IBM

Welcome

AIX on pSeries
Customer Care Handbook

The intended audience of this document is any North American IBM customer who is currently running the AIX operating system on pSeries hardware. Future versions of this document will attempt to give information relevant to other geographies. While the information in this handbook is geared towards North American technical support, the "self-help," "background," and "preventing problems" sections may be interesting to all parties. The purpose of this document is to help people find online resouces for self-help, and to provide assistance in engaging IBM for AIX or pSeries remote technical support. To that end, this document provides:

- support-oriented links to existing IBM websites and online reference materials for AIX and pSeries, including:
  - hardware and software downloads
  - troubleshooting
  - planning & upgrading
  - installation & use
- information regarding the use of pSeries online resources
- IBM terminology regarding pSeries and AIX support
- detailed information regarding AIX & pSeries problem reporting
- a helpful guide for interacting with IBM technical support to speed your problem to a quick resolution

Thank you for choosing IBM!

The IBM commitment

We believe that having your business is both a privilege and a responsibility. We hope to maintain that business by providing you with solutions to your information technology problems. We also recognize that in order to enable you to concentrate on your core business issues, it is crucial that we provide world class information technology services that complement our information system solutions.

The intent of pSeries support is to provide you with the quality support and services you need. Our vision is to achieve a level of support excellence that exceeds your expectations and differentiates IBM in the marketplace by providing:

- Rapid response to your requests
- Fast relief to high impact problems
- Timely problem resolution
- High quality fixes and information
- Up-to-date service and installation information.

We are committed to achieving the highest level of customer satisfaction in the industry, with quality focused programs designed to provide services that enhance and maximize the use of IBM products. As your solutions partner, we are dedicated to enabling your success.

pSeries customer support organizations

IBM's pSeries support organizations in the U.S. are a network of centers with expertise across the broad spectrum of pSeries topics. Teams of skilled specialists work together to provide you with timely, responsive technical support as your need arises.

As a leader in technoloy, IBM is committed to providing world-class technical support for pSeries customers. Through our excellent online resources and our highly skilled technical analysts, we strive to maintain the level of excellence that you've come to expect from IBM. To help you maximize your pSeries investment and support your business needs, IBM provides:

- online pSeries problem submission
- online self-help resources such as knowledge databases, redbooks, and white papers
- a 1-800 number for pSeries hardware and AIX operating system assistance
- a database for obtaining operating system, application software and firmware fixes
- education services and media
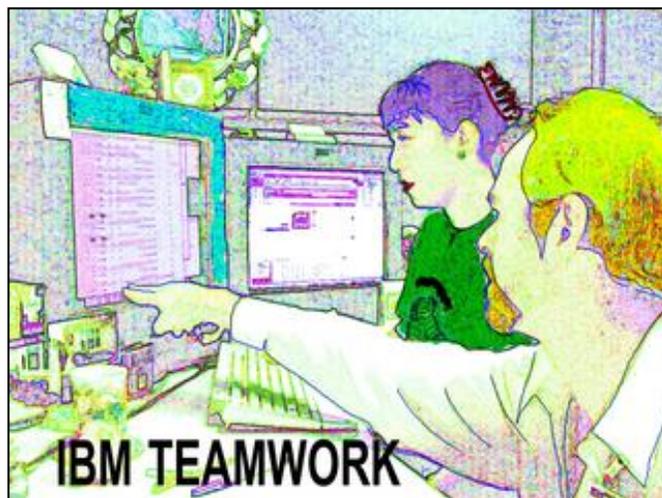
How to view this handbook

This handbook is best viewed in a standards-conformant browser, such as Mozilla. Mozilla is an open-source browser which works well with the technologies that IBM uses in its websites, such as cascading style sheets. Mozilla has been ported to many platforms, including AIX, Linux, and Windows. Downloads can be obtained from http://www.mozilla.org. An AIX-ready installp version can be obtained from the IBM download site here.

The links in this handbook will not pop up in separate browser window unless it is a link to a non-IBM website. If you desire a link to appear in a separate browser window, there are ways to achieve this.

- Windows environments - right mouse click over the link, select "Open link in new window."
- AIX and Linux environments - middle mouse click over the link

If you are having difficulty reading the webpage and would like to increase the size of the text, this can be done through your web browser's settings.

- Internet Explorer: View --> Text size --> (pick a size)
- Mozilla: View --> Text Zoom --> (pick a size)
- Netscape: View --> Increase Font or Decrease Font or, Netscape: Edit --> Preferences --> Appearance -->Fonts (pick a size)

Increasing the text size may distort pictures and the placement of things in the webpage in order to display the larger text.

Currently the content of this handbook is unique to the North American perspective. It is our intention to ensure the information in this document is available and relevant to all geographies .

Outline of handbook chapters

Browse the chapters by using the links below, or by using the high-level links in the navigation block in the top left side of the page

- Background information
    - Unix Server, eServer, pSeries relationships
    - RS6000 machines, "Power," and pSeries
    - Support contracts EAS & SWMA
    - Organization of IBM and pSeries webpages
- Lacking a support contract
    - Investigate obtaining a support contract
    - Investigate technical manuals and online self-help resources
    - Obtaining training or education
- Self-help
    - IBM eServer pSeries Support
    - pSeries Information Centers
    - AIX online resources
    - IBM Servers - Welcome Kit
    - Knowledge databases
    - Education, educational materials, training
    - Software support (not including the operating system)
    - Fixes
    - Subscriptions, alerts, announcements
- Before contacting IBM
    - Define the problem
    - Gather supporting data
- Contacting IBM
    - Contacting IBM remote technical support by phone in North America
    - What to expect of AIX and pSeries hardware technical support
    - Electronic problem submission over the internet
    - For out-of-scope support
    - What helps IBM technical support help you
        - Understanding the scope of IBM AIX operating system and pSeries hardware support through AIX Support Line and SWMA
        - Understanding the role of IBM technical personnnel in the support process
        - Understanding the role of the customer in the support process
        - Handling difficulties
    - Satisfaction
- Preventing problems
    - Preventive maintenance
    - Maintenance Strategy
        - Upgrading
        - Thorough testing
        - Anticipating growth
        - Making backups
    - Stay informed with automated alerts
- Support contacts
    - Phone numbers in this handbook
    - Websites in this handbook, by topic
    - Websites in this handbook, by chapter

- ○ Other sources of contact information
- Acronyms & terminology
  - ○ Acronyms and terminology in this handbook
  - ○ Other resources for acronyms and terminology

Disclaimer

IBM reserves the right to make changes to the AIX on pSeries Handbook and the policies discussed within it at our discretion. Although this webpage is oriented towards North America (US and Canada), it is our intention to address world-wide publication in the future.

Acknowledgment

Thanks to Roger McKnight, author of IBM Software Support Handbook for the section above, "The IBM Commitment." Many ideas for the topics in this AIX on pSeries handbook were derived from the very fine example that Roger McKnight has set in his IBM Software Support Handbook.

Version information

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For questions or comments on this handbook, please e-mail Dawn Patterson.

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Background information

AIX on pSeries
Customer Care Handbook

Related links
- Support for eServer pSeries servers
- IBM eServer pSeries Information Center for AIX 5.1 and 5.2
- pSeries and AIX Information Center for AIX 5.3
- IBM Software Support
- IBM Software Support Handbook

Here is some background information to help you understand some of the terminology and ideas in the rest of this handbook. Once you become familiar with these terms, finding pSeries-related information on IBM websites will become much easier.

Background information
- Unix Server, eServer, & pSeries relationships
- RS/6000 machines, "Power," & pSeries
- The support contracts EAS & SWMA
- Organization of IBM and pSeries webpages
- Version information

Unix Server, eServer & pSeries relationships

The pSeries machine is both an "eServer" and a "Unix Server."

Servers

Intel and AMD based servers
- xSeries®
- eServer 325 and 326
- Cluster 1350

UNIX servers
- IBM System p5™
- eServer p5
- pSeries®
- RS/6000®
- eServer OpenPower™

Midrange servers
- eServer i5
- iSeries™
- AS/400®

Mainframe servers
- IBM System z9™
- zSeries®
- S/390® G5 and G6
- S/390 Multiprise

Blade servers
- BladeCenter®

- The name "eServer" indicates that a machine has certain characteristics of autonomic computing:
  - self-configuring
  - self-healing
  - self-optimizing
  - and self-protecting.

- RS6000s, the Blade Center JS20, and pSeries machines are called "Unix Servers." The Unix Servers typically run Unix operating systems such as AIX and Linux. Unix Servers are a subset of a larger group of computers. The following chart shows the organization of various IBM computers. Notice that many groups of servers have machines that are considered eServers.

- See http://www.ibm.com/servers/eserver/support for additional information.

RS/6000 machines, "Power," and pSeries

RS/6000 machines are also Unix Servers. However, RS/6000 machines should not be confused with pSeries machines. To view a list of model numbers associated with pSeries and RS/6000 machines, please see pSeries Hardware Documentation and select by system.

