IBM SDK for Node.js -z/OS, V6.0 delivers a powerful framework for building fast, scalable applications to support digital transformation on the IBM z/OS platform

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At a glance

IBM® SDK for Node.js -z/OS®, V6.0 includes:

- A full stand-alone JavaScript™ runtime, server-side APIs, and libraries to efficiently build high-performance, highly scalable network applications for the IBM Z platform
- The npm JavaScript package manager to build and assemble Node.js applications
- A powerful open source JavaScript engine that compiles JavaScript source to the latest z/Architecture® instructions for optimal performance
- Support for 99% of ECMAScript 2015 and ECMAScript 2016 features
- Interoperability with IBM middleware including DB2® and z/OS Connect
- Unparalleled scalability for Node.js applications by using the underlying z/OS asyncio and IBM Z I/O bandwidth
- A foundational infrastructure for collecting resource and performance monitoring data for Node.js-based applications that is compatible with IBM Monitoring and Diagnostic Tools for Java™- Health Center tool to monitor Node.js applications
- An optimizing C/C++ compiler that supports 64-bit, and the C11 and C++11 language features, for building Node.js native modules for the z/OS platform
- World-class IBM service and support

Overview

IBM SDK for Node.js -z/OS provides a powerful framework for building fast and scalable applications using JavaScript on the z/OS platform. The SDK provides a module-driven, highly scalable approach to application design, development, and deployment that encourages Agile practices on z/OS. By coding in the popular JavaScript language, enterprise clients can use Node.js to augment traditional IBM Z application stacks to improve the speed of developing and deploying applications driven by digital transformation.

By embracing the Node.js framework, clients can gain access not only to millions of JavaScript and Node.js developers worldwide, but also to over 450,000 native modules that can be used instantly, which will save a substantial amount of development cost and effort. Clients can leverage the technology and vast pool of skills to build end-to-end applications in the JavaScript language.
SDK for Node.js -z/OS delivers a stand-alone JavaScript runtime, a server-side JavaScript solution, and a C/C++ compiler for building Node.js native modules for the IBM z/OS platform. SDK for Node.js -z/OS provides a high-performance, highly scalable, event-driven environment with nonblocking I/O that is programmed with the familiar JavaScript programming language.

SDK for Node.js -z/OS is based on the Node.js open source project. The C/C++ compiler supports 64-bit, and the C11 and C++11 language features, for compiling Node.js native modules for the z/OS platform. SDK for Node.js -z/OS provides a compatible solution for IBM Z products that require Node.js functionality and package management.

With access to IBM support, questions and issues related to SDK for Node.js -z/OS will be addressed to help reduce risks to the business.

**Key prerequisites**

IBM z Systems™ servers supporting:

- z/OS V2R3 (5650-ZOS), or later
- z/OS V2R2 (5650-ZOS), with APAR UI46658

Required hard disk space is 2 GB.

**Planned availability date**

September 8, 2017

**Description**

**IBM SDK for Node.js -z/OS**

The newest addition to the IBM family of development tools, IBM SDK for Node.js -z/OS, V6.0 brings a powerful framework for building fast and scalable applications using JavaScript to the z/OS platform. SDK for Node.js delivers an enterprise-level, stand-alone JavaScript runtime, a server-side JavaScript solution, and a C/C++ compiler for building Node.js native modules to the IBM z/OS platform. It provides a high-performance, highly scalable, event-driven environment with nonblocking I/O that is programmed with the familiar JavaScript programming language.

SDK for Node.js -z/OS is based on the Node.js open source project. The C/C++ compiler supports 64-bit, and the C11 and C++11 language features, and is used to build Node.js native modules for the z/OS platform. SDK for Node.js -z/OS provides a compatible solution for IBM Z products that require Node.js functionality and package management.

