

Mainframe Licensing

Licensing Guide

Effective: January 2022

Last update: June 2023



Version History

Version	Updates
January 2022	– Initial version
February 2023	– Updating document links
May 2023	– Clarified the licensing structure of IBM Db2 Connect Unlimited Edition for System z
June 2023	– Replace mentions of S&S with “Program Services”

Contents

Overview	4
Key Terms	4
Introduction	5
Detail	5
Scenarios and FAQs	13
Further Reading	14

Overview

This document provides an overview of the most common approaches used by IBM to license software on the mainframe (also referred to as zSeries and System Z). Mainframe licensing can be very different from the licensing of distributed software and there are many small but significant variations which make it complex to apply in practice.

This guide provides information on the most common situations only.

This guide is intended as a general licensing knowledge resource. While it may explore scenarios, it is not intended to provide advice for specific customer circumstances. Always consult your IBM representative should you have any questions or concerns about your mainframe licensing.

Key Terms

The following terms are used throughout this document and are fundamental to understanding its contents. This is not an exhaustive list, and some concepts may be discussed in other licensing guides or rely on assumed knowledge.

IBM Customer Agreement (“ICA”)

An agreement setting out licensing terms for certain IBM offerings. In particular, the mainframe software that is measured on a Monthly License Charge (“MLC”) basis is licensed under the ICA.

International Program License Agreement (“IPLA”)

An agreement setting out the base terms for all IBM programs licensed under PA, PAE and certain mainframe programs. It is available [here](#).

MIPS

A measurement of raw processing capacity. It stands for “Millions of Instructions Per Second”. It is used as the basis for calculating MSUs.

Monthly License Charge (“MLC”)

A way of licensing IBM programs on the mainframe which involves reporting and paying for use monthly.

MSU

A measurement of processing capacity on the mainframe. It stands for “Millions of Service Units per Hour”. Each physical mainframe is given a MSU rating.

Parallel Sysplex

The linking of two or more physical mainframes to form one, larger logical machine. Workload is shared across this logical machine to benefit from lower workload pricing; the price per MSU decreases as the size of the machine increases. There are criteria to qualify for Parallel Sysplex, one of which is that a significant amount (defined as 50% or more) of the entire workload of the combined machines must be shared between the connected machines.

Program Services

IBM Provides Program Services for an MLC Program instead of S&S. Program Services are available only (a) for the unmodified portion of the current release of a warranted MLC Program, and (b) for at least one year following the MLC Program’s general availability. If IBM can reproduce Client’s reported problem in the specified operating environment, IBM will issue Program Services. IBM provides Program Services on an on-going basis until IBM terminates them with at least six months’ prior written notice.

Sub-Capacity Reporting Tool (“SCRT”)

A tool used to measure Sub-Capacity license requirements for MLC software on the mainframe.

Introduction

IBM licenses mainframe software under two primary licensing models - Monthly License Charge (“MLC”) and One Time Charge (“OTC”) under the International Program License Agreement (“IPLA”).

As a rule of thumb, the mainframe operating systems (z/OS and OS/390) are licensed under the MLC licensing model, while applications that manage, control, and support the mainframe environment are licensed under either MLC or OTC (such as IBM DB2 Utilities). Some products are available under both MLC and OTC.

It is also important to note that aside from differences in licensing models there are also specific license metrics which only exist for mainframe programs.

Detail

An Overview of Mainframe Software Licensing

Operating Systems

The mainframe uses operating systems that might be unfamiliar to individuals more accustomed to the ‘distributed’ world (that is, servers and desktops where Microsoft Windows Server, IBM AIX and Linux distributions are widely seen).

The mainframe operating systems are z/OS, Linux, z/VM, z/VSE and z/TPF. Multiple operating systems can run on a single mainframe, which allows clients to select the best platform combination for their workload.

Each operating system has its own unique benefits, set out in more detail [here](#).

Particularly notable is z/VM, which is IBM’s virtualization technology for mainframe and allows clients to obtain better value for their mainframe workloads.