The RS/6000 machines and the pSeries machines can have similar hardware depending on their model numbers. For hardware details, please follow the link above for the particular model number you're interested in. The link will guide you to information about the type and speed of the microprocessor and other specifics about the hardware.

The RS/6000 was built upon the "RISC" technology, which stands for "Reduced Instruction-Set Computer." The reduced instruction set allowed for a more rapid execution of instructions, creating lightening-quick responses to complex calculations. The "RS" in the RS/6000 name is referring to the RISC technology.

The pSeries machines can be thought of as the new generation of RS/6000. The focus of the pSeries name is on the performance - that's what the "p" in pSeries stands for. The pSeries machine has significant increases in Reliability, Availability, and Serviceability (RAS), such as hot-swappable disks, dynamic processor deallocation, and Chipkill™ memory. For more information about pSeries features, see the report entitled "IBM eServer pSeries Facts and Features" on the website: pSeries Literature

If the word "Power" is capitalized in IBM documentation, if refers to a particular type of microprocessor. The pSeries model p670 has a Power4 microprocessor, and so does the RS/6000 model 43P. Whenever the improvements to the microprocessor become significantly different from the previous microprocessor, the version number changes. So for example, the new generation of pSeries machines have a Power5 (p5) microprocessor. More information about the Power microprocessors can be found at the Power Architecture or the About System p5 sites.

The support contracts EAS & SWMA

Occasionally, the need arises for IBM to change the way that technical support is offered to customers. IBM gives unique names to contracts which allow different types of support. This gives a lot of flexibility to customers who purchase technical support along with their hardware, because support can be tailored to what hardware, operating system, and application software a customer purchased. With the advent of hardware that can have multiple operating systems running on the same machine, a new way of purchasing support had to be figured out to reflect this new flexibility.

In the past, the way to purchase AIX operating system technical support was through "SupportLine" or an "EAS" subscription. EAS stood for "Enhanced AIX Operating System," which gave customers access to remote technical support.

EAS was withdrawn July 31st, 2003, and was replaced by the support contract known as "SWMA."

"AIX SWMA" stands for "AIX Software Maintenance." It provides technical support, defect investigation and repair, and software upgrades on current versions of AIX. Coverage for versions of AIX which have been withdrawn from marketing are available as special contracts from the Remote Technical Support (RTS) organization. The cost of AIX SWMA is based on the server's processor group and the number of processors purchased. Middleware SWMA is purchased separately.

- Information about AIX SWMA can be found at the following:
  - IBM software maintenance for AIX operating system
  - 1-800-IBM-4YOU

- Information about middleware technical support can be found at:
  - IBM Software Support Handbook

- Information about extended support services including Warranty, HW and SW Maintenance, AIX, Linux, and Premium Support services can be found within the IBM pSeries SPEC Sheet at the site listed below. The IBM pSeries SPEC Sheet documents these additional pSeries technical support services, highlights of each service, customer benefits, and contact information.
  - IBM Technical Support Services for IBM eServer pSeries Servers

- For a thorough overview of all customer support plans for pSeries, including features of each service, contact information, and flowcharts of the support process, see:
  - Customer Support Plan for pSeries, United States
  - Customer Support Plan for pSeries, Canada

It is important that you become familiar with what your IBM support contract provides for, so that you can take full advantage of all the support mechanisms your company has purchased. Some types of support contracts only allow for electronic submission of problems, in which case you may be contacted by e-mail. Some provisions in your contract may allow you to only have "voice support," so that an IBM technical support person can call you on the telephone. Other provisions allow for online updating of your problems. This may make a big difference in your experience with IBM technical support. Please investigate your support options by being familiar with your contract.

If you have any questions about your support contract, contact your IBM representative. If you don't know who your IBM representative is, call 1-800-426-2255 (IBM Direct, Sales/Order Support), and request assistance for finding your company's IBM representative(s).

Note: IBM Business Partners go through PartnerWorld for their support. SWMA is not how Business Partners acquire support for AIX.

- Partnerworld:
  - 1-800-426-9990

Organization of IBM and pSeries webpages

IBM's webpages are constantly expanding in an effort to provide customers with current and accurate information. How do we help you find all the products, services, and information that IBM has to offer on the entry-point webpage, www.ibm.com? Well, IBM has built some consistency into its webpages to help you find information quickly and easily.

Currently, IBM's pages have two frames- a top frame and a left frame. The top frame has the IBM logo, a search bar, and some links. The links are "Home," "Products," "Services and solutions" "Support & downloads," and "My account." These links get you to major topic areas within IBM. This top frame with these links will be on every IBM webpage unless you're looking at a pdf, a special handbook, or a whitepaper. This allows you to jump from one major area to another.

To get to pSeries technical information from the main www.ibm.com webpage, you would click on "Products," and look at the links under the "Servers" section. The pSeries machine is a Unix server, so you click on the link called "Unix". For pSeries technical support, click on the "Support" link in the left frame. This link should lead you to <u>Support for AIX 5L and Linux servers</u> This is the main entry point for a class of servers which run Linux and AIX operating systems. To find information specifically on eServer pSeries machines, use the hardware pull-down menu. This will lead you to the <u>Support for eServer pSeries servers</u>.

You will find that the majority of the technical information about IBM's computers is sorted by what type of hardware they are. If you know the categories that your computer belongs in, you can find your information much easier. Also, information on IBM websites tends to be organized from the top-down according to the chart above. A top-down view of pSeries would be:

Server --> Unix Server --> pSeries

The left side of IBM's webpages (called the "left navbar") can also be a helpful hint about where you are inside IBM's webpages. The top link inside this left frame is the name of a topic area within IBM. pSeries technical webpages will have "System p5 Servers" as that top link in the left frame.

The interior of the webpage will often have "tabs." The tabs resemble manilla folders that organize hardcopy information, but they are actually links to other webpages. When the tab is light-colored, that is the tab that is active and showing you its information. If a tab is shaded, it means that the information connected with them is hidden from you currently. Click on the tab name, and that information will come to the front so you can read it.

Technical information for pSeries will be linked from "support" pages. Support is different from services.

Support is help with the technical end of owning an IBM computer. This realm includes:

- accessing IBM for remote assistance with hardware, operating system, or application software problems
- online technical documentation such as knowledge databases, redbooks and whitepapers
- fixes for the operating system, for application software and microcode
- online electronic tools for problem submission to IBM
- troubleshooting information
- links to information about education and training
- migration and upgrading information

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- IBM eServer pSeries Information Center for AIX 5.1 and 5.2
- pSeries and AIX Information Center for AIX 5.3
- IBM Software Support
- IBM Software Support Handbook

Lacking a support contract

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Arranging technical support for your pSeries machine at the time of purchase is a wise move. The pSeries machine is highly flexible, extremely powerful, and quite complex. Assistance may be necessary as you configure your machine, test it, and use it in production. Being prepared, having a plan, and being able to contact IBM support at a moment's notice will save you and your company time. Having a support contract is really the best way to go. However, there are many ways to obtain help from IBM even if you lack a support contract.

Lacking a support contract
⬇ Investigate obtaining a support contract
⬇ Investigate technical manuals and online self-help resources
⬇ Obtaining training or education
⬇ Version information

Investigate obtaining a support contract

If you don't already have a contract for technical support, please find out what IBM can do for you. Call 1-800-IBM-4YOU and request to speak with someone who can help you arrange technical support for your company.

As of mid-2003, technical support contracts have been bundled in along with the price of buying pSeries hardware. This technical support contract is called "SWMA," which stands for "Software Maintenance." This contract gives direct access to support technicians and even 24x7 support under certain conditions. Read more about AIX SWMA in the "Background" section of this handbook.

Formerly purchased "EAS" or "SupportLine" contracts are still valid until the termination date. At that time, AIX SWMA contracts can be purchased. Contact your IBM represenative or call 1-800-IBM-4YOU and ask to speak to someone about technical support contracts.

The most up-to-date, complete customer support plan information for pSeries can be found in "Customer Support Plans for pSeries." These pdfs contain contact numbers and URLs for IBM's services and support for pSeries, along with explanations of the different levels of service and support available.
"Customer Support Plan for pSeries, US"
"Customer Support Plan for pSeries, Canada"

Information about extended support services including Warranty, HW and SW Maintenance, AIX, Linux, and Premium Support services can be found within the IBM pSeries SPEC Sheet below. The IBM pSeries SPEC Sheet documents these additional pSeries technical support services, highlights of each service, customer benefits, and contact information.
IBM Technical Support Services for IBM eServer pSeries Servers

The IBM Software Support Handbook gives detailed information about support for various application software and middleware. The IBM Software Support Handbook is actually pointed to by the SWMA contract addendum for pSeries, and gives excellent information about the inner workings of application software support.

Investigate technical manuals and online self-help resources

IBM has an enormous amount of information available for all who seek it, whether you have a contract for support or not. There are online resources such as:

- the main pSeries webpage
- knowledge databases
- redbooks
- whitepapers.

One can order service guides and manuals for hardware and the AIX operating system. Please see the section "Self-help" in this handbook for a detailed list of self-help resources.