SDK for Node.js includes:

- A full stand-alone JavaScript runtime, server-side APIs, and libraries to efficiently build high-performance, highly scalable network applications for the IBM Z platform.
- The npm JavaScript package manager to build and assemble Node.js applications. With access to over 450,000 native modules such as express, socket.io, and request, these modules can be used instantly, saving a substantial amount of development cost and effort.
- A powerful open source JavaScript engine that compiles JavaScript source to the latest z/Architecture instructions for optimal performance.
- Support for 99% of ECMAScript 2015 and ECMAScript 2016 features, such as let, arrow functions, Map, and Set.
- Interoperability with IBM middleware including DB2 and z/OS Connect.
- Asynchronous I/O with unparalleled scalability for Node.js applications by leveraging the underlying z/OS asynco and IBM Z I/O bandwidth.
- A foundational infrastructure for collecting resource and performance monitoring data for Node.js-based applications. SDK for Node.js is compatible with IBM Monitoring and Diagnostic Tools for Java - Health Center tool for monitoring Node.js applications.
- An optimizing C/C++ compiler that supports 64-bit, and the C11 and C++11 language features, for the UNIX™ System Services environment. This compiler is to be used for building Node.js native modules for the z/OS platform.
- World-class IBM service and support.

The SDK for Node.js - z/OS product strengthens the z/OS platform and provides a module-driven, highly scalable approach to application design, development, and deployment that encourages adoption of Agile practices and digital transformation.

**IBM Service and Support**

SDK for Node.js - z/OS brings with it IBM Service and Support. The IBM Service and Support organization is made up of teams of individuals who work together to provide clients with the responsive platform and cross-platform software support that they require. For complex or code-related problems, IBM has specialized, skilled service teams with access to the experts in all IBM development laboratories. Therefore, clients have access to the right level of IBM expertise when they need it, no matter where they are located.

**Value Unit-based pricing**

Value Unit pricing for eligible IBM z Systems IBM International Program License Agreement (IPLA) programs enables a lower cost of incremental growth and enterprise aggregation. Each z Systems’ IPLA product with Value Unit pricing has a single price per Value Unit and a conversion matrix, called a Value Unit Exhibit, for converting from some designated measurement to Value Units. Most commonly, Millions of Service Units (MSUs) is the measurement designated by IBM to be converted to Value Units. Some other measurements are engines or messages. Since MSUs are the most common measurement, that measurement will be used for the remainder of this description.

Value Unit pricing offers price benefits for you. For each z Systems IPLA program with Value Unit pricing, the quantity of that program needed to satisfy applicable IBM terms and conditions is referred to as the required license capacity. Each of the various Value Unit Exhibits stipulates that the larger your required license capacity, the fewer Value Units per MSU you will need. Value Unit Exhibits are uniquely identified by a three-digit code and referred to using the nomenclature VUExxx, where xxx is the three-digit code.

Subsequent acquisitions of Value Unit priced programs offer additional price benefits. The quantity of each z Systems IPLA program that you have acquired is referred to as entitled license capacity. If you wish to grow your entitled license capacity for a z Systems IPLA program, the calculation to determine additional needed Value Units is based upon the number of Value Units already acquired.

For each z Systems IPLA program with Value Unit pricing, you should:
- Determine the required license capacity, in MSUs.
- Aggregate the MSUs across the enterprise.
- Convert the total MSUs to Value Units, using the applicable Value Unit Exhibit.
- Multiply the price per Value Unit by the total number of Value Units to determine the total cost.

To simplify conversion from the designated measurement to Value Units or vice-versa, use the Value Unit Converter Tool. For additional information or to obtain a
copy of the Value Unit Converter Tool, go to the IBM System z® Software Pricing website.

Note that Value Units of a given product cannot be exchanged, interchanged, or aggregated with Value Units of another product.

To determine the required license capacity for the z Systems IPLA program you selected, refer to the Terms and conditions section.

Product positioning

IBM SDK for Node.js -z/OS provides a module-driven, highly scalable approach to application design and development that encourages Agile practices. By enabling coding in the popular JavaScript language, Node.js allows enterprise clients to tap into the wealth of JavaScript developer talent and resources. With applications typically developed in a shorter time and with fewer lines of code, Node.js can enable enterprise clients to efficiently augment existing IBM Z application stacks to provide a timely response to customer requirements driven by digital transformation.

Program number

<table>
<thead>
<tr>
<th>Program number</th>
<th>VRM</th>
<th>Program name</th>
</tr>
</thead>
<tbody>
<tr>
<td>5655-SDK</td>
<td>V6.0.0</td>
<td>IBM SDK for Node.js -z/OS, V6.0</td>
</tr>
<tr>
<td>5655-SDS</td>
<td>V1.1.0</td>
<td>IBM SDK for Node.js -z/OS S&amp;S</td>
</tr>
</tbody>
</table>

Offering Information

Product information is available on the IBM Offering Information website.

