IBM® Practice Guide

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Preface

Authors

This practice guide was produced by a team of experts from around the world:

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Feedback

Your feedback is important!

We know IBM licensing is complex. While this practice guide covers many strategies and approaches, you will undoubtedly find more scenarios and situations to handle than can be adequately covered here.

Share your thoughts and help us improve by completing this short survey.

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Scope

This is a prescriptive best practice guide for planning, configuring and operating FlexNet Manager Suite for IBM® license reconciliation projects.

This practice guide describes many strategies for managing IBM licenses using Flexera solutions, while providing IBM licensing knowledge. It is intended to augment other materials, such as:

- The SLO Practice Guide (accessible through the Learning Center via our Customer Community)
- Free training courses (accessible through the Learning Center via our Customer Community)
- FlexNet Manager Suite Online Help (accessible through the product UI)
- FlexNet Manager Suite Product Documentation
- Knowledge Base articles
- IBM licensing policies
- IBM contracts

You should already be familiar with these materials and have a practical understanding of how to use FlexNet Manager Suite for general licensing activities. This guide is part of our Software License Optimization (SLO) practice guides and it follows the same **milestone approach** based on increased levels of maturity which result from additional data, compliance improvements and fast iterations.

YES, IT CAN BE THIS SIMPLE!

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FlexNet Manager Suite Coverage Summary

IBM has an extensive software product portfolio is split into several major metrics and brands. The tables below present FlexNet Manager Suite coverage from a license metric and a product coverage perspective.

IBM License Metric Coverage

Metric	Example Product	Coverage	Summary Comments – See relevant section in Practice guide below for further information
Install / Server / Virtual Server / Client	Cognos Disclosure Management Spectrum Client	FULL	Relevant application installations required for automated consumption.
PVU – Processor Value Unit	Websphere Application Server DB2 Enterprise Server	FULL	Relevant application installations with required Hardware information necessary for automated consumption. ***Note:*** *FlexNet Manger 2015+ with Agent Inventory and Frequent Hardware scanning enabled is required for eligible Sub-capacity licensing.*
RVU – Resource Value Unit	Tealeaf Sterling Order Management	PARTIAL	The value of the metric must be recorded manually in the **Resources consumed** field on the **Identification** tab of the license properties. The RVU license will calculate the Resources Consumed against the relevant RVU Points table and reflect the RVU license consumption.
AUTHORIZED USER	FileNet Content Manager Xl C/C++	PARTIAL	Relevant application installations required for automated consumption. Only 1 user per device calculated automatically. Additional and In-direct access / Multiplexing Users should be added to the **License Consumption** tab (via Bulk counts or specific users).
UVU – User Value Unit	Security Access Manager Security Identity Manager FileNet Content Manager	PARTIAL	See **Authorized User** comments above. The FlexNet Manager Suite UVU license type operates in a similar manner, except that once the consuming Users have been identified the totals are calculated against the relevant UVU tier table to reflect the UVU license consumption.

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CONCURRENT/ FLOATING USER	Rational Infosphere Datastage & Qualitystage Developer	MANUAL	Relevant license types exist in FlexNet Manager Suite but consumption should be calculated and manually populated into FlexNet Manager Suite. Identified applications can be used as a starting point to identify devices and users. ***Note:*** *FlexNet Manager for Engineering Applications may be able to assist FNMS in providing automated license consumption. Please see the Concurrent Licensing Practice Guide for more details.*
VUE – Value Unit Exhibit	DB2 QMF Security zSecure	PARTIAL	FlexNet Manager Suite cannot import Mainframe inventory but the VUE tier points tables exist in the Application Recognition Library to automatically calculate MSU to VUE consumption. Use the RVU license type.
Simultaneous Session	Sterling Connect Direct z/OS	CUSTOM	Use of the Custom Metric license type is required. FlexNet Manager Suite cannot automatically inventory the highest number of sessions. Consumption should be calculated manually and populated into FlexNet Manager Suite.
Terabyte	Spectrum Protect / Tivoli Storage Manager	CUSTOM	Use of the Custom Metric license type is required. FlexNet Manager Suite cannot automatically inventory the Terabytes managed by the Program. Consumption should be calculated manually (via the running of commands or scripts within the IBM licensed program itself) and populated into FlexNet Manager Suite.
VPC – Virtual Processor Core	MQ	FULL	Relevant application installations with required Hardware information necessary for automated consumption. FlexNet Manager SUite uses the PVU license type but the Application Recognition Library includes a VPC points table which is applied to the PVU license type.

Brand and Product Coverage

Brand	Example Products	Coverage
Information Management/Analytics	DB2 InfoSphere PureData Informix	Most applications in this category can be quickly recognized as installed when using IBM's tag files (*.sys, *.sys2, *. swidtag), including many components and supporting programs (such as in the case of bundles). Options and add-ons are often not available in the file and installer evidence collected by standard inventory. Where these attributes are not captured, additional effort may be required to collect manual inventory from the enterprise that can be integrated into the license position.

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Brand	Example Products	Coverage
WebSphere	WebSphere Application Server MQ (formerly Websphere MQ) ILOG	Most applications in this category can be quickly recognized as installed when using IBM's tag files (*.sys, *.sys2, *. swidtag), including many components and supporting programs (such as in the case of bundles). The Flexera Inventory Agent includes custom technology to collect important attributes for WebSphere MQ Queue Managers and their activity status, which is important for calculating license compliance and optimizing license consumption. Authorized User counts returned by inventory technology are likely just the counts of assigned users on local client installations, but they do not include counts of users accessing the system by other means, such as website portals or mobile apps. A more thorough effort will be required to gather these counts.
Collaboration Solutions	Domino Notes 1-2-3	These applications are commonly licensed by CEO, Authorized Users, Installations, or Processor Value Units. Authorized User counts returned by inventory technology are likely just the counts of assigned users on local client installations, but they do not include counts of users accessing the system by other means, such as website portals or mobile apps. A more thorough effort will be required to gather these counts.
Spectrum/Tivoli	Spectrum Protect (Formerly Tivoli Storage Manager) Composite Application Manager Access and Identity Manager Asset Discovery/ILMT/Bigfix	These applications are commonly licensed by RVU, Terabytes, Installations, Authorized Users/UVU's or Processor Value Units. Authorized User/UVU counts returned by inventory technologies are likely just the counts of assigned users on local client installations, but they do not include counts of users accessing the system by other means, such as website portals or mobile apps. A more thorough effort will be required to gather these counts. RVUs and UVUs have a high rate of calculation mistakes due to the misunderstanding of the license model. They require the collection of the unit of measurement and imputing into the license metric for consumption based on the proper tiering table.
Rational	ClearCase Rose Rational Application Developer for WebSphere	Concurrent licenses for Rational products can be measured and managed with FlexNet Manager for Engineering Applications. Separating Authorized User from Concurrent User licensed installations can be somewhat challenging at scale.
Mainframe	zOS System z TADz	The Product Use Rights Library (PURL) includes VUE Point tables and can convert MSU consumption to VUE license consumption when manually applied to the license. See Appendix 1: Managing Mainframe Licenses.

Overview of a License Reconciliation Project

One of the most important steps of any license reconciliation project is to start by defining the **activities**, **timeline**, and **scope**. We have discovered that most licensing projects can be broken down into the same key phases, so we have developed a milestone approach to act as an implementation framework. This

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simple methodology was proven to maximize time to value by focusing on the fastest delivery of an initial license position and constantly improving that position by following a standardized framework. We believe that working in four or more key **milestones** - each sharing the same, repeatable, four work streams - helps create an easy and standardized process, improves efficiency and provides the fastest outcome with our software license optimization solutions. Please read the SLO Practice Guide for a more detailed overview of the milestone framework.

The milestone table below is showing the activities that we've identified as the most important at the different stages of the project, based on general SLO best practices and IBM specifics.

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	Planning & Implementation	Discovery & Inventory Normalization	License Creation & Optimization	Reporting & Governance
Milestone 0 **Planning**	**1.** Set initial scope **2.** Identify stakeholders & set expectations **3.** Identify stakeholder change management requirements	**1.** Identify existing inventory and entitlement sources **2.** Review product requirements & pre-requisites **3.** Identify whether FlexNet Inventory deployment is required **3.a.** If required, choose method(s) and plan for deployment	**1.** Identify the initial baseline **2.** Begin baseline collection (if applicable) **3.** Assess IBM Regional License requirements based on known location of IBM sub-capacity deployments **4.** Review requirements for assets, users, purchases and enterprise groups	**1.** Create a project plan **2.** Create an issue register and gap analysis document **3.** Create an implementation architecture and technical requirements document **4. Define requirements for later milestones**
Milestone 1 **Initial Insight**	**1.** Start planning for later milestones **2.** Consider additional data source integration(s) **3.** Communicate progress	**1.** Import existing inventory **1.a.** Begin deployment of FlexNet Inventory (if required)	**1.** Import existing baseline, or **1.a.** Create baseline from entitlement reports **2.** Certain IBM contracts may include Financial Pot / Substitution Pot entitlements	**1. Initial license position insight** **2.** Produce normalized inventory reports **3.** Gap analysis / KPIs
Milestone 2 **Initial Position**	**1.** Consider additional data source integration(s) **2.** Determine if legacy or out-of-service licenses should be tracked **3.** Communicate progress	**1.** Expand inventory to cover identified gaps and identify inventory to ignore **2.** Cross reference discovery sources (Active Directory) **3.** Import device roles	**1.** Obtain initial set of contracts, review proof of entitlement and create a revised entitlement position **2.** Create licenses adhering to IBM'S ILMT regional requirements **3.** Refine use rights **4.** Assess Unrecognized evidence	**1. Initial license position** **2.** Gap analysis / KPIs
Milestone 3 **Optimized Position**	**1.** Further refine data sources **2.** Initiate policy and process enhancements **3.** Automate collection of KPIs **4.** Identify enterprise group assignment needs **5.** Communicate progress	**1.** Scan networks for missing devices **2**. Complete VM introspection **3.** Import user data **4.** If using Flexera as ILMT replacement, the configuration must adhere to the guidelines	**1.** Incorporate manual inventory **2.** Review all contracts, add renewals **3.** Further refine use rights **4.** Identify product owners for any PVU products **5.** Input pricing details **6.** Manual configuration (RVU, Concurrent, Floating Users, etc.)	**1. Optimized license position** **2.** Gap analysis / KPIs **3.** Custom reports

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Note: *Enterprise Groups are not addressed in the typical plan. These can be addressed as a follow up project. IBM Regional License requirements require a sub-capacity License to be created in FlexNet Manager Suite to represent consumption of each license in each ILMT Region (North & South America, Europe & Africa, Asia & Australia). Pre-configured (prior to reconciliation work) Enterprise Groups are important to ensure license restrictions and scoping can be appropriately applied to enable automated regional license consumption.*

Overview of Milestones: IBM Considerations

In the chapters below, the four milestones are described in greater detail, with a focus on IBM specifics. Each milestone work stream has a dedicated chapter in this practice guide, where overall best practices are being shared and useful IBM tips and tricks given by our team of experts. There is also a dedicated IBM Licensing chapter included. Please see the Planning & Implementation, Discovery & Inventory Normalization, License Creation & Optimization and Reporting & Governance chapters.

The "Overview of Milestones" chapter from the SLO Practice Guide provides a more detailed list of milestone activities. Below are some IBM special considerations to take into account:

During Milestone 0 it is important to assess the IBM Regional License consumption calculation requirements based on the known location of IBM sub-capacity product deployments. In addition, review Enterprise Groups and how they relate to required IBM Region sub-capacity licenses reporting for compliance vs. required internal reporting.

Moving into Milestone 1, important inventory and entitlement sources are the IBM Passport Advantage or Enterprise Agreements. A best practice is to create multiple regional IBM sub-capacity licenses as required to restrict or scope consumption. If the IBM License Metric Tool (ILMT) is used as an inventory tool, do not process purchases to create licenses. Once the ILMT inventory connection is established and Processor Value Unit licenses have been automatically created, then process purchases linking these to the relevant existing licenses.

Certain IBM contracts may include "Financial Pot" entitlements. It is common that a list of products with no specific entitlement quantities is provided. Unit prices, however, are available and your entitlement to use the software is up to the financial quantity defined in the contract. To manage this scenario, identify all the products currently or likely used (it is often not worth creating a license for every product as IBM often provides many more products than are required or will realistically be used) and create a purchase order with a quantity of **1** for each. Process these purchases to create a license. It is recommended to use a naming convention such as *<Financial Pot>* in the license name. Set the license "True Up" button on the **Identification** tab of the license and place the unit price from the contract in the "Override Unit Price" field. Now, either disable the purchase quantities in the license or simply delete these specific "Financial Pot" purchases. Another option includes linking the appropriate licenses to a contract for the "Financial Pot". You can then create a report for licenses consumed under that contract.

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Having created and configured the licenses, other actions would include:

- Creating a custom view of the **All Licenses** page filtered on the "Financial Pot" naming convention. Make sure to expose the consumption and override unit price columns
- Export to Excel and simply conduct a multiplication of the consumption x override unit price for each license
- Sum the total of each line: compliance is obtained if the total is below the financial quantity defined in the contract

FlexNet Manager Suite flags software installations as used or unused based on usage criteria set at the application title level (the details of the application). By default, if the application has not been used during the last three months, it is marked as "unused". FlexNet Manager Suite provides by default the last usage date, and can provide usage metering if enabled. Microsoft System Center Configuration Manager will provide the last used date if Asset Intelligence is enabled. It can also provide metering on monitored applications when metering is enabled. There is immediately a high potential of savings on expensive desktop applications.

If aware of bundled installations (primary and supplementary programs) where the supplementary installation is being used outside of permitted bundled terms, these devices should be allocated to the primary license of the bundled supplementary application. If no primary license exists for the bundled supplementary application, a license will need to be created and the device will need to be allocated. See the Bundle Assessment and Configuration section for more information.

IBM Licensing Considerations

IBM License Types

There are many subtleties in how various IBM license measures operate, as well as various strategies for managing each measure. The following subsections describe:

- Common IBM license measures
- General information about relevant license types in FlexNet Manager Suite
- Common considerations and strategies for managing IBM license measures

Further details and a more complete listing of available license types and associated properties can be found in the **Licenses > License Properties > Identification > License Type** and the FlexNet Manager Suite Online Help. Familiarity with the data model for license records in FlexNet Manager Suite will help you understand the information presented throughout this guide.

