IBM Multi-site Workload Lifeline V2.5 enables enhanced intelligent load balancing of TCP/IP and z/OS workloads on z/OS and Linux on System z platforms

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At a glance

IBM® Multi-site Workload Lifeline V2.5 is designed to enable enhanced load balancing of TCP/IP and SNA workloads that run on z/OS® and Linux™ on System z®. This product is available both as an independent offering and as part of the GDPS® continuous-availability, active-active solution.

Key functions

- Ability to build routing recommendations across two sites (for example, sysplexes) and route-selected workloads across both sites (active-query) for TCP/IP-based, z/OS workloads
- Ability to support workloads that utilize SNA applications for select SNA configurations
- Ability to support workloads that utilize applications that reside on Linux on System z and databases that reside on z/OS
- Ability to receive latency metrics from IM replication products and use the metrics to influence routing recommendations (active-query)
- Ability to support secure communication and authentication between Advisors, Agents that reside on z/OS, and external load balancers that use SSL

For ordering, contact your IBM representative, an IBM Business Partner, or IBM Americas Call Centers at 800-IBM-CALL (Reference: LE001).

Overview

With Multi-site Workload Lifeline, you can load balance TCP/IP-based workload connection requests across two sites at nearly unlimited distances, when both sites are running the same server applications and have the same data sources. As a result, it is designed to deliver:

- Increased performance. Response time can be reduced by aligning new workload connections with the most capable applications and systems
- Increased availability. New workload connections can be routed to other available applications in the event of application, system, or site outages. Outages for maintenance updates or other planned events can be minimized.
- Increased scalability. Application instances can be added on-demand.
• Analytic capability. Network Management Interface (NMI) provides access to workload, application, and site status information.
• Improved recovery time. Recovery time can be reduced from hours to minutes.
• Workload migration. Workloads can be routed from one site to another with minimal disruption.
• Improved system utilization. Connections for query workloads can be distributed to both sites simultaneously.
• Verification of disaster recovery procedures. Simpler, non-disruptive testing of disaster recovery procedures by validating workloads remain accessible on the recovery site without requiring a site outage on the production site.

Multi-site Workload Lifeline consists of Lifeline Advisors and Lifeline Agents. The primary Lifeline Advisor communicates with external load balancers by using the Server-Application State Protocol (SASP), one or more Lifeline Agents, and possibly a secondary Lifeline Advisor.

The primary Lifeline Advisor provides recommendations that are used by a first-tier, external load balancer to determine how to select a target site for new connection requests and routes each request to a second tier. The second-tier routing infrastructure can be an external load balancer, z/OS sysplex distributor, Linux on System z guest, or intermediary node. When the first-tier load balancer routes requests to the second tier, the second tier then routes each request to a target z/OS system within the site to select a target server application or database.

The Lifeline Agent gets a list of server applications that are configured to receive workload requests from registered, external load balancers. The Lifeline Agent gathers data about these server applications and returns the information to the Lifeline Advisor.

For additional information on how Multi-site Workload Lifeline supports the active-standby and active-query configurations of Geographically Dispersed Parallel Sysplex™ (GDPS) active-active sites, refer to Service Announcement 613-033, dated October 22, 2013.

Key prerequisites

z/OS V1.13, or later, with the z/OS Communications Server configured as the active TCP/IP stack

For additional details, refer to the Hardware requirements and Software requirements sections.

Planned availability date

December 5, 2014

Description

Multi-site Workload Lifeline defines two tiers of load balancing. The first-tier load balancer determines which site to route a new workload request to and forwards the request to a second tier. The second-tier routing infrastructure can be an external load balancer, z/OS sysplex distributor, Linux on System z guest, or intermediary node. When the first-tier load balancer routes request to the second tier, the second tier then routes each request to a target z/OS system within the site to select a target server application or database.

Multi-site Workload Lifeline provides the first-tier load balancer with site routing recommendations that are based on the availability and health of the server applications and the z/OS and Linux on System z systems within the site. If the
Multi-site Workload Lifeline is a software solution designed to manage and route workloads across sites. It uses a combination of Lifeline Advisors and Lifeline Agents to provide recommendations for routing new connection requests to target sites. These recommendations are based on the availability and health of server applications and the z/OS and Linux on System z systems within the site. If server applications reside on Linux on System z, or if customized load balancing, called an intermediary node, was built into the workload itself, then Multi-site Workload Lifeline will only provide site routing recommendations to the first-tier load balancer.