Publications

No publications are shipped with this program.

Technical information

Specified operating environment

**Hardware requirements**

SDK for Node.js -z/OS, V6.0 runs on the following IBM Z servers:

- z14
- z13™
- z13s
- zEnterprise® EC12
- zEnterprise BC12
- zEnterprise 196
- zEnterprise 114

**Software requirements**

SDK for Node.js -z/OS, V6.0 requires:
• z/OS V2R3 (5650-ZOS), or later
• z/OS V2R2 (5650-ZOS) with APAR UI46658

Planning information

Packaging
The SDK for Node.js -z/OS, V6.0 package includes:

• Basic machine-readable material on the client-selected distribution medium
• Program Directory (SC27-9030-00)
• Licensed Information DVD (LC27-9029-00)

Security, auditability, and control

SDK for Node.js -z/OS, V6.0 uses the security and auditability features of the host hardware and software.

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.

Ordering information

This program has Value Unit-Based pricing.

<table>
<thead>
<tr>
<th>Program number</th>
<th>Program name</th>
<th>Value Unit Exhibit</th>
</tr>
</thead>
<tbody>
<tr>
<td>5655-SDK</td>
<td>IBM SDK for Node.js -z/OS, V6</td>
<td>VUE007</td>
</tr>
</tbody>
</table>

For each z Systems IPLA program with Value Unit pricing, the quantity of that program needed to satisfy applicable IBM terms and conditions is referred to as the required license capacity. Your required license capacity is based upon the following factors:

• The z Systems IPLA program you select
• The applicable Value Unit Exhibit
• The applicable terms
• Whether your current mainframes are full capacity or sub-capacity

Value Unit Exhibit VUE007

<table>
<thead>
<tr>
<th></th>
<th>MSUs minimum</th>
<th>MSUs maximum</th>
<th>Value Units/MSU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Tier A</td>
<td>4</td>
<td>45</td>
<td>0.45</td>
</tr>
<tr>
<td>Tier B</td>
<td>46</td>
<td>175</td>
<td>0.36</td>
</tr>
<tr>
<td>Tier C</td>
<td>176</td>
<td>315</td>
<td>0.27</td>
</tr>
<tr>
<td>Tier D</td>
<td>316</td>
<td>+</td>
<td>0.20</td>
</tr>
</tbody>
</table>

Ordering example

The total number of Value Units is calculated according to the following example.

If your required license capacity is 1,500 MSUs for your selected z Systems IPLA product, the applicable Value Units would be:

<table>
<thead>
<tr>
<th>Tier</th>
<th>MSUs</th>
<th>Multiplied by Value Units per MSU</th>
<th>Equal Value Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base</td>
<td>3</td>
<td>1.00</td>
<td>3.00</td>
</tr>
<tr>
<td>Tier A</td>
<td>42</td>
<td>.45</td>
<td>18.90</td>
</tr>
<tr>
<td>Tier</td>
<td>MSUs</td>
<td>Multiplied by Value Units per MSU</td>
<td>Equal Value Units</td>
</tr>
<tr>
<td>------</td>
<td>------</td>
<td>----------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Tier B</td>
<td>130</td>
<td>.36</td>
<td>46.80</td>
</tr>
<tr>
<td>Tier C</td>
<td>140</td>
<td>.27</td>
<td>37.80</td>
</tr>
<tr>
<td>Tier D</td>
<td>1,185</td>
<td>.20</td>
<td>237.00</td>
</tr>
<tr>
<td>Total</td>
<td>1,500</td>
<td></td>
<td>343.50</td>
</tr>
</tbody>
</table>

When calculating the total number of Value Units, the sum is to be rounded up to the next integer.