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Processor Value Unit (PVU)

IBM defines the PVU license type on the Learn About Software Licensing webpage.

> *A PVU is a unit of measure by which the program can be licensed. The number of PVU entitlements required is based on the processor technology (defined within the PVU Table by Processor Vendor, Brand, Type and Model Number) and the number of processors made available to the program. IBM continues to define a processor, for the purpose of PVU-based licensing, to be each processor core on a chip. A dual-core processor chip, for example, has two processor cores. Licensee can deploy the program using either full capacity licensing or virtualization capacity (sub-capacity) licensing per the Passport Advantage Agreement Terms. If using full capacity licensing, Licensee must obtain PVU entitlements sufficient to cover all activated processor cores* in the physical hardware environment made available to or managed by the program, except for those servers from which the program has been permanently removed. If using virtualization capacity licensing, Licensee must obtain entitlements sufficient to cover all activated processor cores made available to or managed by the program, as defined per the Virtualization Capacity License Counting Rules.*

Note: *An activated processor core is a processor core that is available for use in a physical or virtual server, regardless of whether the capacity of the processor core can be or is limited through virtualization technologies, operating system commands, BIOS settings, or similar restrictions.*

Some programs may require licenses for the program and what is being managed. In that scenario, in addition to the entitlements required for the program directly, Licensee must obtain PVU entitlements for this program sufficient to cover the processor cores for the systems on which the resources managed or processed by the program reside.

Some programs may be licensed on a managed basis only. In that scenario, instead of the entitlements required for the program directly, Licensee must obtain PVU entitlements for this program sufficient to cover the processor cores for the systems on which the resources managed or processed by the program reside.

A few programs (as an exception) may be licensed on a referenced basis. In that scenario, rather than obtaining entitlements for the activated processor cores available to the program, Licensee must obtain PVU entitlements for this program sufficient to cover the environment made available to the Referenced Program as if the program itself were executing everywhere the Referenced Program was executing, independent of the basis on which the Referenced Program is licensed.

The relevant License Information document should be consulted to determine the specific PVU license requirements for each program. IBM's Virtualization Capacity License Counting Rules site contains useful additional information. Many documents are available on this site that detail the counting methodologies for different platforms and scenarios. It is also a great gateway to other sub-capacity resources, such as the PVU Tables and Manual Calculation of Virtualization Capacity spreadsheet.

The IBM PVU license type can be used in FlexNet Manager Suite to track PVU entitlements. Key aspects of how this license type functions are:

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- **Consumption**: calculated based on the following details of computers that have installations of one or more of the applications linked to the license:
  - CPU details recorded in hardware inventory
  - Physical host/virtual machine relationships
  - The Points rule set specified for the license
- **Raw consumption** field records the most recent calculated consumption count
- **Peak consumed** field records the highest peak value observed for the Raw consumption field (except as manually modified)
- **Compliance**: License is considered compliant if peak consumed is less than or equal to total licensed

Consider the following aspects when managing PVU licenses:

Consideration	Management Strategy
Management of "Peak consumed" values The "Peak consumed" field on PVU license records tracks the maximum PVU consumption that has been calculated in the past by FlexNet Manager Suite. If this value is not managed, over time it will tend to track an unoptimized consumption number which does not consider various rights such as supporting program entitlements and warm/cold standby installations for which license entitlements do not need to be separately purchased. You should have a management task to regularly review Peak consumed numbers, and where prudent and defensible, manually adjust to reflect optimized consumption. Contractual obligations may require you to periodically (quarterly) archive reports detailing peak consumption, and seek confirmation from IBM that any manual adjustments you propose to make to historical peaks are reasonable.	**Reset "Peak consumed" values on PVU licenses after initial setup of the license record** After initially creating a PVU license and applying the relevant optimizations techniques (e.g., exemptions due to bundling or cold/warm standby systems), reset the Peak consumed field on the license record to 0 so that it will start its tracking from the current point in time (that is, the next license reconcile operation). **Regularly and frequently exempt appropriate new installations from consuming PVU licenses** On an ongoing basis (at least monthly), ensure that optimization activities to appropriately exempt new installations from consuming entitlements are performed. New installations which do not strictly require license entitlements to be consumed (e.g., because the installation is supporting software or on a cold/warm standby system) may unnecessarily increase peak consumption). This strategy is intended to help minimize the opportunity for many installations to unnecessarily consume entitlements and increase peak consumption counts. Attention should be paid to licenses which are nearing or above the point of requiring further entitlements to be purchased. **Manually reset "Peak consumed" values where prudent and defensible** If a situation arises where a significant number of installations have unnecessarily consumed entitlements before being exempted and the recorded Peak consumed value has been artificially increased, it may be appropriate to manually decrease the Peak consumed value on a license. Please assess available data to determine an appropriate amount by which to reduce the Peak consumed field value. Calculating a reasonable estimate of how many PVUs would be consumed by exempted computers may help with this assessment. Record your proposed adjustment to the Peak consumed field value, together with the date and a defensible justification in the Notes field on the license record. These notes should include information about the circumstances leading to the un-optimized consumption. If a true-up or negotiated consumption count is reached, then it would be appropriate to manually reset the Peak consumed field values. In no event (except for an initial reset) should the Peak consumed field value be decreased below the peak consumption shown for the license in the most recent quarterly report snapshot.

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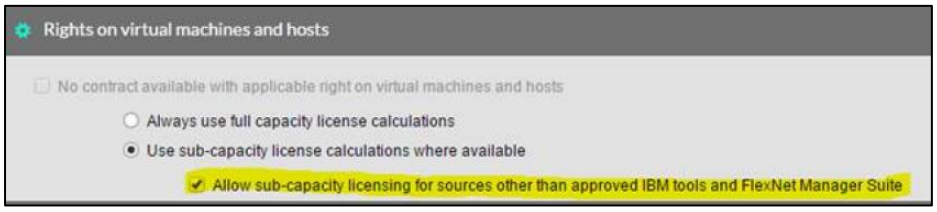
Consideration	Management Strategy
Required CPU hardware inventory information Accurate calculation of PVU license consumption requires accurate CPU hardware inventory from relevant devices. Installations of a PVU-licensed application on a device with missing hardware inventory will not be covered by an IBM PVU license. Devices for which CPU hardware inventory has not been gathered automatically can be individually edited and CPU details manually entered.	Regularly review the **Management > License Compliance > Compliance > Unlicensed Installations** page to identify installations of commercial IBM software that are not covered by any license. Computers with missing CPU hardware details, where those details are required for licensing, are counted in this data. Manually edit device records where CPU hardware details have been unable to be automatically gathered, and enter relevant CPU details based on manual inventory gathering. Regularly review the **Reports > Discovery and Inventory > Inventory > IBM PVU Overridden Inventory** page to check device records where CPU hardware details have been manually modified.
Sub-Capacity vs. Full-Capacity licensing Typically, PVU-based licenses will be managed on a sup-capacity basis. Sometimes it may be appropriate to license a PVU-based license on a full-capacity basis.	Select the "Use sub-capacity license calculations where available" in the **Rights on virtual machines and hosts** section on the **Use Rights & Rules** tab for any IBM PVU license that should be managed on a sub-capacity basis. Sub-capacity calculations are optimal when only using a fraction of the CPU's processing power, as this will reduce the number of licenses consumed.  ***Note:*** *In the instance where sub capacity points exceed what would otherwise be full capacity, the full capacity points would be used for consumption purposes. You should not tick the above option when using FlexNet Manager Suite in replacement of ILMT.*

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Consideration	Management Strategy
Environmental constraints PVU licenses may be designated for use within specific environments, such as "Non-production" or "Production". The Production and Non-Production licenses will need to be created as separate license entries to reflect consumption correctly under each license. The license will need to be scoped to consume only against the specific environment using a configured corporate group (which reflects specific environments).	Create separate license records in FlexNet Manager Suite for each environment. If the target environment for a license can be identified by enterprise groups (such as locations, cost centers or business units), scope the license to apply to the relevant enterprise group(s) under the **Scope** tab on the license record. Alternatively, manually identify which devices should be covered by which license, and configure appropriate explicit allocations.
Uncommon PVU points rules tables If a PVU licenses has been created from the FlexNet Manager Suite Stock Keeping Unit (SKU) Library based on a recognized SKU, then an appropriate points rules table will be automatically configured on the license. However, situations can arise where a points rules table needs to be manually configured. For example, this may be needed if a SKU is unrecognized, a license is created manually (not from the SKU Library), or a non-standard points rules table needs to be used for consumption calculations.	Review the **Points rule** set field on the **Identification** tab of PVU license record and ensure the selected points rule set is appropriate and matches the relevant License Information Document (LID). Select an alternate point rule set for the license if required. If an appropriate point rule set does not already exist, then create and configure a new point rule set. See the **Licenses > Points Rule Sets** page **> Create a Points Rule Set** topic in FlexNet Manager Suite Online Help for guidance on how to create and configure point rule sets.
Products ineligible for sub-capacity licensing Some IBM products are ineligible for sub-capacity calculations. FlexNet Manager for IBM will create full capacity PVU licenses for these products by default when licenses are created from a SKU.	Identify which IBM products licensed by PVU are ineligible for sub-capacity licensing. Ensure the corresponding license records in FlexNet Manager Suite are configured to use full capacity licensing (if creating licenses manually, select a full capacity template from the PURL). The full list of products is available in IBM's Passport Advantage Sub-capacity Licensing Eligible Product Statement. This and many other valuable resources on sub-capacity licensing can be accessed on IBM's Passport Advantage Virtualization (Sub-capacity) Licensing website.

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Note: *For more information on Sub-Capacity licensing, please check the "Sub-Capacity Licensing with IBM PVU" system reference file.*

User Value Units (UVUs)

IBM defines the UVU license type on the Learn About Software Licensing webpage.

> *A UVU is a unit of measure by which the program can be licensed. UVU Proofs of Entitlement (PoE) are based on the number and type of users for the given program. Licensee must obtain sufficient entitlements for the number of UVUs required for Licensee's environment, as defined by the specific software terms. The UVU entitlements are specific to the program and type of user and may not be exchanged, interchanged, or aggregated with UVU entitlements of another program or type of user. To understand the benefits of User Value Unit licensing and to determine how many User Value Units to obtain, please refer to the program specific User Value Unit table. The relevant License Information document should be consulted to determine the specific UVU license requirements and table for each particular program.*

The IBM UVU license type can be used to track UVU entitlements. Key aspects of how this license type functions are:

- **Consumption**: Calculated as the total number of effective users multiplied by the relevant factor from the UVU conversion table configured on the license. The total number of effective users are counted as:
  - Users identified as using the software by application usage tracking
  - The assigned (or calculated) user linked to computers where the software is installed
  - Installation of the software on a device with no known user (which counts as a single unique but unknown user for consumption purposes)
- **Bulk user counts** specified on the license record. The users are classified as "normal", "infrequent" or "external", and the appropriate scaling factor applied to the count of users in each class to obtain the final effective user count
- **Compliance**: License is considered compliant when consumed is less than or equal to total licensed

Consider the following aspects when managing UVU licenses:

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Consideration	Management Strategy
Normal user equivalents for different user classes Some UVU licenses provide ratios between "normal" users and other types of users. For example, if Security Identity and Access Assurance is licensed on a UVU basis, then 1 user license entitlement covers 15 "external users".	On the **Consumption** tab of the license record: • Configure appropriate ratios in the **Infrequent user** and **External user** fields. For example, if 15 "External users" are the equivalent of 1 "Normal user", enter the value 0.0667 (= 1 / 15) in the external user field • Enter appropriate numbers of each type of user in the **Bulk user counts** section • Set the **User type** of individual users as appropriate in the **Related users** section
Tracking individual users or managing bulk counts Consumption is calculated for IBM UVU license type based on bulk user counts and individual users identified through inventory and asset data held in FlexNet Manager Suite. Which management approach is chosen for a license will depend on the type of user community involved and how easily users can be identified from inventory data. The UVU license type is used for products where thousands to millions of users may have access, making it less likely that users will be allocated to the license.	Many UVU licensed products are used in situations where thousands or millions of users are licensed. In this situation, it is likely that users will not be able to be identified and counted based on inventory data. Thus, user-management by specifying values in the **Bulk user counts** section of the **Consumption** tab of the license record will be more appropriate. For software that is primarily used on end user desktops, inventory and usage data imported into FlexNet Manager Suite will identify and model the actual user community based on which users are using those desktops. In this situation, allowing FlexNet Manager Suite to calculate consumption based on users shown in the **Related users** section is appropriate. If it is not appropriate to have users of the software identified based on imported inventory and application usage data, then it is a best practice to ensure the license is not linked to any applications (under the **Applications** tab of the license record). This ensures that FlexNet Manager Suite will not attempt to automatically identify users with installation/usage of particular applications.
Data entry of bulk user counts Bulk user count values are generally not related directly to data imported from inventory data sources.	Implement an appropriate process to gather and verify total user counts, and enter the relevant counts into the following fields in the **Bulk user counts** section on the **Consumption** tab of the license properties: • Additional infrequent users • Additional external users • Additional normal users Alternatively, if an appropriate data source is available and the value of automation will outweigh initial configuration and ongoing maintenance effort costs, the Business Importer can be configured to regularly import appropriate values into the Bulk user counts fields.

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Consideration	Management Strategy
Uncommon UVU points rules tables If a UVU licences has been created from the FlexNet Manager Suite SKU Library based on a recognized SKU, then an appropriate points rules table will be configured on the license. However, situations can arise where a points rules table needs to be adjusted. For example, this may be needed if a SKU is unrecognized, a license is created manually (not from the SKU Library), or a non-standard points rules table needs to be used for consumption calculations.	Review the **Points rule set** field on the **Identification** tab of UVU license record and ensure the selected points rule set is appropriate and matches the relevant License Information document. Select an alternate point rule set for the license. If an appropriate point rule set does not exist, create and configure a new point rule set. See the **Licenses** > **Points Rule Sets** page **> Create a Points Rule Set** topic in FlexNet Manager Suite online help for guidance on how to create and configure point rule sets.

Note: *It is a best practice to plan ahead for the manual collection of UVU details.*

Resource Value Units (RVUs)

IBM defines the RVU license type on the Learn About Software Licensing webpage.

