1   Executive Summary

This paper provides an overview of licensing Oracle programs on Infrastructure as a Service (IaaS) in the Skytap Cloud. There is much confusion about Oracle licensing, especially in virtualized or Cloud environments. This paper provides an overview of a Skytap dedicated environment for Oracle, education on the principles of Oracle licensing, and how those principles are applied to workloads running in the Skytap Cloud.

The key takeaways from this paper are:

- The Skytap cloud is an effective option for Infrastructure as a Service for Oracle-based applications.

- The Skytap cloud provides support for Oracle licensing by allocating dedicated resources for Oracle workloads. This includes dedicated server hosts, and dedicated regions as needed for applications running in Skytap's cloud.

- Oracle licensing is defined by each individual license agreement and is based on the physical server hardware where Oracle is "installed and/or running." There is nothing prospective in this definition, meaning customers do not have to license where Oracle *might* run in the future.

- The use of dedicated resources for Oracle workloads in the Skytap cloud ensures that Oracle workloads stay running only on licensed server hosts. There is log activity to validate historical usage of Oracle licenses.

- In an Oracle audit, usage of the Skytap dedicated cloud environment will be documented as if the dedicated hosts are part of the customer's on-premise environment. Even though the servers are remotely co-located in a separate datacenter, that information will not need to be disclosed to Oracle.

- House of Brick can provide assistance related to architecture review and development, license compliance analysis, and audit defense.

1.1   Assumptions

The information presented in this document is based on House of Brick's lengthy experience with Oracle licensing, and on the architectural and operational nature of the Skytap cloud as presented to House of Brick. It is provided without guarantee of applicability or accuracy. All information contained herein should be validated with your legal advisors before applying it in practice. Unless otherwise noted, any references to Oracle software are considered to be Oracle Database Enterprise Edition, without any additional options or packs included.

2   Overview of Oracle Licensing

Licensing Oracle programs is a more straightforward exercise than most people believe. Amidst all of the confusion that is out there—from Oracle statements, to consultant guidance, to scary stories of audits on social media—licensing Oracle programs comes down to one overruling document, and that is the customer's contractual agreement with Oracle. If a binding contract says that a customer has to do something in order to use their purchased licenses, then they have to do it. Similarly, if customers want to deploy their licenses in a certain way, and the contract does not prohibit it, then they should feel empowered to do that.

So, let us first understand the Oracle contract and how it determines customer obligations for Oracle licensing. In the following sections we will explore how these contractual terms and other licensing principles will apply to workloads running in a Skytap cloud environment.

2.1   The Contract is What is Binding

The agreement document that will be referenced in this paper is from Oracle's website and is OLSA version V1201013_Def_V122304. Customers should validate their own agreement for similar language, but should expect to find materially similar terms other than where we have noted.

In Section Q of that agreement, there is a definition for the word "Processor." This definition is the single most important element to understanding where licensing must be applied when running Oracle programs. It states, *"Processor: shall be defined as all processors where the Oracle programs are installed and/or running."* So for those who are responsible for licensing and ensuring compliance in their organizations, there are two questions that must be asked:

- "Have we accounted for a license on servers where Oracle programs have been installed (past tense activity)?"

- "Have we accounted for a license on servers where Oracle programs are currently running (present tense activity)?"

There are certain things that customers should not feel like they have to worry about. These things may include:

- Wondering if they have to buy licenses for hardware or cloud infrastructure that will be purchased during the coming year;

- Wondering if they have to buy licenses for servers that are technically precluded from allowing Oracle programs to run there; and,

- Wondering if they have to have a license now for a disaster recovery environment whose servers are not, and may never be used.

These considerations are all *prospective* events—things that may or may not happen in the future. There is nothing in Oracle's definition of the word "Processor" that is prospective. It covers both past tense and present tense activities, but not what customers may or may not decide to do in the future.

Oracle often refers to certain documents to claim contractual restrictions. An example of this is Oracle's Partitioning Policy document that attempts to specifically restrict virtualization platforms from doing "soft partitioning" (limiting the number of licensed cores in a server through software means). The only problem is that these documents are all non-binding according to the contract's Entire Agreement clause. The table below gives a more complete example of Oracle's contractual and non-contractual documents.

Section L of the OLSA referenced above contains the Entire Agreement clause. It states:

"You agree that this agreement and the information which is incorporated into this agreement by written reference (including reference to information contained in a URL or referenced policy), together with the applicable order, are the complete agreement for the programs and/or services ordered by you, and that this agreement supersedes all prior or contemporaneous agreements or representations, written or oral, regarding such programs and/or services."