Applications

There is a large catalog of applications that run on mainframe. Some of IBM’s most common products are available for mainframe and distributed. Read more about the applications that run on mainframes [here](#).

The MLC and IPLA licensing models are explained in more detail below.

License Types

The different ways of licensing mainframe software are discussed later in this guide. The table below summarizes the various categories of software and S&S considerations:

Category	Contract	S&S	Example Part Number	Example Part Description
MLC	IBM Customer Agreement (ICA) or Customer Relationship Agreement (CRA)	Program Services (support) is included		
OTC (IPLA)	International Program License Agreement (IPLA)	Must be purchased separately. First year is not included in the initial purchase	5655X01 5655X02	Sterling Connect:Direct z/OS Sterling Connect:Direct z/OS S&S
OTC (Passport Advantage)	IPAA or IPAEA IPLA	First year included in initial license purchase. Subsequent years purchased as a separate S&S part number. All deployed quantities on a PA Site Number must be renewed, or none at all.	DOJ1KLL	IBM Sterling Connect: Direct Standard Edition Simultaneous Session License + SW Subscription & Support 12 Months
OTC (“zDistributed”)	IPAA or IPAEA IPLA	As with Passport Advantage	DOJ2DLL	IBM Sterling Connect: Direct Standard Edition for Linux on IBM z Systems Simultaneous Session License + SW Subscription & Support 12 Months

License Agreements

The applicable license agreements depend upon whether the software is licensed under MLC or IPLA. The table below summarizes the relevant license agreements for each type of mainframe software:

Product	Agreement(s)
Mainframe hardware	IBM Customer Agreement (“ICA”) or Customer Relationship Agreement (“CRA”)
MLC software	IBM Customer Agreement (“ICA”) or Customer Relationship Agreement (“CRA”)
IPLA software	International Program License Agreement (“IPLA”) <i>And/Or</i> IBM Passport Advantage Agreement (“IPAA”) or IBM Passport Advantage Express Agreement (“IPAEA”) <i>And</i> International Agreement for Acquisition of Software Maintenance (“IAASM”)

There are some important differences between programs licensed directly under IPLA and those licensed under Passport Advantage (IPAA or IPAEA). The table below sets out some of the key ones:

	IPLA	Passport Advantage
Is S&S included with the purchase of a perpetual license?	No	Yes
Do I need to buy S&S?	No	No, except for the first year as it comes included with the ‘base’ license
How much of my S&S do I need to maintain?	Your entire purchased entitlement must be maintained, or none	All the licenses used within an individual PA site must be maintained, or none

The MLC Licensing Model

The MLC licensing model applies to the operating system and to some applications such as IBM DB2, IBM CICS, IBM IMS, and IBM WebSphere MQ.

It is based on a monthly fee for the use of the program. Program Services are included in this monthly fee.

There are three key aspects to the MLC:

- The approach to measurement,
- the measurement of usage, and
- the pricing plan.

The approach to measurement

Use-based metrics

Use-based metrics, such as Authorized User, are calculated in the way described in the License Information document for the program.

Capacity-based metrics

There are three approaches to measuring capacity-based license metrics that apply to mainframe licensing under MLC (see Figure 1). All models are currently available for purchase.

Full-Capacity measurement is a fixed monthly price based on the MSU rating of the physical mainframe. Pricing is fixed regardless of use. This is IBM's oldest and simplest, but least flexible, pricing model. However, its simplicity brings certainty: if your environment and software remain unchanged month to month your MLC invoice each month will be the same.