> *An RVU is a unit of measure by which the program can be licensed. RVU Proofs of Entitlement are based on the number of units of a specific resource used or managed by the program. Licensee must obtain sufficient entitlements for the number of RVUs required for their environment as defined by the specific software terms. RVU entitlements are specific to the program and the type of resource and may not be exchanged, interchanged, or aggregated with RVU entitlements of another program or resource.*

Some programs may require licenses for the resources available to AND the resources being managed by the program. In that case, the following applies:

> *"In addition to the entitlements required for the Resources used by the Program directly, Licensee must obtain entitlements for this Program sufficient to cover the Resources managed by the Program". Some programs may be licensed on a managed basis ONLY. In that case, the following applies: "Instead of the entitlements required for the Resources used by the Program directly, Licensee must obtain entitlements for this Program sufficient to cover the Resources managed by the Program".*

To understand the benefits of Resource Value Unit licensing and to determine how many RVUs to obtain, please refer to the program specific Resource Value Unit table. The relevant License Information document should be consulted to determine the specific resource license requirements for each program. A wide range of resources can be counted when considering RVU licenses, based on the software in question. Some examples are:

- IBM Tivoli Composite Application Manager (ITCAM) Full Agent Pack can be licensed based on a resource of "Managed Activated Processor cores"
- Tealeaf products can be licensed based on a resource of "Million Monthly Interactions"

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The IBM RVU license type can be used in FlexNet Manager Suite to track RVU entitlements. Key aspects of how this license type functions are:

- **Consumption**: Calculated as the amount of the named resource produced or consumed (as entered in the **Resources consumed** field on the **Identification** tab of the license properties), multiplied by the relevant factor from the RVU table specified in the **Points rule set** field on the **Identification** tab. The **Metric** value on an RVU license record should be set to identify the relevant resource consumed by the license. However, the actual value specified is for informational purposes only and does not directly impact on consumption calculations. If an RVU license record is created from the FlexNet Manager Suite SKU Library based on a recognized SKU then it will be automatically configured with an appropriate metric value specified, although this can be reviewed and manually modified if appropriate
- **Compliance**: License is considered compliant when consumed is less than or equal to total licensed

Consider the following aspects when managing RVU licenses:

Consideration	Management Strategy
Data entry of resource consumption numbers Metric values for consumption of RVU licenses are generally not directly related to data imported from inventory data sources.	The value of the metric must be recorded manually in the **Resources consumed** field on the **Identification** tab of the license properties. Alternatively, if an appropriate data source is available and the value of automation will outweigh initial configuration and ongoing maintenance effort costs, a Business Importer can be configured to regularly import an appropriate value into the Resources consumed field. For example, if a program is licensed based on the number of "Order Lines" in a database table, then a Business Importer could be configured to import the number of lines from the relevant database.

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Consideration	Management Strategy
Uncommon RVU points rules tables If an RVU licence has been created from the FlexNet Manager Suite SKU Library based on a recognized SKU then an appropriate points rules table will typically be configured on the license. However, situations can arise where a points rules table needs to be manually configured. For example, this may be needed if a SKU is unrecognized, a license is created manually (not from the SKU Library), or a non-standard points rules table needs to be used for consumption calculations.	Review the Points rule set field on the Identification tab of RVU license records and ensure the selected points rule set is appropriate and matches the relevant License Information document. Select an alternate point rule set for the license if required. If an appropriate existing point rule set does not already exist, then create and configure a new point rule set. Due to the way that points rules tables are configured in FlexNet Manager Suite, the lower ends of ranges should be configured as 1 less than the range numbers specified in IBM License Information documents. For example, the Resource Value Unit Conversion Table in a License Information document may specify: • From 1 to 2 Resources, 1.00 RVU per Resource • From 3 to 5 Resources, 2 RVUs plus 0.90 RVUs per Resource above 2 • The points rule set configured in FlexNet Manager Suite for this table would have two ranges from 0 to 2, and from 2 to 5 respectively to model this. See the **Licenses > Points Rule Sets** page **> Create a Points Rule Set** topic in FlexNet Manager Suite Online Help for guidance on how to create and configure point rule sets.

Note: *It is a best practice to plan for the manual collection of RVU details.*

Authorized Users

IBM defines the Authorized Users license type on the Learn About Software Licensing webpage.

> *An Authorized User is a unit of measure by which the program can be licensed. An Authorized User is a unique person who is given access to the program. The program may be installed on any number of computers or servers and each Authorized User may have simultaneous access to any number of instances of the program at one time. Licensee must obtain separate, dedicated entitlements for each Authorized User given access to the program in any manner directly or indirectly (for example: via a multiplexing program, device, or application server) through any means. An entitlement for an Authorized User is unique to that Authorized User and may not be shared, nor may it be reassigned other than for the permanent transfer of the Authorized User entitlement to another person.*

Some programs may be licensed where devices are considered users. In that case the following applies:

> Any computing device that requests the execution of or receives for execution a set of commands, procedures, or applications from the program or that is otherwise managed by the program is considered a separate user of the program and requires an entitlement as if that device were a person. The relevant License Information document should be consulted to determine the specific Authorized User license requirements for each particular program. As a

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rule of thumb, an Authorized User license entitlement will typically be required for any person (or device) that would be impacted if the licensed software was removed or disabled.

The IBM Authorized User license type can be used in FlexNet Manager Suite to track AU entitlements. Key aspects of how this license type functions are:

- **Consumption**: The following users are counted:
  - Users identified as using the software by application usage tracking
  - The assigned (or calculated) user linked to computers where the software is installed
  - Installation of the software on a device with no known user (which counts as a single unique but unknown user for consumption purposes)
  - Bulk user counts specified on the license record

The users are classified as "normal", "infrequent" or "external", and the appropriate scaling factor applied to the count of users in each class to obtain the final effective user count.

- **Compliance**: License is considered compliant if consumed is less than or equal to total licensed

Consider the following aspects when managing Authorized User licenses:

Consideration	Management Strategy
Normal user equivalents for different user classes Some Authorized User licenses provide ratios between "normal" users and other types of users.	On the **Consumption** tab of the license record: • Configure appropriate ratios in the **Infrequent user** and **External user** fields. For example, if 15 "External users" are the equivalent of 1 "Normal user", enter the value 0.0667 (= 1 / 15) in the **External user** field • Enter appropriate numbers of each type of user in the **Bulk user counts** section • Set the **User type** of individual users as appropriate in the **Related users** section
Minimum quantity requirements Some Authorized User licenses have minimum quantity requirements. FlexNet Manager Suite does not model minimum requirements for this license type.	Record details of minimum quantity requirements in the **Notes** field on the license record. When setting up the license, ensure the purchased quantity is no lower than the minimum. Purchase more licenses to meet minimums as required. If the minimum requirements are based on the number of installations, regularly review installation and purchase counts to ensure appropriate minimum requirements are met.

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Consideration	Management Strategy
Avoiding consumption calculations based on installations FlexNet Manager Suite calculates consumption on license records of type IBM Authorized User based on (amongst other data) installations and usage of applications linked to the license records. This type of calculation may not be appropriate to perform for some licenses. One such case is when users of the software should not be identified from logon and usage data on computers where the software itself is installed (which is common for server-based applications).	On the **Applications** tab of the license record, ensure the license is not linked to any applications. Manage consumption on the license record as described in the **Data entry of bulk user counts** consideration in this section.
Data entry of bulk user counts Bulk user count values are generally not related directly to data imported from inventory data sources, and so are not updated in FlexNet Manager Suite automatically.	Implement an appropriate manual process to gather and verify total user counts, and enter the relevant counts into the following fields in the **Bulk user counts** section on the **Consumption** tab of the license properties: • Additional infrequent users • Additional external users • Additional normal users Alternatively, if an appropriate data source is available and the value of automation will outweigh initial configuration and ongoing maintenance effort costs, you may be able to configure the Business Importer to regularly import appropriate values into the **Bulk user counts** fields.

Concurrent Users

IBM defines the CU license type on the Learn About Software Licensing webpage.

> *A Concurrent User is a unit of measure by which the program can be licensed. A Concurrent User is a person who is accessing the program at any point in time. Regardless of whether the person is simultaneously accessing the program multiple times, the person counts only as a single Concurrent User. The program may be installed on any number of computers or servers, but Licensee must obtain entitlements (Proof of Entitlement) for the maximum number of Concurrent Users simultaneously accessing the program. Licensee must obtain an entitlement for each simultaneous Concurrent User accessing the program in any manner directly or indirectly (e.g., via a multiplexing program, device, or application server) through any means.*

Some programs may be licensed where devices are considered users. In that case the following applies:

> *Any computing device that requests the execution of or receives for execution a set of commands, procedures, or applications from the program or that is otherwise managed by the program is considered a separate user of the program and requires an entitlement as if that device were a person. The relevant License Information document should be consulted to determine the specific Concurrent User license requirements for each program.*

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The IBM Concurrent User license type can be used in FlexNet Manager Suite to track Concurrent User entitlements. Key aspects of how this license type functions are:

- **Consumption**: The Consumed count is not automatically calculated
- **Compliance**: License is considered compliant when consumed is less than or equal to total licensed

Consider the following aspects when managing Concurrent User licenses:

Consideration	Management Strategy
Data entry of concurrent user consumption numbers The maximum number of concurrent users of a program cannot generally be identified based on data imported from inventory data sources into FlexNet Manager Suite.	Put monitoring programs and tools in place to track the maximum number of concurrent users of each program licensed on a Concurrent User basis. Regularly manually update the **Consumed** field on the **Compliance** tab of license records to reflect the latest maximum. Flexera's FlexNet Manager for Engineering Applications can help track concurrent usage of some applications. Use of this product is not covered by this practice guide. Alternatively, if an appropriate data source is available and the value of automation will outweigh initial configuration and ongoing maintenance effort costs, a Business Importer can be configured to regularly import an appropriate value into the **Consumed** field.

Floating Users

IBM defines the Floating Users license type on the Learn About Software Licensing webpage.

> *A Floating User is a unit of measure by which the program can be licensed. A Floating User is a person who is accessing the program at any point in time. An install is an installed copy of the program on a physical or virtual disk made available to be executed on a computer. The program may be installed on any number of computers or servers, but if the Floating User simultaneously accesses more than one install of the program, the Floating User requires a separate entitlement for each such install. Licensee must obtain separate entitlements for each Floating User simultaneously accessing the program on each install in any manner directly or indirectly (e.g., via a multiplexing program, device, or application server) through any means.*

Some programs may be licensed where devices are considered users. In that case the following applies:

> *Any computing device that requests the execution of or receives for execution a set of commands, procedures, or applications from the program or that is otherwise managed by the program is considered a separate user of the program and requires an entitlement as if that device were a person. The relevant License Information document should be consulted to determine the specific Floating User license requirements for each program.*

The IBM Floating User license type can be used in FlexNet Manager Suite to track Floating User entitlements. Key aspects of how this license type functions are:

- **Consumption**: The Consumed count is not automatically calculated
- **Compliance**: License is considered compliant when consumed is less than or equal to total licensed

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Consider the following aspects when managing Floating User licenses:

Consideration	Management Strategy
Data entry of concurrent user consumption numbers The maximum number of floating users of a program cannot generally be identified based on data imported from inventory data sources into FlexNet Manager Suite.	Monitoring programs and tools are required to track the maximum number of floating users of each program licensed on a Floating User basis. Regularly manually update the **Consumed** field on the **Compliance** tab of license records to reflect the latest maximum. Flexera's FlexNet Manager for Engineering Applications can help track concurrent usage of some applications. Use of this product is not covered by this practice guide. Alternatively, if an appropriate data source is available and the value of automation will outweigh initial configuration and ongoing maintenance effort costs, a Business Importer can be configured to regularly import an appropriate value into the **Consumed** field.

Installs

IBM defines the Installs license type on the Learn About Software Licensing webpage.

> *An Install is a unit of measure by which the program can be licensed. An Install is an installed copy of the program on a physical or virtual disk made available to be executed on a computer. Licensee must obtain an entitlement for each Install of the program. The relevant License Information document should be consulted to determine the specific Install license requirements and table for each program.*

The Device license type can be used in FlexNet Manager Suite to track Install entitlements. Key aspects of how this license type functions are:

- **Consumption**: Based on the number of unique computers that have installations of one or more of the applications linked to the license
- **Compliance**: License is considered compliant when Cconsumed is less than or equal to total licensed

Client Devices

IBM defines the Installs license type on the Learn About Software Licensing webpage.

> *A Client Device is a unit of measure by which the program can be licensed. A Client Device is a single user computing device or special purpose sensor or telemetry device that requests the execution of or receives for execution a set of commands, procedures, or applications from or provides data to another computer system that is typically referred to as a server or is otherwise managed by the server. Multiple Client Devices may share access to a common server. A Client Device may have some processing capability or be programmable to allow a user to do work.*

Examples include, but are not limited to actuators, appliances, automated teller machines, automatic meter readers, cash registers, disk drives, desktop computers, kiosks, notebook computers, personal digital assistant, point-of-sale terminals, sensors, smart meters, tape drives, and technical workstations.

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You must obtain entitlements for every Client Device which runs, provides data to, uses services provided by, or otherwise accesses the program and for every other computer or server on which the program is installed. IBM defines specific details of what is considered a Client Device in the License Information document for each program.

Terabytes

A Terabyte is a metric used for certain licenses, typically software related to backup or storage. Entitlements are usually required to cover the storage managed by the licensed program. An example definition is: Terabyte (1-100), Terabyte (101-250), Terabyte (251-500), Terabyte (501-750), Terabyte (751-1250), Terabyte (1251-2000), and Terabyte (2001+) is a unit of measure by which the program can be licensed. Proofs of Entitlement are based on the number of Terabytes available to the program. A Terabyte is 2 to the 40th power bytes.

You must obtain sufficient entitlements required for the environment. The entitlements are specific to the program and may not be exchanged, interchanged, or aggregated with entitlements of another program. In addition to the entitlements required for the program directly, you must obtain Terabyte entitlements for this program sufficient to cover the Terabytes managed by the program. The License Information document for the relevant program typically specifies details of how Terabyte requirements are applied.

As an example, Spectrum Protect Suite can be licensed on a Terabyte basis. Terabyte entitlements are required for "all data stored in the Primary Storage pool volume".