According to this statement, the only things that are binding are:

1. The agreement itself,
2. Anything incorporated into the agreement by written reference, and
3. The applicable order document.

Most customers understand the agreement, and the order document; but what else is included in this agreement by written reference that would become part of the binding contract? The table on the right shows those documents that may impact licensing that are included by reference into the agreement. It also shows those common documents that are not contractually based.

With that foundational understanding, let us review the principles of how Oracle programs are licensed.

Oracle Document	Contractual?	
Applications Licensing Table	✓	Yes
New Purchase Order Documents	✓	Yes
Technical Support Policies	✓	Yes
Processor Core Factor Table-post 8/08	✓	Yes
Software Investment Guide	✗	No
Licensing Data Recovery Guide	✗	No
Technology Hosting	✗	No
Partitioning Policy	✗	No

2.2   Principles of Oracle Licensing

2.2.1   Oracle Licensing is Hardware-Based

Oracle licenses are hardware-based, meaning that they depend on the processor cores in the underlying server hardware. This is true for the Processor metric, as well as the Named User Plus (NUP) metric. Both require counting of physical processor cores in the server to determine how many licenses are required for programs running on that server.

The Processor Core Factor for x86 servers is 0.5. What this means is that for every two physical x86 cores that Oracle programs run on, users have to account for one license. Except for one condition noted in the section on Oracle Licensing in a Cloud Computing Environment, hyper-threading does not factor into the core count for license purposes.

2.2.2   Oracle Licensing is Storage Independent

One of the most frequent questions that House of Brick gets is if the storage presentation to a server running Oracle hardware impacts licensing. By recalling the definition of where Oracle programs need to be licensed (processors where Oracle programs are installed and/or running) we see that there is no contractual mention of storage. Oracle does mention storage in relation to the Failover Rule in contract template versions in about Q4 of 2007. More detail on this is given in the section on Determining License-able Events.

2.2.3   Oracle Licensing is Agnostic to Virtualization and Specific Hypervisors

Many customers are surprised to learn that their Oracle agreements are completely devoid of language regarding virtualization. There is, of course, language regarding virtual environments in the Partitioning Policy document. As we established earlier however, that document is not contractually binding, being excluded by the contract's Entire Agreement clause.

2.2.4   Oracle Licensing in a Cloud Computing Environment

There is one variation from the principle of hardware-based licensing that is worth noting, and that is Oracle's Cloud Computing Environment policy. This policy currently applies to only two cloud providers—Amazon AWS and Microsoft Azure. In summary, it states that existing licenses can be used to cover Oracle programs running in the cloud infrastructure of the approved vendors. Instead of counting processor cores, users must count virtual CPU's that are assigned to that workload. The license in these environments follows the virtual machine. In AWS, if hyper-threading is enabled, then two virtual CPUs are equivalent to one Oracle Processor license. If hyper-threading is not enabled on AWS, then one virtual CPU is equivalent to one Oracle Processor license. In Azure, one Azure CPU Core is equivalent to one Oracle Processor License.

Readers will notice from above that the Cloud Computing Environment policy document is not a part of the binding contract. While it is not contractual, it is fundamentally different than the other non-contractual documents cited. The difference is that the Cloud Computing Environment document grants additional privileges, while the other documents restrict privileges. In discussion with legal teams on this issue, it appears that Oracle's granting of additional privileges in a non-contractual way could be counted on by a user, and upheld in a legal setting, since Oracle widely and publicly published such a privilege.

Since this paper focuses on the Skytap cloud, readers may wonder what this Cloud Computing policy means for Skytap customers. As far as Oracle is contractually concerned, the Skytap cloud using dedicated infrastructure for Oracle software is not a cloud-computing environment like AWS or Azure where licenses are allowed to follow the virtual CPUs. To Oracle, the Skytap cloud will be viewed as if the dedicated hosts are part of the customer's on-premise environment, even though they are remotely co-located servers in a separate datacenter. These servers will be accounted for in the normal fashion in an Oracle Server Worksheet during audit time. More detail on applying Oracle licenses in the Skytap cloud will be presented in the Section on Oracle Database Licensing in a Skytap Environment.

