IBM LoadLeveler for AIX 5L V3 Improves Response Time with IBM @server Clustering Enhancements

Overview

LoadLeveler® for AIX® 5L schedules applications to IBM @server Cluster 1600, RS/6000® SP™ nodes, or clusters of IBM @server pSeries or RS/6000 servers. LoadLeveler supports load balancing for interactive Parallel Operating Environment sessions, and focuses on parallel job scheduling and scalability.

This new version of LoadLeveler for AIX 5L:

- Supports the new pSeries 690 server with AIX 5L for POWER Version 5.1.
- Speeds job processing with striped communication between nodes with enhanced switch adapter support. Stripping allows the job to use multiple communication paths to the node for increased data bandwidth and reliability.
- Allows more windows per SP Switch2 PCI Attachment Adapter, enabling more user space jobs to run simultaneously.
- Provides enhanced consumable resource support by using AIX 5L WorkLoad Manager to enforce and monitor the use of consumable CPUs and real memory resources.
- Improves overall system utilization and responsiveness to parallel workloads with Gang scheduling.
- Includes checkpoint and restart enhancements that allow you to periodically save the state of serial and parallel jobs automatically.
- Supports 64-bit applications for interactive and batch jobs that run on POWER nodes with AIX 5L.

Key Prerequisites

- IBM AIX 5L for POWER Version 5.1
- RS/6000 workstations, servers, and/or SP nodes

Planned Availability Dates

- December 7, 2001, for LoadLeveler for AIX 5L, general support
- December 7, 2001, for LoadLeveler for AIX 5L, support of IBM @server pSeries 690 on stand-alone servers
- June 28, 2002, for LoadLeveler for AIX 5L, 32-bit Checkpoint/Restart support
- June 28, 2002, for LoadLeveler for AIX 5L, pSeries 690 PSSP cluster support

At a Glance

LoadLeveler for AIX 5L, a job management program, allows users to run more jobs in less time by matching the jobs’ processing needs with the available resources.

This new version of LoadLeveler for AIX 5L:

- Exploits IBM’s world class UNIX® operating system, AIX 5L for POWER Version 5.1
- Supports the new pSeries 690 server
- Provides checkpoint/restart enhancements
- Integrates with the AIX 5L Workload Manager for resource enforcement and monitoring
- Provides 64-bit application support
- Provides coordinated context switching with Gang scheduling
- Offers a new IBM Software Maintenance program

For ordering, contact:
Your IBM representative, an IBM Business Partner, or IBM Americas Call Centers at 800-IBM-CALL

Reference: RE001

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LoadLeveler is a job management system that allows users to run more jobs in less time by matching the jobs’ processing needs with the available resources. LoadLeveler schedules jobs and provides functions for building, submitting, and processing jobs quickly and efficiently in a dynamic environment. Batch jobs can be submitted, either serial or parallel, to run in the background and require no input from the user. LoadLeveler scheduling algorithms use the availability of consumable resources to determine the machine or machines on which a job will run.

LoadLeveler for AIX 5L Version 3 provides the following functions:

**Striped Communication:** Parallel jobs can request to use striped communication between nodes. Stripping allows the job to use multiple communication paths to the node. Two methods of stripping can be used, IP and user space. When a job is submitted using stripping, communication is established between nodes that takes advantage of all adapter connections, including the SP Switch2 PCI Attachment Adapter.

**AIX Workload Manager Integration:** The LoadLeveler administrator can configure LoadLeveler to use the AIX Workload Manager to enforce the resource usage of consumable CPU and consumable memory. In addition, users can obtain Workload Manager statistics on a specific job.

**Gang Scheduling:** For parallel jobs, LoadLeveler supports Gang scheduling and Backfill scheduling for efficient use of system resources. Gang scheduling provides support for:
- Coordinated context switching for both time-sharing and space-sharing applications
- Resource scheduling that matches applications with available resources
- Preempting jobs; system initiated and user initiated

Time-sharing involves assigning one or more processors to run multiple applications during a designated time interval. This provides better response to workloads with a mix of short- and long-running jobs. For applications that switch between tasks frequently, coordinated context switching may enhance system performance.