5655-SDK -IBM SDK for Node.js -z/OS, V6.0

**Charge metric**

<table>
<thead>
<tr>
<th>Program name</th>
<th>Part number or PID number</th>
<th>Charge metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM SDK for Node.js, V6</td>
<td>5655-SDK</td>
<td>Value Units</td>
</tr>
<tr>
<td>IBM SDK for Node.js, Subscription &amp; Support</td>
<td>5655-SDS</td>
<td>Value Units</td>
</tr>
</tbody>
</table>

**Value Unit pricing**

Value Unit pricing for eligible z Systems IPLA programs enables a lower cost of incremental growth and enterprise aggregation within a country. Each z Systems IPLA product with Value Unit pricing has a single price per Value Unit and a conversion matrix, called a Value Unit Exhibit, for converting from some designated measurement to Value Units. Most commonly Millions of Service Units (MSUs) is the measurement designated by IBM to be converted to Value Units. Some other measurements are engines or messages. Since MSUs are the most common measurement, that measurement will be used for the remainder of this description.

Value Unit pricing offers price benefits for customers. For each z Systems IPLA program with Value Unit pricing, the quantity of that program needed to satisfy applicable IBM terms and conditions is referred to as the "required license capacity." Each of the various Value Unit Exhibits stipulates that the larger your required license capacity, the fewer Value Units per MSU you will need. Value Unit Exhibits are uniquely identified by a three-digit code and referred to using the nomenclature VUExxx, where xxx is the three-digit code.

Subsequent acquisitions of Value Unit priced programs offers additional price benefits for customers. The quantity of each z Systems IPLA program that you have acquired is referred to as "entitled license capacity." If you wish to grow your entitled license capacity for a z Systems IPLA program, the calculation to determine additional needed Value Units is based upon the number of Value Units already acquired.

For each z Systems IPLA program with Value Unit pricing, you should:

- Determine the required license capacity, in MSUs
- Aggregate the MSUs across the enterprise within a country
- Convert the total MSUs to Value Units for that country, using the applicable Value Unit Exhibit, and
- Multiply the price per Value Unit by the total number of Value Units to determine the total cost

To simplify conversion from the designated measurement to VUs or vice-versa, use the Value Unit Converter Tool. For additional information or to obtain a copy of the Value Unit Converter Tool, visit the Value Unit Converter Tool website.

**Basic license**

**On/Off CoD**
IBM SDK for Node.js -z/OS, V6.0 is eligible for On/Off CoD with a temporary use charge calculated based on MSUs per-day usage.

**Program name: IBM SDK for Node.js -z/OS, V6.0**

**Program PID: 5655-SDK**

<table>
<thead>
<tr>
<th>Entitlement identifier</th>
<th>Description</th>
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Translation from MSUs to Value Units

<table>
<thead>
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<th>MSUs</th>
<th>Value Units/MSU</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>Tier D</td>
<td>0.20</td>
</tr>
</tbody>
</table>

To order, specify the program product number and the appropriate license or charge option. Also, specify the desired distribution medium. To suppress shipment of media, select the license-only option in CFSW.

**Program name: IBM SDK for Node.js -z/OS, V6.0**

<table>
<thead>
<tr>
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<th>Description</th>
<th>License option/Pricing metric</th>
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<tr>
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<tr>
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**Subscription and Support PID: 5655-SDS**

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<td>S01878L</td>
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<td>Basic ASC, per Value Unit SW S&amp;S</td>
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</table>

<table>
<thead>
<tr>
<th>Orderable supply ID</th>
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<th>Distribution medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>S01878M</td>
<td>English</td>
<td>Paper</td>
</tr>
</tbody>
</table>

**Subscription and Support**

To receive voice technical support via telephone and future releases and versions at no additional charge, Subscription and Support must be ordered. The capacity of Subscription and Support (Value Units) must be the same as the capacity ordered for the product licenses.

To order, specify the Subscription and Support program number (PID) referenced above and the appropriate license or charge option.

IBM is also providing Subscription and Support for these products via a separately purchased offering under the terms of the IBM International Agreement for Acquisition of Software Maintenance. This offering:
• Includes and extends the support services provided in the base support to include technical support via telephone.
• Entitles you to future releases and versions, at no additional charge. Note that you are not entitled to new products.

When Subscription and Support is ordered, the charges will automatically renew annually unless cancelled by you.