Obtaining training or education

Train to be your own support! A great way to prepare for owning and operating a pSeries machine is to get some education and training. "The Campus" is an exciting resource for customer education. This IBM website displays pSeries education topics along with how the education can be delivered- classroom, web-based, CD-ROM, etc.

To jump straight to pSeries education in "The Campus," use this link: IBM eServer and TotalStorage education - pSeries.

The main link to "The Campus" is: The Campus.

There are two things to take note of. One is the link "IBM Training" in the left frame (nav bar) of the "IBM Campus" webpages. It has some additional offerings. Secondly, when navigating "The Campus" webpages, remember that pSeries machines are classified as:

Server --> Unix Server --> pSeries

There will be times when the link to follow will be named "Unix Server." If you click on the Unix Server link, you will get to the pSeries information.

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Related links
- Support for eServer pSeries servers
- IBM eServer pSeries Information Center for AIX 5.1 and 5.2
- pSeries and AIX Information Center for AIX 5.3
- IBM Software Support
- IBM Software Support Handbook

Self-help

AIX on pSeries
Customer Care Handbook

IBM has numerous resources for self-help. Below are just a few of the many online resources that IBM has for AIX on pSeries technical support. The links provided are entry points for AIX on pSeries information. Each entry point below has a unique orientation and slightly different organization of their information, though they sometimes point to the same resources. Bookmark the entry points themselves, then browse what they have to offer. Creating a solid set of technical support bookmarks will save time later on. Re-visit these bookmarks from time to time to read news updates and keep current.
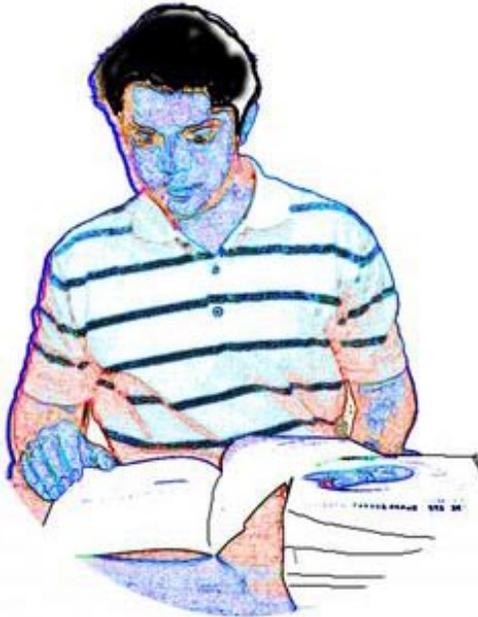
Self-help
- ⇣ Support for eServer pSeries servers
- ⇣ pSeries Information Center
- ⇣ AIX online resources
- ⇣ IBM Server - Welcome Kit Knowledge databases
- ⇣ (redbooks, white papers)
- ⇣ Education, educational material, training
- ⇣ Software Support
- ⇣ Fixes
- ⇣ Subscriptions and announcements
- ⇣ Version information

Support for eServer pSeries servers

Support for eServer pSeries servers is the main site for pSeries hardware and operating system technical support. Through this site, you can fulfill your need for pSeries technical information, such as:

- Troubleshooting
- Downloading fixes or microcode
- Installing and using the operating system
- Planning or upgrading

The Support for eServer pSeries servers site provides access to:

- Technical resources
- Fixes and tools
- Preventive maintenance
- Electronic problem reporting and status

for pSeries hardware, AIX and Linux operating systems, application software, and middleware.

For example, the hardware technical resources include links to service guides, maintenance guides, and lists of product features. Its software counterpart contains links to AIX and Linux documentation, and application software support. There are links to product documentation, education, training, and developer resources.

Every effort has been made to make this website be as comprehensive as possible. The new tab feature simplifies the sorting process and allows you to quickly find information you're looking for. Please take the time to explore what these webpages have to offer you, and bookmark it for future reference. If you cannot find something, do not hesitate to use the "feedback" link to give constructive feedback. You can also use the feedback link for compliments!

AIX and pSeries Information Centers

The AIX and pSeries Information Centers are divided into two websites. One focuses on AIX 5.3 on pSeries hardware, and the other focuses on older versions of AIX.

The IBM eServer pSeries Information Center for pSeries, RS/6000, and AIX 5L versions 5.1 and 5.2 is a very valuable entry point into pSeries topics. There are links to AIX and pSeries documentation, but this site offers a unique sample of other topics as well:

- Message Center: Look up 7-digit error codes and LED codes
- How-to's for administrators and users
- FAQs covering a wide range of topics, such as LPARs and 32-bit vs 64-bit kernel
- Making AIX and pSeries accessible to people with varying abilities

The AIX documentation links from this site are of a technical nature, and include guides for:

- System management
- Installation
- Users
- Programming
- Reference documentation

The pSeries and AIX Information Center for AIX 5L version 5.3 is an excellent hub for technical information. pSeries hardware information can be accessed from here, which includes user, installation, and service guides. Extensive AIX documentation is accessible from this site.

AIX online resources

The most comprehensive technical AIX documentation can be accessed from the pSeries and AIX Information Center for AIX 5L version 5.3 webpage, which is mentioned in the section above.

If what you're looking for is a top-level view of AIX, take a look at the IBM AIX 5L Unix Operating System webpage. This page has a marketing bent to it rather than a technical bent. As such, it gives a very good overview of what features AIX has to offer. There's even a list of what features each version of AIX has called "Upgrade Benefits," so if you're looking for when a particular feature entered the AIX code, this might be just the thing for you.

IBM Servers - Welcome Kit

Recall the categorization of the pSeries machine from the Background information webpage:

Server --> Unix Server --> pSeries.

Since the pSeries is a type of Server, the IBM Servers - Welcome Kit webpage is a good online resource. Other types of Servers are listed on this webpage, but if you follow the link under the "Support" tab for "UNIX Servers (pSeries)" you can find a top-level list of links to various IBM sites of interest. There are links to pSeries support, training, microcode updates, libraries, white papers, and redbooks.

Knowledge databases (redbooks, white papers)

Redbooks is a very popular and extremely useful group of IBM-published technical writings. Most of the publications are available in pdf for immediate download, but some are available as a CD-ROM or hardcopy. A search function is provided, to search by keyword. pSeries keywords could include the model number of the machine, or the words: "eServer," "Unix Server," "pSeries," "AIX." Redbooks covers a wide range of information, so you can search for both broad topics and for specific tasks and come away with relevant material.

Make frequent visits to the online pSeries Library, where you can find up-to-date links to AIX and pSeries technical documentation, support, articles, and other libraries.

pSeries has a repository for online papers, in the site System p5 Literature. This excellent resource provides direct access to pdf files or links to eServer pSeries:

- Data sheets (hardware specs)
- White papers (technical reports on a specific topic)
- Consultant reports (independent reports on IBM hardware)
- Technical journals
- Online libraries

Education, educational material, training

As computers become more complex, it takes a longer time to learn how all the features work. IBM has written materials for self-education, courses taught in classrooms, and even things in-between, such as online learning courses. Take advantage of the free resources, but seriously consider investing in some education or training courses.

Transfer of knowledge to you from subject matter experts can familiarize you quickly with all the wonderful things that a pSeries machine can do. Some companies have a combination approach- they send their system administrators to IBM education and training courses, then supply them with manuals and written materials for reference information.

Education and training
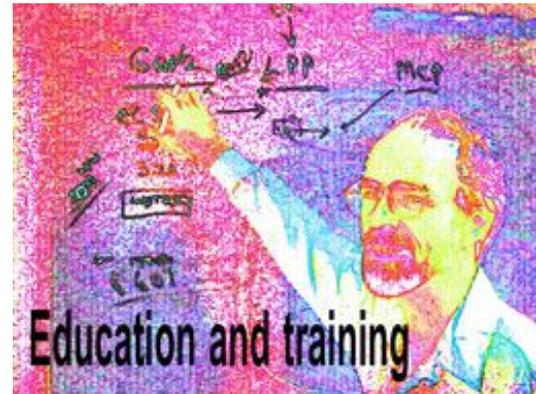
One consolidated resource for eServer education is The Campus. Again the knowledge that a pSeries machine is an eServer / UNIX Server will come in handy when navigating this site. Education might be delivered in any these ways, depending on the topic selected:

- Classroom
- Publication

- CD-ROM
- Web-based

The following Campus links are highly recommended:
- The Campus IBM eServer
- The Campus IBM Unix Server (pSeries Education)

IBM Global Services also provides training. Explore the link entitled "Training" to reach the course catalog, courses by location, and even e-learning.

Software Support (not including the operating system)

The term "software" can be confusing, because it can be used in three ways:

- refers only to application software
- refers to the operating system or application software
- refers to the operating system and application software.

Some IBM websites include operating system information when addressing the subject of software, but some do not. Be wary. If you're looking for operating system information, look in IBM websites for the hardware model the operating system runs on, and look from there. If you're looking for application software, then most IBM sites which speak of "software" will be relevant for you.