Sub-Capacity

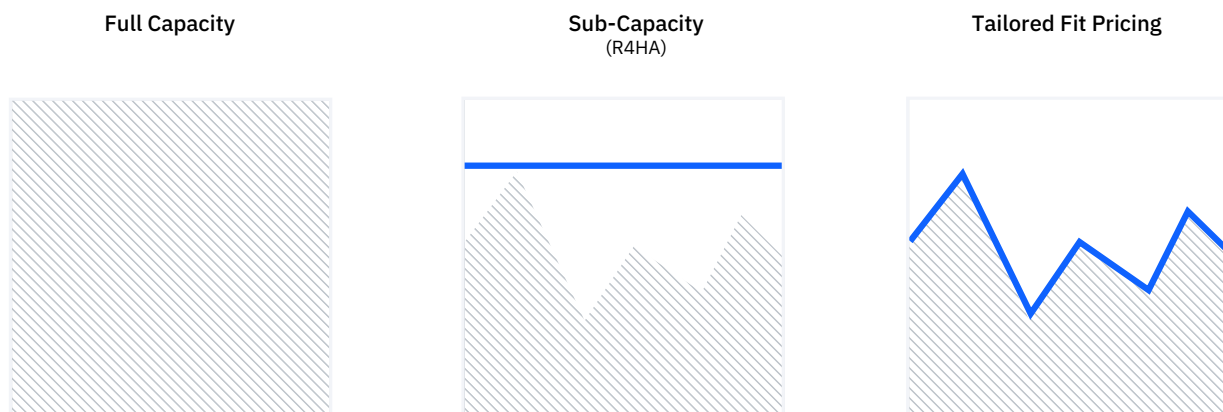
IBM introduced Sub-Capacity licensing over 20 years ago. This is based on peak usage during the month rather than the physical capacity of the mainframe. The concept is like Virtualization Capacity used for Distributed software, however for the mainframe peak use is measured on a rolling 4 hourly average ("R4HA", sometimes referred to as "4RHA") basis rather than at a single point in time.

To benefit from Sub-Capacity licensing, you must run a tool called IBM Sub-Capacity Reporting Tool ("SCRT") on the mainframe environment. All mainframe environments, including disaster recovery environments, must be monitored. SCRT will measure the R4HA use over time. Reports from SCRT detailing the R4HA must be shared with IBM each month, and IBM uses these reports to calculate the MLC invoice.

While SCRT needs to be run on disaster recovery environments, these environments can be excluded from the report before sharing it with IBM.

Full-Capacity

Figure 1: The three primary MLC measurement models



Tailored Fit Pricing (“TFP”)

This is IBM’s newest measurement method, introduced in May 2019. It is a true use-based capacity model. You are only charged for your actual use of the software, and this use is measured on a minute-by-minute basis.

There are several criteria that must be met to qualify for TFP. One of the key criteria is that 12 months of historic Sub-Capacity reporting must be available to allow IBM to analyze historic use and calculate a price per MSU, and to provide a predictable discounted price for future growth in workloads.

Once qualified for TFP you no longer need to be concerned about how much processing capacity your mainframe workloads are using, and all forms of processor capacity capping can be removed.

Minute-by-minute usage is calculated by SCRT. Reports from SCRT are required to be submitted to IBM every month.

The measurement of usage – MSUs and MIPS

Depending on the applicable measurement approach for your mainframe, the MLC is calculated based on the number of MSUs or the number of MIPS.

MSUs

Fundamentally, the MSU metric (which stands for Millions of Service Units per hour) is a measure of the amount of processing work a computer can perform in one hour. Each mainframe is given a MSU rating which can be used for Full-Capacity purposes; for Sub-Capacity purposes SCRT calculates the MSUs consumed on a rolling four-hourly basis for you.

Charges are priced per machine but it is possible to aggregate multiple machines into one machine for pricing purposes through a process known as Country Multiplex Pricing (“CMP”). The use of CMP is subject to eligibility requirements and terms and conditions. You can learn more about CMP [here](#).

To learn more about MSUs and how SCRT calculates MSU usage, see [here](#).

Capacity capping

The number of MSUs required for a logical partition (LPAR) is defined by reference to the hard cap, not the soft cap, that is, the cap managed at the Processor Resource/System Manager level, not the Workload Manager level.

MIPs

MIPs (or Millions of Instructions per Second) are also used to define the capacity of the mainframe. This metric is mostly encountered in older products where the focus was on measuring the rate at which a processor executes instructions.

Although the name suggests otherwise, MIPS are not actually a measurement of the number of instructions per second; the value is derived from numbers published by IBM in the Large System Performance Reference (“LPSR”) table.