The combined effect of the IPLA license and the Agreement for Acquisition of Software Maintenance gives you rights and support services comparable to those under the traditional ICA S/390® and z Systems license or its equivalent. To ensure that you continue to enjoy the level of support you are used to in the ICA business model, you must order both the license for the program and the support for the selected programs at the same Value Unit quantities.

Customized offerings

Product deliverables are shipped only through CBPDO and ServerPac. These customized offerings are offered for internet delivery in countries where Shopz product ordering is available. Internet delivery reduces software delivery time and allows you to install software without the need to handle tapes. For more details on internet delivery, go to the Help section on the Shopz website.

You choose the delivery method when you order the software. IBM recommends internet delivery. In addition to internet and DVD, the supported tape delivery options include:
• 3590
• 3592

Most products can be ordered in ServerPac the month following their availability in CBPDO. z/OS can be ordered through CBPDO and ServerPac at general availability. Many products will also be orderable in a Product ServerPac without also having to order the z/OS operating system or subsystem.

Shopz and CFSW will determine the eligibility based on product requisite checking. For more details on the product ServerPac, go to the Help section on the Shopz website.

For additional information about the Product ServerPac option, refer to Software Announcement AP12-0255, dated July 31, 2012.

Production of software product orders will begin on the planned general availability date.
• CBPDO shipments will begin one week after general availability.
• ServerPac shipments will begin four weeks after general availability.

Terms and conditions

The information provided in this announcement letter is for reference and convenience purposes only. The terms and conditions that govern any transaction with IBM are contained in the applicable contract documents such as the IBM International Program License Agreement, IBM International Passport Advantage® Agreement, and IBM Agreement for Acquisition of Software Maintenance.

Licensing

IBM International Program License Agreement including the License Information document and Proof of Entitlement (PoE) govern your use of the program. PoEs are required for all authorized use.
This software license includes Software Subscription and Support (also referred to as Software Maintenance).

**Agreement for Acquisition of Software Maintenance**

The following agreement applies for Software Subscription and Support (Software Maintenance) and does not require customer signatures:

- IBM Agreement for Acquisition of Software Maintenance (Z125-6011)

These programs are licensed under the IBM Program License Agreement (IPLA) and the associated Agreement for Acquisition of Software Maintenance, which provide for support with ongoing access to releases and versions of the program. These programs have a one-time license charge for use of the program and an annual renewable charge for the enhanced support that includes telephone assistance (voice support for defects during normal business hours), as well as access to updates, releases, and versions of the program as long as support is in effect.

**License Information number**

L-JWOG-AN4KZ7

See the License Information documents page on the IBM Software License Agreement website for more information.

**Limited warranty applies**

Yes

**Limited warranty**

IBM warrants that when the program is used in the specified operating environment, it will conform to its specifications. The warranty applies only to the unmodified portion of the program. IBM does not warrant uninterrupted or error-free operation of the program or that IBM will correct all program defects. You are responsible for the results obtained from the use of the program.

IBM provides you with access to IBM databases containing information on known program defects, defect corrections, restrictions, and bypasses at no additional charge. For further information, see the IBM Software Support Handbook.

IBM will maintain this information for at least one year after the original licensee acquires the program (warranty period).

**Program technical support**

Technical support of a program product version or release will be available for a minimum of two years from the general availability date, as long as your Software Subscription and Support (also referred to as Software Maintenance) is in effect.

This technical support allows you to obtain assistance (by telephone or electronic means) from IBM for product-specific, task-oriented questions regarding the installation and operation of the program product. Software Subscription and Support (Software Maintenance) also provides you with access to versions, releases, and updates (CD releases, long term support releases, or fixes) of the program. You will be notified, through an announcement letter, of discontinuance of support with six months' notice. If you require additional technical support from IBM, including an extension of support beyond the discontinuance date, contact your IBM representative or IBM Business Partner. This extension may be available for a fee.

For additional information on the IBM Software Support Lifecycle Policy, see the IBM Software Support Lifecycle Policy website.
Money-back guarantee

If for any reason you are dissatisfied with the program and you are the original licensee, you may obtain a refund of the amount you paid for it, if within 30 days of your invoice date you return the program and its PoE to the party from whom you obtained it. If you downloaded the program, you may contact the party from whom you acquired it for instructions on how to obtain the refund.