A superb entrypoint for application software technical information and support is the Software Support site. Provided from this site are:

- Focused searches for solving a problem, downloading, learning
- Problem submission
- News and updates
- "My Support," a customizable webpage with some neat features

Software Support's parent webpage is the IBM Software site, if you want an even higher-level view of popular application software.

Last but not least, the IBM Software Support Handbook will tell you everything you need to know about application software that IBM supports. This thorough, well-written, well-organized handbook is an excellent reference material for application software support.

Fixes

AIX fixes, microcode, drivers and HMC updates can be found through the Support for eServer pSeries servers webpage. Select the pSeries hardware type, and look under the "download" tab.

"Maintenance Packages" for AIX are packages of AIX fixes that can be downloaded or ordered on CD-ROM from this site. Sometimes these packages of fixes are referred to as "Recommended Maintenance Packages," "Maintenance Packages," "Maintenance Levels," or "ML's." A good habit to acquire is to apply Maintenance Packages for AIX on a regular basis.

Subscriptions and announcements

Good news! You can have information delivered to you by e-mail or view it online.

Support Subscription Services for Unix Servers allows you to create a profile of what types of information you want, which will be e-mailed to you. You can select from such things as security advisories and alerts that maintenance fixes are available. See the website for the complete list of what you can sign up for. The basic

free service is extremely helpful, but you can also choose to expand the capabilities of this service.

Offering Information is an entry point website to many, many different kinds of information within IBM, including announcements, redbooks, white papers, marketing materials, and press releases. You can search by hardware category keeping in mind that a pSeries machine is an IBM eServer Unix server.

iSource, "Customized weekly e-news from IBM," is a nice free service which delivers information via e-mail. The e-mails have links within IBM's website for you to explore. Just select what categories of information you want delivered to you, and you're off!

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- IBM Software Support
- IBM Software Support Handbook

Before contacting IBM

AIX on pSeries
Customer Care Handbook

Preparing to contact IBM with a pSeries support request is not a difficult task. In fact, taking some time and gathering information before you contact IBM will save you time in the long run. Familiarize yourself with the process of getting support, so that if you need to engage IBM in a hurry, you know what to expect.

This AIX on pSeries Customer Care Handbook is the support process viewed from a hardware and operating system perspective. Becoming familiar with its content will round out your education regarding IBM support specific to the AIX operating system and pSeries machines.

Before contacting IBM
- ⇩ Define the problem
- ⇩ Gather supporting data
- ⇩ Version information

Define the problem

Once you've identified that your hardware, operating system, or application software is malfunctioning, the next step is to define what the problem is. When calling in for technical support from IBM, the phone menu will prompt you to pick one of two support categories:

- hardware or
- software - which includes the operating system and application software

If you are not sure if the problem is hardware or software, pick software. IBM Support will work with you to sort out what the problem actually is. A different support technician may then be called to take over your computing problem and drive it to resolution.

If you are unsure about how to define your computing problem, the "Support Questionaire" below will assist you.

Gather supporting data

When contacting IBM, customers will need to supply various types of information IBM so that a problem management record (PMR)can be created. IBM personnel update this electronic record when you call in, creating a history of the interactions between you and IBM.

Customer information

When you call into IBM for technical support, IBM will need to verify who are and what type of support you have a contract for. This verification process is called "entitlement." Every time a PMR is opened, entitlement must performed. The entitlement process for hardware relies on the serial number of the machine. The entitlement process for operating system or application software hinges on the customer number. Having the following information gathered before calling IBM will help the entitlement process go smoothly.

- A customer number if you have an IBM support contract.

- The model number of the machine and its serial number (can be found on the exterior of the machine).
- The name of your company, and the name and contact information for the person in your company who will be handling the technical portion of the problem.
- The AIX operating system version and maintenance level, and the name and version number of any application software affected.
- The name, model number, and/or serial number of any hardware involved.

If you are not entitled for support, the Response Coordinator will create the PMR and pass it through to support. A different IBM represenative will soon call you to discuss your support options.

Support Questionaire

The answers to this questionaire can help AIX pSeries technical support better understand the problem. Please take the time to answer these questions before you contact IBM.

1. What is the model number of the pSeries hardware that the problem is happening on?
2. What is the version and maintenance level of AIX on that hardware? (Command: instfix -i | grep AIX)
3. Is your pSeries machine divided into logical partitions?
   If so, how many LPARs and what operating system is in each?
   Does the problem occur on every LPAR?
4. Is the machine a production machine (currently used by people who need the machine to do their daily jobs or used by your end customers) or a development system (used for testing or application development)?
5. What were you attempting to do when the problem occurred?
6. Describe the symptoms you see. What did you expect to see, and how is it different from the problem that you are seeing? Are you getting any error messages?
7. Has the problem always been there?
   If not, what changed on the system between the time that the problem wasn't occuring and the time that it did occur? For example, did you apply or back off any fixes, remove or replace any hardware?
8. Can you reproduce the problem by doing any particular thing? If so, what are you doing to reproduce the problem? Please be very specific, such that if anybody else was trying to reproduce the problem from your instructions, they could.
9. Can you provide a testcase- files or scripts that can be run to show the problem?
10. What are your expectations of IBM for assisting with the problem? Is there any time limitation? Is there some type of loss (or potential loss) of revenue involved?
11. Are any other IBMers already involved in the resolution of this problem? If so, who are they and what are their roles?

Other data and information

You might also have collected other types of information to more plainly show the problem, for example:

- outputs of data showing corruption and an output showing no corruption of data
- screen captures of what the monitor is displaying at the time of the problem
- a crash dump
- an application core dump
- a reproducible testcase

When you contact IBM for support, the technician who will work your PMR will explain how to send data to IBM.

Version information

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For questions or comments on this handbook, please email <u>Dawn Patterson.</u>

IBM®

Related links

- Support for eServer pSeries servers
- IBM eServer pSeries Information Center for AIX 5.1 and 5.2
- pSeries and AIX Information Center for AIX 5.3
- IBM Software Support
- IBM Software Support Handbook

Contacting IBM

AIX on pSeries
Customer Care Handbook

The operating system that runs on a computer is closely tied to the hardware. That is why, on IBM websites, the operating system support is often found by looking up the model of hardware you're using. Application software, on the other hand, may run on many different types of operating systems, and so is not as closely tied to the hardware as the operating system is.

This section of the handbook is devoted to explaining how to invoke remote technical support for the AIX operating system and pSeries hardware. If you've determined that your computing problem is likely to be due to application software rather than the operating system or the hardware, please consult the IBM Software Support Handbook for more detailed information about application software support.

Contacting IBM
- ...by phone in North America
- What to expect of technical support
- Other ways of contacting IBM
- For out-of-scope support
- What helps IBM technical support help you
- Satisfaction
- Acknowledgement
- Version information

## Contacting IBM remote technical support by phone in North America

The main phone number to contact IBM technical support in North America is

1-800-IBM-SERV

The 1-800-IBM-SERV phone number is the number to call for pSeries hardware and AIX operating system voice support if you've already purchased a contract for support. (If you do not have a support contract, call anyway. IBM will assist you.)

The automated phone system will do some initial routing of your call to the proper entity based on your responses. Having a good idea of the nature of the problem will help you at this point. If you don't know know if the problem is hardware or software related, choose "software." The IBM technical person that you speak to will do some additional problem determination and route you to a more specific support area if necessary.
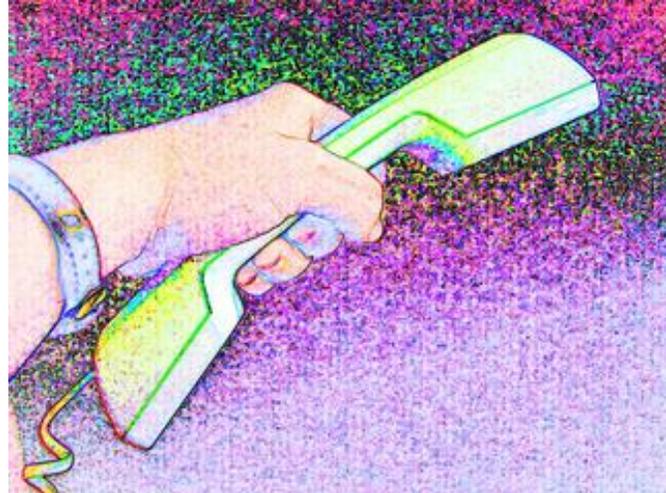
What to expect of AIX and pSeries hardware technical support

Accessing the Severity of the Problem

IBM technical support will assist you in assessing the "severity" of the problem that you call in to report. The severity is a measure used to help IBM technical support rank the urgency of the situation. This severity number may change in the course of your communication with IBM technical support. For example, if you call into IBM because your machine is completely hung, the problem may become a severity 1. When IBM helps you get your machine back up and running, your severity level may be reduced. We want everyone to get appropriate service, but witthout properly prioritizing the calls, we cannot do this. Severity 1 calls should be reserved for systems that are effectively unusable in order to prioritize those calls. Here are the

explanations of severity:

