes and security alerts Upgrade scripts Certification with new third party product/versions. 24x7 via phone My Oracle Support 22% of the license price	Major product and technology releases Updates, fixes and security alerts Upgrade scripts NO Certification with new third party product/versions. 24x7 via phone My Oracle Support Year 1 +10% Year 2 +20% Year 3 + 20% of Premier Support fee	Major product and technology releases Technical Support Pre-existing fixes for your solution 24x7 via phone My Oracle Support Back to original Premier Support fee


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Know The Oracle Programs

Unlimited License Agreement

Agreement that enables a customer to deploy an unlimited quantity of Oracle product(s) in the agreement for the term of the agreement with a certification of license usage, **no true up**, at the end of the unlimited deployment period

Bring Your Own License

A program that enables customers to leverage their **unused perpetual licenses** in Oracle's cloud (OCI) at a discounted rate

- Oracle Database Service – Enterprise - \$0.4301 OCPU per hour
- Oracle Database Service – BYOL - \$0.1935 OCPU per hour
- Discount for BYOL SKU vs License included = 55%

BYOL to PaaS is inclusive of:



- Compute + Compute Support
- Automation

License Included PaaS is inclusive of:

- Compute + Compute Support
- Automation
- License Entitlement + License Support

Oracle Support Rewards

- A program that enables customers to **earn support rewards** when using Oracle Cloud Infrastructure (OCI) services
 - 25% back in rewards for each \$1 spent
 - 33% back in rewards for each \$1 spent (when in a USA)


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License Optimization Opportunities

Multiple Database On A Single Server

If you have multiple databases on a single server, validate if all databases on that server are using the same options/packs. If not, consider deploying all licensed options/packs as once a server is licensed, all databases installed can utilize all options/packs

Bring Your Own License

If you have available licenses, you should investigate utilizing them in OCI to receive a significant savings as compared to the license included PaaS SKU's


OCI PaaS Included Options/Packs

PaaS on OCI includes a set of options/packs with each service.

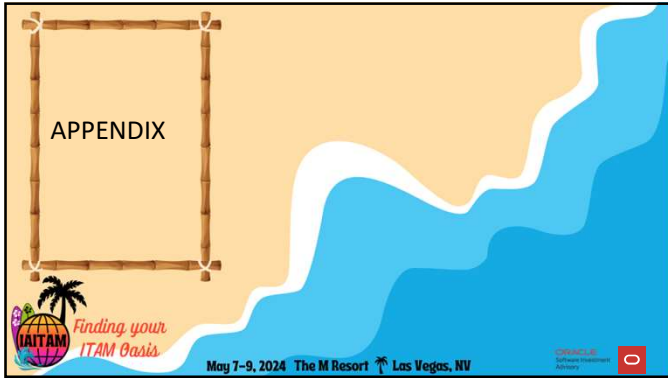
- Data Masking and Subsetting
- Diagnostics Pack
- Tuning Pack
- Real Application Testing

Oracle Support Rewards

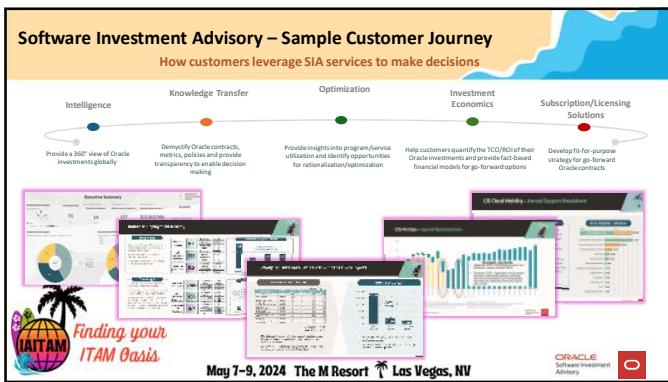
Migrate workloads to OCI to earn support rewards that can be applied to your perpetual license support


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Deployment Scenario – Virtualized – Soft Partitioning

vCenter	Cluster	Physical Server/Processor Make/Model	Physical Processors	Cores Per Processor	Cores Factor	Oracle Processor Licenses Required
vCenter A	Cluster A	Dell Intel Xeon ES-2620	2	10	.5	?
		Dell Intel Xeon ES-2620	2	10	.5	?
		Dell Intel Xeon ES-2620	2	10	.5	?
	Cluster B	Dell Intel Xeon ES-2620	2	10	.5	?
		Dell Intel Xeon ES-2620	2	10	.5	?
		Dell Intel Xeon ES-2620	2	10	.5	?
						= ?