VPC Virtual Processor Cores

IBM does not currently define the Virtual Processor Cores license type on the Learn About Software Licensing webpage, however it's definition can be identified in relevant License Information Documents.

> *Virtual Processor Core is a unit of measure by which the Program can be licensed. A Physical Server is a physical computer that is comprised of processing units, memory, and input/output capabilities and that executes requested procedures, commands, or applications for one or more users or client devices. Where racks, blade enclosures, or other similar equipment is being employed, each separable physical device (for example, a blade or a rack-mounted device) that has the required components is considered itself a separate Physical Server. A Virtual Server is either a virtual computer created by partitioning the resources available to a Physical Server or an unpartitioned Physical Server. A Processor Core (commonly called a processor or CPU) is a functional unit within a computing device that interprets and executes instructions. A Processor Core consists of at least an instruction control unit and one or more arithmetic or logic unit. A Virtual Processor Core is a Processor Core in an unpartitioned Physical Server, or a virtual core assigned to a Virtual Server. Licensee must obtain entitlement for each Virtual Processor Core made available to the Program.*
>
> *For each Physical Server, Licensee must have sufficient entitlements for the lesser of 1) the sum of all available Virtual Processor Cores on all Virtual Servers made available to the Program or 2) all available Processor Cores on the Physical Server.*

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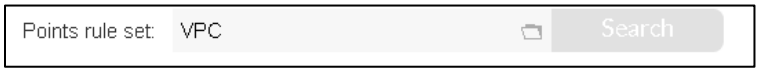
Due to the similar nature of the license calculation, FlexNet Manager Suite uses the PVU license type to manage VPC licenses. However, rather than applying the PVU license points rules table (identifiable on the **Identification** tab of the license) FlexNet Manager Suite uses a VPC points table.



Please see the PVU section above for other relevant license management considerations.

FlexNet Manager Suite "Custom Metric" License Type

The Custom Metric license type can be used to track entitlements where no other license type can be used. Metric values are generally not related directly to data imported from inventory data sources, and so are not calculated or updated automatically.

Where compliance conditions are too complex for a simple comparison of quantities, you may also choose to set the **Compliance status** manually on records of this license type.

Key aspects of how this license type functions are:

- **Consumption**: The Consumed count is not automatically calculated
- **Compliance**: When **Set Compliance status manually** is cleared, license is considered compliant when Consumed is less than or equal to Total licensed. If **Set Compliance status manually** is checked, compliance status is set manually

Consider the following aspects when managing other kinds of licenses:

Consideration	Management Strategy
Data entry of consumption numbers Metric values for consumption of other license types like those discussed in this section are generally not related directly to data imported from inventory data sources, and so are not updated in FlexNet Manager Suite automatically.	The consumed value of the metric must be recorded manually in the **Consumed** field on the **Identification** tab of the license properties. Alternatively, if an appropriate data source is available and the value of automation will outweigh initial configuration and ongoing maintenance effort costs, you may be able to configure the Business Importer to regularly import an appropriate value into the **Consumed** field.

Consumption without Installations

For FlexNet Manager Suite to be able to calculate consumption of any license that is based on identifying application installations, two conditions must be met:

- Installations of relevant applications on computers that consume license entitlements must be recognized (as per normal FlexNet Manager Suite application recognition functionality), and
- Relevant applications must be linked to the license record

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Situations can arise where a license may need to be consumed on computers where no relevant application installation has been recognized (a PVU license for Sterling Control Center requires licenses to cover devices which are managed by a program, but there will not be a recognizable "Sterling Control Center" application component installed on each covered device). Typical strategies for dealing with such situations are:

- Explicit allocation

Manually identify devices which should consume license entitlements (for example, by gathering information from relevant application owners), and explicitly allocate those devices to the license record. The **Allocations consume license entitlements** option in the **License consumption rules** section on the **Use rights & rules** tab of the license record may be checked so that all explicit allocations (without exemption reasons specified) consume licenses. Alternatively, for points-based licenses the **Allocated points** value can be configured on each allocation to specify how many license entitlements should be consumed. Allocation details should be reviewed and updated as appropriate on a regular basis.

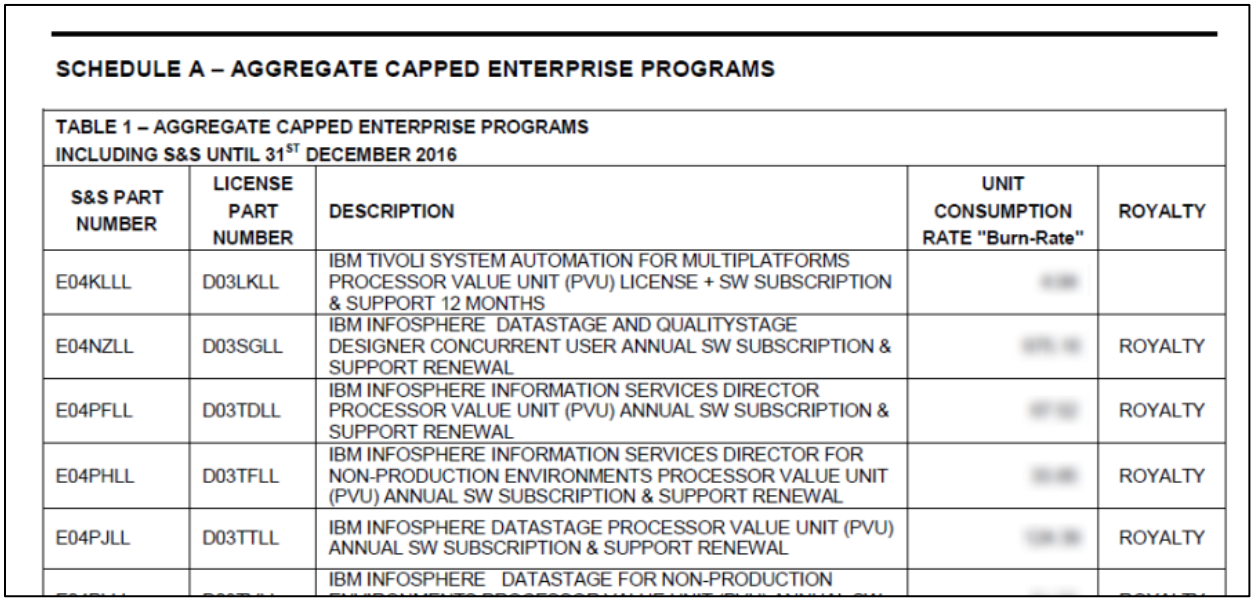
- Manual analysis and calculation

If the scenario does not lend itself to using explicit allocations, a manual assessment of entitlement consumption may need to be performed based on available data. A Custom Metric license type can be configured to record the entitlement and manually calculated consumption.

Contracts

Aggregate Cap Enterprise Program (ACEP)

Entitlements for IBM licenses under an Aggregate Cap Enterprise Program (ACEP) will likely have a Transaction Document containing a table like the following:



SCHEDULE A – AGGREGATE CAPPED ENTERPRISE PROGRAMS

TABLE 1 – AGGREGATE CAPPED ENTERPRISE PROGRAMS INCLUDING S&S UNTIL 31ST DECEMBER 2016

S&S PART NUMBER	LICENSE PART NUMBER	DESCRIPTION	UNIT CONSUMPTION RATE "Burn-Rate"	ROYALTY
E04KLLL	D03LKLL	IBM TIVOLI SYSTEM AUTOMATION FOR MULTIPLATFORMS PROCESSOR VALUE UNIT (PVU) LICENSE + SW SUBSCRIPTION & SUPPORT 12 MONTHS		
E04NZLL	D03SGLL	IBM INFOSPHERE DATASTAGE AND QUALITYSTAGE DESIGNER CONCURRENT USER ANNUAL SW SUBSCRIPTION & SUPPORT RENEWAL		ROYALTY
E04PFLL	D03TDLL	IBM INFOSPHERE INFORMATION SERVICES DIRECTOR PROCESSOR VALUE UNIT (PVU) ANNUAL SW SUBSCRIPTION & SUPPORT RENEWAL		ROYALTY
E04PHLL	D03TFLL	IBM INFOSPHERE INFORMATION SERVICES DIRECTOR FOR NON-PRODUCTION ENVIRONMENTS PROCESSOR VALUE UNIT (PVU) ANNUAL SW SUBSCRIPTION & SUPPORT RENEWAL		ROYALTY
E04PJLL	D03TTLL	IBM INFOSPHERE DATASTAGE PROCESSOR VALUE UNIT (PVU) ANNUAL SW SUBSCRIPTION & SUPPORT RENEWAL		ROYALTY
		IBM INFOSPHERE DATASTAGE FOR NON-PRODUCTION		

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ACEP products may be deployed up to an agreed date (the "ACEP Calculation date") up to a specified value, based on the Unit Consumption Rate specified in the table. It is a best practice to include some identifying text such as *"(ACEP)"* in the name of license records in FlexNet Manager Suite for ACEP programs, and maintain the entitlement (purchased) count assigned to these licenses to reflect the current maintained entitlement. This way, reports can be configured to filter on these licenses for reporting purposes and for calculating usage (the "ACEP Active Use Quantity") against the entitlements based on actual consumption. At the ACEP Calculation date, IBM should provide a proof of entitlement for the number of licenses that constitute the ACEP Active Use Quantity. The proof of entitlement should be uploaded into FlexNet Manager Suite, processed and assigned to the relevant licenses. At this point, the associated licenses can have the *"(ACEP)"* text in their names removed.

Uncapped Enterprise Program (UEP)

Entitlements for IBM licenses under an Uncapped Enterprise Program (UEP), will likely have a Transaction Document containing a table similar to the following:

SCHEDULE B – PRODUCTS LIST

TABLE 1 – UNCAPPED ENTERPRISE PROGRAMS
Including S&S until 30th September 2019

PART NUMBER	DESCRIPTION
D0ILZLL	IBM PROCESS SERVER ADVANCED PROCESSOR VALUE UNIT (PVU) FOR LINUX ON SYSTEM Z LICENSE + SW SUBSCRIPTION & SUPPORT 12 MONTHS
D0P69LL	IBM PROCESS SERVER ADVANCED FOR NON-PRODUCTION ENV PROCESSOR VALUE UNIT (PVU) FOR LINUX ON SYSTEM Z LICENSE + SW SUBSCRIPTION & SUPPORT 12 MONTHS

UEP programs may be deployed without license quantity limitation subject to the terms agreed with IBM. It is a best practice to include some identifying text such as *"(UEP)"* in the name of license records in FlexNet Manager Suite for UEP programs, and maintain the entitlement (purchased) count assigned to these licenses to reflect the current maintained entitlement. This way, reports can be configured to filter on these licenses for reporting purposes and for calculating usage (the "UEP Active Use Quantity") against the entitlements based on actual consumption. At the UEP Calculation date, IBM should provide a proof of entitlement for the number of licenses that constitute the UEP Active Use Quantity. The proof of entitlement should be uploaded into FlexNet Manager Suite, processed and assigned to the relevant licenses. At this point the associated licenses can have the *"(UEP)"* text in their names removed.

Unmanaged Environments

Data from some parts of the organization may not be imported into the main FlexNet Manager Suite instance. While this may raise concerns with IBM and fail to meet their requirements for tooling, a best practice method to manually model and track licenses and usage from such environments is:

- Create a Custom Metric license to model each entitlement

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- Manually enter a value into the **Consumed** field on each license record per the consumption numbers provided by the persons internally responsible for the unmanaged environment

Planning & Implementation

The “Planning & Implementation” chapter from the SLO Practice Guide provides a more detailed list of activities. Below are some IBM considerations to take into account:

To scope the IBM license reconciliation project, it is important to understand which products are critical for the initial license position and which can be deferred for a later phase. To do this, create a baseline from a recent audit report, or assemble a baseline representative list of entitlements, including entitlements acquired through recent agreements (e.g. IBM's Passport Advantage). This will help identify which licenses are in scope and the regional consumption reporting requirements (which defines the enterprise groups and license creation requirements). It is also possible to assemble a baseline summary from a detailed list of individual purchase records, but this second approach will be more time consuming.

Start assessing the IBM Regional License consumption calculation requirements based on known location of IBM sub-capacity product deployments and review enterprise groups to have a clear understanding of how they relate to required IBM Region sub-capacity licenses and reporting for compliance vs. required internal reporting.

Such defining of priority products might make sense, but be prepared to consider other factors that could come into play (e.g., if a contract renewal is on the horizon for a certain set of products, it may make sense to include that set of products in the project scope). Some products require significantly more manual effort than others, so make sure that the overall effort required does not exceed what the project timeline and resourcing allows.

Discovery & Inventory Normalization

The “Discovery & Inventory” chapter from the SLO Practice Guide provides general best practices for discovery and inventory management. Below are some IBM considerations to take into account:

Hardware and Virtualization

Each IBM license type will have different data collection requirements. The most common case is the IBM sub-capacity PVU license, which requires the following information:

- General hardware characteristics for each physical and virtual device, including processor type, processors, cores and threads
- Configuration of virtual machines, partitions, zones and pools, including "guest to host" virtual to physical machine relationships

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Note: *VMware clusters are generally useful to have but are not factored into IBM sub-capacity PVU licensing, thus not a critical part of the inventory data.*

If using Flexera Inventory, it will collect all the important hardware and partitioning configuration required for IBM licensing. Whether using Flexera Inventory or a third-party inventory source, it is imperative to validate the health of the inventory source by looking for abnormalities, such as:

- Machines where the number of cores or processors = 0
- Machines where the number of cores or processors are unusually high (e.g., mid-range x86-64 servers with only 1 processor but which are reporting 64 cores)
- Virtual machines or partitions without a host, especially if these systems contain sub-capacity PVU licensed products

Note: *Sockets are not collected by most inventory tools. The physical processor count is the closest available value.*

Using FlexNet Manager Suite as an Inventory Source

FlexNet Manager for IBM is an IBM approved alternative to ILMT, TADd, and TEM/SUA for sub-capacity PVU license calculations when configured and used correctly. For up to date information, please see Flexera Knowledge Base article on Using FlexNet Manager Suite for IBM Sub-capacity PVU Licensing.

