Increase Your License Effectiveness with Bring Your Own License
About bring your own license (BYOL)

Bring your own License, or BYOL, is the process of bringing previously purchased on-premises licenses to public cloud (AWS, Azure, etc.), to leverage existing software license investments.

According to Gartner, “By 2020, more than 90 percent of organizations worldwide would have adopted hybrid infrastructure management capabilities.” As organizations move to hybrid cloud and pure cloud environments, their existing software investments can be leveraged through BYOL models. If used effectively, this can lead to better software license optimization within organizations.

Moving workloads to the cloud improves business agility and resilience in the face of uncertainty, it also leads to rapid innovations and hyper-scale growth. We can observe that organizations are adopting cloud and a hybrid or multi-cloud approach in a very rapid manner.

In the wake of a meteoric rise in world-wide cloud adoption, organizations face challenges while managing their software assets. These challenges include the following:

- Discovering the license types of software assets placed in the cloud
- Understanding the license compliance of major software products after moving to the cloud (in hybrid and multi-cloud deployment models)
- Understanding the license compliance of major software products after moving them to dedicated hosts service models provided by different cloud providers
- Taking Remediation Actions to become compliant, after non-compliance is determined

ServiceNow offers a single platform to automatically discover software license types across cloud providers, determine overall compliance across hybrid and multi-cloud deployment models, and take remediation action to maintain compliance.

---

# Table of Contents

- Bring your own license overview 3
- Functional architecture 4
- Discovery of cloud resources and attributes 6
- License compliance for cloud resources 8
- Taking remediation actions through workflow 11
- Conclusion 14
- FAQs 15
Bring your own license overview

**Moving licenses from on-premises to the cloud**
This whitepaper explores the various features provided by ServiceNow to help organizations discover software assets and determine compliance, as they “Bring Your Own License” to different cloud providers like AWS and Microsoft Azure.

---

**Figure 1**: BYOL licensing in hybrid environments

---

**Bring your own license challenges**
Bring your own license compliance management, when performed conventionally, has many challenges that software asset management (SAM) managers must deal with, challenges that include:

- Manual determination of cloud resources and their license types
- Manual determination of license compliance across hybrid Infrastructure (on-prem and cloud)
- Lack of process workflow to be compliant
- Lack of automation to determine potential savings, if a customer plans to shift licenses to the cloud (BYOL)

ServiceNow Software Asset Management aims to solve the challenges related to accurately determining license compliance and thereby taking remediation actions through a workflow, all steps are performed automatically on one system of record.

---

You will need rigorous processes in place to ensure compliance — on-prem datacenter compliance is challenging in itself and you’re adding another layer of complexity by using your own licenses in the cloud.

— The ITAM Review

---

2 Bring your own article: https://www.itassetmanagement.net/2018/07/19/bring-your-own-a-guide-to-deploying-perpetual-licenses-in-cloud-services
BYOL overview with ServiceNow Software Asset Management

ServiceNow Software Asset Management, in its latest release (Rome), provides the following capabilities:

**Automated discovery of software license types hosted on the cloud**

License types such as license included (Pay as you go, SPOT, on Demand) or BYOL are automatically discovered for cloud resources. Azure Hybrid Benefit is a BYOL benefit provided by Azure and ServiceNow supports discovery of the same.

**Cloud compliance determination for hybrid infrastructure and environments**

Publishers like Microsoft and Oracle have different licensing rules for their software products such as Oracle DB Server, Microsoft Windows Server, or Microsoft SQL Server, when deployed on different cloud providers, such as AWS and Azure, for both IaaS (infrastructure as a service), which includes shared and dedicated hosts, and PaaS (platform as a service) service models. These rules need to be combined with the already applicable on-premises rules, so that a complete consolidated license compliance position can be determined for each software product across a hybrid environment.

ServiceNow automatically reconciles all these rules and provides an accurate license position to the SAM manager for their hybrid environment.

**Automated application of license optimization**

Publishers like Microsoft offer special rights for Microsoft products such as Windows Server and SQL Server as they are deployed on Azure vs. AWS. Some of these privileges include dual use rights, edition flexibility, and unlimited virtualization.