**Checkpoint/Restart:** Checkpointing allows users to periodically save the state of both serial and parallel jobs automatically. When users enable checkpointing for a job and the job does not complete, it can be restarted from the saved state. When checkpointing is enabled, checkpoints can be initiated from within the application at major milestones, or by the user, by the administrator, or by LoadLeveler external to the application.

**64-bit Support:** For both interactive and batch jobs, LoadLeveler users and administrators can:
- Assign 64-bit integer values to keywords in the Job Command, Configuration, and Administration files
- Specify and request 64-bit system resource limits

Both sets of 32-bit and 64-bit LoadLeveler APIs and libraries are available for application development. This 64-bit support is essential for running applications with large memory and other resource requirements. The AIX 64-bit kernel is not yet supported by LoadLeveler.

**Resource Manager Functions:** LoadLeveler incorporates the job management functions, which were previously part of the Parallel System Support Programs (PSSP) Resource Manager. This effectively eliminates the control workstation as a point of failure for parallel jobs and improves the efficiency of managing workloads using the SP switch.

**Multiple User Space Tasks Per Adapter:** LoadLeveler supports multiple user space tasks on the SP Switch and the SP Switch2.
- On the SP Switch, applications using the Low-level Application Programming Interface (LAPI) user space API or Parallel Environment MPI and LoadLeveler may start up to 16 user space tasks per node, with a limit of 4096 tasks in a parallel job.
- On the SP Switch2 with the SP Switch2 adapter, applications using the LAPI user space API or Parallel Environment MPI and LoadLeveler may start up to 32 user space tasks per node, with a limit of 4096 tasks in a parallel job.
- On the SP Switch2 with the SP Switch2 PCI adapter, applications using the LAPI user space API or Parallel Environment MPI and LoadLeveler may start up to 64 user space tasks per node, with a limit of 4096 tasks in a parallel job.

A parallel job using IP for its communication may consist of up to 2048 tasks.

**Multiple Tasks Per Job Per Node:** Specified keywords in the job command language allow you to run multiple tasks of a parallel job on the same node.

**Multiple Communication Protocols Per Task:** LoadLeveler allows a job to request the network resources required for a task to run both the Message Passing Interface (MPI) and the LAPI communication protocols.

**Task to Node Assignment:** With added flexibility, a user can specify specific nodes for a job to run based upon keywords provided. Tasks can be assigned in blocks, can be assigned specifically by the user, can be left for LoadLeveler to determine assignment, or a combination.

**Process Tracking Function:** Allows LoadLeveler to cancel any processes throughout the entire cluster which may have been left behind after a job is terminated consuming resources or degrading performance.

**Task Guide Support:** A Task Guide is a sequence of panels a user steps through to accomplish a task. The LoadLeveler Task Guide allows modification of LoadLeveler configuration values related to scheduling, such as setting up consumable resources, tuning scheduling and communications keywords, and merging SP machine and adapter information.

**Consumable Resources:** The use of consumable resources allow users to schedule jobs based on the availability of specific resources. A scheduling option is available to request resources such as CPU for running jobs. Installation defined resources can be specified and considered in scheduling as well. Keywords have been added which can specify which resource to be considered by the LoadLeveler scheduler when dispatching jobs and to specify what resources are available collectively on all machines.

**Security:** LoadLeveler exploits the Security Services offered in PSSP. With Distributed Computing Environment (DCE), administrators can authenticate user identity so only DCE authenticated users can schedule jobs. In addition, you can delegate credentials so jobs will run with the users DCE authority.
Application Programming Interface Calls: API calls provide the functions which are available through the standalone commands, providing information on parallel jobs originating from a specific node.

Monitoring of Machine Availability: A daemon is provided to monitor machine availability and notify the negotiator when a machine is no longer reachable. This daemon provides quicker and more reliable response with its use of the PSSP Group Services API (GSAPI).

Accessibility by People with Disabilities

For Software Offerings:
The following feature supports use by people with disabilities:

- Operation by keyboard alone

Euro Currency

These programs are not impacted by euro currency.

Product Positioning

LoadLeveler is an integral piece of the total System Management solution for the IBM @server Cluster 1600. Version 3 exploits many of the features in the AIX 5L for POWER Version 5.1 operating system.