Using ILMT as an Inventory Source

The IBM License Metric Tool (ILMT), Tivoli Asset Discovery for Distributed (TADd or TAD4D) and Tivoli Endpoint Manager (TEM) for Software Usage Analysis (SUA) tools are accepted for sub-capacity PVU licensing in addition to FlexNet Manager Suite. Use the ILMT adapter to connect to these data sources. Read access to the database will be required. For more information on connecting to ILMT, refer to the Online Help.

It is important to note that when connecting to ILMT DB2 database, the driver on the Flexera Beacon needs to match the exact version of the DB2 database. Flexera provides a link to the global download page for the DB2 drivers. Work with you ILMT administrators to identify the proper driver needed. In addition, it is important to have all Virtual Machines in ILMT assigned to their host. If this is not accomplished, duplicate devices will be created in FlexNet Manager Suite as the serial number will not be properly represented.

Please note that licensees using an Eligible Public Cloud (EPC) to deploy PVU software do not need to have ILMT configured for those VMs. Standard practice would still be to confirm the quantity deployed through

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scripts, contracts, system reporting, but we can consider sub-capacity for those VMs using the PVU ratios outlined on the BYOSL site:

A few more points worth mentioning around BYOSL:

- If you have ILMT installed and wish to use it to track software usage for VMs at an EPC, you can configure ILMT to register the correct PVU rating per the directions on this link
- There are many public clouds which are not EPCs. There is currently not a process in place to account for these providers which are not allowing ILMT to be given credentials to the VM managers
- IBM is currently considering developing a policy to handle similar situations as this situation will become more prevalent. If you come across a similar situation, please reach out to your compliance manager who will need to petition an exemption
- FlexNet Manager Suite has out of the box capabilities to model IBM PVU license rules that applies to the default set of cloud service providers, such as: 70 PVUs per vCPU on AWS, Azure, Google, SoftLayer virtual servers, 100 PVUs per vCPU on IBM Cloud Managed Services x86, 120 PVUs per vCPU on IBM Cloud Managed Services Power Systems, 70-140 PVUs per vCPUs in Bluemix depending on memory size

Mainframe

While it is not possible to gather mainframe inventory with an agent or via a third part tool, Flexera can help manage mainframe licenses. Please see Appendix 1: Managing Mainframe Licenses.

Software Inventory Including Manual Inventory

While much of the IBM license and inventory data can be automatically collected, there are some that will require some degree of manual work. For IBM Authorized User, if users are not found in inventory, they must be manually added. For IBM Floating User, the consumption count does not come from inventory and must be manually added or imported via a business adapter. For IBM User Value Unit (UVU), users must be manually applied to the license. Then each user needs to be classified as "Normal", "External", or "Infrequent".

However, once the users are applied, the point table will take effect automatically, producing the correct results.

Many IBM applications have different ways of being detected on a system. When focused on IBM software license compliance, it is important that the inventory feed includes:

- Package repository installer evidence from each of the major platforms on which IBM software is installed, often including LPP (AIX), RPM (Linux), DEB (Linux), Add/Remove Programs (Windows), MSI (Windows), PKG (Mac)

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- File evidence for the key file types used to recognize IBM applications, especially the following extensions: .exe, .swtag, .sys, .sys2, .swidtag, .cmptag

---

Note: *Flexera Inventory is configured out of the box to collect the appropriate file evidence required for IBM application recognition. It also includes some additional evidence collection mechanisms that are useful for detecting IBM application installations (e.g., IBM Installation Manager packages).*

License Creation & Optimization

The "License Creation & Optimization" chapter from the SLO Practice Guide provides general best practices for creating, managing and optimizing licenses. Below are some IBM considerations to take into account.

License Creation

For details on management strategies for various IBM license types, please review the IBM License Types chapter.

Below are some best practice recommendations for creating IBM licenses:

- If ILMT will be used for inventory, do not process purchases to create licenses. Once the ILMT inventory connection is established and PVU licenses have been automatically created, it is time to start processing purchases by linking them to the relevant, already existing licenses. For any licenses not automatically created, it is a best practice to manage them alongside the unprocessed purchases.

- When using Summary purchase data, create one license per region dependent on the deployment locations and restrict or scope the license accordingly. Multiple licenses may also be required per product to accurately reflect maintained and perpetual non-maintained entitlements.

- When using Transactional purchase data, first assess and understand the current entitlement position (in relation to both changing names, metrics and maintenance quantities). Aim to create as few licenses as possible per product. However, the IBM requirement to maintain all entitlements for a product in use at a customer site may require separate licenses to be created to represent maintained entitlements and non-maintained perpetual entitlements. The non-maintained perpetual entitlement licenses may need to be temporarily retired if maintained entitlement is currently held and used. Create one license per region dependent on the deployment locations and restrict or scope the license accordingly.

- Validate the license name created by the SKU. Please note that IBM often changes product names and the license name created automatically may be a newer or older name than the license name on the entitlement. Also, where Regional IBM licenses are required, ensure to set a naming convention to clearly identify the region-specific licenses.

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- Where the required SKU data has not been provided, this can be identified by assessing and searching for the relevant IBM Announcement letter or using the Gemini E-store.
- Validate that the **License type** field created automatically by the SKU is correct and that the license reflects the required maintenance dates (IBM Establishment licenses created as Site licenses, Appliance Install licenses created as Appliance licenses, etc.).
- Validate that the correct points tables have been applied to the IBM points based licenses (PVU, RVU, UVU). Any customer specific points tables will need to be manually configured.
- Validate that the **License Use Rights & rules** have been configured correctly. It is also a best practice to assess the IBM License Information Document (LID) to ensure the specific terms of the license are either configured or are manually captured as part of manual consumption. Any specific (non-standard) use rights will need to be manually configured.

License Optimization

This section covers common optimization methods. Many of the strategies for optimizing IBM Licenses are not that different from other publishers and other products, but there are some specific concerns. Some of the main techniques include, but are not limited to:

- Identify non-use of licensed products where maintenance can be cancelled
- Ensure bundles are configured to reduce secondary license consumption
- Assess and configure product specific considerations
- Ensure correct consumption for server environment and role
- Optimize deployments in virtualized environments & infrastructure
- Review license metric
- Review application portfolio rationalization

Note: *It is important to consider the duration of the current IBM contracts to understand when savings may be realized. It is also important to consider IBM's pricing strategy (placing focus on new license sales over maintenance renewal) and Maintenance & Reinstatement costs (if maintained software may be required in the future) when contracts are negotiated to realize savings.*

Maintenance Cost Savings

IBM perpetual software and Fixed Term licenses are sold including Subscription and Support (S&S). Twelve months S&S is normally included with perpetual software licenses.

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S&S entitles the Licensee to use the latest version of the product released within the S&S period and request IBM support. The Licensee can renew the S&S period by purchasing additional S&S (IBM E Part Number SKU's). These E part SKU's are sold individually on a twelve-month basis. Often S&S is included for both newly acquired and existing perpetual entitlements in IBM's enterprise contracts. These contracts define products and quantities covered by S&S until the end of the contract or specified period. S&S is approximately 25% of the cost of the perpetual license.

IBM requires enterprises to maintain all (or none) of the S&S for software at a particular site under the following term (see the IBM Passport Advantage agreement extract below):

> *"If Client elects to continue IBM Software Subscription and Support for an IBM Program at a designated Client Site, Client must maintain IBM Software Subscription and Support for all uses and installations of the IBM Program at that Site"*

To implement maintenance cost savings there are two primary options:

- **Stop S&S/maintenance entirely for a specific license at a site**: This requires identifying a license where the organization has S&S, but no longer requires it. At the end of the current S&S period (year), if managed outside of a contract, it should not be renewed. If the S&S is managed within a contract, declare your intention not to renew the maintenance in renewal negotiations.
- **Reduce S&S/maintenance for a specific license at a site**: This requires identifying a license where the current consumption is less than the S&S held at a site and which is unlikely to increase in the following years. At the end of the current S&S period (year), if managed outside of a contract, the reduced S&S quantity should be acquired. If the S&S is managed within a contract, declare your intention to renew a reduced maintenance quantity.

In addition to customer pricing levels, IBM contracts can often be negotiated to benefit from scale when calculating the pricing. The logic behind it is that the more software or S&S included often reduces the unit price when represented as a total contract price. The removal of software or S&S may reduce this pricing impact in a manner that would determine IBM reapportion the total contract costs over the remaining software. IBM account managers are also likely to be focused on new software sales rather than S&S, so it may be difficult to realize maintenance reduction savings on their own. IBM offer S&S license reinstatements to perpetual licenses for which S&S was not previously renewed. The reinstatement cost is approximately 75% of the purchase price, or three times the S&S price. As such, when assessing a reduction in maintenance please consider any future requirements, as it could be better to maintain some or all entitlements supported if consumption is likely to grow again within the next three years.

Bundle Assessment & Configuration

IBM programs are often bundled with other programs which support them. Typically, when a license is purchased for a primary application, it normally provides an entitlement to use relevant secondary applications (subject to various constraints). Please review the License Information Document (LID) for

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the relevant bundling rights. Some typical wording describing this arrangement (from the LID for IBM DB2 Enterprise Server Edition for Linux, UNIX and Windows 10.5) is:

> *"The Program is licensed as a multi-product package and includes the Supporting Programs identified below. Licensee is authorized to install and use such Supporting Programs only to support Licensee's use of the Principal Program under this Agreement […].*
>
> *The following are Supporting Programs licensed with the Program:*
>
> *[…]*
>
> *IBM WebSphere Application Server 8.5*
>
> *[…]"*

Automated Bundles

FlexNet Manager Suite provides bundle functionality to enable the automatic calculation and management of IBM bundles. Many IBM bundles are included in the PURL and will be applied automatically to a license when processed from a SKU. When more than one application is added to a license, the license is amended to "Multi-Product". A multi-product license covers a group of products that are sold together as a bundle under a single license. A Multi-Product license typically contains a primary product (or sometimes more than one), and one or more supplementary products. The primary product must be present to consume an entitlement. The supplementary products may be present on the same device, or under the terms of some licenses, may be installed on a separate server. The purpose is for one license to cover all products, both primary and secondary. For more details on bundles in FlexNet Manager Suite, please review the SLO Practice Guide.

Where the IBM bundles exist in the PURL, processing a purchase with the appropriate IBM SKU will automatically apply the relevant primary and secondary applications to the license. When creating a license from an application (without processing a purchase with a SKU) the **Create a License** Page's **License Models** includes a column called "bundle". Select the "Yes (Primary)" model to create a bundle license.

FlexNet Manager Suite bundles automatically include the secondary application installations, where the secondary are installed on the same devices as the primary.

Practical Example

A bundle has been created where Product "A" is the primary application and Product "B" is the secondary application. Product "B" also has a separate, standalone license. Where Product "A" and "B" are identified on the same device, Product "A" will consume the bundle license and Product "B" applications sharing the same device will also be linked to the bundle consumption. Any devices where only Product "B" is installed will consume against the standalone Product "B" license.

To manage bundle application installations on separate devices to the Primary application, manually exempting those devices from the standalone license consumption is required. Specific device exemptions can be configured and managed within the consumption tab of the license or using the **Allocation and**

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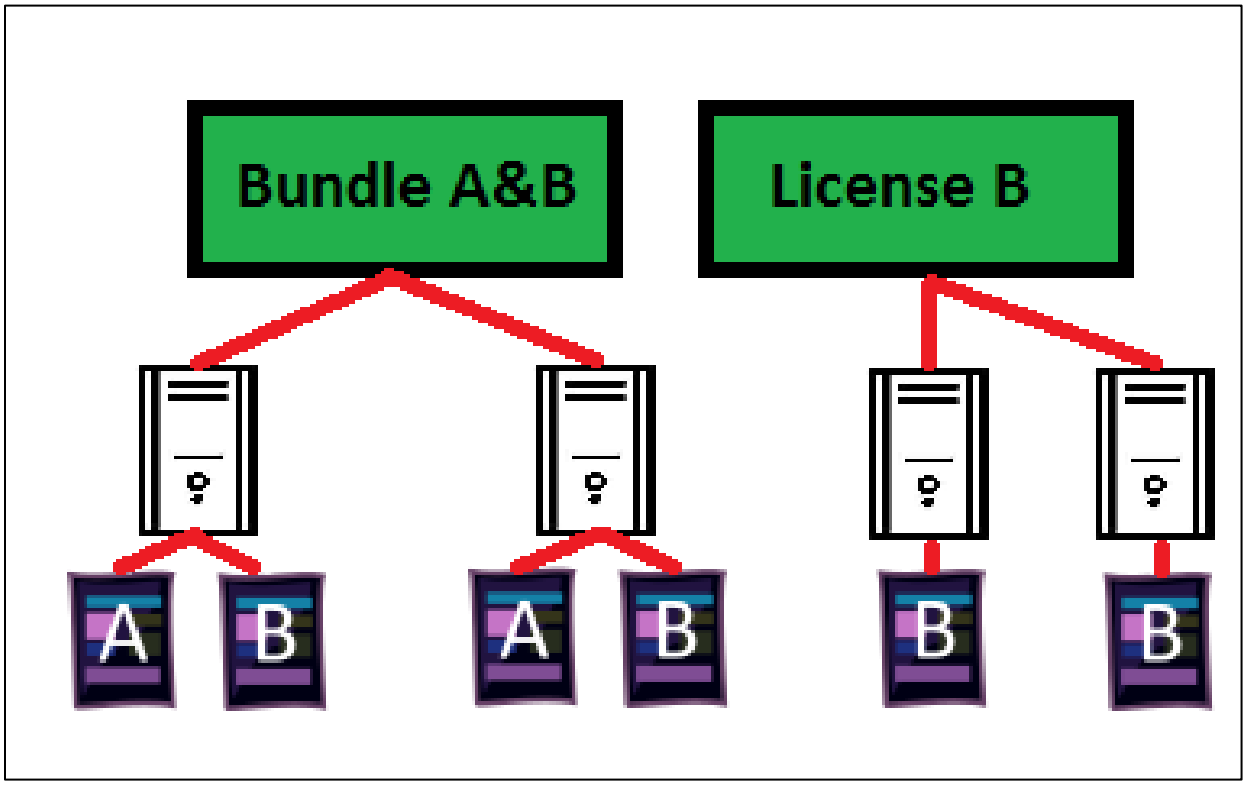
Exemptions page. For tracking and reporting purposes it is recommended to use a custom exemption reason such as "Supporting Installation to <Product>" when applying device based bundle exemptions.

