•System z software pricing refers to both the pricing and the licensing terms and conditions for IBM software products that run in a mainframe environment. IBM's mainframe software portfolio includes IBM operating system software (z/OS, z/TPF, z/VM, and z/VSE) and middleware that runs on these operating systems. IBM also offers a collection of tools to manage the mainframe environment and a set of software that executes in host-based Linux environment.
IBM mainframe software pricing is grouped into two categories:

Monthly License Charge (MLC) software
- includes license fees and support costs
- governed by IBM Customer Agreement (ICA) contract
- applies to IBM software products such as z/OS, OS/390, DB2, CICS, IMS and WebSphere MQ
- establishes terms and price points by applying an appropriate MLC pricing metric, such as **AWLC, AEWLC, WLC, EWLC, MWLC, zNALC, zELC and PSLC**
- determines the MLC pricing metric based on customer choice and/or mainframe environment

International Product License Agreement (IPLA) software
- requires up-front, one time license fee and ongoing, optional, annual subscription and support charges governed by the IPLA contract
- applies to IBM software products such as Data Management Tools, Application Development Tools and Systems Management Tools
- applies to IBM software products for a host-based Linux environment, such as WebSphere Application Server for Linux on System z
- most commonly, IPLA programs running under z/OS or z/VM have Value Unit (VU) pricing
- most commonly, IPLA programs running under host-based Linux have Processor Value Unit (PVU) pricing

Advanced Workload License Charges (AWLC)
• Advanced Workload License Charges (AWLC) is a monthly license pricing metric designed to support today's on demand business requirements.
- AWLC may be applied to **IBM zEnterprise 196 (z196)** servers running z/OS or z/TPF in z/Architecture (64-bit) mode when stand-alone or when in a Parallel Sysplex.
- **IBM zEnterprise 114 (z114)** servers may have AWLC when in a fully qualified Parallel Sysplex consisting entirely of zEnterprise servers.
AWLC enables customers to:
- Grow hardware capacity without necessarily increasing your software charges
- Pay for key software, such as DB2, CICS, IMS, WebSphere MQ, and z/OS with LPAR-level granularity
- Experience a low cost of incremental growth
- Manage software cost by managing workload utilization
NOTE: Once a customer chooses to adopt AWLC, then neither PSLC nor Usage License Charges (ULC) will apply.
There are two types of charges involved:
> AWLC, which vary based upon server size and/or utilization, and Flat Workload License Charges (FWLC), a flat charge per server.
>> AWLC apply to products such as z/OS, DB2, IMS, CICS, WebSphere MQ, and Lotus Domino.
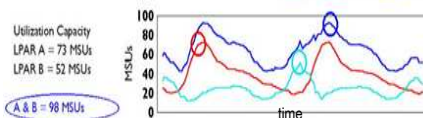>> FWLC apply to legacy products such as less current compilers and older MVS/VM/VSE utilities.
NOTE: Once AWLC is adopted, applicable AWLC and FWLC charges are applied.
Customers may choose to implement AWLC in one of two ways:
Full-Capacity AWLC - charges are based on the full z196 server capacity where each AWLC product executes
Sub-Capacity AWLC - charges are based on the utilization of the LPAR or LPARs where an AWLC product executes

Mechanics of Sub-Capacity AWLC. The right graph shows a z196 server rated at 110 MSUs with Sub-Capacity AWLC. The machine is configured with two LPARs, LPAR A and LPAR B. The customer sees a highest observed rolling 4-hour average for LPAR A at 73 MSUs. Accordingly, software running only in LPAR A would be charged at 73 MSUs. Likewise, LPAR B has a highest observed rolling 4-hour average of 52 MSUs.