Multi-site Workload Lifeline consists of Lifeline Advisors and Lifeline Agents. The primary Lifeline Advisor communicates with external load balancers by using the Server-Application State Protocol (SASP), one or more Lifeline Agents, and possibly a secondary Lifeline Advisor.

If the Lifeline Advisor detects that system images, which make up a site where the workloads are running, are no longer available, then the product is designed to declare a site failure. If the applications that make up the active-standby or active-query workloads are down or unhealthy, the product is designed to declare a workload failure. In either case, new workload connection requests can be routed to the other site. If the database replication latency for the active-query workload exceeds a threshold, the product is designed to declare a workload failure on the one site where the threshold was reached. Instead of using both sites, all workload is then routed to the other site.

In the event that you want to power down a site for a power check or apply maintenance, the offering allows you to perform a graceful movement of workloads from one site to the other through the use of commands that influence where workload requests are routed.

Multi-site Workload Lifeline provides an interface for Network Management Applications to extract information such as the status of the workloads, sites, and more.

**Lifeline Advisors**

The primary Lifeline Advisor provides recommendations that are used by a first-tier, external load balancer to determine how to select a target site for new connection requests and routes each request to a second tier. The second-tier routing infrastructure then routes each request to a target z/OS system within the site to select a target server application or database.

The second-tier routing infrastructure can be an external load balancer, z/OS sysplex distributor, Linux on System z guest, or intermediary node. If the second tier is an external load balancer, it also uses the Lifeline Advisor recommendations to determine how to route these new requests to the target server applications in the site.

If the second-tier load balancer is a z/OS sysplex distributor, it creates its own recommendations that are similar to the ones that the Lifeline Advisor creates to determine how to route these new requests to the target server applications in the site. If a Linux on System z guest is used, all routing decisions within the site are made by the Linux on System z guest, without Lifeline providing any recommendations. If an intermediary node is used, all routing decisions within the site are made by the intermediary node, without Lifeline providing any recommendations.

**Lifeline Agents**

The z/OS Lifeline Agent and Linux on System z Management Guest Agent receive from the Lifeline Advisor a list of server applications that are configured to receive workload requests from registered external load balancers. These Lifeline Agents gather data about these server applications and return the information to the Lifeline Advisor.
**External load balancers**

External load balancers use Server-Application State Protocol (SASP) to obtain recommendations and topology information related to server applications and systems in a clustered environment. A second-tier load balancer can be an external load balancer that is SASP-enabled or a z/OS sysplex distributor on a z/OS system in the site.

**Internal load balancers**

An internal load balancer, also known as z/OS sysplex distributor, resides on a z/OS system in the site. It uses z/OS Communications Server functions to obtain recommendations and topology information related to server applications in a sysplex environment.

**Intermediary nodes**

An intermediary node does not communicate directly with the Lifeline Advisor, but it replaces the function of a second-tier load balancer. It is used in cases where customized load balancing has been built into a workload. The Linux on System z guests where server applications reside that distribute requests to databases on z/OS are considered intermediary nodes. An example of a workload utilizing intermediary nodes is SNA workloads whose SNA applications are accessed through TN3270 servers.

**Active-standby configuration**

An active-standby workload is active in one site. Lifeline directs load balancers to route incoming connections to the active site. When database updates are made, database software replication transmits those changes asynchronously from the active instance of the workload to the standby instance of the workload. At the standby site, the standby instance of the workload is active and ready to receive work. The updated data from the active site is applied to the database subsystem running in the standby site in near real time.

**Active-query configuration**

An active-query workload can be active in one or both sites. Lifeline provides routing recommendations to the load balancers to intelligently balance connections across both sites. When database updates are made by the associated active-standby workload, database replication latency is monitored by Lifeline to ensure connections are not routed to a site if the replicated database on that site contains data that is too out of date with the database on the active site.