The LPSR table is described in more detail at the following link: <https://www-01.ibm.com/servers/resourceink/lib03060.nsf/pages/lspindex?OpenDocument>

The pricing plan

There are various pricing plans that determine how much each MSU or MIP costs to license. Each model is slightly different and is based on the type of mainframe and the type of workloads that are run on the machine.

Note that not all pricing plans are available to all customers as some have qualifying criteria that must be met.

The key pricing plans are summarized in Table 1 below:

Table 1: The key MLC software pricing models

Pricing Plan	Abbr.	Description
Advanced Workload License Charge	AWLC	Used for larger hardware, for example specific machines running the operating systems z/OS or z/TPF in z/Architecture
Advanced Entry Workload License Charge	AELC	Used for smaller hardware, for example specific machines and standalone z14 servers
New Application License Charges	zNALC	Used for z/OS virtual environments (or “LPARs”) where a qualified “new workload” application is running. Essentially, this model is used to incentivize the addition of new workloads to existing environments by offering reduced pricing. There are many types of new workload and you can discuss with your IBM representative whether your application qualifies as a new workload.
Midrange Workload Charges	MWLC	Used for 15 specific products and the z/VSE (or later) operating system.
Parallel Sysplex		A method of aggregating multiple physical mainframes together to form one larger logical system. This allows you to achieve lower price-per Value Unit.

This is not a comprehensive list of metrics but covers the most widely used ones; for other pricing models such as zSeries Entry License Charges (zELC) and older metrics such as Workload License Charges (WLC) please refer to [this page](#).

To see the monthly invoices that have been raised for your use of MLC programs, go to www.ibm.com/support/customer/invoices and log in with your IBM ID.

The OTC licensing model

There are three types of OTC programs described in turn below.

Programs licensed directly under IPLA

Some mainframe software is licensed under the International Program License Agreement (“IPLA”). IPLA entitlements for mainframe software are listed in “Shopz”, the mainframe equivalent of Passport Advantage Online.

Software licenses are acquired for IPLA mainframe software in the same way as for distributed (that is, Passport Advantage) software but there are a few key differences:

1. The first year of Support and Subscription (S&S) is not included in the initial purchase of a perpetual license. S&S is purchased separately.
2. S&S must be purchased for ALL of the mainframe environments. This is slightly different from Passport Advantage terms which allow you to maintain S&S only for the licenses you actively use.
3. You must have sufficient licenses to cover your peak use of the software.

The initial purchase of a perpetual license under IPLA is often referred to as the One-Time Charge (“OTC”) in the mainframe context.

Programs licensed under Passport Advantage

Certain IBM programs licensed under Passport Advantage (an agreement which sits under IPLA) can be deployed on the mainframe. If you have a license for the mainframe equivalent of a distributed program, then you may use this entitlement to license the use of the program on a distributed environment. Likewise, an entitlement to a distributed IBM program permits you to deploy it on Linux on Z.

As with other Passport Advantage entitlements, the first year of S&S is included in the initial purchase of the base perpetual license.

zDistributed

A subset of programs licensed under PA have program names which specifically reference their designation for mainframe deployment. These are sometimes referred to as “zDistributed” programs. The name of the software includes, for example, ‘for Linux on z’ or ‘for Linux on z Systems’, which denotes a license specific to the mainframe environment.

Value Units

It is common for OTC programs to be licensed by Value Units. In simple terms, value units are calculated by counting the number of ‘resources’ and applying a tiered discount. The most common resource counted is MSUs.

The conversion from resource to Value Unit is detailed in a table known as a Value Unit Exhibit. Each exhibit is referred to by a number, for example VUE001, VUE002 and so on. The full list of Value Unit Exhibits is located [here](#).

The relevant Value Unit Exhibit is documented in the announcement letter for the program. You can search announcement letters [here](#).

To calculate the number of Value Units required for your mainframe software, the following steps should be taken:

1. Determine the required license capacity, measured in MSUs
2. Sum up all the MSUs required based on the relevant Full-Capacity or Sub-Capacity measurement method across your Enterprise. If you are eligible for Country Multiplex Pricing, you can aggregate the MSU requirements within each country.
3. Convert the total MSUs to Value Units for each country (if applicable) using the Value Unit Exhibit for that program.