LoadLeveler is ideal for users who need to submit jobs as necessary, not according to any pre-set schedule. Other job schedulers that provide a rule-based batch workload management for inter-job dependencies and scheduling jobs at predetermined schedules can be integrated with LoadLeveler function. In particular, AIX 5L Workload Manager is integrated with LoadLeveler Version 3.

LoadLeveler supports load balancing for interactive Parallel Operating Environment sessions and focuses on parallel job scheduling and scalability.

LoadLeveler is fully supported and serviced with continuing development and resource. It is an integrated part of the IBM @server Cluster 1600 System Management solution.

Reference Information

Refer to:


Trademarks

SP is a trademark of International Business Machines Corporation in the United States or other countries or both. AIX, LoadLeveler, and RS/6000 are registered trademarks of International Business Machines Corporation in the United States or other countries or both. UNIX is a registered trademark is a registered trademark of the Open Company in the United States and other countries. Other company, product, and service names may be trademarks or service marks of others.
IBM Software Maintenance Information

IBM Software Maintenance is a 1-year or 3-year contract offering that enables customers to maintain software product version and release currency, with voice support during normal business hours included at no additional charge for the first year, for selected AIX® and UNIX®-based software products at a predetermined cost. One year of Software Maintenance is included in the price of the original license. For products participating in IBM Software Maintenance, customers can receive all software product version and release upgrades and voice support, announced during the contract period. If customers allow either the one-year or three-year software maintenance offering to expire without renewal, there will be an “Maintenance-after-license” option to enable reinstatement in the Software Maintenance offering, on a product by product basis.

The following is general information regarding the Software Maintenance offering being announced:

Structure:

- Each eligible licensed software program will include 1 year of Software Maintenance (Software Subscription and Technical Support) in the price of the license.
- A 1-year and 3-year prepay option (represented by two separate type/models) associated with each eligible licensed program are available.
- The Software Maintenance type/models will have the same pricing structure as the license type/models they are associated with.
- Each 1-year and 3-year Software Maintenance PID will have three sets of feature numbers for each priced entity:
  - A no-charge (NC) registration feature for the 1-year contracts and a 2-year priced feature (since the first year is included in the price of that license) for the 3-year contracts.
  - A renewal feature of one or three years.
  - A Software Maintenance “after license” charge for customers who want to renew but have lapsed coverage.
  - The Software Maintenance order generated for this product will be a new order and have a new starting/ending period, separate from the one for the license already in effect.

Definition of Software Upgrade: An upgrade is either a new version (3.x.x to 4.x.x) or a new release (x.3.x to x.4.x) of an IBM program announced as eligible for which a customer enrolled under the IBM Software Maintenance. Software Maintenance entitles customers to future upgrades from only the latest announced version or release of an available eligible product.

Upgrades do not include programs sold separately from the enrolled program, but enhance the performance of that program, or are considered add-ons or utilities. Programs that perform the same functions as the enrolled program but are installed on a non-AIX platform are not considered upgrades.

Note: Software preventative-maintenance releases x.x.1 to x.x.2 (modification level changes, updates, or refreshes) are released under the 1-year or 3-year maintenance program numbers but only when a supply feature has been announced. Supply features are only announced under the 1-year and 3-year options when there is an announced version/release change against the original program product. No-charge preventative maintenance releases should be obtained by Software Maintenance customers in the same manner as non-Software Maintenance customers.

Example: Product A is offered under IBM Software Maintenance and three months later PTFs are incorporated into the program package. This is considered an update that would not be obtained under the 1-year or 3-year maintenance program numbers under the IBM Software Maintenance offering. Using the same example above, three months after the PTFs were incorporated into the program package, IBM announces a new version of product A. At that time, a supply feature is announced for product A under the 1-year and 3-year maintenance program numbers. This allows customers who are entitled by purchase or when the first year of maintenance is included with the license, of either the 1-year or 3-year maintenance offering for product A to order the upgrade under the 1-year or 3-year offering.

IBM may announce a product that can be substituted for an enrolled product. This product is neither a new version, a new release, nor a preventative maintenance release of that enrolled product. In most cases, this product has a different architecture, more function, and a higher license charge than the enrolled product. IBM may provide those customers enrolled in the IBM Software Maintenance offering access to this product at a discounted rate. The terms of this transaction will be included in the new product announcement.