Supplementary applications have specific use rights defined within the relevant IBM License's LID. If a device has a supporting application installed and is included in a bundle, but the supporting application has been used outside the permitted LID terms (e.g., the application is not being used in sole support of the primary application), then this installation should consume against its own standalone license. To manage this scenario, identify the device which should consume against its own license and allocate it accordingly.



Note: *IBM bundles in the IBM LID can include patches, fix packs and drivers as supporting programs. As these are usually not part of the FlexNet Manager Suite ARL, they will not get recognized and included into the default IBM bundles. Any product marked as supplementary will never contribute to the consumption count on the license, irrespective of whether it is measured for compliance. Please see the section below for further information. The Flexera Research team monitor the release of new IBM License Information Documents and will add new bundles in library updates.*

Manual Bundle Creation and Configuration

In a bundle, the **Use Rights and rules** tab of the license is updated from having separate upgrade and downgrade sections to show **Licensed products and upgrade/downgrade rights**. This enables the manual

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configuration of license bundles. If you identify IBM bundles that are not currently part of the tool, please raise a support ticket.

The following steps describe how to manually create a bundle:

- Create a license or open an existing standard single-product license
- In the **Applications** tab search and add an additional application (which will represent the supplementary product)
- In the **Use rights and rule** tab, expand the **Licensed products and upgrade/downgrade rights** section and click **edit** next to the newly added application
- Select "Supplementary" and amend the required upgrade and downgrade rights, then click **Save**
- Run a reconciliation
- Any installations of the secondary application installed on the same device as the primary will now be included in this license

When editing the bundle settings in the **Use Rights and rules** for a secondary product, a possibility is selecting **Measure for Compliance**. It is important to note that the "Measure for Compliance" setting of the bundle rules can impact the compliance status of a bundle license but this setting will not add to the consumption of the license. Selecting it reveals a further setting where a ratio can be defined for the supplementary to primary. If a ratio of less than 1:1 is selected and more supplementary application installations are identified on the same devices as the primary, the license will report a status of "in Breach". This breach status is accompanied with a breach reason that "Supplementary Product Exceeds Ratio".

Assessing and Configuring Product Specific Considerations

Certain IBM License Information Documents specify that only certain components or applications are required for establishing entitlements. Flexera's PURL and SKU Library assign the relevant applications to the license. There are times however where the end user will also need to assess the IBM product's LIDs to ensure that the optimal license consumption is being calculated for each IBM licenses.

For example, Infosphere Datastage is licensed on a PVU metric and FlexNet Manager Suite will assign the application to a PVU license when processing a purchase SKU. But, as per the License Information Document below, in this scenario the non-Engine tier Datastage installations should be assessed and exempted from the Datastage license to ensure optimized license consumption.

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1. Components Used for Establishing Required Entitlements

When determining the number of entitlements required for Licensee's installation or use of the Program, the installation or use of only the following Program components are taken into consideration. In other words, Licensee may install and use Program components other than those listed below, under the license terms, but only the listed components are used to determine the number of entitlements required for the Program.

- Engine tiers, except the capacity in a clustered configuration that is used exclusively for either reading from or writing to IBM DB2 tables

Note: *Flexera is continuously improving application recognition to ensure accurate and optimal license reconciliation.*

Ensuring correct consumption for Server Environment and Role

Exemption by role and requirement to set device roles in FlexNet Manager Suite

Certain IBM products (such as IBM Integration Bus) include "Program Unique Terms" which define certain program uses that do not require license entitlements such as for development and functional test purposes. Please review the relevant IBM License Information Document (LID) to assess specific terms for each Program:

> *"Components Not Used for Establishing Required Entitlements*
>
> *When determining the number of entitlements required for Licensee's installation or use of the Program, the installation or use of the following Program and components are not taken into consideration. In other words, Licensee may install and use the following Program and components, under the license terms, but these components are not used to determine the number of entitlements required for the Program. Use of the Program and Components when used for Development and Functional Test purposes: Under Development and Functional Test use, the Program or components can only be deployed as part of Licensee's internal development, unit, and functional testing environments. Licensee is not authorized to use the Program or components for processing production workloads, simulating production workloads or testing the scalability of any code, application or system."*

In the example, assessing the devices with a role defined as "development" in FlexNet Manager Suite and ensuring they meet the IBM development terms above is required. Also, ensure the "development" role is configured in the **Exemption** section of the **Use Rights and rules**, otherwise exempt the specific devices with an appropriate reason.

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Back-up device role exemptions

IBM defines three types of backup situations: cold, warm, and hot.

In cold and warm situations, a separate entitlement for the copy on the backup machine is typically not required and no additional charge applies. In a hot backup situation, you must acquire license entitlements sufficient for that machine.

The table below from is taken from the IBM Distributed Software licensing reference guide and highlights the general license requirements for different back-up roles. See the reference guide and Backup use policies for further information on the Backup categories and their license requirements.

Backup Category	Program Status	Licensing
Cold	Not Started	No additional entitlement
Warm	Started but Idle	No additional entitlements
Hot	Started and doing work	Additional entitlements required

FlexNet Manager Suite will configure the use rights appropriately when processing an IBM SKU with the IBM PURL. However, the roles assigned to devices may be defined differently within organizations from those defined by IBM, so validating that the relevant device roles have been exempted is a best practice. The license consumption also needs reviewed to identify if any devices are incorrectly consuming the license (it might not have been assigned to the appropriate role).

If device roles have not been assigned in FlexNet Manager Suite, please assess all the devices consuming against the license to identify those that meet the requirements for the cold and warm exemptions. These devices should be manually exempted from the license. FlexNet Manager Suite has a bulk allocation and exemption functionality that will assist with the initial configuration and with the ongoing management. See the "Apply Allocations and Exemptions" Online Help page for further information.

The "Exemption" section within an IBM licenses will exempt the device roles from consuming against the license (where configured), but this cannot be used as a way of forcing certain device roles not to consume this license but consume against another license. The exemption rule ensures the devices with the configured roles are linked to the license on which the exemption is configured but do not consume. Warm backup devices require license entitlement for certain IBM Products such as DB2. Assess the relevant License Information Document for further information.

Warm standby 100 PVU per Physical Server management in FlexNet Manager Suite

DB2 licenses have specific license consumption requirements for “Warm” devices. The below is an extract from DB2 Advanced Enterprise Server edition:

> *“2.2 Idle/Warm Standby*
>
> *"Idle/Warm Standby" means that the Program is installed but is not operational to service user transactions or query workloads, and is used exclusively for administrative actions that assist in failover scenarios, such as: having a database in rollforward pending state to support log*

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shipping; or making a flash copy of a DB2 database and performing a database backup of this copy on another server; or keeping a standby database synchronized using the HADR component of the Program. Idle/Warm Standby servers must be licensed as follows:

If the primary server(s) are licensed under the PVU metric, then on the secondary/standby server(s) the Program must be licensed for 100 PVUs per physical server".

In your DB2 license identify and ensure automated exemption by role is disabled for 'Warm Stand-by'

In the Consumption tab of your PVU license -

If you have Device roles assigned to your inventory, filter the 'Device Role' column by 'Warm Stand-by'. If you do not have Device roles assigned to your inventory or your assigned 'Warm-Standby' device roles do not meet/match IBM'S definition, then manually select the relevant IBM 'Warm-stand-by' devices.

Add the 'Overridden consumption' column and for your Inventory device(s) (or Hosts where all VM's residing on the Host with relevant DB2 software installed are 'Warm-Stand-by') place 100 in the relevant Overridden consumption field.

Following these steps will result in the warm DB2 devices consuming 100 PVU's per physical device against the DB2 license. All other devices will continue to consume the license as expected.

Production & Non-production license consumption

For certain products, IBM sells separate license entitlements for production and non-production use. Non-production entitlements cost less than production ones but have restrictive use terms. When purchasing licenses, determine environment entitlement options, procuring where possible non-production entitlements for all deployments that meet the restrictive use terms.

"Non-production" is defined within the IBM License Information Document (LID):

"If the Program is designated as "Non-Production", the Program can only be deployed as part of the Licensee's internal development and test environment for internal non-production activities, including but not limited to testing, performance tuning, fault diagnosis, internal benchmarking, staging, quality assurance activity and/or developing internally used additions or extensions to the Program using published application programming interfaces. Licensee is not authorized to use any part of the Program for any other purposes without acquiring the appropriate production entitlements."

When reconciling existing license consumption, ensure separate licenses have been created that reflect production and non-production entitlement where relevant. Specific non-production applications exist in the ARL and will be linked to the license when processing the relevant non-production SKU.

It may be the case that the software identified the production and Nnon-production devices may be reporting as the same. This is likely to only reflect the production application as installed and therefore license consumption will initially only occur against the production license. A best practice is to ensure the correct applications have been deployed to the devices, but where there is no specific non-production

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software and the software installed and identifiable is the same for both production and non-production, this will need to be managed using the following approaches to ensure optimal license consumption:

- If device roles have been defined in an enterprise group within FlexNet Manager Suite and assigned to the relevant devices, then the production and non-production license should be scoped to consume only against the relevant group(s). This will result in the production devices consuming the production license and the non-production devices consuming against the non-production license. If the enterprise groups have been defined without IBM specifically in mind, then checking if the non-production devices scoped have installations being used that meet the non-production terms in the IBM License Information Document is recommended.

- If device roles have not been defined, managing the optimal consumption of production and non-production licenses can be done using allocations. Assess the devices that have the application(s) assigned to the license installed. Once the production and non-production devices have been identified (usually using assigned device role), allocate the production and non-production devices to their respective license. This will ensure the production and non-production devices consume against the relevant license.

FlexNet Manager Suite has a bulk allocation and exemption functionality that will assist with the initial allocation configuration and on-going management. In the **Apply Allocations and Exemptions** page, search the relevant applications that should be consumed by the production and non-production license and filter them. Add the device “Role” column and select the relevant devices which are to be allocated to either the production or non-production license. Click on **Allocate** and repeat this step for the remaining devices. These allocations would need to be maintained periodically to ensure the correct devices are consuming the relevant license.

Managing IBM licenses for the same application licensed under multiple metrics

Organizations may have the same IBM application licensed under multiple metrics. This usually occurs where licenses have been purchased by different areas of an organization or where suites have been purchased under a metric different to standalone licenses. To manage this scenario, the same application(s) need to be assigned to both licenses. To ensure the correct devices consume against the correct license, these will also need to be managed using either:

- Specific device allocations to each license which will need to be maintained as new or additional installations are identified, or

- If the devices have been split into relevant enterprise groups that represent specific group(s) for each license restrictions, the licenses should be restricted to consume only against that relevant group. Please note that this approach does not work if an enterprise group is only used to restrict a PVU license when the other license is a custom metric/RVU type, as installations will remain in an "unlicensed" position. In this scenario, the non-scoped devices should be allocated to the custom license

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Example: Tivoli Storage Manager (TSM) / Spectrum Protect (SP) has been purchased on a PVU and Terabyte (custom) metric. Two licenses should be created to represent each license entitlement under each metric. As these licenses are for the same product, the same applications should be assigned to both. Using the **Apply allocations and exemptions** page, identify and filter on the relevant TSM / SP applications. Select the relevant devices which are to be consumed by one metric (PVU) and allocate these devices to the PVU metric's license. Repeat this step allocating the other devices to the custom metric Terabyte license. Although the Terabyte license does not automatically consume, allocating the device to the license will prevent the installation consuming against the other license.

Some ARL applications identify license metric keys that have been applied to the installation. In these scenarios, please link the relevant application for the license metric.

Managing Temporary additional use installations

IBM offers a temporary additional use policy (with specific restrictions) which enables the additional use of IBM Programs in non-production for up to 90 days for scenarios such as data center migrations. See the following link for more information.

If the 90-day policy is not sufficient, it might be worth speaking to the IBM account manager, as longer temporary additional use rights may be granted.

To ensure temporary additional use installations do not consume against a license, the specific devices or users should be identified and exempted from the license.

To create these exemptions, either:

- Access the **License Consumption** tab, select the relevant consumption and apply an exemption reason
- Access the **Apply allocations and exemptions** page and search and filter on the license. Select the relevant consumption and click exemption

---

Note: *For tracking and reporting purposes it is recommended to use a custom exemption reason such as "Temporary additional use" and include the date at which the 90-day (or other) period will expire.*

Third party license provision management

IBM software may be provided to the customer by a third-party infrastructure provider (where the third-party is responsible for the IBM licenses consumed on their devices). To ensure optimal license consumption, these third-party IBM license deployments should not count towards the license count.

Where FlexNet Manager Suite inventories these third-party devices, the applications installed will be identified. Unless the installed software has been packaged in a manner that the evidence of the installation can be separately identifiable, it is likely that where a license already exists for these applications, they will consume against the existing license(s).

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It is necessary to manage this scenario, ensuring the licenses only consume the installations for which you are responsible. Please follow the steps below:

- Access the **License Consumption** tab for each license where the software has been provided by a third-party, select the relevant consumption and apply an exemption reason (see note below). The options below are only a recommended preference if tracking third-party license consumption is required
- If the third-party provider's devices have been assigned to specifically identifiable enterprise groups, the main license can be scoped not to consume against these groups. Create a second license named appropriately for the third-party entitlements. Scope the licenses to consume only against the enterprise groups specific to the third-party devices. Assign the relevant applications from the main license also to this third-party license. Following a license reconciliation, the main license will no longer consume the installations from the third-party devices and the consumption will be reflected against the specific third-party license
- If the third-party provider's devices have not been assigned to specifically identifiable enterprise groups but the devices are known, create a second license named appropriately for the third-party entitlements. Assign the relevant applications from the main license to this third-party license also and ensure the third-party license has a lower license priority. Allocate the third-party devices to the third-party license.