ServiceNow automatically applies these special privileges to software deployed on cloud, so SAM Managers can best optimize their license compliance and gain the cost savings.

In addition, for Oracle Databases deployed on AWS PaaS (RDS), ServiceNow automatically generates optimization actions such as optimize vCPU count to resize the AWS resource.

**Compliance workflow remediation actions**

If a software product is determined to be non-compliant, ServiceNow provides a remediation workflow to be used by SAM Manager. These compliance actions include removing unlicensed installs or the ability to purchase more license rights.

**Functional architecture**

ServiceNow employs new discovery patterns from ServiceNow Discovery to determine the license types of software deployed on the cloud. ServiceNow discovery is also able to discover the important licensing attributes on different Service delivery models viz. IaaS, which includes dedicated or shared and PaaS.

These attributes include cloud provider, virtual machine details, CPU count, core count, CPU core thread count, Oracle options and packs (useful for Oracle DB server), and many others.

PaaS service delivery model is a popular choice amongst customers shifting their databases to the cloud. For PaaS resources (such as AWS RDS), ServiceNow can discover attributes such as read replicas and multi-AZ deployments.

---

“Azure Hybrid Benefit is a cost-savings benefit that lets you bring your existing on-premises Windows Server and SQL Server licenses with active Software Assurance or subscriptions to Azure”

– Microsoft
For certain cloud providers, due to non-availability of public APIs, can use ServiceNow Cloud Insights (available on the ServiceNow Store) to automatically determine the license type.

Cloud Insights uses billing information from the cloud providers to determine if a software was purchased from the cloud provider directly or is a BYOL resource.

License Mobility through Microsoft Software Assurance gives Microsoft Volume Licensing customers the flexibility to deploy certain server applications with active Software Assurance on-premises or in the cloud, without having to buy additional licenses

– Microsoft


Figure 2: Functional architecture for BYOL on ServiceNow Software Asset Management

Once the license types and host types are discovered, ServiceNow Software Asset Management reconciles the entitlements with different licensing rules as specified by the different software vendors and determines the correct license compliance position.

The license compliance information is combined across the entire hybrid infrastructure (on-premises and cloud) and is available on ServiceNow Software Asset Management dashboards. License compliance is determined by reconciling different rules across on-prem and cloud environments in an optimized manner.

Lastly, for remediating non-compliance, ServiceNow Software Asset Management auto generates remediation candidates and compliance actions for SAM managers to drive through workflows on the Now Platform®.
Discovery of cloud resources and attributes

Cloud providers like Azure and AWS allow organizations to either purchase software with license included or bring their own license to the cloud. In the case of license included, there are many options that the organization can take, such as pay-as-you-go (PAYG), SPOT, on-demand, etc. License included licenses are managed by the cloud providers.

Organizations need to manage the licenses brought to the cloud (or BYOL). Currently, there hasn’t been an automated mechanism to determine the license types of resources purchased directly from the cloud vs. brought to the cloud. Instead, people often use “manual” tags on the cloud to segregate these license types. The manual tags added by organizations are an inefficient mechanism to manage license types.

ServiceNow has introduced automated discovery of license types of Microsoft products—Windows Server and SQL Server on AWS and Azure. Support for Oracle DB Server on AWS and Azure has also been introduced in the Rome platform release.

These license types are automatically discovered without any reliance on manual tags, through a combination of APIs and billing information from the cloud providers.

New patterns are regularly published on the ServiceNow Store outside major product releases. Customers of Discovery and Service Mapping can use updated or modified patterns without having to wait for the next major release.

– ServiceNow

Figure 3: Automated determination of license type across cloud resources

SAM managers can easily determine the automated tags added to the virtual machine discovered. These automated tags signify whether the license type is either license included or BYOL.

There are certain cases where the cloud providers don’t provide any APIs to determine the license type. In these cases, ServiceNow uses Cloud Insights to infer the license type automatically through billing data downloaded from the cloud provider.
Cloud providers, such as Azure and AWS, provide dedicated hosts wherein the organization can deploy their virtual machines. These dedicated hosts provide physical servers that host one or more virtual machines. The servers that are dedicated to the organization and its workloads are not shared with other customers. This host-level isolation helps address compliance requirements.