Assessing Severity Levels

Severity Level	Explanation	Example
Severity 1	You are completely unable to use your business-critical hardware or operating system. This applies to a production system environment which supports either your internal business functions directly, or supports your end-customers directly. This does not apply to a development, testing or staging environment.	- A production machine with the business-critical function of serving applications to your end-customers was having its AIX upgraded when power to the machine was lost. The machine will not boot now. - Two nodes in an SP cluster designed to support the business functions of your business's internal users are non-repsonsive and your workers are unable to do their work. You have no back-up machines that provide the business functions they need. Recycling the nodes does not make them responsive. - Two logical partitions (LPARs) which contain business-critical software are not coming up. The administrator of the machine suspects the problem is due to a bad pair of planars or the adaptors referenced by them. While the partitions are down, no one in your company can work.
Severity 2	You are able to use your business-critical hardware or operating system, but the business-critical functions are severly limited.	- The machine where your business-critical applications are has begun to page after 4 days. The constant paging slows all the applications and business functions down. The problem will go away if you reboot, but you're having to reboot every four days. - After replacing the MCM (MultiChip Module) and upgrading microcode, you're now getting adapter and tablespace errors on your production machine. Those errors weren't seen before the upgrade, and no other changes were made to the machine. All other business functions are acting normal, but some DB2 queries are negatively affected, displaying signs of data corruption.
Severity 3	You are able to use your business-critical hardware and software for your business-critical functions, but other functions are unavailable or limited.	- A non-business-critical filesystem can't be mounted because the "device is busy," but you can't tell what is keeping the filesystem busy. - The cron daemon is not starting, so jobs can't be scheduled. - An AIX command won't work. The error says that it can't load an AIX library.

Severity 4	The problem has very little impact on business-critical operations, or a workaround for the problem has been found.	- You're getting hardware errors in the error report, but so far, you can't see that anything is negatively affected. - You're trying to use the "vi" command on a very large file, but you're getting errors that the line length is too long. - You can't find a download you're looking for.

** For severity explanations in regards to application software support rather than operating system or hardware support, see the IBM Software Support Handbook.

**The "Assessing Severity" chart does not apply to Partnerworld PMRs.

Problem Management Record (PMR) creation

Upon calling IBM technical support, a "Problem Management Record" (PMR) will be created. A PMR is an electronic representation of the problem that you contacted IBM about. It allows IBM technical support to track information about your problem, and update this record electronically.

The PMR number consists of three groups of numbers:

1. The PMR number, which is 5 digits long and is a unique identifier.
2. The branch number, which is 3 digits long and indicates a geographical area.
3. The country code, which is 3 digits long and indicates what country you're in. (The U.S. has a country code of "000".)

Retain the PMR number, and use it when dealing with IBM technical support to refer to the problem that you called in about. There should only be one problem reported in each PMR. If your system has multiple problems, this means you must open a PMR for each one. Keeping one problem per PMR helps IBM technical support see the complete history of problem determination steps that have been tried for each problem so that no steps are unnecessarily repeated.

Problem Determination

The PMR will be routed to an IBM technical support group. At the same time, you may be transferred to someone in that group that you may speak with immediately. Sometimes, however, you will be called back as soon as a support technician is available.

IBM technical support will begin problem determination by reviewing the history and exact nature of the problem with you. Sometimes the resolution to the problem can be determined by the asking of questions alone. However, IBM technical support may request that you:

- Run some operating system commands and gather the output
- Recreate the problem and gather data during the period of time that the problem manifests
- Run a script on your machine to gather data for you
- Send data into one of IBM's testcase servers by ftp.
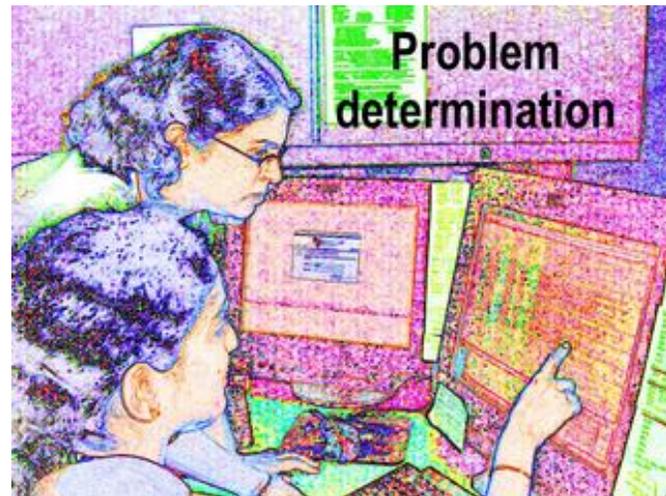
There are generally two ways to identify a technical problem - either by positive identification, or by process of elimination. It would be nice if every problem could be identified just by how it manifests itself - positive

identification. However, if the problem doesn't show the underlying cause plainly, then IBM technical support will have to walk you through eliminating suspects one-by-one until the real root cause of the problem shows itself. Problem determination by process of elimination can take time and may involve repeatedly gathering data. Please be patient with this technique, as it will eventually shed light on the underlying problem.

If it is determined that the root cause of the problem is due to the interactions of multiple products, IBM technical support may involve people from different IBM support areas. Calling 1-800-IBM-SERV for that one PMR number should allow you to communicate with any or all IBM entities involved in solving the problem in that specific PMR.

It is rare, but occassionally the root cause of a problem cannot be determined. Sometimes a workaround or a fix is found for a problem, but IBM support was unable to determine what caused the problem. Being unable to determine the root cause of a problem may indicate two or more defects combining indirectly to form a new defect with odd symptoms. Upgrading can eliminate the two original defects so the new defect that was formed goes away as well. It is extremely difficult to get positive identification of the root cause for this type of problem. Identifying the root cause for a problem is IBM's desire, but it simply is not possible for every type of computing problem.

Sending data to IBM

IBM has many servers designed to receive incoming data from customers. When dealing with IBM technical support, you may be asked to send data into IBM. This is usually accomplished by ftp'ing data to a secure testcase server. The testcase servers make it possible for customers to transmit data to IBM in a secure fashion - other customers will not be able to see your data. IBM technical support personnel, however, will be able to retrieve your data from the secure testcase server. Different IBM technical support centers use different testcase servers, or even different directories on the same testcase server. When requesting that you send in data, your IBM technical support contact will inform you of how to place your data on the IBM testcase server nearest you.

If your problem is being handled by multiple IBM technical teams, you may have to place the same data on different IBM testcase servers so that all the IBM personnel working on your problem have access to your data. We are aware that this is a slight inconvenience, but realize that IBM has internal security restrictions. We want your data to be seen only by the IBM personnel involved in solving the problem, so different IBM support groups rarely have access to each other's testcase servers. This high standard of security is maintained to protect your company's data, and we apologize for any inconvenience.

Problem Resolution

The root cause of the problem may turn out to be one of 3 things:

- A known defect.
- A new (previously unreported) defect.
- Not a defect at all.

If the problem is a known defect, IBM may be able to provide a fix for the problem, a workaround, or a date that a fix may come out for the known problem. If the problem is a new defect, it will be registered internally to IBM as a new defect and someone will be assigned to fix the defect or determine if the problem is resolved in the next generation of the of the operating system or hardware. If the problem is not defect-related at all, IBM technical support will attempt to help you correct the problem. If the non-defect solution requires actions which are beyond the scope of the IBM support center, you will be directed to other IBM resources to assist you. Some of those other IBM resources are listed below in the section "For intensive support".

If IBM determines that a software defect has been identified, an Authorized Program Analysis Report (APAR)) will be created which describes the problem in detail, along with any necessary diagnostic documentation that you may be asked to provide. Because of the complexities of the environments supported, APARs will often take several weeks, possibly months, to debug and to write, test, package and distribute a fix. For high impact problems, IBM Support will make every effort to develop a bypass or workaround that you can use until the APAR has been resolved and a Program Temporary Fix (PTF) has been created. Code fixes for IBM products may be distributed via software subscriptions, service packages or in a future release

of the product. In such cases when the fix is delivered on physical media, a minimal shipping and media charge may apply.

Communicating with IBM by telephone is called "voice support," but there are electronic ways to contact support and engage IBM.

For pSeries support, there is electronic submission for both operating system and hardware support. Access to the electronic submission of problems is through the main pSeries technical support page, Support for eServer pSeries servers . Use the link in the left frame entitled "Submit and track problems," or find a link under the "Problem reporting and status" section under the " Troubleshooting" tab. This will lead you to the IBM Electronic Services Site.

The IBM Electronic Services site lets you electronically create and track PMRs. You can read the updates made by IBM support personnel, and respond through the electronic medium of the PMR. In fact, all PMRs, whether opened by phone or electronically over the internet, can be viewable by the customer. Service Requests, a way of submitting and tracking PMRs electronically, make a take a while to set up. But once IBM has verified your service contracts, submitting PMRs electronically over the internet is very quick. Please experiment with this method of opening a PMR and see how convenient it is.