Note: *For tracking and management purposes it is recommended to use a custom exemption reason such as "3rd party providers name" and "license provision".*

IBM software licenses may also be included within other third-party non-IBM software (for example, FlexNet Manager Suite license includes a right to use Cognos as a supporting application). To ensure these installations do not count towards your license consumption, please follow either of these steps:

For installations on the same device as the third-party non-IBM software:

- If a license bundle does not already exist, create one by assigning both the third-party non-IBM software and the relevant included IBM applications. Ensure the primary application is set "Yes" for the Third-party non-IBM software and that the IBM software is configured as a supplementary application (Primary = "No"). This license bundle will ensure that installations of the IBM software included with the third-party non-IBM software consumes against this non-IBM third-party program license and not consumes against the respective IBM license. See the Bundles Assessment & Configuration chapter for more information on bundle management.
- An all publisher reconciliation will be required to calculate consumption where multiple publisher applications are included in a bundle

For installations on separate devices to the third-party non-IBM software:

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- If a third-party non-IBM software license includes an IBM license which can be deployed on a separate device to the third-party license software, this can be managed through the following:
    - Access the **License Consumption** tab for each of the IBM licenses where the software has been provided by a third-party provider and select the relevant consumption. Then apply an exemption reason.

Note: *For tracking and management purposes it is recommended to use a custom exemption reason such as "3rd party providers name" and "license provision".*

Optimize deployments in virtualized environments & infrastructure

Efficient sizing of VM's & Pools

The type and configuration of virtualization technology used can impact IBM license consumption. Ensuring the business processing requirements and the licensing implications of IBM software deployed on virtualization technologies are understood, can help ensure optimal license consumption. For further information on the implications of virtualization technology and configuration see IBM's Virtualization Capacity license counting rules.

Logical Partitions (LPARs)

Logical Partition (LPAR) types (dedicated/capped or uncapped) and the use of Pools on IBM Power Systems can impact license consumption. A shared pool or physical shared pool is a single shared pool of processor cores that can be available to all partitions defined within the shared pool. The system will automatically move processor core resources between the LPARs as needed. Power6 and later versions allows physical shared processor pools to be subdivided into multiple virtual pools. LPARs that are part of a shared pool are limited by the number of processor resources in that pool.

Capped LPARs can never be allocated processing capacity over its Entitled Capacity (the actual processor core capacity available to the partition). The Entitled Capacity for an LPAR can be changed because of Dynamic Logical Partitioning operation after start-up. Uncapped LPARs can exceed their Entitled Capacity by accessing the unused processor cores in the shared pool, when available, up to the online virtual processor value (actual virtual processors available to a partition which can be changed because of Dynamic Logical Partitioning operation after start-up). Placing Uncapped LPARs in default or large pools without acknowledging the potential available online virtual processors which the LPAR could access could result in a significant license consumption.

Hardware optimization

The IBM PVU table (located here and reflected in the FlexNet Manager Suite IBM PVU points rule) defines the PVU per core rating to be applied to the device based on the Processor brand and type. These PVU per core ratings range from 30 to 120 PVU's and are based on the performance of the processor.

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Assess and ensure that the proposed or existing IBM PVU software deployments are installed on devices with the appropriate processor technology in relation to the business requirements. Changes in processor technology can impact the license requirements.

Review license metric options

Device based vs. user or other metric based

IBM offers many of their products on multiple license metrics. Choosing the optimal license metric can result in reduced license requirements. For new software purchases assess the infrastructure and proposed deployments against the expected user or use based consumption. As an example, if you have many users accessing software that is only installed on a few servers, it may be more cost efficient to license on a PVU basis, whereas if you require many deployments but for only a few users it may be more efficient to license on a user basis.

Some licenses have minimum consumption requirements that must be considered when choosing metric options and calculating consumption. Some license metrics such as UVU & RVU provide conversion tables (which are included as points tables within the IBM PURL) that provide economies of scale for license purchases. These results in ratio levels where higher purchase quantities result in greater license entitlement per license purchase ratios. When assessing metric options, these need to be considered and calculated.

See the relevant products IBM License Information Document for further information on both license minimums and conversion tables.

Application portfolio rationalization

Using the categories in the ARL, look for all the related products from this and other major publishers. For example, if you are analysing IBM DB2 look for Oracle Databases, Microsoft SQL Server, and other database technologies in use in the environment. If you are analyzing IBM Websphere Application Server, look for Oracle WebLogic, Microsoft IIS / Application Server and other application servers. There may be a significant amount of overlap. Some enterprises may even have multiple unlimited agreements for the same categories of products from multiple publishers. Consolidating on fewer technologies can bring both significant hard and soft cost savings from eliminating contract payments, larger scale allowing for deeper pricing discounts on fewer contracts, and fewer technologies to support.

Exemption Spreadsheet Import

Configure an adapter and interface to upload and import spreadsheet data to explicitly allocate computers to licenses, and exempt computers from consuming licenses where appropriate. This type of interface can aid with configuring explicit exemptions to support various license management strategies.

Regional Licensing

IBM licenses software for use in one of three defined regions:

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- Region 1: North America & South America
- Region 2: Europe & Africa
- Region 3: Asia & Australia

Organizations that operate across regions should:

- Define a location enterprise group structure within FlexNet Manager Suite in such a way that locations can be mapped to these regions. A structure having multiple locations mapped to each IBM-defined region is typical
- Ensure a process is in place to accurately set and maintain the location property on inventory device and user records
- Create separate regional license records for each product operated in multiple regions, and apply restrictions to ensure that each license will only cover software usage in that region

Additional Practices

Software Removal

IBM software applications installed via installation methods such as IBM Installation Manager will need to be removed in the same manner as they were installed. Failure to do so, or removal of software via an alternative method may result in latent evidence being left behind and false positive installation being identified, potentially leading you to pay for unneeded licenses.

Missing Processor Model Details

Sometimes data available from the BIOS and operating system on a computer does not identify the model of processors installed sufficiently to enable an optimal or accurate choice of which PVU points rule to use. The exact PVU points per processor used will depend upon the exact processor type details reported by the operating system. If the processor type is not recognized, then typically a default of 100 PVU points per processor will be used. To overcome this lack of automated data, processor type details on affected inventory devices can be manually overridden to provide full details.

For example, this has been observed to occur with a relatively small number of Intel Pentium III Xeon processors on computers running Windows Server 2003 versions, where the processor types are described as "Intel(R) Pentium(R) III Xeon processor" without any indication of the model (such as "E5540", "X5650", etc.) These computers can be found from the **Management > Discovery & Inventory > All Inventory** page, filtering on **Processor type** contains "Xeon processor".

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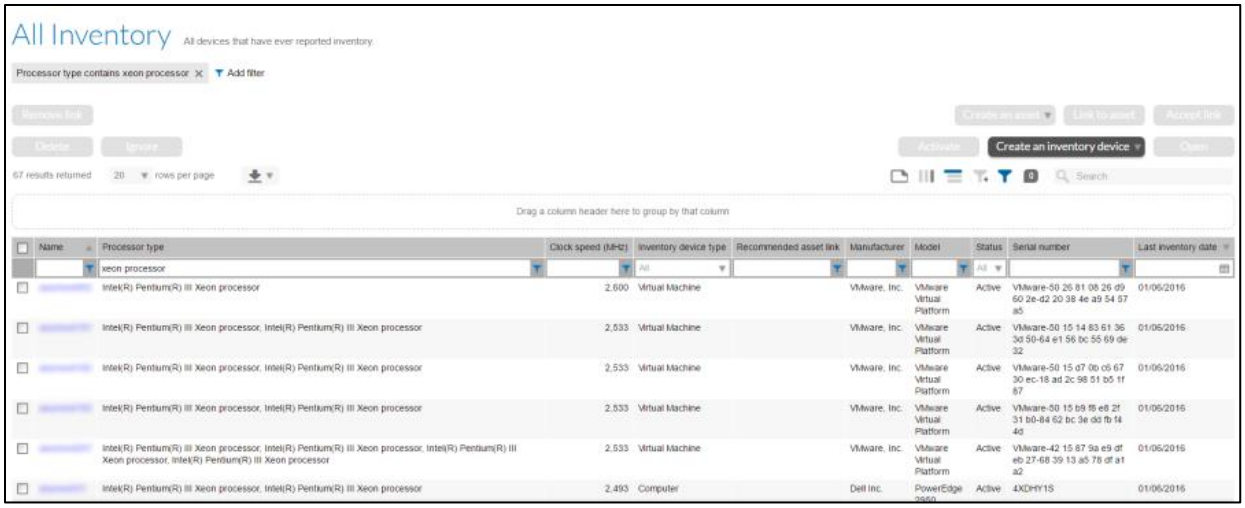
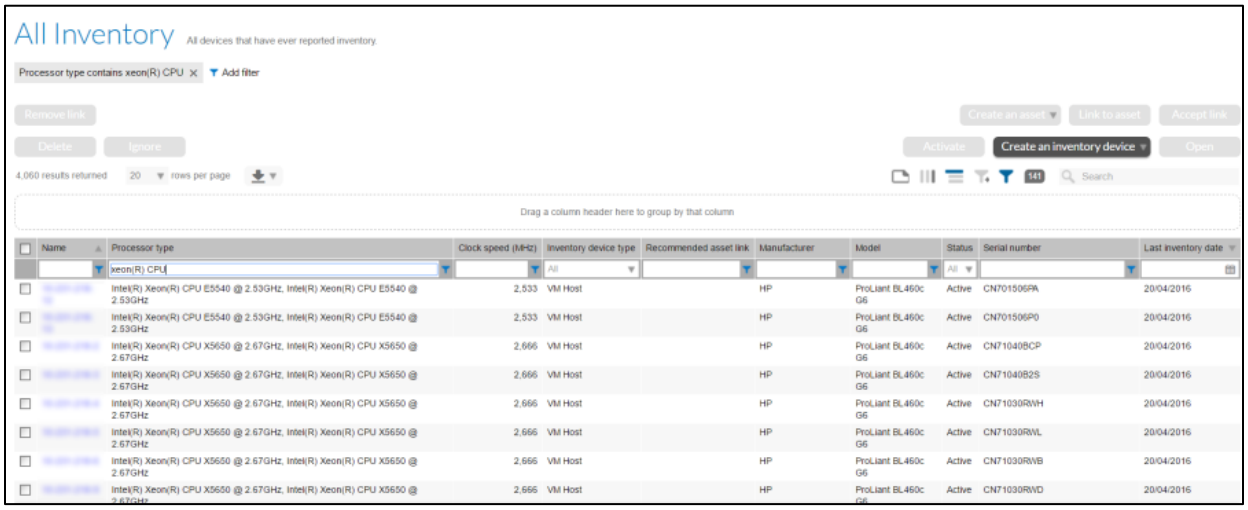


Examples of processor type details that do contain model information can be found by filtering on **Processor type** contains **"Xeon(R) CPU"**.



Manually Overriding Processor Details

The processor type can be manually overridden on relevant inventory device records by clicking the **Override** option against the **Processor type** property on the **Hardware** tab when viewing the inventory device record. You will need to determine exactly which processor model is installed on the computer, and enter a processor type value which is will match the appropriate PVU points table rule. PVU points table rules (including the patterns used to match processor type values) can be reviewed under **Management > License Compliance > Points Rule Sets**.

Reporting & Governance

The “Reporting & Governance” chapter from the SLO Practice Guide provides general best practices for gaps analysis, KPI tracking and generic custom reports. Below are some IBM considerations to take into account.

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IBM Reports

The IBM Passport Advantage Agreement provides details of typical reporting obligations:

> *1.12 Compliance Verification*
>
> *"Client will i) maintain, and provide upon request, records and system tools output, and access to Client's premises, as reasonably necessary for IBM and its independent auditor to verify Client's compliance with this Agreement, including Machine Code and Program licenses and metrics, such as sub-capacity usage, and ii) promptly order any required entitlements and pay additional charges at IBM's then current rates, (including uses in excess of Client's authorizations or entitlements, and associated IBM Subscription and Support and Selected Support), and other liabilities determined as a result of such verification. These compliance verification obligations remain in effect during the term of this Agreement and for two years thereafter. Client is responsible for retaining adequate records. If Client's records are inadequate to determine IBM Subscription and Support or Selected Support charges, IBM's charges for any excess usage will include two years of associated maintenance and IBM Subscription and Support or Selected Support".*

The customer may have additional reporting requirements beyond typical sub-capacity reporting requirements as part of their agreements with IBM that will need to be separately addressed. For example, IBM's License Management Option (LMO) is likely to require other reporting.

On this basis, the following classes of data should be saved on a quarterly basis and safely archived for at least two years:

- Reports from FlexNet Manager Suite (see Reports to Run below)
- Records substantiating license consumption details that have been manually calculated and stored in FlexNet Manager Suite
- Records of scripts and other tool output that may have be used to gather license consumption details

While it is prudent to save data as described here, this data is first and foremost for internal records and not for providing it directly to IBM without appropriate review and consideration.

Reports should be exported at the end of each reporting period (typically at least once per quarter) and archived in a safe place where they will be available for at least two years in the event of an audit. Ensure the reporting period is clearly identified in the name of the folder, archive or filenames in which the reports are stored.

Digitally sign all generated reports so that proof can be provided of who approved the report and when that was done. Tools such as Microsoft Excel or Adobe Acrobat Reader DC could be used for signing Excel and .pdf files.

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Reports to Run

Display and export data from the following reports and pages of the FlexNet Manager Suite web interface to assist with managing IBM PVU licenses:

- **Management > License Compliance > Licenses > All Licenses >** filter by Publisher "IBM". Extract this page to provide a summary position of all IBM licenses showing their current entitlement and consumption. Ensure the relevant columns are added to the page prior to exporting
- **Reports > License Compliance > Licenses > IBM PVU License Consumption** lists the software covered by IBM PVU licenses and detailed device consumption information resulting from most recent inventory import

---

Note: *The* ***Consumed*** *column in the All Licenses page for PVU licenses reports the Peak consumption that the license has calculated over the reporting period (and is shown in the PVU license as the Peak Consumption). The "Raw Consumption" column shows the current (as of the last reconciliation) PVU consumption for the license.*

Multiplying virtual device level consumption may result in a different count to the license consumption one due to the detailed nature of the report (such as multiple application versions installed on the same device are correctly counted once at a license level but reported individually).

