Partitioning

Topic: Server/Hardware Partitioning

In this document we discuss the attributes of server partitioning and how companies can leverage partitioning to optimize their software licenses.

What is partitioning?

"Partitioning" occurs when the CPUs (a.k.a. processors) on a server are separated into individual sections where each section acts as a separate system. Sometimes this is also called "segmenting."

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. The database administrator can set the number of CPUs to the number of licensed CPUs. 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: and Solaris 9 Resource Containers, AIX Workload Manager, HP Process Resource Manager, Affinity Management, Oracle VM, VMware etc. This is not a comprehensive list of all the different types of technologies or resource allocation devices/programs that would fall into the category of Soft Partitioning.

As a result, soft partitioning is not permitted as a means to determine or limit the number of software licenses required for any given server.

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.

Examples of such partitioning type include: Dynamic System Domains (DSD) -- enabled by Dynamic Reconfiguration (DR), Solaris 10 Containers (capped Containers only), LPAR (adds DLPAR with AIX 5.2), Micro-Partitions (capped partitions only), vPar, nPar, Integrity Virtual Machine (capped partitions only), Secure Resource Partitions (capped partitions only), Static Hard Partitioning, etc. Oracle VM can also be used as hard partitioning technology only as described in the following document: http://www.oracle.com/technology/tech/virtualization/pdf/ovm-hardpart.pdf. This is not a comprehensive list of all the different types of technologies or resource allocation devices/programs that would fall into the category of Hard partitioning.

Partitioning Trends and Directions

Oracle recognizes a trend 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. In keeping with the changes in the hardware industry and the way customers pay for services, we allow customers to license only the number of CPUs that are turned on to run Oracle.

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

Partitioning Examples:

A server has 32 CPUs installed, but it is hard partitioned and only 16 CPUs are made available to run Oracle. The customer is required to license Oracle for only 16 CPUs.

A server comes with 30 CPUs and Oracle is installed and/or run on this server. If this server cannot be hard partitioned, the customer must obtain licenses for all 30 CPUs.

These examples are illustrative only. Specific configurations and hardware products vary by vendor. This is not and should not be considered a definitive or exhaustive list.

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.