Note: IBM will not offer stand-alone upgrades as a standard product offering. Standalone upgrades to this product/release, and its future versions and releases, will be considered only on a special request basis by IBM.

Contract Duration: The IBM Software Maintenance contracts are on a product by product basis and are offered for one or three years. One year of Software Maintenance is included with the purchase of a new license for the product. The 3-year prepay option covers two additional years of coverage since the first year is included in the product license. The 3-year prepay option can be purchased at the same time a license for an eligible product is purchased. Refunds do not apply if cancellation occurs during the one or three year contract period. Customers are not required to renew under either the one-year or three-year offering when the contract expires but will need to use the Maintenance-after-license option should they let the contract expire and want to

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acquire a new version or release of an eligible product. If the one-year or three-year contracts aren’t renewed, the one or three year contracts will be removed from IBM administrative systems. Contract transfers within an enterprise are allowed.

Payment Options: Customers enroll in the plan at a reduced “Initial” price at the same time a new license for an eligible program product is purchased. Customers can also enroll in the plan after purchase of a new license for an eligible program product but must purchase the “Maintenance-after-license” option.

Software Maintenance Prices: The IBM Software Maintenance program prices are based on the published price of the software program at the time of the contract preparation.

Minimum Contract Value: None

Notification of Upgrade Availability and Ordering: Changes are currently underway to the Web server where customers will register for e-mail notifications when Software Maintenance products are upgraded. Availability of this service is expected first quarter 2002. The Software Maintenance component of the Web server will be found at:

http://techsupport.services.ibm.com/server/support

Ordering Information

A customer ordering a new license for LoadLeveler® for AIX 5L, LP product number 5765-E69, must include a 1-year (5771-LLV) or a 3-year (5773-LLV) maintenance order to be entitled to future version or release updates of the licensed program. Not only will customers be entitled to future version or release updates, this new offering includes a year of voice support at no additional cost. Customers entering a 1-year or 3-year Software Maintenance offering for LoadLeveler, should specify type/model 5771-LLV or 5773-LLV. After selecting the 1-year or 3-year type/model, customers should add the applicable billing features with a quantity equal to the number of licenses in the contract.

Offering Information

Product information will be available on day of announcement through Offering Information (OITOOL) at:

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

Publications

No hardcopy publications are shipped with this program. The following publications are offered in displayable softcopy form:

- IBM LoadLeveler for AIX 5L: Using and Administering (SA22-7881)
- IBM LoadLeveler for AIX 5L: Diagnosis and Messages Guide (GA22-7882)
- Installation Memo for IBM LoadLeveler (GI11-2816)

These displayable manuals are part of the basic machine-readable material and are viewable in PDF and HTML formats.

http://www.rs6000.ibm.com/resource/aix_resource/sp_books

Terms and conditions for use of the machine-readable files are shipped with the files.

The Publication Notification System (PNS) is available by order number/product number. Customers currently subscribing to PNS will automatically receive notifications by e-mail. Customers who wish to subscribe, can visit the PNS Web site at:

http://www.ibm.com/shop/publications/pns

The IBM Publications Center Portal:

http://www.ibm.com/shop/publications/order

The Publications Center is a worldwide central repository for IBM product publications and marketing material with a catalog of 70,000 items. Extensive search facilities are provided, as well as payment options via credit card. Furthermore, a large number of publications are available online in various file formats, which can currently be downloaded free of charge.

Note that PNS subscribers most often order their publications via the Publication Center.

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Technical Information

Specified Operating Environment

Hardware Requirements

- IBM RS/6000® SP™ systems
- IBM @server pSeries servers
- IBM RS/6000 servers

Software Requirements

- LoadLeveler for AIX 5L, Version 3 requires the AIX 5L for POWER Version 5.1 operating system (5765-E61)
  - To run parallel operating environment (POE) jobs, Parallel Environment for AIX 5L, Version 3.2 (5765-D93) is required.
  - If using the graphical user interface (GUI), AIXwindows® Environment, Version 5.1 (5765-E61) and Java™ Runtime Environment, Version 3.1 are required.
  - If using the Config Tasks Wizard, TaskGuide Runtime Environment, Version 5.1 is required.
  - Parallel Systems Support Programs for AIX, Version 3.4 (5765-D51) is required only:
    - If you plan to run POE jobs in user space mode with LoadLeveler on an SP, then the Job Switch Resource Table Services fileset (ssp.clients 3.4 or later compatible releases) of the PSSP install image is required.
    - If you plan to configure LoadLeveler to support DCE security services then the SP Authenticated Clients Commands fileset (ssp.clients 3.4) of the PSS0 install image is required.