As Microsoft and other publishers have different licensing rules for software deployed on these dedicated hosts, it’s imperative that the SAM solution discovers dedicated hosts, virtual machines, and software deployed on them.

As shown through ServiceNow Discovery, which automatically discovers the dedicated hosts and their relationships with virtual machines and software installed on them.

Amazon EC2 Dedicated Hosts allow you to use your eligible software licenses from vendors such as Microsoft and Oracle on Amazon EC2, so that you get the flexibility and cost effectiveness of using your own licenses, but with the resiliency, simplicity and elasticity of AWS.

– AWS

Figure 4: Automated determination of dedicated hosts as cloud hosts and virtual machines deployed on it

The dependency view showcases a dedicated host and virtual machines having Windows Server /SQL Server installed on them, as shown through ServiceNow Discovery, which automatically discovers the dedicated hosts and their relationships with virtual machines and software installed on them.

4 AWS dedicated hosts: https://aws.amazon.com/ec2/dedicated-hosts
In addition to discovery of shared cloud resources, ServiceNow can discover PaaS resources as well. Commonly used PaaS resource include AWS Relational Database Services (or AWS RDS).

The dependency view showcases Oracle Database deployed on a PaaS resource, which is provisioned through AWS.

As platform as a service model, will become the prevailing cloud platform delivery model of choice, ServiceNow Software Asset Management enables customers to show license compliance easily and effectively by identifying and proving BYOL usage.

License compliance for cloud resources

Licensing rules of software deployed on Azure and AWS are different. In addition, the licensing rules differ if the software is deployed on a shared host versus a dedicated host.

“Gartner Expects that from 2018 ($15B) to 2022 ($32B), the PaaS market will double, and PaaS will be the prevailing cloud platform delivery model.”

– Gartner (2019)
The following table shows an overview of these compliance rules for Microsoft Windows Server when deployed on Azure and AWS:

<table>
<thead>
<tr>
<th>Software Product and Entitlement</th>
<th>AWS, Google Cloud etc.</th>
<th>Azure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Shared Host</td>
<td>Dedicated Host</td>
</tr>
<tr>
<td>Windows Server with Software Assurance</td>
<td>BYOL is not allowed (this product does not have license mobility)</td>
<td>BYOL is not allowed on purchases made after 1 Oct 2019 or software released after 1 Oct 2019</td>
</tr>
<tr>
<td>Windows Server without Software Assurance</td>
<td>BYOL is not allowed on purchases made after 1 Oct 2019 or software released after 1 Oct 2019</td>
<td>BYOL is not allowed</td>
</tr>
</tbody>
</table>

Table 1: License compliance rules for Windows Server across Azure and AWS

Similarly, there are license compliance rules defined for SQL Server, Oracle DB, and other software. These licensing rules are summarized within a ServiceNow documentation site at the following:


Note that the licensing rules are dependent on various factors like Software Assurance, the purchase date of the licenses, and whether the software is deployed on shared or dedicated hosts. There are also special privileges (cloud special rights) that are provided by Azure for both Windows and SQL Server.

ServiceNow Software Asset Management reconciles the licensing rules of different software on the cloud and on-premises to arrive at the correct license compliance across a hybrid infrastructure.

ServiceNow Software Asset Management helps SAM managers accurately determine the licensed and unlicensed installs on the cloud. Additionally, the

“Beginning October 1, 2019 on-premises licenses purchased without Software Assurance and mobility rights cannot be deployed with dedicated hosted cloud services offered by the following public cloud providers: Microsoft, Alibaba, Amazon (including VMware Cloud on AWS), and Google. They will be referred to as ‘Listed Providers’

– Microsoft

SAM manager can easily know the license type of the cloud resource, host type, and the discovery source contributing.

To give further context to SAM Managers, ServiceNow Software Asset Management showcases how the rights were used. If a resource was provided “cloud special rights” they are visible to that SAM manager.

SAM managers can easily see how many rights were used for a particular resource in the rights used by section and if any special rights like dual use rights or edition flexibility were applied.

