Oracle Partitioning Policy

Topic: Server/Hardware Partitioning

What is Partitioning?

"Partitioning" occurs when the CPUs on a server are separated into individual sections where each section acts as a separate system. Sometimes this is called "segmenting." There are several hardware and software virtualization technologies available that deliver partitioning capabilities, with varying degree of resource allocation flexibility.

The purpose of this policy document is to define which of these partitioning technologies is deemed to be Soft, Hard or an Oracle Trusted Partition, and under what conditions Oracle permits them as a means to determine or limit the number of Oracle Processor licenses required for a given server, i.e., to license a sub-capacity of total physical cores as an exception from the contractual Oracle Processor definition. Oracle may modify the definitions and conditions specified in this document from time to time.

Why Partition?

Database Administrators (DBAs) often partition servers to achieve the following benefits:

- Ability to run multiple operating systems, or multiple versions of an operating system, on the same server
- Ability to improve workload balancing and distribution by managing processor allocations across applications and users on the server
- Ability to leverage hardware models such as "Capacity on Demand" and "Pay As You Grow."

Types of Partitioning

There are two main types of partitioning available:

Soft Partitioning:

Soft partitioning segments the operating system using OS resource managers. The operating system limits the number of CPUs where an Oracle database is running by creating areas where CPU resources are allocated to applications within the same operating system. This is a flexible way of managing data processing resources since the CPU capacity can be changed fairly easily, as additional resource is needed.

Examples of such partitioning type include: Solaris 9 Resource Containers, AIX Workload Manager, HP Process Resource Manager, Affinity Management, Oracle VM, and VMware.

Unless explicitly stated elsewhere in this document, soft partitioning (including features/functionality of any technologies listed as examples above) is not permitted as a means to determine or limit the number of software licenses required for any given server or cluster of servers.

Hard Partitioning:

Hard partitioning physically segments a server, by taking a single large server and separating it into distinct smaller systems. Each separated system acts as a physically independent, self-contained server, typically with its own CPUs, operating system, separate boot area, memory, input/output subsystem and network resources.

Oracle-approved hard partitioning technologies as listed in this section of the policy document are permitted as a means to limit the number of software licenses required for any given server or a cluster of servers. Oracle has deemed certain technologies, possibly modified by configuration constraints, as hard partitioning, and no other technology or configuration qualify. Approved hard partitioning technologies include: Physical Domains (also known as PDomains, Dynamic Domains, or Dynamic System Domains), Solaris Zones (also known as Solaris Containers, capped Zones/Containers only), IBM's LPAR (adds DLPAR with AIX 5.2), IBM's Micro-Partitions (capped partitions only), vPar, nPar, Integrity Virtual Machine (capped partitions only), Secure Resource Partitions (capped partitions only), Fujitsu's PPAR.

Using IBM processors in TurboCore mode is not permitted as a means to reduce the number of software licenses required; all cores must be licensed.

IBM Power VM Live Partition Mobility is not an approved hard partitioning technology. All cores on both the source and destination servers in an environment using IBM Power VM Live Partition Mobility must be licensed.

Oracle VM Server may be used as hard partitioning technology only as described in the following documents:

- Oracle VM Server for x86, only if specific cores are allocated per the following document:
    - http://www.oracle.com/technetwork/server-storage/vm/ovm-hardpart-168217.pdf
- Oracle VM Server for SPARC, only if specific cores are allocated per the following document:
    - http://www.oracle.com/technetwork/server-storage/vm/ovm-sparc-hard-partitioning-1403135.pdf

Oracle Solaris Zones may be used as hard partitioning technology only as described in the following document:

- http://www.oracle.com/technetwork/server-storage/solaris11/technologies/os-zones-hard-partitioning-2347187.pdf

Any technology not listed in the Hard Partitioning section of this document is considered soft partitioning technology.

Oracle Trusted Partitions for Oracle Engineered Systems

For approved Oracle Engineered Systems, (see table below), Oracle permits the use of Oracle VM Server (OVM) as a means to limit the number of Oracle Processor licenses required, i.e., to license a sub-capacity of total physical cores. Oracle's Trusted Partitions policy also requires use of Oracle Enterprise Manager as described below – if both of these conditions are met, the partition is deemed a 'Trusted Partition.'

Approved list of Oracle Engineered Systems eligible for Trusted Partitions

Oracle Engineered System	Version requirement
Exalogic Elastic Cloud	running 2.x or higher Exalogic Elastic Cloud Software
Exalytics In-Memory Machine	running Exalytics Base Image 1.0 for Oracle VM
Private Cloud Appliance	running 1.0 or higher Oracle Private Cloud Appliance controller software
Exadata Database Machine	running 12.1.2.1.0 or higher Exadata Storage Server Software

For the purposes of licensing Oracle programs in a Trusted Partition, two (2) virtual CPUs (vCPU) are counted as equivalent to a physical core. Licenses must be procured in increments of 2 physical cores. The customer is required to license the highest number of vCPUs running at any given time (highwater mark), however they are not required to license more than the total number of physical cores in the machine. Hyper-threading must be enabled for processors when using Trusted Partitions.

The licensing rules for Trusted Partitions varies across the supported Engineered Systems listed in the table above. For information on Trusted Partitions on Exadata (including minimum cores to be licensed), please see Oracle Exadata Database Machine Licensing Information User's Guide. The minimum for all other engineered systems is two (2) physical cores.

Requirements for Oracle Enterprise Manager

For virtual machines to participate under Oracle Trusted Partition based licensing, they need to be monitored by Oracle Enterprise Manager 12.1.0.2 (also known as 12c Release 2) or later. This means that the Enterprise Manager 12.1.0.2 agent should be deployed on the guest operating system running on those VMs. The Enterprise Manager can be configured to run in either connected or disconnected mode.

1) Connected mode: In Connected mode, Enterprise Manager will be connected to My Oracle Support. Enterprise Manager would report on usage locally and also upload to My Oracle Support (requires a current Oracle support contract and valid CSI number).

2) Disconnected mode: In disconnected mode, there is no Internet connectivity. Enterprise Manager would run locally and customers are required to run collections quarterly and maintain a backup of the report. Such reports must be maintained for at least two (2) years, and reports must be provided to Oracle upon request.

For details on how to configure Enterprise Manager for trusted partitioning, refer to Support Note 1471719.1

Note: Whether operating in connected or disconnected mode, the specific Oracle technologies for customers to report usage may change over time.

Capacity on Demand

Oracle recognizes a practice in the industry to pay for server usage based on the number of CPUs that are actually turned on – the "Capacity on Demand," or "Pay as You Grow" models. Oracle allows customers to license only the number of cores that are activated when the server is shipped. Capacity on Demand is also available on certain Oracle Engineered Systems. Check with your Oracle sales representative for more information.

Note: Oracle does not offer special licensing terms for server usage models where the number of CPUs used can be scaled down or their usage varied – the "Pay Per Use" or "Pay Per Forecast" models.

Customers should check with their applicable hardware vendors to determine whether soft and/or hard partitioning is available on their servers.