AWLC Transition Program for Sysplexes: When two or more machines exist in a qualified Parallel Sysplex but not all of the servers are zEnterprise (**z196 or z114**) servers, all machines will remain on Workload License Charge (WLC) pricing, but will receive a reduction to VWLC pricing across the aggregated Parallel Sysplex. This reduction provides a portion of the price performance benefit related to AWLC pricing based upon the proportion of zEnterprise server capacity in the Parallel Sysplex.
Advanced Entry Workload License Charges (AEWLC) is a monthly license pricing metric designed to support today's on demand business requirements.
AEWLC may be applied to IBM zEnterprise 114 (z114) servers running z/OS, z/TPF, or z/VSE in z/Architecture (64-bit) mode. AEWLC enables customers to:
- Grow hardware capacity without necessarily increasing your software charges
- Pay for key software, such as z/OS, z/TPF, z/VSE, DB2, CICS, and WebSphere MQ with LPAR-level granularity
- Experience a low cost of incremental growth
- Manage software cost by managing workload utilization
Workload License Charges (WLC) is a monthly license pricing metric designed to support today's on demand business requirements. WLC may be applied to IBM System z servers running z/OS or z/TPF in z/Architecture (64-bit) mode.
• System z10 EC, System z9 EC, eServer zSeries 990, and eServer zSeries 900 servers may have WLC when in a Parallel Sysplex or when stand-alone.
• System z10 BC, System z9 BC, eServer zSeries 890, and eServer zSeries 800 servers may have WLC only when in a fully qualified Parallel Sysplex.
• zEnterprise 196 and zEnterprise 114 servers may have WLC only when under the terms of AWLC Transition Charges for Sysplexes in a fully qualified Parallel Sysplex with at least one other server which is not a zEnterprise server.
WLC enables customers to:
- Grow hardware capacity without necessarily increasing your software charges
- Pay for key software, such as DB2, CICS, IMS, WebSphere MQ and z/OS with LPAR-level granularity
- Experience a low cost of incremental growth
- Manage software cost by managing workload utilization
• Once a customer chooses to adopt WLC, then neither PSLC nor Usage License Charges (ULC) will apply.
- WLC is broken into two types of charges: Variable WLC (VWLC) and Flat WLC (FWLC).
> VWLC apply to products such as z/OS, DB2, IMS, CICS, WebSphere MQ, and Lotus Domino.
> FWLC apply to legacy products such as less current compilers and older MVS/VM/VSE utilities.
NOTE: VWLC vary based upon server size and/or utilization, while FWLC are a flat charge per server. Once WLC is adopted, applicable VWLC and FWLC charges are applied.
Entry Workload License Charges (EWLC) is in support of an on demand operating environment, IBM offers Entry Workload License Charges (EWLC) for IBM System z10 Business Class (z10 BC), IBM System z9 Business Class (z9 BC), IBM eServer zSeries z890 and z800 customers. EWLC is not available on zEnterprise 114 (z114) servers. EWLC enables qualifying customers to pay for sub-capacity eligible IBM software based on the utilization of the LPAR or LPARs where that product executes. This sub-capacity pricing provides the potential to lower software charges on a standalone z10 BC, z9 BC, z890 or z800.
EWLC compared to WLC: EWLC and Workload License Charges (WLC) are two Sub-Capacity capable monthly license charge pricing metrics from IBM. EWLC is similar to Sub-Capacity WLC, in terms of implementation and mechanics. Both pricing metrics offer LPAR-based pricing for sub-capacity eligible software products, based on the highest rolling 4-hour average utilization of the LPAR or LPARs where the eligible product executes.
Both EWLC and WLC may also be implemented at full-capacity (based on the MSU rating of the machine), rather than sub-capacity. Sub-Capacity pricing, for either EWLC or WLC, requires the customers fully migrate all OS/390 to z/OS in 64-bit mode, discontinue their OS/390 licenses and to utilize the sub-capacity reporting tool (SCRT) to generate Sub-Capacity Reports.
Midrange Workload License Charges (MWLC) is a monthly license charge price metric on the IBM zEnterprise 196 (z196), IBM System z10 Enterprise Class (z10 EC), IBM System z10 Business Class (z10 BC), IBM System z9 Enterprise Class (z9 EC), and the IBM System z9 Business Class (z9 BC) servers that applies to z/VSE V4 and 12 key VSE middleware programs such as CICS TS for VSE, DB2 Server for VSE, and ACF/VTAM for VSE. MWLC is available on z196, z10 EC, z10 BC, z9 EC and z9 BC servers with z/VSE V4. MWLC is not available on zEnterprise 114 (z114) servers
•Similar to Advanced Workload License Charges, Workload License Charges, and Entry Workload License Charges, you may implement MWLC in full-capacity or sub-capacity mode.
Full-Capacity: servers with full-capacity MWLC pricing must license and pay for MWLC-priced programs based on the IBM rated capacity of the server.
Sub-Capacity: servers with sub-capacity MWLC pricing may license and pay for MWLC-priced programs based on the utilization of the Logical Partitions (LPARs) where the program executes. Sub-capacity MWLC pricing is available only on servers where z/VSE V4 is the only VSE operating system and prior versions of VSE use and license have been discontinued.