In the preceding example, edition flexibility special rights were applied for a SQL Server deployed on Azure shared environment. Edition flexibility allows one SQL Server Enterprise core license on the cloud to license four SQL Server Standard licenses on Azure, hence the organization saves more and can license more SQL Server virtual machines on the cloud with fewer core licenses.

In addition to edition flexibility, ServiceNow Software Asset Management also supports another cloud special right—dual use rights for Windows Server deployed on Azure.

Beginning October 1, 2019 on-premises licenses purchased without Software Assurance and mobility rights cannot be deployed with dedicated hosted cloud services offered by the following public cloud providers: Microsoft, Alibaba, Amazon (including VMware Cloud on AWS), and Google. They will be referred to as ‘Listed Providers’.

---

ServiceNow Software Asset Management reconciles licenses with the best possible optimization, so that the organization gets the maximum cost benefits as per the license compliance rules. These optimization benefits allow the organization to make the best possible use of their license investments made on-premises. License optimizations taken by ServiceNow Software Asset Management include:

- Licensing all cores on dedicated hosts to achieve unlimited virtualization, allowing unlimited number of VMs to be run on the host and save license costs
- Determine if it is cheaper to license all cores on the dedicated host or license by VMs, thereby applying licensing rules as per the least expensive option
- Licensing Azure first versus licensing AWS, in case the organization has a multi-cloud deployment, which helps in saving costs because most Microsoft products have special rights on Azure
- Recommending customer to resize their PaaS resources on AWS, to be compliant for Oracle Database

Taking remediation actions through workflow

ServiceNow Software Asset Management automatically generates remediation options if the license rules applied lead to non-compliance. Remediation options generate reclamation candidate workflows on the Now Platform, which helps SAM managers to take action to be compliant again. For example, SAM managers can remove unlicensed cloud installs as part of a remediation option.

![Remediation options for unlicensed cloud installs](image)

**Figure 8: Remediation options for unlicensed cloud installs**
Notice the description on each reclamation candidate workflow has context for the specific software and license condition. Workflows are the inherent strength of the Now Platform, which is leveraged effectively here.

Similarly, there are remediation options generated for Oracle BYOL on the cloud. An example remediation option can include such activities as optimizing vCPU on PaaS resources. The reclamation candidate workflow generated on these remediation options has context-specific actions for the SAM manager.

Figure 9: Reclamation candidate workflow for unlicensed SQL Server deployed on cloud resource

Our approach to workflow removes bottlenecks and integrates processes and activities between people and systems.

– ServiceNow

Figure 10: Reclamation candidate workflow for unlicensed Oracle DB Server deployed on cloud resource
In addition to generating reclamation a workflow, ServiceNow also highlights potential licensing risks of software deployed on the cloud. For example, Oracle DB licenses acquired under unlimited license agreements (ULAs) may be used in authorized cloud environments, but customers may not include those licenses in the certification at the end of the ULA term.

Hence, the report – Oracle DB Server deployments per agreement provides an overview to the customer to determine their ULA Risks if they have deployed Oracle DB on the Cloud.