Compatibility: The Gang scheduling option will not function until all nodes in the system have been upgraded to the latest version of LoadLeveler. Configuration and administration files that specify new Gang scheduling keywords will not be compatible with previous versions of LoadLeveler. LoadLeveler 3.1 can coexist with LoadLeveler 2.2 in a mixed cluster; some machines in the cluster have LoadLeveler 3.1 installed while the rest of the cluster is...
running LoadLeveler 2.2. However, there are restrictions to running in a mixed cluster and new Version 3.1 functions will be available in a mixed cluster. In addition, when running a mixed 2.2 and 3.1 cluster, the LoadLeveler 2.2 machines must have 2.2.0.10 (U478841) or higher installed. Refer to the Migration Considerations sections of the Install Memo for IBM LoadLeveler and IBM LoadLeveler for AIX 5L, Using and Administering, Version 3 Release 1 publications.

LoadLeveler 2.2 operates with 32-bit data only, while LoadLeveler 3.1 operates with both 32-bit and 64-bit. Since 2.2 cannot interpret 64-bit data, LoadLeveler converts all 64-bit integers originating from 3.1 commands, daemons, or APIs into 32-bit integers before sending the data to a 2.2 target.

Limitations: Because of the interaction with the AIX Workload Manager (WLM), LoadLeveler will not interact with any other WLM configurations, and previously defined WLM classes will not be honored.

Support for the Checkpoint/Restart function will be available via PTF. Refer to APARs IY24116 and IY24117 for information on availability and support of this function.

The SP Switch adapter and the RS/6000 SP System Attachment adapter are not supported with Gang scheduling.

Support on the pSeries 690 is initially limited to non-PSSP stand-alone servers with a maximum of 16 operating system images and 128 processors.

LoadLeveler 3.1 provides support for 64-bit applications that run on POWER nodes with AIX 5L 5.1. This 64-bit support is essential for running applications with large memory and other resource requirements. However, the AIX 64-bit kernel is not yet supported by LoadLeveler.

The LoadLeveler function allowing only DCE authenticated users to use LoadLeveler to schedule jobs is not available without PSSP security services. One of the configurable options for delegation of DCE credentials, so that jobs run with the user’s DCE authority, does not require PSSP and is not limited.

Planning Information

Packaging: IBM LoadLeveler for AIX 5L is distributed in one package with:

- An IBM International Program License Agreement (IPLA) in multilanguage booklet and its License Information (LI): LI10-0683
- A CD-ROM: LCD4-5569

Hardcopy publications will not be shipped. All publications are available in softcopy only on the product media.

Security, Auditability, and Control

LoadLeveler uses the security and auditability features of the AIX 5L Operating System

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

Opening Information

Ordering Information

LoadLeveler for AIX 5L, Version 3 has two charge units. Charge units for SP based products are based on nodes; charge units for workstations and servers are based on the number of physical installations of the product (for example, installation on a system or LPAR partition). These installations are available in variable order quantities based on the number of workstations or servers with which LoadLeveler will be installed. On the SP, LoadLeveler is shipped with the hardware. When adding a LoadLeveler license to a cluster, order using the tier equal to the total quantity in the cluster. Upgrades may be acquired via the IBM Software Maintenance program up to the current level of use authorized for the qualifying programs.

Program Name: LoadLeveler for AIX 5L, V3.1

New users of LoadLeveler Version 3.1 should specify Type 5765, Model E69, asset feature number 9001, and the feature number equal to the total number of desired licenses to be installed times the quantity of installs. For example, to order 12 licenses of LoadLeveler, specify the feature number for Order Type Description 11 to 50 Installs, with a quantity of 12.

Note: Charge units for SP based products are based on nodes; charge units for workstations and servers are based on the number of physical installations of the product (for example, installation on a system or LPAR partition).