•MWLC pricing applies only to the z/VSE V4 operating system and 12 key VSE middleware programs.
- On a z10 BC or a z9 BC, all other VSE programs will be priced according to Tiered Entry Workload License Charges (TWLC).
- On a z196, z10 EC or z9 EC, all other VSE programs will be priced according to either Flat Workload License Charges, Graduated Monthly License Charges, or Extended License Charges. In the event that one of these three pricing metrics is not available for a particular VSE program, other applicable pricing metrics may be used.
MWLC Limitations and Restrictions: The smallest z10 BC and z9 BC servers, capacity setting A01, do not qualify for MWLC.
•Customers on the z10 BC or z9 BC capacity setting A01 will always pay zELC for all IBM monthly license charge software.
•If you want sub-capacity MWLC and intend to run z/VSE V4 as a guest of z/VM then you must run z/VM V5.2 or higher.
System z New Application License Charges (zNALC) offers a reduced price for the z/OS operating system on LPARs where you are running a qualified new workload application (*Qualified Application*) such as Java language business applications running under WebSphere Application Server for z/OS, Domino, SAP, PeopleSoft, and Siebel.
•The zNALC offering extends the IBM commitment to sub-capacity pricing, allowing customers with a Qualified Application to obtain a reduced price for z/OS where charges are based on the size of the LPAR(s) executing a Qualified Application, assuming all applicable terms and conditions are met.
•z/OS with zNALC provides many benefits over previous 'new workload' pricing offers. It provides a strategic pricing model available on the full range of System z servers for simplified application planning and deployment. zNALC provides similar pricing benefits to z/OS with NALC pricing.
•zNALC allows for aggregation across a qualified Parallel Sysplex, which can provide a lower cost for incremental growth across 'new workloads' that span a Parallel Sysplex.
NOTE: zNALC is the IBM strategy, replacing the z/OS.e operating system and the NALC pricing metric.
Prerequisites, Restrictions, and Certification: zNALC is available only on IBM z/Architecture servers (z196, z114, z10 EC, z10 BC, z9 EC, z9 BC, z990, z890, z900, z800, or later) running the z/OS (5694-A01) operating system. z/OS middleware running on the IBM z/Architecture server which qualifies for Advanced Workload License Charges (AWLC), Advanced Entry Workload License Charges (AEWLC), Workload License Charges (WLC), or Entry Workload License Charges (EWLC) must be priced AWLC/AEWLC/WLC/EWLC in order for z/OS to be eligible for zNALC charges.
Any Logical Partition (LPAR) that is designated as a zNALC LPAR must identify itself in one of two ways:
1. By using the naming convention "ZNALxxxx" where xxxx may be any letters or numbers.
2. By using the "LICENSE=ZNALC" IPL parameter
NOTE: Sub-Capacity zNALC is not available on any LPARs where z/OS is running as a guest of z/VM unless z/OS APAR OA20314 was applied to the z/OS guest system before it was IPLed and SCRT V14.2.0 or higher is used to create the SCRT report.
•IBM has established a certification process whereby customers must complete a form when they establish zNALC charges and which must be renewed each year to maintain zNALC charges. This form requires customers to certify that they meet all the requirements to be eligible for z/OS with zNALC charges.
•IBM may cancel zNALC charging if a customer fails to submit an annual certification. IBM has the right to audit servers with z/OS with zNALC charges to ensure compliance with all zNALC terms and conditions.
zNALC Qualified Applications are available only on LPARs where a Qualified Application is present, among other requirements.
•Qualified Applications are those that IBM considers 'new workload,' such as Java language business applications running under WebSphere Application Server for z/OS, Domino, SAP, PeopleSoft, or Siebel. IBM has established the three criteria to determine which applications are Qualified Applications, all three criteria must be met and are not listed in this document.
Examples of zNALC Qualified Applications are (You may already have an application that has been previously approved. This is a list of *examples*:
•DB2 for z/OS in support of SAP from SAP AG
•DB2 for z/OS in support of PeopleSoft from Oracle
•DB2 for z/OS in support of Siebel from Oracle
•Lotus Domino for z/OS
•BASE24-eps from ACI Worldwide

zSeries Entry License Charges (zELC) is a monthly license charge pricing metric designed especially to support the smaller server.
•IBM introduced zSeries Entry License Charge to deliver appropriate software price performance for a variety of Business Class customer needs.
- zSeries Entry License Charge is determined based on the particular model (0E1, 0A1, 0B1, 0C1, 0X2, 001, 0A2, 002, 003, 004) where the software is licensed. zELC is offered on all the IBM System z10 Business Class and IBM System z9 Business Class capacity setting A01, and the IBM zEnterprise 114 capacity setting A01.
Parallel Sysplex License Charges (PSLC) is a monthly license charge pricing metric designed to support the high availability design of a Parallel Sysplex cluster. PSLC may be applied to many different types of mainframes including IBM System z servers, S/390 Enterprise servers, and others.
A listing of PSLC-eligible servers is listed on the web site:
http://www-03.ibm.com/systems/z/resources/swprice/reference/exhibits/hardware.html
• PSLC may be applied to a standalone mainframe environment. However, aggregation benefits may only be applied across a fully qualified Parallel Sysplex environment.
• PSLC is designed to provide improved price/performance as you grow lowering cost of incremental growth is provided via the decreasing unit cost per MSU, a key element of the PSLC price structure.
Sysplex - In a fully qualified sysplex environment, PSLC software charges are based on the total **MSU** value for only those machines where the products execute. This provides you the flexibility to grow your sysplex either vertically (grow an existing server) or horizontally (add a new server) and experience similar incremental software costs.
Standalone - For a standalone (uncoupled) machine, PSLC charges are also available. Software charges for products executing in this environment are based on the MSU capacity of the machine. In an uncoupled environment, MSU values are not aggregated with any other machines.