2.3   Common Non-Contractual Assertions

The Skytap cloud is based on the VMware ESXi hypervisor. Because of the foundation in virtualization technology, Oracle may make some claims about what needs to be licensed that are not based in the contractual principles which we have already discussed.

In the [House of Brick blog post](#) reviewing the documents of the Mars vs. Oracle lawsuit, it is noted that Oracle has been attempting to redefine the word "installed." This attempt may be viewed as a means to get around their own contractual limitation of licensing where programs are "installed and/or running." The blog post paraphrases from Oracle's claim in the filing documents as follows: *"Oracle programs are installed on any processors where the programs are available for use. Third-party VMware technology specifically is designed for the purpose of allowing live migration of programs to all processors across the entire environment."* (Declaration of Eloise Backer, exhibit 11—September 25, 2015 letter to Khaled Rabbani, Mars General Counsel, from Chad Russell, Oracle Corporate Counsel.) Oracle is attempting to declare that their software "could run" on additional processors and thus those processors must be licensed. In House of Brick's experience defending against Oracle audits this attempted re-definition falls short of legal concern by our customers. Several of our customers' legal teams have performed case law searches and have found no evidence of Oracle filing legal actions against their customers on this issue. Furthermore, House of Brick has never had an otherwise compliant customer have to pay audit fees based solely on this tactic from Oracle.

For the purposes of reviewing VMware infrastructure, as well as deployments to the Skytap cloud, we will review the three most common non-contractual assertions that Oracle makes.

VMware Version	VMware Capability	Non-Contractual Oracle Assertion
5.0 or earlier	vMotion within a cluster	You must license all VMware-based hosts in the same cluster, and not just those where Oracle software is installed and/or running
5.1 – 5.5	vMotion between clusters within the same vCenter	You must license all VMware-based hosts managed by the same vCenter, and not just those where Oracle software is installed and/or running
6.0 or later	vMotion between vCenters	You must license all VMware-based hosts in your entire organization, and not just those where Oracle software is installed and/or running

Remember, that these assertions are not contractually founded. They are only claims that Oracle may make in an effort to increase the size of their sales opportunity.

The following comic (which has become quite popular worldwide) was developed by House of Brick to illustrate how Oracle tends to think about how customers should license their software.

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Just like drivers only have to pay for the parking spots that they actually park their cars in, Oracle users only have to license those cores where they actually have Oracle programs installed and/or running.

While ESXi is used as the underlying hypervisor in the Skytap cloud, the Distributed Resource Scheduling capabilities, such as vMotion, are not used. For virtual machines running Oracle in the Skytap cloud, dedicated server infrastructure is allocated to ensure license compliance and to enable reporting of such compliance to Oracle. Skytap also uses proprietary means to ensure the customer's workloads stay on the dedicated hosts.

2.4   Determining License-able Events

Whenever Oracle programs are installed on a server and/or running on that server, users must account for a license for those programs. In the Skytap cloud, whenever users migrate a virtual machine into the cloud, or if they install Oracle software on a new Skytap instance, users create a license event that Oracle may audit at some time in the future.

There are a few ways that users can accommodate a virtual machine with Oracle installed and/or running without acquiring or allocating additional license. The following sections describe two such events—Failover (e.g., for disaster recovery) and Backup Testing. In both scenarios, we will be talking about the possibility of running virtual machines that are replicated as part of a backup strategy. It should be noted that a backup of a virtual machine that is sitting in storage and not presented to a server, does not constitute a license-able event.

2.4.1 Failover

In a failover event, the primary licensed server running Oracle database or app server workloads becomes unavailable for whatever reason. Oracle allows you to run that workload "*on an unlicensed spare computer in a failover environment for a total of ten separate days in any given calendar year*" (OLSA Section Q, Licensing Rules, Failover). This privilege has traditionally been a very powerful component in each user's disaster recovery planning.