As PVU license consumption is calculated at the host level, the sub-capacity or full-capacity host consumption (if relevant dependent on product license or inventory source) when de-duplicated per host and combined per License should result in a consumption calculation equal to the current consumption. Some report examples below:

- **Reports > Discovery and Inventory > Inventory > IBM PVU Overridden Inventory**: lists computers consuming from IBM PVU licenses where the computer inventory has been manually modified
- **Reports > Discovery and Inventory > Inventory > IBM PVU Out-Of-Date Inventory**: lists computers with incorrectly configured inventory agents, or those for which there has been no inventory gathered in the previous time interval you select for the report
- **Out of Date Reasons**: The device is not running frequent inventory scans, and has not reported recently, the device has frequent inventory scans enabled, but has not reported recently.
- **Reports > License Compliance > Applications > Application Installation Details >** filter for Publisher "IBM": lists details of all identified installations of IBM applications.
- **Management > License Compliance > Compliance > Unlicensed Installations >** filter for Publisher "IBM": lists installations of IBM software for which an applicable license has not been identified. This might be because no license for the application exists, or because conditions required for configured licenses to cover an installation have not been met

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Configure your own reports, possibly to obtain the following types of information:

- Details of allocations of inventory devices (including configured exemptions) to IBM license records
- Details of allocations of users (including configured exemptions) to IBM license records
- Summary list of IBM license records with use right details configured on each one
- List of applications assigned to each IBM license record

Useful Resources

IBM resources

- Learn about Software Licensing
- License Information documents
- Passport Advantage Virtualization Capacity (Sub-capacity) Licensing
- Support lifecycle
- Product list
- IBM Passport Advantage Agreement
- Passport Advantage Sub-capacity Licensing Eligible Product Statement
- Passport Advantage Virtualization (Sub-capacity) Licensing
- Virtualization Capacity License Counting Rules
- Manual Calculation of Virtualization Capacity
- PVU Tables
- Amendment to International Passport Advantage Agreement

Customer Community Resources

Flexera's Customer Community page offers resources such as:

- Knowledge Base articles: where articles are aimed at answering common questions such as access product FAQ, error documentation, problem resolutions and many more
- HelpNet Documentation: where you can find, and download our user guides, installation guides or product release notes

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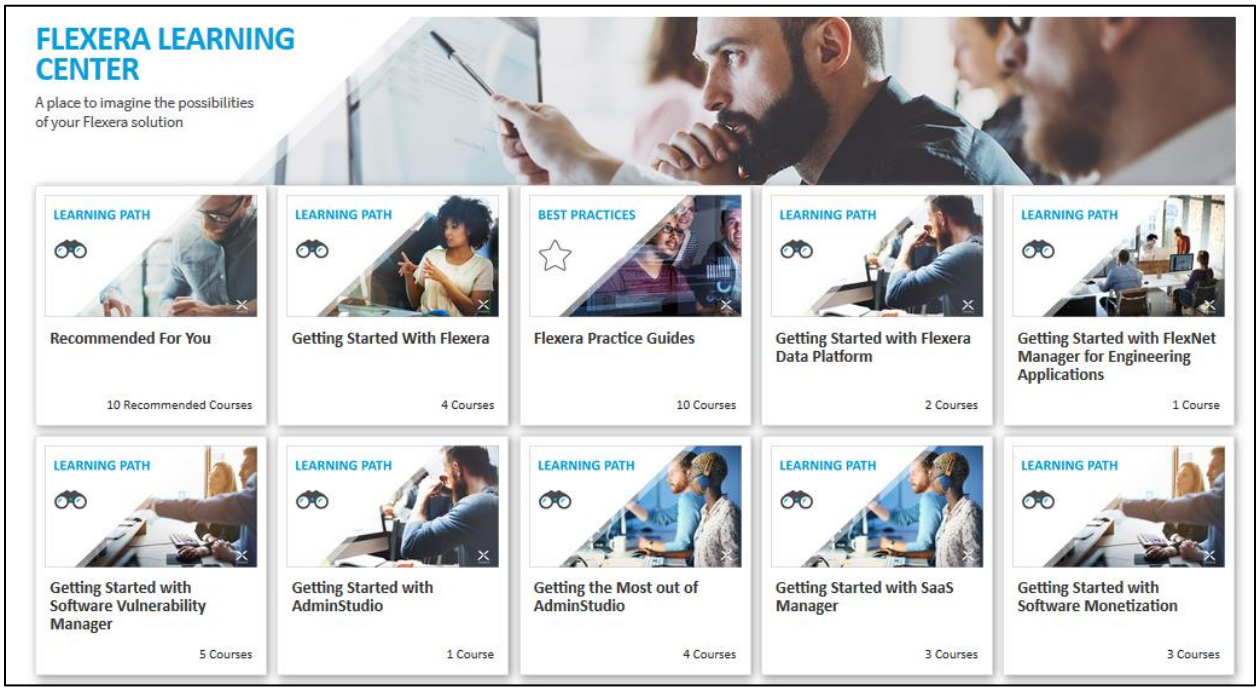
- Forums: where we discuss a wide variety of topics and offer expert advice

You can login to the Community to submit support cases, propose product enhancements, access our vast knowledge base and more!

Note: *It is a best practice to always check the Customer Community for new materials and product updates. The practice guides will not dive deep into product enhancements, FlexNet Manager Suite versioning and other configuration topics.*

Flexera's Learning Center

Flexera's Learning Center is the place to go for product enablement & training materials, including the latest Practice Guides! You can access the Learning Center via our Customer Community available to all customers free of charge.



IBM Acronyms

- **ACEP** = Aggregate Cap Enterprise Program
- **AU** = Authorized Users
- **ELA** = Enterprise License Agreement
- **ILMT** = IBM License Metric Tool
- **ITCAM** = IBM Tivoli Composite Application Manager

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- **LID** = License Information Document
- **LMO** = License Management Option
- **LPAR** = Logical Partition
- **PVU** = Processor Value Unit
- **RVU** = Resource Value Unit
- **TADd** = Tivoli Asset Discovery for Distributed
- **TEM** = Tivoli Endpoint Manager
- **UEP** = Uncapped Enterprise Program
- **UVU** = User Value Unit

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Appendix 1: Managing Mainframe Licenses

MLC (Monthly License Charge) and OTC (One Time Charge - Perpetual) license consumption is reported by IBM's SCRT (Sub-Capacity Reporting tool). Please click here for more information. The output of this report shows Program Names, Price group and MSU consumption. CSV reports can be extracted from IBM's SCRT. As part of the MLC process the SCRT report must be provided to IBM each month. You may not wish to import the consumption into FlexNet Manager Suite as IBM will charge based on the reported usage. However, if you own perpetual OTC entitlements, you may wish to calculate the Value Unit Exhibit (VUE) consumption based on the MSU information provided in the SCRT. This is to assess the current compliance position.

Note: *As IBM receive the SCRT report monthly they will be aware of the consumption but they may not raise issues with OTC compliance immediately. Tracking this in FlexNet Manager Suite enables you to understand current compliance and be aware of non-compliance.*

It is important to read the IBM license information documents as the license consumption of some OTC entitlement is based on the consumption of a parent program or total device consumption. For this, you would need to identify the correct MSU consumption from the SCRT report for use in your license consumption calculations.

Management in FlexNet Manager Suite

There are multiple options available to create or import the Mainframe license entitlements into FlexNet Manager Suite:

Manual

Start by processing the purchase and creating a Custom Metric license type. Then assess the IBM License Information Document (and other relevant documentation such as the Announcement letters) to identify if the VUE Table is relevant for calculation of MSU to Value Units. Review IBM LID Info here.

You should then enter name of application (e.g., MQ for Z/os), find the application and click on it. If this is the application you want, click on the **Submit** button.

Then find the Value Unit information (for MQ for z/os, see information below):

IBM MQ for z/OS Value Unit Edition V9.0.3

- The Value Unit Exhibit for this Program is **VUE007**.
- From 1 to 3 MSUs, 1 VU per MSU
- From 4 to 45 MSUs, 3 VUs plus 0.45 VUs per MSU above 3
- From 46 to 175 MSUs, 22 VUs plus 0.36 VUs per MSU above 45

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- From 176 to 315 MSUs, 69 VUs plus 0.27 VUs per MSU above 175
- For more than 315 MSUs, 107 VUs plus 0.20 VUs per MSU above 315

Manually calculate (or use an IBM VUE calculator) the MSU to VUE consumption. Populate the VUE or other Consumption into the Consumption field of the license

Partially Automated

Start by processing the purchase and creating an IBM RVU license type.

Note: *This metric is preferred because of its Points table calculation capabilities.*

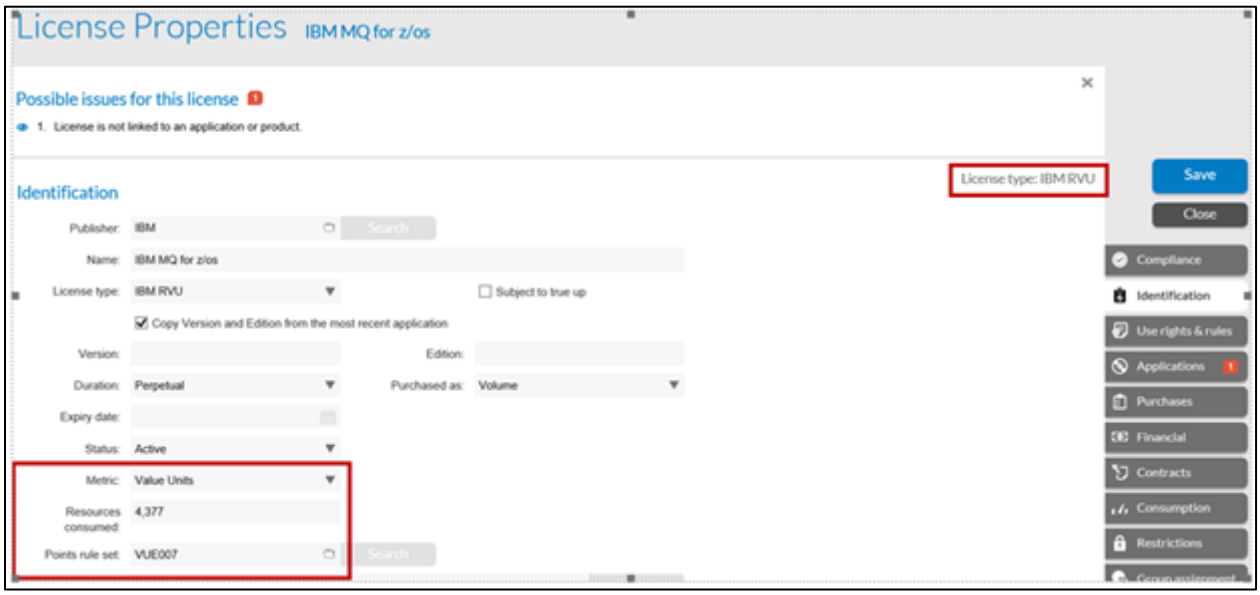
Assess the IBM License Information Document (LID) (and other relevant documentation such as Announcement letters) to identify the VUE Table if relevant for calculation of MSU to Value Units. Search the ARL RVU points table for the relevant VUE and apply this to the license. Review IBM LID Info here.

You should then enter name of application (Example: MQ for Z/os), find the application and click on it. If this is the application you want, click on the **Submit** button.

Then find the Value Unit information (for MQ for z/os, see information above). Import the MSU consumption via a business adaptor and populate this in the **Resources Consumed** field

Now that you know to use VUE007 Points Rules, these can be set on the **Identification** tab of the license.

Note: *License type is 'IBM RVU', Metric is 'Value Units' and the Resources Consumed is the sum of all devices reporting MSUs for the application: device name = number of MSUs on the device: M19C1 – 1256, M20C1 – 1236, M22C1 – 978, M23C1 – 907 = 4,377.*



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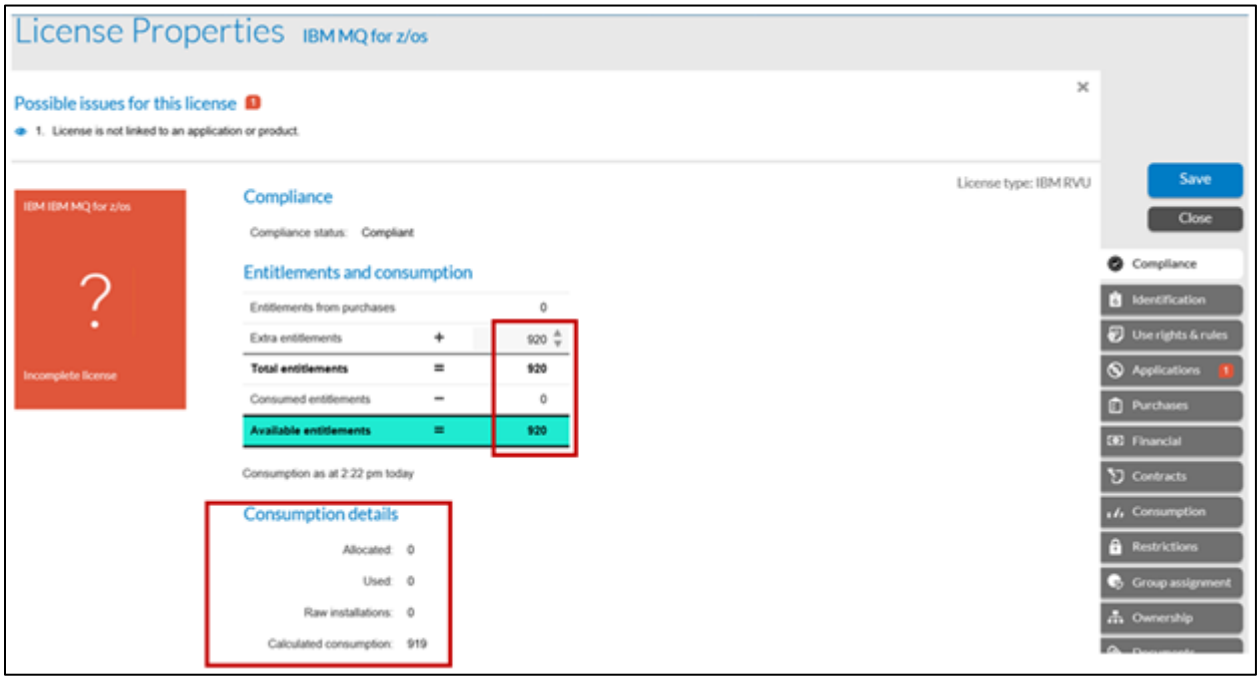
This method will automatically calculate the VUE consumption from the MSU number placed in the **Resource Consumed** field, reflecting the calculated VUE as the number consumed.

In the below screenshot, the calculated consumption is 919.



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