You can find the Value Unit Converter Tool [here](#).

Other methods of measuring usage

Some mainframe programs do not use MSUs or Value Units to measure their use. In such cases, the method to determine the number of licenses required is documented in the License Information document or the License Program Specification document, which can be found by searching the [IBM Documentation](#) website.

The table below gives a small number of examples that are frequently encountered:

Program	Measurement Metric
PSF	Printer Points – a measurement based on the speed of the printers the software is driving. Each printer is assigned a category based on its speed by reference to “impressions per minute”. The Printer Points for all connected printers are aggregated and the total number of Printer Points determines the Usage Tier of PSF license that is required. Changes to the printer environment might therefore affect the Tier that you require to license your PSF software with.
Sterling Connect	Concurrent Sessions – the number of sessions that are simultaneously open. A session could be a user logging in, or it could be a session established between devices.
DB2 Connect Unlimited Edition for System z	Is licensed under both MSU and Host Server license metrics. The way MSU is measured is slightly different as detailed below. MSU: The licenses required will depend upon the MSU capacity of the LPAR to which the installation is connected and installed. Tailored Fit Pricing minute-by-minute usage does not apply. Host Server: each production DB2 for z/OS subsystem.

Scenarios

Service Providers

IBM does not offer certain pricing and measurement options to Service Providers. Examples of these are:

- Value Unit Exhibits (VUE)
- Tailored Fit Pricing. Service Providers can, however, benefit from Sub-Capacity.

PSF Printer

The licenses initially acquired for this product reflects your printer environment at that time. However, as explained earlier in this guide, the overall 'Usage Tier' that is applicable to the license you need for PSF is the accumulation of all the Printer Points assigned to your printers.

Changes to your printer environment can often cause the Usage Tier to change. In our experience the movement is generally to a higher tier, not a lower one. Clients often forget to recalculate their Usage Tier and inform IBM about any change of Usage Tier.

This often results in non-compliance when this is checked as part of a licensing verification activity. It can easily be avoided by bearing the effect on Usage Tier in mind when adding, removing or upgrading printers in the mainframe environment.

Sterling Connect:Direct

When installing Sterling Connect:Direct it is important to double-check that you are installing the correct product. Sterling Connect:Direct is made available under more than one license metric. In audits it is often noticed that a customer with a Simultaneous Session license has mistakenly installed the version of Sterling Connect:Direct which is licensed by MSU. This creates a license exposure as the client does not have any entitlement to MSUs for this product.

FAQs

[What is the definition of Production?](#)

See the Backup policy for ICA (related to MLC software) and the Backup policy for IPLA (relating to OTC, OTC (Passport Advantage) and OTC (zDistributed) programs), both on the [Software Policies](#) page, for detailed definitions of what IBM considers to be Production. The core concept described in these documents is whether the program is 'doing work'.

[Where can I learn more about Sub-Capacity Reporting Tool \(SCRT\)?](#)

Please see the SCRT FAQ which is located [here](#).

[How do I license disaster recovery or testing in a mainframe environment?](#)

Sub-Capacity Reporting Tool (SCRT) is the application which IBM uses to measure the use of MLC software. It should be installed on LPARs, including but not limited to, Production, Test, Development and Disaster Recovery LPARs. To avoid paying for licenses while performing Disaster Recovery testing it is possible to exclude this workload from the SCRT report. In addition, there are certain types of LPARs which are not supported by SCRT such as coupling configurations.

Further Reading

Advanced Entry Workload License Charges (AEWLC)

A document defining and providing details of the Advanced Entry Workload License Charges pricing metric.

<https://www.ibm.com/downloads/cas/QXY6LZXK>

Advanced Workload License Charges (AWLC)

A document defining and providing details of the Advanced Workload License Charges pricing metric.

<https://www.ibm.com/downloads/cas/46QOA0GE>

Country Multiplex Pricing ("CMP")

A document defining and providing details of Country Multiplex Pricing.