For out-of-scope support

Some non-defect support work is beyond the scope of what AIX Support Line and AIX SWMA offer. "How-to" non-defect support problems which are extremely time-intensive require a different tactic. More information about the scope of AIX Support Line and AIX SWMA can be found in the section "What helps IBM technical support help you," in the sub-section entitled "Understanding the scope of IBM AIX operating system and pSeries hardware support through AIX Support Line and AIX SWMA." For time-intensive service, you may need to engage Consult Line or IBM Global Services.

Consult Line

Consult Line is a service that provides you with intensive step-by-step support for non-defect problems. This support is done remotely. The difference between what would be considered a Consult Line problem vs. a problem that is dealt with by IBM AIX Support Line and AIX SWMA contracts, is illustrated in the following examples:

- IBM AIX support would help debug a problem of an AIX product that's already been installed, but Consult Line would provide intensive step-by-step support for a task such as walking you through a setup process outlined in IBM documentation.
- IBM AIX support would help you track down a Logical Volume Manager (LVM) defect, but Consult Line would assist you in attempting to recover lost LVM data.

Other Consult Line activities:

- Solution design
- Analysis of system traces
- Debugging custom applications or scripts
- Customizing a computing environment or application to fit a particular computing need
- Work with 3rd party (non-IBM) software and applications
- Lengthy performance tuning, or tuning for a highly unique computing environment
- Tuning to enhance system performance
- System design
- Extensive configuration planning or customization
- Problem solving and resolution in an unsupported environment or configuration
- When you need it done for you rather than being shown how to do it.

If you already have a PMR open, your IBM technical support person can direct the PMR to Consult Line. If you do not have a PMR open already, you can call the following number:
1-888-426-4343, option 1

IBM Global Services (IGS)

IGS provides intensive, focused, and/or long-term services for you and your company. Some IGS services can even provide on-site support to help resolve a complex technical issue. A nice grouping of the services that IGS provides for pSeries can be found in the <u>Customer Support Plan; pSeries, US</u> or <u>Canada</u> pdfs under the section regarding IGS. Here are some examples of IGS services:

- Integrated Technology Services
- Product-Specific Services
- Server Consolidation
- Implementation Services for pSeries LPAR
- Operational Support Services - Advanced Support
- Migrations Services for pSeries

For an exhaustive list of all the services that IGS can provide, visit <u>IGS Services, A-Z</u>. You can also call IGS and discuss your options with someone who can help pinpoint the service you need. **1-800-IBM-7777**

IBM Technical Support Services

Information about extended support services including Warranty, HW and SW Maintenance, AIX, Linux, and Premium Support services can be found within the IBM pSeries SPEC Sheet at the site listed below. The IBM pSeries SPEC Sheet documents these additional pSeries technical support services, highlights of each service, customer benefits, and contact information.
<u>IBM Technical Support Services for IBM eServer pSeries Servers</u>

What helps IBM technical support help you

Understanding the scope of IBM AIX operating system and pSeries hardware support through AIX Support Line and AIX SWMA

The Software Maintenance contract for AIX, "AIX SWMA," states that this type of support is for "routine, short duration installation and usage (how-to) questions" as well as "code-related" questions. The IBM technical support under AIX SWMA is geared towards the identification and resolution of defects and short-duration how-to questions. The IBM technical teams who provide support under the AIX SWMA contract sort out how-to problems from operating system defects and hardware defects. Identified defects are either fixed as soon as possible, fixed in a future release, or not fixed per IBM's discretion. Short-duration how-to problems are solved as soon as possible. It is at the discretion of the IBM support personnel to determine if the depth and complexity of support necessary to fix a how-to problem is beyond the scope of the AIX SWMA and AIX Support Line contracts

Understanding the role of IBM technical personnnel in the support process

IBM technical personnel supporting AIX SWMA and AIX Support Line contracts for pSeries have a specific role to play in helping you with your technical problem. We try to make your support experience quick, easy, and pleasant. To that end, you can expect that IBM technical support personnnel will:
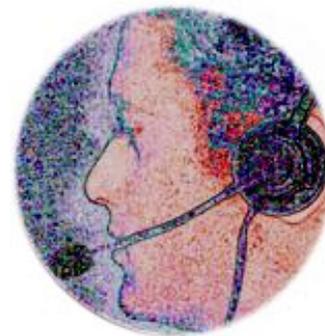
- Obtain a problem description
- Assess and re-assess the severity of the pmr with you
- Attempt to find the root cause of the problem by creating and following an action plan
- Route defects to skilled engineers
- Answer short-duration how-to problems
- Engage other entities within our support area for assistance in solving a problem if necessary
- Determine if the problem is beyond the scope of our support organization and steer you towards other support if necessary
- Maintain a professional demeanor

Understanding the role of the customer in the support process

You can help IBM by being acquainted with your role in the support process. The more prepared you are to assist IBM support, the faster IBM can solve your technical problem. Without your help, we can't help you! So please do not be surprised if IBM technical support desires the following things:

- Do some basic assessment of the problem prior to contacting IBM
- Have or acquire the sufficient skill to assist IBM with debugging techniques (such as running AIX commands at the command line)
- Be willing to apply fixes and maintenance if your operating system or microcode is downlevel (not current)
- Follow IBM support's action plan for problem determination and problem resolution
- Be willing to submit enough data to satisfy problem determination
- Acquire, apply, and test fixes suggested by IBM to assist in problem determination or problem resolution
- Maintain a professional demeanor

Handling difficulties

If your technical problem lies within the scope of AIX Support Line or your AIX SWMA contract, and yet progress is not being made or you feel some injustice has been done, you have recourse. There are several things you can do:

1. **Request that the severity of the pmr be increased.**
   Realize, however, that not all problems fit the definition for a severity of 1 (the most severe). If your problem has one of the following conditions:
   - The PMR is really out of the scope of AIX Support Line and AIX SWMA support
   - A problem description has not yet been determined for your PMR
   - IBM has requested data from you, but you have not yet submitted it
   - No one is available from the customer site 24x7 to assist IBM with debugging, data collection and data submission
   - A viable workaround which puts the computer back in service has been found
   - The problem is in an unsupported configuration, making it out of the scope of what AIX Support Line and AIX SWMA was designed to handle

   IBM technical support would be likely to resist a designation of severity 1.

2. **Involve a Duty Manager.** A Duty Manager's role is to listen to a customer's needs and invoke

whatever resources are available to assist the customer. The Duty Manager can be reached from the same main support number that is used to call into IBM, **1-800-IBM-SERV.**

3. **For any unresolved problems, contact your IBM representative.**
   The "IBM representative"is the person or or persons who sold the pSeries machine to your company. This IBM representative has the power to pursue unresolved problems in a manner that is outside of the Support realm. Any unresolved issues should be brought to the attention of this representative. If you do not know who your IBM representative is, please call this number:
   1-800-426-2255 (IBM Direct, Sales/Order Support),
   and request assistance for finding your company's IBM representative(s).

Satisfaction

IBM strives to deliver the best technical support possible. Your feedback about our support is important to us. We use feedback to make improvements in our service, support, infrastructure, and even the provisions of the contracts for support.

If you are not satisfied with the support you've received

There are a couple of things you can do to express your dissatisfaction with AIX and pSeries technical support or the products themselves.

- If you feel comfortable with this, explain the source and nature of your dissatisfation with the IBM technical support person who is helping you with your computing problem. Sometimes the source of dissatisfaction is something that the technician can resolve.
- Contact a Duty Manager at 1-800-IBM-SERV and explain what you are unhappy with, and what you think could be done to resolve the situation. Understand that there may be no IBM service or support for what you are requesting. The Duty Manager must work with what IBM has to offer. If what you want is not on the list, the Duty Manager can ensure that your request is acknowledged by the proper entity.
- Contact your IBM representative - the person or persons who sold your company the pSeries machine. This person has the ability to pursue customer satisfaction issues. If you do not know who your IBM representative is, call 1-800-426-2255 and request to speak with someone who can help you find the name of your company's IBM representative.
- If you get called with a random survey after your IBM support experience, let your opinion be known at that time.

If you are satisfied with the support you've received

It is refreshing to hear compliments. We want to hear what satisfies you about our support, so we can keep doing those things that make you a happy customer. If you have the time, and feel that IBM technical support has more than fulfilled your expectations, please let us know in one of the following ways:

- Send an e-mail to the IBM technical support person who assisted you, being sure to mention exactly what it was that impressed you about IBM's support. Support personnel can show these e-mails to their managers.
- Speak to a Duty Manager, 1-800-IBM-SERV, who will pass on your compliment to the appropriate entity.
- If you get called with a random survey after your IBM support experience, let your opinion be known at that time.

Acknowledgment

Thanks to Roger McKnight, author of <u>IBM Software Support Handbook</u> for some of the information regarding APARs. Additionally, I adapted his chart of PMR severity to reflect hardware and operating system examples.

IBM®

Preventing problems

AIX on pSeries
Customer Care Handbook

You may have heard the saying, "An ounce of prevention is worth a pound of cure." This is especially true in the computing environment. In the support arena, we see many customers who could have saved enormous amounts of time, money, and energy, if they had just taken some time up front to plan. IBM computers are exquisite machines, expensive and complex. They are the muscle behind your business. To squeeze out every pound of performance, invest in an ounce of prevention.