For clarification, note that for programs acquired under any of IBM's On/Off Capacity on Demand (On/Off CoD) software offerings, this term does not apply since these offerings apply to programs already acquired and in use by you.

Volume orders (IVO)

No

Passport Advantage applies

No

Software Subscription and Support applies

Yes. During the Software Subscription and Support period, for the unmodified portion of a program, and to the extent problems can be recreated in the specified operating environment, IBM will provide the following:

- Defect correction information, a restriction, or a bypass.
- Program updates: Periodic releases of collections of code corrections, fixes, functional enhancements, and new versions and releases to the program and documentation.
- Technical assistance: A reasonable amount of remote assistance by telephone or electronically to address suspected program defects. Technical assistance is available from the IBM support center in the organization's geography.

Additional details regarding Technical Assistance, which includes IBM contact information, are provided in the IBM Software Support Handbook.

Software Subscription and Support does not include assistance for:

- The design and development of applications.
- Your use of programs in other than their specified operating environment.
- Failures caused by products for which IBM is not responsible under the IBM Agreement for Acquisition of Software Maintenance.

Software Subscription and Support is provided only if the program is within its support timeframe as specified in the Software Support Lifecycle policy for the program.

All distributed software licenses include Software Subscription and Support (also referred to as Software Maintenance) for a period of 12 months from the date of acquisition, providing a streamlined way to acquire IBM software and assure technical support coverage for all licenses.

While your Software Subscription and Support is in effect, IBM provides you assistance for your routine, short-duration installation and usage (how-to) questions, and code-related questions. IBM provides assistance by telephone and, if available, electronic access, only to your information systems (IS) technical support personnel during the normal business hours (published prime shift hours) of your IBM support center. (This assistance is not available to your end users.) IBM provides Severity 1 assistance 24 hours a day, every day of the year. For additional details, go to the IBM Support Handbooks page.
Software Subscription and Support does not include assistance for the design and
development of applications, your use of programs in other than their specified
operating environment, or failures caused by products for which IBM is not
responsible under this agreement.

For more information about the Passport Advantage Agreement, go to the
Passport Advantage and Passport Advantage Express website.

**Variable charges apply**

No

**Educational allowance available**

15% to qualified educational institution customers

**Multi-Version Measurement**

Multi-Version Measurement (MVM) replaces the previously announced Migration
Grace Period time limit of six months and allows unlimited time for clients to run
more than one eligible version of a software program. Clients may run multiple
versions of a program simultaneously for an unlimited duration during a program
version upgrade. Clients may also choose to run multiple versions of a program
simultaneously for an unlimited duration in a production environment. MVM does not
extend support dates for programs withdrawn from service.

For more information about MVM, including requirements for qualification, see the
MVM web page. For a list of eligible programs, see the IPLA Execution-Based web
page.

**Sub-capacity terms and conditions**

For each z Systems IPLA program with Value Unit pricing, the quantity of that
program needed to satisfy applicable IBM terms and conditions is referred to as the
required license capacity. Your required license capacity is based upon the following
factors:

- The z Systems IPLA program you select
- The applicable Value Unit Exhibit
- The applicable terms
- Whether your current mainframes are full capacity or sub-capacity

For more information on the Value Unit Exhibit for the z Systems IPLA program you
selected, refer to the Ordering information section.

<table>
<thead>
<tr>
<th>Program number</th>
<th>Program name</th>
<th>Terms</th>
<th>Parent, if applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>5655-SDK</td>
<td>IBM SDK for Node.js -z/OS, V6</td>
<td>Execution-based</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

**Full-capacity mainframes**

In cases where full capacity is applicable, the following terms apply.

Execution based, z/OS based, full machine based: The required capacity of a z
Systems IPLA program with these terms equals the MSU-rated capacity of the
machines where the z Systems IPLA program executes.

For more information on mainframe MSU-rated capacities, go to the IBM System z
Software Contracts website.
Reference based: The required license capacity of a z Systems IPLA program with these terms equals the license capacity of the applicable monthly license charge (MLC) program. This MLC program is called the parent program.

**Sub-capacity mainframes**

In cases where sub-capacity is applicable, the following terms apply.