<https://www.ibm.com/downloads/cas/NKOLR7Y2>

IBM Announcement Letters

A searchable repository of IBM Announcement Letters.

<https://www.ibm.com/common/ssi/SearchResult.wss>

Midrange Workload License Charges ("MWLC")

A document defining and providing details of Midrange Workload License Charges.

<https://www.ibm.com/downloads/cas/YV9BPZXY>

Overview of Value Unit Exhibits

A document defining and providing details of Value Unit Exhibits, including VUE conversion reference tables.

<https://www.ibm.com/downloads/cas/NV5RDQXB>

Parallel Sysplex License Charges

A document defining and providing details Parallel Sysplex License Charges.

<https://www.ibm.com/downloads/cas/YYNGJKBB>

SCRT User Guide

A comprehensive user guide for the Sub Capacity Reporting Tool ("SCRT").

[https://www-40.ibm.com/servers/resourcelink/svc00100.nsf/pages/SCRTsc236845/\\$file/scrt-29-1-1.pdf](https://www-40.ibm.com/servers/resourcelink/svc00100.nsf/pages/SCRTsc236845/$file/scrt-29-1-1.pdf)

SCRT Process Overview

A page detailing the process for enabling sub-capacity pricing using the Sub Capacity Reporting Tool ("SCRT")

<https://www.ibm.com/docs/en/zos/2.1.0?topic=tool-overview-scr-t-process>

Tailored Fit Pricing

A page explaining Tailored Fit Pricing for IBM Z and the various options available to clients.

<https://www.ibm.com/it-infrastructure/z/pricing-tailored-fit>

Value Unit Converter Tool

A link to the download page for the System Z Software Licensing Value Converter Tool. N.B. Requires client to sign up for this offering.

https://www.ibm.com/marketing/iwm/platform/mrs/assets?source=swg-zsltd&S_PKG=vuctool

IBM Z Resources

A page containing IBM Z exhibits, reference guides and news articles.

<https://www.ibm.com/it-infrastructure/z/pricing-resources>

IBM Z Licensing

A page detailing the various IBM Z licensing methods, including MLC, zIPLA and Sysplex licensing.

<https://www.ibm.com/it-infrastructure/z/pricing-licensing>

Understanding the MSU Metric

A document providing a deeper look into the MSU metric and its use for metering production workloads.

<https://www.ibm.com/downloads/cas/YMW2JWP4>

zIPLA Sub-Capacity

A document that provides a list of sub-capacity eligible z Systems IPLA programs and provides a guide on sub-capacity eligibility.

<https://www.ibm.com/downloads/cas/AOJR8PEA>

zSystems New Application License Charges (zNALC)

A document that provides information relating to z Systems New Application License Charges and its features and benefits.

<https://www.ibm.com/downloads/cas/WGVAN8A2>



© Copyright International Business Machines Corporation 2022

IBM, the IBM logo, and ibm.com are trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the web at "Copyright and trademark information" at ibm.com/legal/copytrade.shtml. This document is current as of the initial date of publication and may be changed by IBM at any time. The most recent version of this document is published at www.ibm.com/about/software-licensing/licensing/guides.

Not all offerings are available in every country in which IBM operates.

IBM Licensing and User Guides provide general guidance to help clients navigate common IBM licensing and compliance topics. The guides' content is provided for general information purposes only and is not intended as legal advice. IBM reserves the right to review the materials from time to time and to amend them to reflect changes in IBM's licensing terms.

The guides do not supersede your license agreement with IBM. For the exact terms and conditions which govern the usage of a specific IBM software program, refer to the specific contract terms, License Information Documents and any additional agreements under which the software was obtained.

THE INFORMATION IN THIS DOCUMENT IS PROVIDED "AS IS" WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY OR CONDITION OF NON-INFRINGEMENT. IBM products are warranted according to the terms and conditions of the agreements under which they are provided.

Questions and Comments:

If you have questions regarding the content of this licensing guide, or any aspect of IBM's licensing terms and conditions, please contact us at www.ibm.com/about/software-licensing/contact.