In the contract template that started being used in about Q4 of 2007, however, Oracle changed their failover terms to be more restrictive. This is illustrated in the diagram on the right. In addition to the language stated above, Oracle added the following restriction: "*The above right only applies when a number of machines are arranged in a cluster and share one disk array.*" It further restricts the number of failover environments by stating that "*only one failover node per clustered environment is at no charge for up to ten separate days even if multiple nodes are configured as failover.*" An example of this language can be found in OLSA v110711.
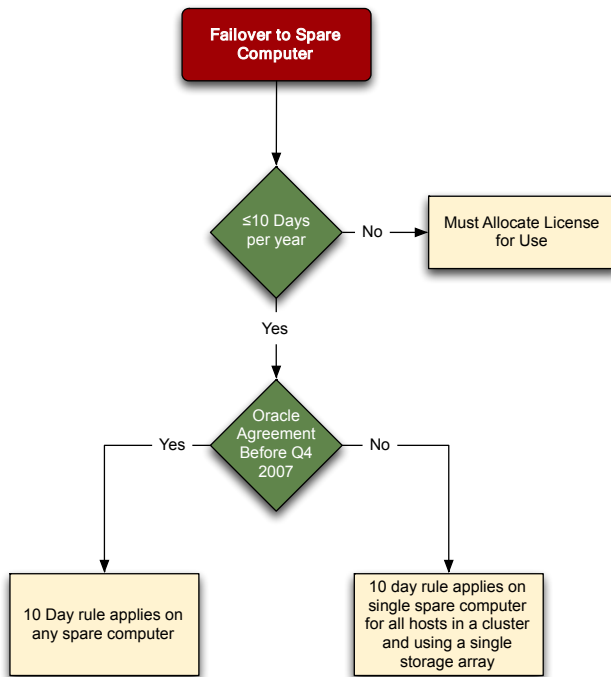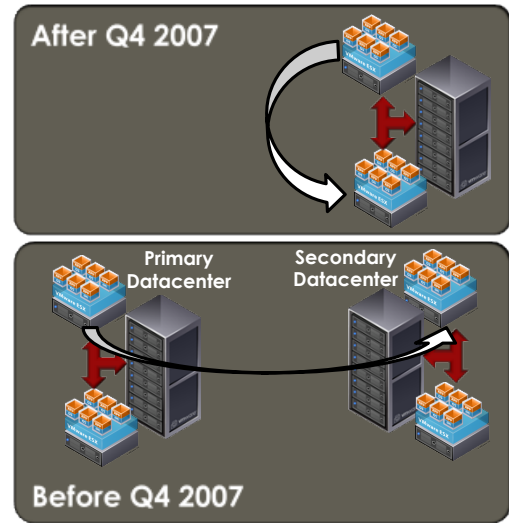
The flow diagram on the left helps with the decision process of whether the Failover rule (aka ten day rule) can be applied to a particular environment. Users should discuss this architecture with their Skytap representative and with their legal advisors to see if the cluster and shared disk array can be justified in using the Failover rule.

If users have an active contract from before about Q4, 2007, and have validated that it does not have the restrictive language in it, then House of Brick highly recommends that they preserve that agreement in perpetuity. Users should still be able to make additional license purchases with the older agreement. In doing so, they should perform a legal review of all language that Oracle has added to the Order Document, being especially careful to strike all replacements of the Licensing Definitions and Rules section of the contract.

2.4.2   Backup Testing

The second privilege for running Oracle databases on an unlicensed computer is the Testing Rule for testing the recovery of backups. The Testing rule states "*For the purpose of testing physical copies of backups, your license for the Oracle Database includes the right to run the database on an unlicensed computer for up to four times, not exceeding 2 days per testing, in any given calendar year*" (OLSA Section Q, Licensing Rules, Testing).

Similar to the Failover rule, in late 2011, Oracle changed the contract language for the Testing rule to be more restrictive. Users should validate their own contracts to see which provision applies. The more restrictive language states "*The aforementioned right does not cover any other data recovery method - such as remote mirroring - where the Oracle program binary files are copied or synchronized.*" An example of this more restrictive language can be found in OLSA v110711.

This newly-added restriction seems to prevent the ability to launch a backed-up virtual machine, which may be considered a data recovery method where the Oracle program binary files are copied or synchronized in a manner that does not cause an immediate license event. In this case, users would need to launch a backed-up database into a virtual machine that was not replicated as part of the backup process. Users should validate this with their legal advisors.