Execution based: The required capacity of a z Systems IPLA sub-capacity program with these terms equals the capacity of the LPARs where the z Systems IPLA program executes.

z/OS based: The required license capacity of a z Systems IPLA program with these terms equals the license capacity of z/OS on the machines where the z Systems IPLA program executes.

Reference based: The required license capacity of a z Systems IPLA program with these terms equals the license capacity of the applicable monthly license charge (MLC) program. This MLC program is called the parent program.

Full machine based: The required license capacity of a z Systems IPLA program with full machine based terms equals the MSU-rated capacity of the machines where the z Systems IPLA program executes.

For more information on mainframe MSU-rated capacities, refer to the IBM z Systems Machines Exhibit (Z125-3901) or visit the Mainframes section of the z Systems Exhibits website.

For additional information for products with reference-based terms, z Systems IPLA sub-capacity programs with reference-based terms adds value to the parent program across the environment, regardless of where in the environment the z Systems IPLA program executes.

An environment is defined as either a single or stand-alone machine or a qualified Parallel Sysplex®. You may have one or more different environments across the enterprise. To determine the required license capacity for each z Systems IPLA program with referenced-based terms, each environment should be assessed separately.

When a z Systems IPLA sub-capacity program with reference-based terms is used in a qualified Parallel Sysplex environment, the required license capacity of the z Systems IPLA program must equal with the license capacity of the parent program across the Parallel Sysplex. Qualified Parallel Sysplex refers to one where MLC pricing is aggregated across the sysplex.

**Sub-capacity eligibility**

To be eligible for sub-capacity charging on select z Systems IPLA programs, you must first implement and comply with all terms of either sub-capacity Workload License Charges (WLC) or sub-capacity Entry Workload License Charges (EWLC).

To implement sub-capacity WLC or EWLC, a machine must be z Systems (or equivalent). On that machine:

- All instances of the OS/390® operating system must be migrated to the z/OS operating systems.
- Any licenses for the OS/390 operating system must be discontinued.
- All instances of the z/OS operating systems must be running in z/Architecture (64-bit) mode.

For that machine, you must create and submit a Sub-Capacity Report to IBM each month. Sub-Capacity Reports must be generated using the Sub-Capacity Reporting Tool (SCRT). For additional information or to obtain a copy of SCRT, go to the IBM System z Software Pricing website.
You must comply with all of the terms of the WLC or EWLC offering, whichever is applicable:

- The complete terms and conditions of sub-capacity WLC are defined in the IBM Customer Agreement - Attachment for z Systems Workload License Charges (Z125-6516).
- The complete terms and conditions for sub-capacity EWLC are defined in the IBM Customer Agreement - Attachment for EWLC, TWLC, zELC, and z/OS.e License Charges (Z125-6587).

Additionally, you must sign and comply with the terms and conditions specified in the amendment to the IPLA contract - Amendment for Amendment for IBM z Systems Programs Sub-Capacity Pricing (Z125-6929). Once the amendment is signed, the terms in the amendment replace any and all previous z Systems IPLA sub-capacity terms and conditions.

**Sub-capacity utilization determination**

Sub-capacity utilization is determined based on the product’s own execution as reported to IBM in accordance with the requirements for reporting sub-capacity utilization for products.

**On/Off CoD**

To be eligible for On/Off CoD pricing, you must be enabled for temporary capacity on the corresponding hardware, and the required contract, Attachment for IBM z Systems On/Off Capacity on Demand (Z125-7883), must be signed prior to use.

**Statement of good security practices**

IT system security involves protecting systems and information through intrusion prevention, detection, and response to improper access from within and outside your enterprise. Improper access can result in information being altered, destroyed, or misappropriated or can result in misuse of your systems to attack others. Without a comprehensive approach to security, no IT system or product should be considered completely secure and no single product or security measure can be completely effective in preventing improper access. IBM systems and products are designed to be part of a regulatory compliant, comprehensive security approach, which will necessarily involve additional operational procedures, and may require other systems, products, or services to be most effective.

**Important:** IBM does not warrant that any systems, products, or services are immune from, or will make your enterprise immune from, the malicious or illegal conduct of any party.

**Prices**

For all local charges, contact your IBM representative.

**AP distribution**

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* Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste, and Vietnam

** Bangladesh, Bhutan, India, Maldives, Nepal, and Sri Lanka

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