**New in Multi-site Workload Lifeline V2.5**

Multi-site Workload Lifeline adds SNA and Linux on System z support as follows:

- Ability to monitor the health of SNA workloads through an enhanced z/OS Lifeline Agent, which is used to inform the Lifeline Advisor of the health of those workloads.
- Ability to cleanly transition SNA workloads to a secondary site while ensuring that no persistent SNA sessions remain on the primary site.
- Ability to route select SNA workloads across two sites. Supported configurations to access SNA applications include Remote API, TN3270 or a customer provided IP to SNA protocol gateway.
- Ability to monitor the health of Linux on System z workloads through a new Linux on System z Management Guest Agent, which is used to inform the Lifeline Advisor of the health of those workloads.
- Ability to cleanly transition Linux on System z workloads to a secondary site while ensuring that no persistent connections to zLinux guests remain on the primary site.
- Ability to route Linux on System z workloads across two sites when the application tier resides on a Linux on System z guest and connects to databases on z/OS.
• Ability to perform automated environment checks to prevent customers from transitioning a workload into an incorrect state. New console messages are issued to alert operators when configured first-tier load balancers or Lifeline Agents are not connected to the Lifeline Advisor.
• Performance enhancements and scalability improvements for large environments. Customers can now add additional, first-tier load balancers and Lifeline Agents to the Lifeline configuration with a much lower impact to system and network performance. This allows for larger Lifeline configurations across two sites while maintaining extremely high levels of performance and scalability.

**Accessibility by people with disabilities**

A U.S. Section 508 Voluntary Product Accessibility Template (VPAT) containing details on accessibility compliance can be requested at


**Section 508 of the US Rehabilitation Act**

Multi-site Workload Lifeline V2.5 is capable as of December 5, 2014, when used in accordance with associated IBM documentation, of satisfying the applicable requirements of Section 508 of the Rehabilitation Act, provided that any assistive technology used with the product properly inter-operates with it.

**Value Unit-based pricing**

Value Unit pricing for eligible IBM System z IBM International Program License Agreement (IPLA) programs enables a lower cost of incremental growth and enterprise aggregation. Each System z IPLA product with Value Unit pricing has a single price per Value Unit and a conversion matrix, called 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 System z 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 stipulate 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 System z IPLA program that you have acquired is referred to as **entitled license capacity**. If you wish to grow your entitled license capacity for a System z IPLA program, the calculation to determine additional needed Value Units is based upon the number of Value Units already acquired.

For each System z 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, visit the Value Unit Converter Tool website

http://ibm.com/zseries/swprice/vuctool
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 System z IPLA program you selected, refer to the Terms and conditions section.

### Product positioning

Multi-site Workload Lifeline is an integral part of the active-standby and active-query configurations of IBM GDPS active-active continuous availability.

GDPS active-active continuous availability is the next generation of GDPS and a fundamental paradigm shift from a failover model to a near continuous availability model. IBM GDPS active-active continuous availability combines the best attributes of the existing suite of GDPS services and expands them to allow you to achieve unlimited distances between your data center sites with recovery time objectives measured in seconds.

GDPS active-active continuous availability is a solution for an environment consisting of two sites, separated by unlimited distances, running the same applications and having the same data with cross-site workload monitoring, and balancing. IBM GDPS active-active continuous availability, as with previous GDPS solutions, provides a complete set of services to help achieve near continuous availability. This solution, which is an integration of IBM products and GDPS control software, is delivered through an IBM service engagement which includes project management throughout the implementation cycle.

Multi-site Workload Lifeline is not only integral in providing support for disaster recovery as part of GDPS, it can also be used to significantly reduce downtime during planned outages. Multi-site Workload Lifeline can be used to reroute workloads from one site to another during planned outages, such as maintenance. Work can be performed on the second site while maintenance is applied to the production site. Once complete, the workload can be moved back.

### Reference information

For additional information on how Multi-site Workload Lifeline supports the active-standby and active-query configurations of Geographically Dispersed Parallel Sysplex (GDPS) active-active, refer to Services Announcement 613-033, dated October 22, 2013.

For additional information on SNA support over TCP/IP using Remote API Client-server, TN3270 and SNA over IP protocol gateways, refer to the Communications Server for Data Center Deployment (CSDCD) product documentation, and see 212-338, dated October 3, 2012.

### Program number

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Product identification number

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Business Partner information

If you are a Direct Reseller - System Reseller acquiring products from IBM, you may link directly to Business Partner information for this announcement. A PartnerWorld® ID and password are required (use IBM ID).