The flow diagram on the right helps with the decision process of whether the Testing rule can be applied to an environment. Users should discuss their backup procedures with their Skytap representative and their legal advisors to see if they are justified in using the Testing rule with backed-up virtual machines for contract language after late 2011.
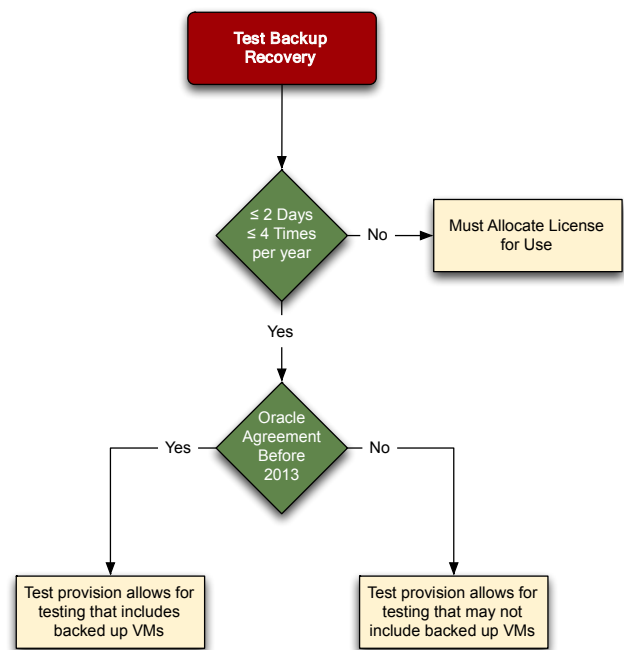
If users have an active contract from before late 2011, and have validated that it does not have the restrictive language in it, then we highly recommend that they preserve that agreement in perpetuity. Users should still be able to make additional license purchases with the older agreement. In doing so, they should perform a legal review of all language that Oracle has added to the Order Document, being especially careful to strike all replacements of the Licensing Definitions and Rules section of the contract.

3   Skytap Cloud Architecture for Oracle

Skytap has designed an available architecture for its customers running Oracle workloads that is both powerful and license-compliant. Since Oracle has authorized only two IaaS cloud providers (Microsoft Azure and AWS) to use their "bring your own license" (BYOL) model, the Skytap cloud takes a different approach for license compliance. The Skytap cloud allows customers to apply their existing licenses to Oracle workloads because those workloads are running on dedicated infrastructure (server hosts and datacenter regions). The dedicated infrastructure model has the following considerations for Oracle licensing purposes:

1. The server environment is dedicated to Oracle workloads, and is not shared with any other customer environment.

2. These dedicated hosts will be reported to Oracle as if they are part of the customer's on-premise environment. Even though the servers are remotely co-located in a separate datacenter, that information will not need to be disclosed to Oracle.

3. Skytap uses VMware ESXi as the underlying virtualization hypervisor, but the Distributed Resource Scheduler (DRS) from VMware is not used. The usage of DRS is typically referenced by Oracle when they claim, without contractual merit, that customers must license more than they are actually using.

For further security and/or compliance purposes, Skytap can provide a Dedicated Region for Oracle users in addition to the dedicated host model. This dedicated region is located within a single datacenter and contains resources that are wholly dedicated to the customer from the dedicated servers through each network layer to the Internet backbone. This is illustrated in the following Skytap Dedicated Region diagram.
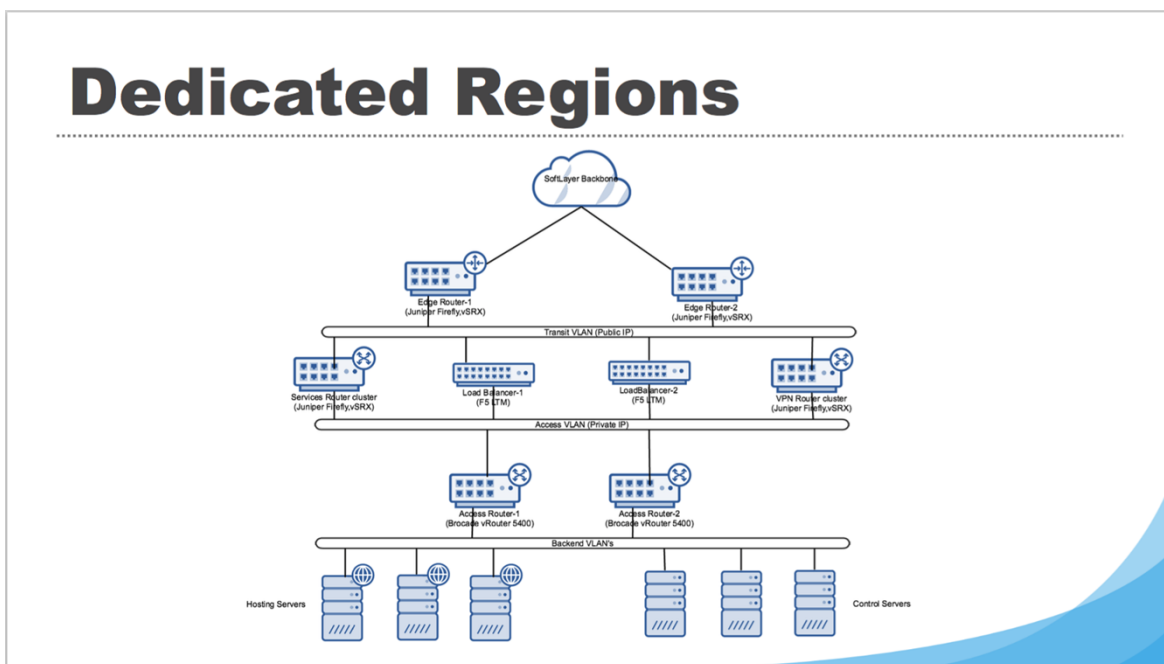
Unless particular application architectures require it, the Dedicated Region option will not be required for license compliance. The dedicated host model is sufficient to ensure virtual machines running Oracle programs stay contained on licensed servers.