Preventing problems
- Preventive maintenance
- Maintenance strategy
- Stay informed with automated alerts
- Version information

Preventive maintenance

Preventive maintenance is the art of heading off disaster by careful planning and regular upkeep. The Support for eServer pSeries servers webpage is going to be your single best source of information about preventive maintenance. Look up the information by pSeries model. The hardware and software information for each model will have a section on prevention. This section will contain links to other IBM resources, white papers, redbooks, and anything else that pertains to the upkeep of this particular model of pSeries and operating system.

Get a copy of the service guide, handbook, or redbook for your particular pSeries machine from the Support for eServer pSeries servers webpage. Look up in the hardware section. There will be links you can follow. Or, you can look directly into the redbooks area for for your machine's handbook. Search by model number of machine.

Check the IBM eServer pSeries Information Center for AIX 5L versions 5.1 and 5.2 or pSeries and AIX Information Center for AIX 5L version 5.3 for service and user's guides to help you make informed decisions about upgrades. You can look up information by operating system or by hardware model. Most of these guides can be downloaded over the internet, read on your machine, and printed out. If it's a redbook, it can also be ordered on CDROM.

Make a point of being familiar with the contents of these service guides or handbooks. They will have information that may be hard to find elsewhere. It's not only the best reference material for your machine, it's also a good tool for planning and preventive maintenance. Sections on "RAS" will be especially relevant to preventive maintenance. RAS stands for

"Reliability," "Availablity," and "Serviceability." These RAS qualities are important to, and affect, preventive maintenance. The higher the RAS, the longer your machine stays in operation, the better it performs, and the easier it is serviced. For example, the newer pSeries machines with the more advanced AIX versions have some fault recovery and automated calls for support.

Plan for periodic updates of your operating system and microcode. AIX "Recommended Maintenance Packages" and microcode fixes come out several times a year. In these fixes are code that prevent known defects. To apply these fixes is to ensure that your machine does not run into a problem that has been investigated and fixed by IBM. Should you have a computer problem, and IBM technical support notices that you have not applied any of the recent fixes, you will probably be told to upgrade. This is a debugging technique that eliminates all known problems from the mix and allows the technician to confirm that the problem your computer has is due to something new rather than something that IBM has already fixed. Wouldn't you rather apply fixes to your machine regularly, when you can schedule convenient down-time, rather than be asked by support personnel to upgrade during an emergency situation?

Maintenance Strategy

Here are some general guidelines that can become the basis for your personal maintenance strategy. Take these ideas and modify them if necessary, adjusting them to your particular computing environment.

Upgrading

It is advisable to upgrade your operating or your hardware upon these conditions:

- You've received a "cert advisory"
- You've received an e-mail from the Subscription Services for UNIX Severs saying that a security fix has been released.
- You've received an e-mail from the Subscription Services for UNIX Servers saying that a Recommended Maintenance Package has been released.
- AIX or pSeries technical support recommends that you the upgrade the operating system or microcode.

Thorough testing

When upgrading, please keep these ideals in mind:

1. Fixes and hardware upgrades should be applied in a testing, development, or staging environment. Testing should occur on a non-production machine before moving the fixes or hardware to a production environment. If you don't have a testing environment, you may be able to arrange one through the IBM Testing Services National Test Center.
2. Make an operating system backup (mksysb) before applying fixes. Backup any application data or databases before applying fixes.
3. Maintenance Package upgrades and microcode upgrades should be done separately rather than at the same time. If you apply both types of fixes at the same time, and you experience a problem, you will not know which group of fixes caused the problem- the microcode or the Maintenance Package. Apply groups of fixes one at a time and monitor the changes. If you need to apply both microcode fixes and a Maintenance Package, apply one and watch it for a week, then apply the other and watch them both for a week. If all is well, proceed with 30-60 days of testing. If all is not well, back off the last one you applied and see if the problem goes away. This will help you distinguish between the two, should a problem be introduced by one of the upgrades.
4. The testing of fixes should be done for 30-60 days:
   - in the testing environment

        ○ with all applications that the production system has
        ○ simulating a stress load that is a least as high as the production environment if not more
        ○ ensuring that you have the latest copy of base media available before attempting an upgrade
        ○ applying operating system fixes using the "alt_disk_install" technique
        ○ applying operating system fixes (rather than committing them) so that they can be backed-off easily should an emergency occur

5. Once the fixes pass inspection in the test environment, apply them in the production environment, making sure to have a large enough maintenance window to apply the fixes (including some time to back off the fixes if necessary). Only commit the fixes in production after a long period of monitoring which includes a time of high stress and load.

Anticipating growth

Every business should anticipate their growth. It is important to project the growth of the stress on your production machine, and test your hardware, operating system, and application software knowing what the likely stress and load on the production system will be in the future. This is called "capacity planning." A machine operating at its maximum capacity in terms of use of memory, cpu, and i/o, has no room for growth. Should your company experience a sharp increase in end-customers demanding your excellent product, the load may exceed the limits of the production system which was previously operating just fine at maximum capacity.

IBM actually prefers that you test above anticipated stress and load levels so you can tell whether or not your hardware, operating system, and application software can accomodate a large spike in load and stress. If a production machine is operating at maximum capacity at all times, you need to look at either purchasing an additional machine to share the load, or upgrading your hardware to something that has more memory, cpu, and i/o capacity. Operating a production machine at maximum capacity at all times with no back-up machine and no alternative for picking up the excess work is a problem waiting to happen. There are links regarding pSeries capacity planning from the Support for eServer pSeries servers page. There is information for both hardware and software capacity planning for each model of pSeries. Look in the "Plan or upgrade" tab. There is also a redbook which deals specifically with capcity planning for the pSeries. See redbooks, and search for "SG24-7071-00."
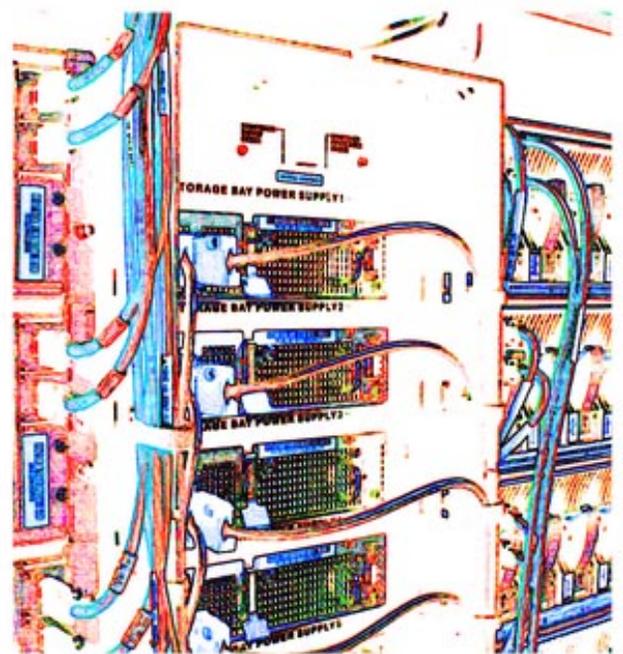
Making backups

Any time you make changes to your operating system that will affect the ODM, an operating system backup should be made. This is typically done using the mksysb command. A mksysb is handy because it can be used to boot into maintenance mode should any problem occur. It's a backup image of the important bits of the operating system, and can be used to replace a corrupted operating system image.

You should make a mksysb before doing the following things:

- adding a new hardware device
- changing tuning parameters through the "no" command.
- changing the characteristics of the operating system through smit (or by hand)

- making changes to logical volumes or volume groups
- making any change that affects the operating system or the ODM.

Always verify that you can boot from your mksysb, and that the backup is complete and uncorrupted. The mksysb command will not back up your application data. That will have to be done separately. System backups for AIX 5L versions 5.1 and 5.2 are discussed in the AIX Documentation in the "Installation Guide" or "Installation and Reference Guide." Look for the section about "System Backups." For AIX 5L version 5.3, consult the IBM eServer pSeries Information Center for AIX 5L version 5.3 Click on "AIX information." The "Installtion guides: "Installation Guide and Reference" has a whole section on creating and installing system backups.

Stay informed with automated alerts

We know it's hard to stay informed. That's why we have a system that will e-mail you when new fixes or alerts come out. You create a profile indicating what kinds of information you're interested in, so you only receive the information you're looking for. There are different types of automated information:

Subscription Services for UNIX Servers allows you to receive security advisories and alerts that maintenance fixes are available. See the website for the complete list of what you can sign up for. The basic free service is extremely helpful, but you can also choose to expand the capabilities of this service.

Offering Information is an entry point website to many, many different kinds of information within IBM, including announcements, redbooks, white papers, marketing materials, and press releases. You can search by hardware category keeping in mind that a pSeries machine is an IBM eServer UNIX server.

iSource, "Customized weekly e-news from IBM," is a nice free service which delivers information via e-mail. The e-mails have links within IBM's website for you to explore. This is a great way to keep current on new IBM websites.