Offering Information

Product information is available via the Offering Information website

http://www.ibm.com/common/ssi

Publications

- License Information document
- IBM Multi-site Workload Lifeline V2.5 User's Guide
- Program Directory

The latest product documentation is found in IBM Knowledge Center at

http://www.ibm.com/support/knowledgecenter

IBM Knowledge Center is the new home for IBM product documentation. It brings IBM technical publications together in a single location, and replaces over 800 individual product Information Centers. IBM Knowledge Center simplifies the user experience, improves search, and refines the overall experience with other enhancements. Locate the desired WebSphere® Application Server offering from the product list to obtain the product documentation.

Services

Software Services

IBM Software Services has the breadth, depth, and reach to manage your services needs. You can leverage the deep technical skills of our lab-based, software services team and the business consulting, project management, and infrastructure expertise of our IBM Global Services team. Also, we extend our IBM Software Services reach through IBM Business Partners to provide an extensive portfolio of capabilities. Together, we provide the global reach, intellectual capital, industry insight, and technology leadership to support a wide range of critical business needs.

To learn more about IBM Software Services or to contact a Software Services sales specialist, visit

http://www.ibm.com/software/sw-services/
Technical information

Specified operating environment

Hardware requirements
Multi-site Workload Lifeline V2.5 runs on the following System z servers:

- z196
- z12 EC
- z10™ EC
- z10 BC
- z9® EC
- z9 BC
- z990
- z890
- z900
- z800

Software requirements
Multi-site Workload Lifeline V2.5 requires z/OS V1.13, or later that also has the z/OS Communications Server configured as the active TCP/IP stack.

The program's specifications and specified operating environment information may be found in documentation accompanying the program, if available, such as a readme file, or other information published by IBM, such as an announcement letter. Documentation and other program content may be supplied only in the English language.

Planning information

Packaging
Program components are delivered by traditional z/OS fulfillment:

- CBPDO
- ServerPac

The following items are delivered:

- License Information Document
- 3590 tape cartridge

Direct customer support

Direct customer support is provided by IBM Operational Support Services - SoftwareXcel. This fee service enhances your productivity by providing voice and electronic access into the IBM support organization. IBM Operational Support Services - SoftwareXcel helps answer questions pertaining to usage and suspected software defects for eligible products.

Installation and technical support is provided by Global Services. For more information call 800-IBM-4YOU (426-4968).

For technical support or assistance, contact your IBM representative or visit

http://www.ibm.com/support
Security, auditability, and control

Multi-site Workload Lifeline V2.5 uses the security and auditability features of the base operating system under which it is operating. 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

Ordering z/OS through the Internet

ShopzSeries provides an easy way to plan and order your z/OS ServerPac or CBPDO. It will analyze your current installation, determine the correct product migration, and present your new configuration based on z/OS. Additional products can also be added to your order (including determination of whether all product requisites are satisfied). ShopzSeries is available in the U.S. and several countries in Europe. In countries where ShopzSeries is not available yet, contact your IBM representative (or IBM Business Partner) to handle your order via the traditional IBM ordering process. For more details and availability, visit the ShopzSeries website at http://www14.software.ibm.com/webapp/ShopzSeries/ShopzSeries.jsp

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Charge metric

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The programs in this announcement all have Value Unit-based pricing.

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For each System z 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 System z 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

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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 System z IPLA product, the applicable Value Units would be:

Translation from MSUs to Value Units

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From MSUs to Value Units

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<td>1,185</td>
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Total 1,500 343.50

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

Basic license

On/Off CoD

Multi-site Workload Lifeline V2.5 is eligible for On/Off CoD with a temporary use charge calculated based on MSUs per-day usage.

Program name: Multi-site Workload Lifeline V2.5
Program PID: 5635-UM4

Entitlement identifier Description License option/Pricing metric
S017CG1 Multi-site Workload Lifeline V2.5 Basic OTC, Per MSU-day TUC

Translation from MSUs to Value Units

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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: Multi-site Workload Lifeline V2.5
Program PID: 5655-UM4

Entitlement identifier Description License option/Pricing metric
S017CG1 Multi-site Workload Lifeline V2.5 Basic OTC, Value Units

Orderable supply ID Language Distribution medium
S017CG0 US English 3590 Tape Cartridge

Note: Additional media type selections (3480 compressed, 3490E, 3590, and 3592) are offered during Custom Build Offering ordering.