4   Oracle Database Licensing in a Skytap Environment

Licensing Oracle programs in a Skytap cloud must be accounted for by using core-based licensing (Processor or Named User Plus metrics), rather than using Oracle's Cloud Computing Environment policy. Because Skytap is not included in the authorized Oracle Cloud Environment policy, they have created an optional license-compliant architecture to accommodate their Oracle customers. This architecture was discussed in a previous section.

Let us consider different scenarios with a user's license estate and usage of Oracle programs, and how Oracle licensing will work in each case.

4.1   Processor Metric Licenses

4.1.1   Enterprise Edition Database

As discussed previously for the Processor metric, for Oracle Enterprise Edition Database (and its associated features, options, and packs) the number of licenses that are required is determined by how many physical processor cores there are in the servers where the database is installed and/or running. Given the assumption that we are not doing soft partitioning of those servers using core pinning, users must count every processor core in each Skytap server where Oracle workloads will be running, and then allocate one Processor of Enterprise Edition license for every two physical cores in that count.

4.1.2   Standard Edition Database

Users can use Standard Edition licensing in the Skytap cloud, but need to be careful that certain limitations are respected. Assuming Standard Edition 2 (SE2) licenses, instead of counting cores, the customer must count the number of sockets (full CPU chips) where the database is installed and/or running. Users must have an SE2 license for every socket. Users are limited to two sockets for SE2, but the number of processor cores within those sockets does not matter for licensing purposes. Users are also limited to running on servers with a maximum capacity of only two sockets. SE2 may not be run on servers with four or more sockets. This is not an issue in the Skytap Cloud since all hosts have only two sockets. Skytap does not have the ability to disable a socket, so the use of Oracle Real Application Clusters (RAC) using the SE2 license, which requires two servers of one socket each, is not possible in the Skytap environment. Users may have multiple servers running Oracle with SE2 in the Skytap environment, even though all of those hosts have a total of more than two sockets. This is because the servers are not clustered, and each server contains only two sockets.

4.2   Named User Plus Licenses

Calculating the required Named User Plus licenses (NUP) is similar to the Processor metric. First, count all of the hardware cores on each server where the Oracle programs are installed and/or running, and multiply that by the Processor Core Factor (0.5 for x86 processors). Then, multiply this number by the per Processor Minimum. For Enterprise Edition Database with the associated features, options, and packs, the minimum is typically 25 NUP per processor (Number of cores times the Processor Core Factor). The following is the calculation for the minimum number of NUP licenses and the actual number of required NUP licenses for an organization.

Minimum NUP Licenses   =   Hardware Cores x Processor Core Factor x Per Processor Minimum
Required NUP Licenses   =   Greater of: Number of Human Users accessing the system(s) and
                                             previously-calculated NUP minimum

4.2.1   Example NUP Calculation

The Scenario—A user would like to use Named User Plus licenses for their development operations. There is one server on premise with 12 cores, and one dedicated host in the Skytap cloud with 16 cores. Oracle Database Enterprise Edition will run on both servers. There are 300 people in the company who might access and use the database.

Calculating the Minimum—For the two servers, we count the cores (12 +16), multiply by the core factor of 0.5, then multiply by the per processor minimum of 25.

> Minimum = (12+16) x 0.5 x 25 = 350

Since the minimum number of licenses is greater than the number of users, customers have to purchase 350 NUP licenses. If the same server was set up, but instead had 400 users accessing the system, then 400 NUP licenses would have to be purchased to be compliant.