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Deployment Scenario – Virtualized – Soft Partitioning

vCenter	Cluster	Physical Server	Processor Make/Model	Physical Processors	Cores Per Processor	Cores Factor	Oracle Processor Licenses Required
vCenter A	Cluster A	Deell	Intel Xeon ES-2620	2	10	.5	10
		Deell	Intel Xeon ES-2620	2	10	.5	10
		Deell	Intel Xeon ES-2620	2	10	.5	10
	Cluster B	Deell	Intel Xeon ES-2620	2	10	.5	10
		Deell	Intel Xeon ES-2620	2	10	.5	10
		Deell	Intel Xeon ES-2620	2	10	.5	10
							= 60

Oracle Database Edition: Enterprise
License Metric: Processor

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Oracle ECPU (Elastic Compute Processing Unit)

Aside from only paying for what you consume, updating to the ECPU billing metric provides the following additional benefits:

- 50% lower entry cost** - The smallest Autonomous Database that can be provisioned with ECPUs is 50% less expensive (\$0.672 per hour vs \$1.3441 per hour with OCPUs).
- Finer granularity for database scaling** - Each incremental increase in ECPU database size is only \$0.336.
- Lower storage costs** - Autonomous Data Warehouse storage price reduced from \$118.40 to \$25.00 per TB per month, Autonomous Transaction Processing storage can be provisioned in increments of 1GB, with a minimum of 20GB.
- Up to 87% lower costs with database consolidation** - Elastic Resource Pools, available on ECPU ADB Serverless databases, help consolidate deployments leading to major cost savings.
- New features for Autonomous Database** may only be available with ECPU's

Updating your Autonomous Database Serverless to the ECPU billing metric will have no impact to your service and incur no downtime.

https://support.oracle.com/lookup.jsp?_af=1
<https://www.oracle.com/au/ocm/price/autonomous-database-ecpu-usa.pdf>

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Types of Partitioning – Hard Partitioning

Partitioning occurs when the cores on a server are separated (or partitioned) into individual processors. The individual processors are then assigned to a single Virtual Machine (VM), a group of VMs, or grouped and assigned to a VM. Sometimes this is called "segmenting." There are several hardware and software virtualization technologies available which deliver partitioning capabilities, with varying degree of resource allocation flexibility.

Approved hard partitioning technologies include:

Physical Domains (also known as PDomains, Dynamic Domains, or Dynamic System Domains)	vPar (capped partitions only)
Solaris Zones (also known as Solaris Containers, capped Zones/Containers only)	nPar
IBM's LPAR (adds DLPAR with AIX 5.2)	Integrity Virtual Machine (capped partitions only)
IBM's Micro-Partitions (capped partitions only)	Secure Resource Partitions (capped partitions only)
	Fujitsu's PPAR
	Oracle Linux KVM *
	Oracle VM Server **

(For KVM and VM Server, see next slide)

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Optimization Example: AWS or Azure vs OCI

Environment: 4 vCPUs with hyper threading enabled

BYOL OCPU Per Hour Cost: \$0.1935
 OCPU's Required: 2
 Hours Per Day: 24
 Days Per Year: 365

Oracle Support Rewards Earned

$\$0.1935 \times 2 \times 24 \times 365 = \$3,390.12$ ← $\times 25\% = \$874.53$

Total License Cost: \$164,000	Total License Cost: \$47,500
Annual Support Cost: \$36,080	Annual Support Cost: \$10,450

4 vCPUs


License Requirement on AWS or Azure

- Oracle Database Enterprise Edition (2) x \$47,500 = \$95,000
- Data Masking and Subsetting (2) x \$11,500 = \$23,000
- Diagnostics Pack (2) x \$7,500 = \$15,000
- Tuning Pack (2) x \$5,000 = \$10,000
- Real Application Testing (2) x \$11,500 = \$23,000


2 OCPUs

License Requirement on OCI

- Oracle Database Enterprise Edition (1) x \$47,500 = \$47,500
- Data Masking and Subsetting Free - Option Included
- Diagnostics Pack Free - Pack Included
- Tuning Pack Free - Pack Included
- Real Application Testing Free - Option Included



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Optimization Example: AWS or Azure vs OCI

Environment: 4 vCPUs with hyper threading enabled

Installed Products:

- Oracle Database Enterprise Edition
- Data Masking and Subsetting
- Diagnostics Pack
- Tuning Pack
- Real Application Testing

License Savings 71% **Support Savings 73%**

Total License Cost: \$164,000	Total License Cost: \$47,500
Annual Support Cost: \$36,080	Annual Support Cost: \$10,450 - \$874 = \$9,576

4 vCPUs


License Requirement on AWS

- Oracle Database Enterprise Edition (2) x \$47,500 = \$95,000
- Data Masking and Subsetting (2) x \$11,500 = \$23,000
- Diagnostics Pack (2) x \$7,500 = \$15,000
- Tuning Pack (2) x \$5,000 = \$10,000
- Real Application Testing (2) x \$11,500 = \$23,000


2 OCPUs

License Requirement on OCI

- Oracle Database Enterprise Edition (1) x \$47,500 = \$47,500
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