Machine Type/Model: 5765-E69

<table>
<thead>
<tr>
<th>Order Type Description</th>
<th>Feature Number</th>
<th>OTC Feature Number</th>
<th>Medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 5 Installs</td>
<td>0001</td>
<td>5809</td>
<td>CD-ROM</td>
</tr>
<tr>
<td>6 to 10 Installs</td>
<td>0002</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 to 50 Installs</td>
<td>0003</td>
<td></td>
<td></td>
</tr>
<tr>
<td>51 or greater Installs</td>
<td>0004</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per RS/6000 SP Node</td>
<td>0005</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

OTC = One-Time Charge

Software Subscription Option for AIX

Customers who purchased upgrade protection for LoadLeveler V2 (5765-D61), under Software Subscription Option for AIX (5692-SSO), are entitled to receive Version 3.1 at no additional charge. Eligible customers should add CD-ROM media supply feature number 0596 under their existing 5692-SSO record. LoadLeveler for AIX 5L is offered on CD-ROM media only.

<table>
<thead>
<tr>
<th>Description</th>
<th>5692-SSO Eligible Billing Feature Annual Subscription Charge¹</th>
<th>Media Supply Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>From 5765-D61 V2.2 to 5765-E69 V3.1</td>
<td></td>
<td>0596</td>
</tr>
<tr>
<td>1 to 5 Installations</td>
<td>6499 6503 6504</td>
<td>CD-ROM</td>
</tr>
<tr>
<td>6 to 10 Installations</td>
<td>6500 6505 6506</td>
<td></td>
</tr>
<tr>
<td>11 to 50 Installations</td>
<td>6501 6507 6508</td>
<td></td>
</tr>
<tr>
<td>51 or More Installations</td>
<td>6502 6509 6510</td>
<td></td>
</tr>
</tbody>
</table>

¹ Denotes billing features that customer must have previously purchased in order to receive this upgrade at no additional
A charge. The billing features must currently be on a customer’s record as proof of eligibility.

Note: Software Subscription Option for AIX (5692-SSO) is no longer an offering. The replacement offering is called IBM Software Maintenance.

General Information on IBM Software Maintenance

The IBM Software Maintenance offering was previously announced. Refer to Software Announcement 201-201, dated July 10, 2001.

The following are some key points from that announcement.

• IBM Software Maintenance, defined as Software Subscription and Technical Support, is included with all licenses for a period of one year from the date of acquisition, providing a streamlined way to stay current and help assure technical support coverage for all licenses.

• Each eligible licensed software program will include one year of Software Maintenance.

• Customers may elect to extend coverage for a total of three years from the date of acquisition.

• A 1-year and 3-year prepay offering, represented by two separate type/models, is associated with each eligible licensed program.

• Software Maintenance also provides access to current and future software versions and releases, and technical support during the support period.

• Each 1-year and 3-year Software Maintenance licensed program will have three sets of feature numbers for each licensed entity:
  - A no-charge registration feature for the 1-year contracts (the registration features for the 3-year contracts are priced for the second and third years only)
  - A renewal feature for one year or three years
  - A Software Maintenance “after license” charge for customers who want to renew but have lapsed coverage

Note: The following term differs from Software Announcement 201-201: Stand-alone upgrades to this product/release, and its future versions and releases, will be considered only on a special request basis from IBM.

Ordering Information for IBM Software Maintenance

Current Licensees of LoadLeveler V2.2

Customers with the current level of LoadLeveler for AIX (5765-D61), who are interested in IBM Software Maintenance, and do not have an active AIX Software Subscription or AIX/UNIX Upgrade Protection contract, should select the appropriate feature from the table below.

OTC Charge 1-Year Software Maintenance 5771-LLV

<table>
<thead>
<tr>
<th>Program Name</th>
<th>Registration (NC) Feature Number</th>
<th>Renewal Billing Feature Number</th>
<th>Maintenance After-License Feature Number</th>
<th>Current Licensee Feature Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>LoadLeveler (5765-E69)</td>
<td>0062</td>
<td>0067</td>
<td>0072</td>
<td>5809</td>
</tr>
<tr>
<td>1 to 5 Installs</td>
<td>0063</td>
<td>0068</td>
<td>0073</td>
<td></td>
</tr>
<tr>
<td>6 to 10 Installs</td>
<td>0064</td>
<td>0069</td>
<td>0074</td>
<td></td>
</tr>
<tr>
<td>11 to 50 Installs</td>
<td>0065</td>
<td>0070</td>
<td>0075</td>
<td></td>
</tr>
<tr>
<td>51 or More Installs</td>
<td>0066</td>
<td>0071</td>
<td>0076</td>
<td></td>
</tr>
</tbody>
</table>

Note: Please note the following for new licenses:

• The appropriate 1-year registration feature (no additional charge feature) will automatically transfer to the customer order record.