4.3   Unlimited License Agreement

Unlimited License Agreements (ULA) from Oracle seem quite attractive on the surface. In our experience at House of Brick, however, ULAs tend to cost the customer more than a well-designed and well-managed architecture would. If readers currently have a ULA, they should review it for privileges and/or restrictions for running Unlimited Deployment Right product in a dedicated host environment such as the Skytap cloud. There may be language stating that the ULA only allows for deployments on servers that are owned or leased by the customer. Readers should consult with their legal advisors on whether the Skytap dedicated host environment qualifies as owned or leased, and the impact of any other language that may be in the ULA agreement pertaining to either public cloud deployments or VMware-based environments.

4.3.1   The ULA Value Assessment

During the (typically) 3-year term of a ULA, Oracle LMS has indicated that they may perform two "Value Assessments" to "*help customers better understand their usage of Oracle products*." One is done at mid-term and one at the end of the term. Oracle may refer to these as "friendly audits." Unless these so called assessments are invoked under the terms of the audit clause in the customer's agreement with Oracle, it is House of Brick's opinion that the customer is under no obligation to respond.

4.3.2   Certifying off of a ULA

The process of exiting a ULA is called "certification." It is where customers certify usage of the Oracle programs, and the licensee claims that capped number of Processor metric licenses from Oracle to cover that usage going forward. In the certification process, users count all physical processors in servers where Oracle is installed AND running (note that the "or" is eliminated). A primary downside of a ULA is that it establishes a new minimum for the annual support payment that is required, called the "Total Support Stream." Even if users certify off of the ULA to convert to a Processor metric and reduce their usage, the support stream will not go down. The only way to reduce the annual support stream is to terminate support on all existing licenses. If the customer in this scenario needed Oracle support they would have to purchase all new licenses for the smaller footprint. House of Brick has seen where the positive return on investment period for such a strategy can be relatively short with a large enough reduction in the license footprint justifying the change.

4.4   Development and Test Environments

Development and test environments must be licensed for Oracle usage. Customers can, however, use a more advantageous license metric if it will result in a lower cost. Many House of Brick customers use a Processor metric for production environments, and have historically used the NUP metric for development and test environments. House of Brick best practice looks for opportunities to mix workload types on servers licensed with the Processor metric. With the appropriate architecture and operational controls, customers may find that they can put development and/or test environments on servers that are licensed for production workloads. Once a server is licensed, administrators can put as many virtual machines running Oracle on that server as will fit, without incurring any additional license. The isolation and protection that VMware ESXi provides between virtual machines makes this a realistic option to consider.

5   Frequently Asked Questions about Oracle Licensing (FAQ)

Q: Is the Skytap cloud just like AWS or MS Azure when it comes to Oracle?

A: No. Only AWS and Azure are [Oracle Authorized Cloud Environments](). This means that Oracle authorizes customers to "bring your own license" (BYOL) into the AWS or MS Azure cloud at rates specified in the document. In those environments, the license follows the virtual machine. Since Skytap is not an authorized cloud environment from Oracle, they have created an architecture that provides dedicated hosts for customers to deploy their Oracle workloads on.

Q: Could there be advantages to the Skytap cloud compared to AWS or MS Azure for running Oracle?

A: Using a BYOL strategy for running Oracle in AWS or Azure does not necessarily reduce licensing costs. Consider that AWS and Azure require one processor of license for every one or two virtual CPUs, and that with one processor of license in a dedicated host environment users would have access to two physical cores, plus two hyper-threads. In the dedicated host model (two cores, plus two hyper-threads) users could potentially run four vCPUs of Oracle on ESXi virtual machines. In this scenario, running Oracle in the Skytap cloud could potentially require only half as many licenses as running in AWS or Azure. For production workloads, it is not typically House of Brick's best practice to over-subscribe CPU, but with mixed workloads the customer may get more virtual CPUs per license than on AWS or Azure.

Q: For purposes of asset protection, do I need to keep a number of licenses in reserve for future Oracle deployments?

A: No. Keeping unused licenses may be non-productive while still incurring annual support costs. If you need additional licenses in the future, you can acquire them at that time. Some customers who have planned growth in a well-defined period may choose to retain some licenses to cover that growth. A cost-benefit analysis should be performed.

Q: Do I really have to create a separate cluster for my Oracle workloads?