Figure 11: Oracle DB Server deployment per agreement report

<table>
<thead>
<tr>
<th>Name</th>
<th>Product</th>
<th>Version</th>
<th>Edition</th>
<th>License metric</th>
<th>Agreement type</th>
<th>Cloud provider</th>
<th>Cloud service type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle DB Server 10</td>
<td>Standard Edition 3</td>
<td>Per Processor</td>
<td>Generic</td>
<td>AWS Datacenter</td>
<td>IaaS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oracle DB Server 12</td>
<td>Standard</td>
<td>Per Processor</td>
<td>Generic</td>
<td>Vmware Datacenter</td>
<td>IaaS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oracle DB Server 10</td>
<td>Standard Edition 2</td>
<td>Per Processor</td>
<td>Generic</td>
<td>AWS Datacenter</td>
<td>PayG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oracle DB Server 12</td>
<td>Enterprise</td>
<td>Per Processor</td>
<td>Generic</td>
<td>AWS Datacenter</td>
<td>IaaS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oracle DB Server 12.1.0</td>
<td>Enterprise</td>
<td>Per Processor</td>
<td>Generic</td>
<td>AWS Datacenter</td>
<td>IaaS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oracle DB Server 10</td>
<td>Standard Edition 2</td>
<td>Per Processor</td>
<td>Generic</td>
<td>AWS Datacenter</td>
<td>PayG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oracle DB Server 10</td>
<td>Standard Edition One</td>
<td>Per Processor</td>
<td>Unlimited License Agreement (ULA)</td>
<td>AWS Datacenter</td>
<td>PayG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oracle DB Server 12</td>
<td>Enterprise</td>
<td>Per Processor</td>
<td>Generic</td>
<td>AWS Datacenter</td>
<td>IaaS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oracle DB Server 12</td>
<td>Enterprise</td>
<td>Per Processor</td>
<td>Generic</td>
<td>AWS Datacenter</td>
<td>IaaS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oracle DB Server 12</td>
<td>Standard Edition One</td>
<td>Per Processor</td>
<td>Generic</td>
<td>AWS Datacenter</td>
<td>PayG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oracle DB Server 12</td>
<td>Enterprise</td>
<td>Per Processor</td>
<td>Generic</td>
<td>AWS Datacenter</td>
<td>IaaS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Conclusion**

ServiceNow provides advanced support to determine the license compliance of Microsoft Windows Server, SQL Server, and Oracle DB Server deployed on Azure and AWS. These products are among the most virtualized software deployed on the cloud and many organizations are asking for help in determining their license compliance position.

ServiceNow recommends using ServiceNow Discovery and ServiceNow Cloud Insights to automate the entire end-to-end license compliance discovery and determination. However, organization can use the software asset connection feature introduced in the ServiceNow Paris release to integrate other third-party discovery sources to make use of these features within ServiceNow Software Asset Management.

ServiceNow will continue to innovate around BYOL capabilities to include more software that is often run both on-prem and in the cloud on Azure, AWS, and other cloud providers.

![Figure 12: Microsoft products BYOL management dashboard](image1)

![Figure 13: Oracle DB server BYOL management dashboard](image2)
FAQs

Q1: What does ServiceNow Software Asset Management support with respect to BYOL?
A: ServiceNow Software Asset Management provides the following BYOL support:

- Calculating compliance of Microsoft products, namely Windows Server and SQL Server across on-premises, AWS, and Azure environments
- Calculating compliance of Oracle DB Server across hybrid environment (on-premises, AWS, and Azure)
- Determine ULA risks in deploying Oracle DB Server on AWS and Azure
- Dashboards related to license type for Windows Server, SQL Server and Oracle DB Server
- Provide remediation options for compliance mitigation

Q2: Do we need to configure tags on AWS and Azure to support license type determination?
A: No, the license type will be auto-determined by ServiceNow Discovery. However, there are few additional details you should know:

- If you only using ServiceNow Discovery, then your license type (BYOL or license included) will be automatically gathered by ServiceNow for Windows Server, SQL Server, and Oracle DB Server for Azure. However, for AWS, ServiceNow can automatically determine the license type only for Windows Server and Oracle DB Server; for SQL Server, you would need to rely on manual tags
- If you have both ServiceNow Discovery and Cloud Insights, then all details related to license type for Windows Server and SQL Server are automatically determined by ServiceNow

Q3: Which ServiceNow Store apps are needed?
A: Customers should install the latest apps for CMDB CI class model and discovery service mapping patterns. Both apps are available free on the ServiceNow Store. Customers should also activate Cloud Insights in the ServiceNow Store to support fully automated BYOL use cases.

Q4: What is the scope of support for BYOL?
A: Microsoft Windows Server and SQL Server deployed in Azure and AWS. Additional publisher and cloud use cases are being assessed and prioritized for the ServiceNow Software Asset Management roadmap.

Q5: Which release of ServiceNow Software Asset Management introduces the BYOL feature?
A: Quebec for Windows and SQL Server, Rome for Oracle DB Server

Q6: How does ServiceNow support unauthorized database options on the cloud such as RAC?
A: ServiceNow automatically creates reclamation candidates for the same.