Other: IBM offers a number of other special-purpose monthly license charge pricing metrics and offerings for the mainframe platform.
S/390 Usage Pricing also known as Usage License Charges (ULC), offers an attractive pricing alternative on machines with either PSLC or GOLC. ULC provides a mechanism to deploy low-utilization software products across an enterprise, with excellent price/performance. For a product with ULC, software charges are based upon the utilization of that product. ULC price points are available for DB2, CICS, IMS and WebSphere MQ.
Select Application License Charges (SALC) are available solely for WebSphere MQ and only on machines with AWLC, AEWLC, WLC or EWLC.
- SALC is an excellent price/ performance option on very-low utilization installations of WebSphere MQ. SALC is available for either Sub-Capacity or Full Capacity machines.
NOTE: For a WebSphere MQ installation with the SALC pricing metric, software charges are based upon the utilization of WebSphere MQ.
ULC and SALC Implementation each require the submission of a yearly "Software Usage Report".
• IBM provides a reporting tool called IFAURP (which ships with OS/390 V2 and z/OS) that analyzes 12 months of Systems Measurement Facility (SMF) data, record type SMF89, and generates the "Software Usage Report".
- This annual report summarizes the use over the past 12 months and establishes the ULC or SALC MSU level for the next 12 months.
• To determine the billable ULC or SALC MSUs for a given product, the following algorithm is applied to each product set. A product set encompasses all the active versions of a given product.
> Daily value: In a given day, MSUs from highest hour of utilization each day
> Monthly value: In a given month, MSUs from the fourth highest daily value
> Yearly (billable) value: In a given year, MSUs from the highest monthly value.
System z Lifecycle Charge (SzLC) is the System z Lifecycle Charge (SzLC) metric is used for pricing of optional service contracts for both the IBM Lifecycle Extension and also the IBM Service Extension for Usage Support of certain releases of z/OS.
SzLC is a monthly support charge for extended support of z/OS. Lifecycle Extension and Service Extension for Usage Support are support offerings, not software. Therefore SzLC is a support charge, it is not a software product licensing metric.
- The IBM Lifecycle Extension for z/OS is a fee-based corrective service offering for users who have not completed their migration from a specific release of z/OS to a more current release.

News http://www-03.ibm.com/systems/z/resources/swprice/news.html

Software running only in LPAR B would be charged at 52 MSUs. They do not have set a defined capacity or any LPAR cap for either LPAR A or LPAR B.

LPAR A   LPAR B   Combined A & B

Utilization Capacity
LPAR A = 73 MSUs
LPAR B = 52 MSUs
A & B = 98 MSUs

A **Processor Value Unit (PVU)** is a unit of measure used to differentiate licensing of software on distributed processor techno-logies (defined by Processor Vendor, Brand, Type and Model Number). IBM continues to define a processor, for purposes of PVU-based licensing, to be each processor core on a chip (socket). Each software Program has a unique price per PVU.

If your application is not on the list (for example a Java language business application running under WebSphere Application Server for z/OS), then you will need to provide some information in order to get it qualified. Describe your application and submit it to IBM for review via your IBM sales representative or Business Partner

MSU = Millions of Service Units - A means of normalizing processor speeds between different models of mainframes. Each CPU model is rated by service consumed per second of execution time. The values listed are SRM constants.
Service Unit=
(CPU x CPU Service Units)
+ (SRB x SRB Service Units)
+ (IOC x I/O Service Units)
+ (MSO x Storage Service Units)
where:
CPU Service Units = task (TCB) execution time, multiplied by an SRM constant which is CPU model dependent.
SRB Service Units = service request block (SRB) execution time for both local and global SRBs, multiplied by an SRM constant which is CPU model dependent.
I/O Service Units = measurement of individual dataset I/O activity and JES spool reads and writes for all datasets associated with the address space.
Storage Service Units = (central page frames) x (CPU service units) x 1/50, where 1/50 is a scaling factor designed to bring the storage service component in line with the CPU component.