Subscription and Support PID: 5655-U25

Entitlement identifier Description License option/Pricing metric
S016M9K Multi-site Workload Lifeline Basic ASC, per Value Unit SW S&S
Subscription and Support No charge, decline SW S&S
Per MSU SW S&S Registration

Orderable supply ID Language Distribution medium
S016M9J US English Paper

**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 (IAASM). 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 System z 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 via CBPDO and ServerPac. These customized offerings are offered for Internet delivery in countries where ShopzSeries 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, refer to the Shopz help information at

http://www.software.ibm.com/ShopzSeries

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 via 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, visit the Help section on the Shopz
website at


For additional information on the Product ServerPac option, refer to 212-272, 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 two 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 the 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.

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.
IBM System z Operational Support Services - SoftwareXcel is an option if you desire added services.

**License Information number**

LC14-7596-01

The program’s License Information will be available for review on the IBM Software License Agreement website


**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, consult the *IBM Software Support Handbook* found at

http://www.ibm.com/support/handbook

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

**Program support**

Enhanced support, called Subscription and Support, includes telephone assistance, as well as access to updates, releases, and versions of the program as long as support is in effect. You will be notified of discontinuance of support with 12 months’ notice.

**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.

**Other terms**

*Volume orders (IVO)*

No
IBM International Passport Advantage Agreement

**Passport Advantage applies**
No

**Software Subscription and Support applies**
For operating system software, the revised IBM Operational Support Services - SoftwareXcel offering will provide support for those operating systems and associated products that are not available with the Software Subscription and Support (Software Maintenance) offering.

This will ensure total support coverage for your enterprise needs, including IBM and selected non-IBM products. For complete lists of products supported under both the current and revised offering, visit

http://www.ibm.com/services/sl/products

**IBM Operational Support Services - SoftwareXcel**
Yes

**Other support**
SoftwareXcel

**System i® Software Maintenance applies**
No

**Variable charges apply**
No

**Educational allowance available**
Yes. A 15% education allowance applies to qualified education institution customers.

**Sub-capacity terms and conditions**
For each System z 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 System z 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 System z 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>
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<tbody>
<tr>
<td>5655-UM4</td>
<td>Multi-site Workload Lifeline V2.5</td>
<td>Execution-based based</td>
<td>N/A</td>
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</table>

IBM United States Software Announcement 214-446 IBM is a registered trademark of International Business Machines Corporation 14
**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 System z IPLA program with these terms equals the MSU-rated capacity of the machines where the System z IPLA program executes.

For more information on mainframe MSU-rated capacities, visit


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

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

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

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

http://ibm.com/zseries/library/swpriceinfo/

For additional information for products with reference-based terms, System z IPLA sub-capacity programs with reference-based terms adds value to the parent program across the environment, regardless of where in the environment the System z 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 System z IPLA program with referenced-based terms, each environment should be assessed separately.

When a System z IPLA sub-capacity program with reference-based terms is used in a qualified Parallel Sysplex environment, the required license capacity of the System z IPLA program must equal 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 System z 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 System z (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, visit the System z Software Pricing website

http://ibm.com/zseries/swprice

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 System z 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 IBM System z Programs Sub-Capacity Pricing (Z125-6929). Once the amendment is signed, the terms in the amendment replace any and all previous System z IPLA sub-capacity terms and conditions.

Sub-capacity utilization determination

Sub-capacity utilization is determined based on the utilization of an eligible operating system and machine (for example, z/OS running in z/Architecture (64 bit) mode on a System z ((or equivalent) server).

On/Off Capacity on Demand (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 System z 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 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 comprehensive security approach, which will necessarily involve additional operational procedures, and may require other systems, products, or services to be most effective. IBM does not warrant that systems and products are immune from the malicious or illegal conduct of any party.
Prices

Information on charges is available at

http://www.ibm.com/support

Choose the option entitled Purchase/upgrade tools.

Program name: Multi-site Workload Lifeline V2.5
Program PID: 5655-UM4

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Subscription and Support PID: 5655-U2S

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<td>Multi-site Workload Lifeline</td>
<td>Basic ASC, Value Units SW S&amp;S</td>
</tr>
<tr>
<td>- Subscription and Support</td>
<td>No charge, decline SW S&amp;S</td>
<td>Per MSU SW S&amp;S Registration</td>
</tr>
</tbody>
</table>

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