• The appropriate 3-year feature (priced for second and third year only) will automatically transfer to the customer order record.

• Customers should select the “Renewal Billing Feature” for one or three year contract renewal.

• Customers should select the “Maintenance-After-License” feature to re-enter the program after a contract has lapsed.

201-334 -4-
OTC 3-Year Software Maintenance 5773-LLV

Maint.
After-
License
Billing
Feature
Number
Current
Licensee
Supply
Feature
Number

Program Name | Registration Feature Number | Renewal Billing Feature Number | Maint. After-License Billing Feature Number | Current Licensee Supply Feature Number
---|---|---|---|---
LoadLeveler (5765-E69) | | | | 5809
1 to 5 Installs | 0061² | 0066 | 0071 | 
6 to 10 Installs | 0062² | 0067 | 0072 | 
11 to 50 Installs | 0063² | 0068 | 0073 | 
51 or More Installs | 0064² | 0069 | 0074 | 
Per RS/6000 SP Node | 0065² | 0070 | 0075 | 

² The registration features for 5773-LLV are priced for the second and third years only of the three year contract.

Withdrawal of Software Subscription for AIX Feature Numbers

The following feature numbers are withdrawn as of April 8, 2002.

<table>
<thead>
<tr>
<th>Description</th>
<th>Program Number</th>
<th>Feature Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software Subscription for LoadLeveler 2.2</td>
<td>5692-SSO</td>
<td>6499 6503 6504 6500 6505 6506 6501 6507 6508 6502 6509 6510</td>
</tr>
</tbody>
</table>

Customization Options for 5765-E69: Select the appropriate feature numbers to customize your order with delivery options desired. These features can be specified on the initial or MES orders.

Description | Feature Number
---|---
Initial Shipments | 
Serial Number Only (suppresses initial shipment of documentation) | 3444
Expedites Shipments | 
Local IBM Office Expedite (for IBM use only) | 3445
Customer Expedite Process Charge ($30 charge for each product) | 3446

The money-back guarantee will commence on the Invoice Date.

Copy and Use on Home/Portable Computer: No

Volume Orders (IVO): Yes, contact your IBM representative.

Passport Advantage Applies: No

Usage Restriction: Yes. The following agreements apply for maintenance and do not require customer signatures:

- IBM Agreement for Acquisition of Support (Z125-6011)
- Addendum for Support (Software Maintenance) for Selected iSeries and pSeries Programs (Z125-6495)

IBM Operational Support Services — Support Line: No

Other Support: IBM @server pSeries Software Maintenance

AIX/UNIX Upgrade Protection Applies: No

Entitled Upgrade for Current AIX/UNIX Upgrade Protection Licensees: Yes

IBM @server iSeries Software Subscription Applies: No

Variable Charges Apply: No

Educational Allowance Available: Yes, 15% education allowance applies to qualified education institution customers.

Terms and Conditions

Licensing: IPLA. Proofs of Entitlement (PoE) are required for all authorized use.

Limited Warranty Applies: Yes

Program Services

- LoadLeveler for AIX, Version 2.2 available until December 31, 2003
- LoadLeveler for AIX, Version 3.1 available until September 30, 2003

Money-Back Guarantee: 30-day, money-back guarantee, applicable to the first instance per customer enterprise.
### Prices

**Program Name:** LoadLeveler for AIX 5L, Version 3

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<thead>
<tr>
<th>Description</th>
<th>Machine Type/Model</th>
<th>OTC Feature Number</th>
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<tr>
<td>6 to 10 Installs</td>
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**OTC 1-Year Software Maintenance 5771-LLV**

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<th>Renewal Billing Feature Number</th>
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**OTC 3-Year Software Maintenance 5773-LLV**

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^3 The registration features for 5773-LLV are priced for the second and third years only of the three year contract.

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