A: Not necessarily. Users have to account for a license for every location where Oracle programs are "installed and/or running." If users can contain Oracle deployments to a subset of servers in a cluster, then they only have to license that subset.

Q: What things do I need to look for in my own contract with Oracle?

A: Understanding the license agreement with Oracle is key to maximizing the benefit from the software, while controlling and minimizing the license footprint through architectural means. House of Brick can provide best-practice guidance for creating architectures that minimize the license footprint. Organizations should keep track of all contract documents with Oracle, including their master agreement, any purchase order documents, and all Software Update and License Support (SULS) renewal documents. Oracle puts additional contract terms that override the master agreement in the purchase order documents, so it is important to perform a legal review of those terms before each purchase.

Q: How do I license disaster recovery environments?

A: We have discussed several scenarios in this paper related to disaster recovery, including the Failover rule, and the Testing rule. An important thing to remember in deciding if you have to license a secondary or failover environment is this: are the Oracle programs installed and/or running at the secondary site? If so, then a license must be accounted for. If not, then they do not have to be licensed. In the event of a failover, then it will be installed and running, and you must account for a license (either through the ten-day Failover provision or through license entitlement). If the Failover rule does not apply, then users must determine if the primary licenses can be migrated, or if new licenses must be acquired.

Q: What happens if I cancel support on a subset of licenses in a single order, or a subset of licenses of a single product across all orders?

A: Many customers want to cancel support on certain licenses for different reasons. These reasons may include a plan to migrate to a different platform within an acceptable unsupported period, or to eliminate support on a set of unused licenses. Oracle has strict (and contractual) policies about canceling support. If you cancel support on a subset of a single order, then Oracle may have the right to re-price support for the remaining order. Customers should understand that if they cancel support on a subset of a single order that the resulting re-price may be the same as the original support amount.

When customers cancel support on a subset of a single product across all orders, then the "license set" rules apply. These rules state that canceling support on a subset of licenses of the same code base results in the cancellation of the entire license. Customers may no longer use those licenses for which support was canceled. As an example, if a customer had 100 processors of Enterprise Edition database across four separate orders of 25 each, and canceled support on one order of 25 licenses, would only be entitled to use 75 licenses. The licenses for the 25 that support were not renewed for have now been completely canceled and can no longer be used.

Q: What should I do when I get audited?

A: In the contract, customers have agreed to allow Oracle to perform an audit of their usage of Oracle software. Most agreements state that customers agree to allow Oracle to audit them with 45 days written notice. Also, their audit may not unduly impact normal business operations (although every audit will undoubtedly be an impact). Once an audit is complete, customers have agreed that they will settle any compliance issues within 30 days. Oracle has become quite aggressive in performing audits and in claiming fees due with and without contractual merit, including from the non-contractual assertions discussed earlier in this paper. It is important to understand your contractual

privileges and to be prepared to defend those. House of Brick provides audit defense services to help with this process.

6   House of Brick Can Help

House of Brick can provide consulting services for your planned deployment in a Skytap environment. This includes architectural as well as license services. House of Brick Service offerings include:

- Architecture review and development, Including for license optimization
- Oracle or SQL Server license analysis and compliance strategy
- Oracle Audit Defense
- ULA Certification and other Oracle negotiation consulting
- Managed License Support Service (bundled unlimited service for fixed annual fee)

You can contact your Skytap representative for an introduction to House of Brick, or visit us at www.houseofbrick.com.

7   Summary

- The Skytap cloud is an effective option for Infrastructure as a Service, including for Oracle-based applications.
- The Skytap cloud provides support for Oracle licensing by allocating dedicated resources for Oracle workloads. This includes dedicated server hosts, and dedicated regions as needed for applications.
- Oracle licensing is defined by the specific license agreement, and is based on server hardware where Oracle is "installed and/or running." There is nothing prospective in this definition, meaning customers do not have to license where Oracle *might* run in the future.
- The dedicated resources for Oracle workloads in the Skytap cloud ensure that Oracle workloads are running only on licensed server hosts. There is log activity to validate the historical usage of Oracle licenses.
- In an Oracle audit, usage of the Skytap dedicated cloud environment will be documented as if the dedicated hosts are part of the customer's on-premise environment. Even though the servers are remotely co-located in a separate datacenter, that information will not need to be disclosed to Oracle.
- House of Brick can provide assistance related to architecture review and development, license compliance analysis, and audit defense.

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