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IBM

Support contacts

AIX on pSeries
Customer Care Handbook

The following are different resources for phone numbers and websites to contact IBM. To see descriptions, move your mouse cursor over the name of the phone number or website.

Support contacts
⇩ Phone numbers in this handbook
⇩ Websites in this handbook, by topic
⇩ Websites in this handbook, by chapter
⇩ Other sources of contact information
⇩ Version information

Phone numbers in this handbook

Phone Numbers

IBM Support	**1-800-IBM-SERV**
IBM Customer Service Center	**1-800-IBM-4YOU**
Partnerworld	**1-800-426-9990**
IBM Global Services (IGS)	**1-800-IBM-7777**
Consult Line	**1-888-426-4343, option 1**
IBM Direct, Sales/Order Support	**1-800-426-2255**

Handbook URLs by topic

pSeries websites	
Support for eServer pSeries servers	**http://www.ibm.com/servers/eserver/support/unixservers/esps/ solvinghwaix.html**
pSeries Hardware Documentation	**http://publib.boulder.ibm.com/infocenter/pseries/v5r3/index.jsp Click on " pSeries Hardware"**
AIX and pSeries Information Center	**For AIX 5.1 and 5.2: http://publib16.boulder.ibm.com/pseries/ en_US/infocenter/base/ For AIX 5.3: http://publib.boulder.ibm.com/infocenter/pseries/ index.jsp**
pSeries Library	**http://www.ibm.com/servers/eserver/pseries/library/**
System p5 Literature	**http://www.ibm.com/systems/p/library/index_lit.html**
Customer Support Plan for pSeries US and Canada	**For US: http://www.ibm.com/support/techdocs/atsmastr.nsf/ WebIndex/PRS243 For Canada: http://www.ibm.com/support/techdocs/atsmastr. nsf/WebIndex/PRS1061**
Subscription Service for Unix Servers	**https://techsupport.services.ibm.com/server/pseries. subscriptionSvcs**
"The Campus" pSeries education	**http://www.ibm.com/servers/eserver/education/cust/pseries/ custpseries.html**
Support for IBM servers	**http://www.ibm.com/servers/eserver/support**
IBM Servers - Welcome Kit	**http://www.ibm.com/servers/eserver/welcome/**
AIX websites	

AIX and pSeries Information Center	For AIX 5.1 and 5.2: http://publib16.boulder.ibm.com/pseries/ en_US/infocenter/base/aix.htm For AIX 5.3: http://publib.boulder.ibm.com/infocenter/pseries/ v5r3/index.jsp
IBM AIX 5L Unix Operating System	http://www.ibm.com/servers/aix/index.html

Websites in this handbook, by chapter

Handbook URLs by chapter

Background information	
Support for IBM servers	http://www.ibm.com/servers/eserver/support
pSeries Hardware Documentation	http://publib.boulder.ibm.com/infocenter/pseries/index.jsp Click on "pSeries Hardware "
IBM Software Support Handbook	http://techsupport.services.ibm.com/guides/handbook.html
IBM Software Maintenance for AIX Operating Systems	http://www.ibm.com/servers/aix/products/softwaresub/maint. html
Partnerworld	http://www.ibm.com/partnerworld/pwhome.nsf/weblook/index. html
Lacking a Support Contract	
Customer Support Plan for pSeries US and Canada	For US: http://www.ibm.com/support/techdocs/atsmastr.nsf/ WebIndex/PRS243 For Canada: http://www.ibm.com/support/techdocs/atsmastr. nsf/WebIndex/PRS1061
"The Campus" pSeries education	http://www.ibm.com/servers/eserver/education/cust/pseries/ custpseries.html

The Campus	**http://www.ibm.com/servers/eserver/education/**
Self-help	
Support for eServer pSeries servers	**http://www.ibm.com/servers/eserver/support/unixservers/esps/ solvinghwaix.html**
pSeries information at the AIX and pSeries Information Center	**For AIX 5.1 and 5.2: http://publib16.boulder.ibm.com/pseries/ en_US/infocenter/base/** **For AIX 5.3: http://publib.boulder.ibm.com/infocenter/pseries/ index.jsp**
AIX information at the AIX and pSeries Information Center	**For AIX 5.1 and 5.2: http://publib16.boulder.ibm.com/pseries/ en_US/infocenter/base/aix.htm** **For AIX 5.3: http://publib.boulder.ibm.com/infocenter/pseries/ index.jsp** **Click on "AIX documentation."**
IBM AIX 5L Unix Operating System	**http://www.ibm.com/servers/aix/index.html**
IBM Servers - Welcome Kit	**http://www.ibm.com/servers/eserver/welcome/**
Redbooks	**http://www.redbooks.ibm.com**
pSeries Library	**http://www.ibm.com/servers/eserver/pseries/library/**
System p5 Literature	**http://www.ibm.com/systems/p/library/index_lit.html**
The Campus	**http://www.ibm.com/servers/eserver/education/**
The Campus IBM eServer	**http://www.ibm.com/servers/eserver/education/cust/crossseries/ custcs.html**
The Campus IBM Unix Server (pSeries Education)	**http://www.ibm.com/servers/eserver/education/cust/pseries/ custpseries.html**

IBM Global Services	http://www.ibm.com/services/us/index.wss/home
IBM Software Support (not AIX, not hardware)	http://www.ibm.com/software/support
IBM Software (not AIX, not hardware)	http://www.ibm.com/software
Subscription Service for Unix servers	https://techsupport.services.ibm.com/server/pseries.subscriptionSvcs
Offering Information	http://www.ibm.com/common/ssi/OIX.wss
iSource	https://isource.ibm.com/world/index.shtml/
Contacting IBM	
IBM Software Support Handbook	http://techsupport.services.ibm.com/guides/handbook.html
Support for eServer pSeries servers	http://www.ibm.com/servers/eserver/support/unixservers/esps/solvinghwaix.html
Consult Line	http://www.ibm.com/services/us/index.wss/so/its/a1000158/
Customer Support Plan for pSeries US and Canada	For US: http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS243 For Canada: http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS1061
IGS Services A-Z	http://www.ibm.com/services/us/index.wss/az
Preventing Problems	
Support for eServer pSeries servers	http://www.ibm.com/servers/eserver/support/unixservers/esps/solvinghwaix.html
Redbooks	http://www.redbooks.ibm.com

AIX and pSeries Information Center	For AIX 5.1 and 5.2: http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base/ For AIX 5.3: http://publib.boulder.ibm.com/infocenter/pseries/index.jsp
Subscription Service for Unix servers	https://techsupport.services.ibm.com/server/pseries.subscriptionSvcs
Offering Information	http://www.ibm.com/common/ssi/OIX.wss
iSource	https://isource.ibm.com/world/index.shtml

Other sources of contact information

Customer Support Plan for pSeries US and Canada	For US: http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS243 For Canada: http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS1061 The last few pages of the PDF file are phone numbers and URLs for different types of pSeries support.

IBM Software Support Handbook, "Support Contacts"	http://techsupport.services.ibm.com/guides/contacts.html An extensive list of contact numbers and websites focusing on software support.

IBM Directory of Worldwide Contacts	http://www.ibm.com/planetwide/

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Acronyms & Terminology

AIX on pSeries
Customer Care Handbook

There is no master list of acronyms and terminology that IBM uses. However, there are many IBM glossaries available online, sorted by topic. Below are the terms and acronyms in this handbook, followed by other online reference materials.
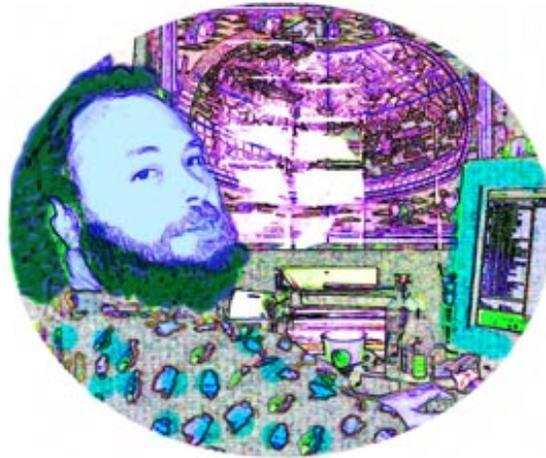
Acronyms and Terminology
- Acronyms and terminology in this handbook
- Other resources for acronyms and terminology
- Version information

Acronyms and terminology in this handbook

action plan	A step or series of steps to be taken by the customer and/or support personnel in the course of determining and resolving the operating system or hardware problem. An action plan is created by IBM support personnel, and is in effect until completed or until a new action plan is necessary.
AIX	Advanced Interactive eXecutive [IBM]- The name for one of IBM's operating systems, which is a flavor of Unix. AIX is an operating system which runs on RS/6000®s and pSeries machines.
AIX SWMA	"AIX Software Maintenance " - The name for the support contract for the AIX operating system. AIX on pSeries support is achieved through an AIX SWMA contract. More information can be found about AIX SWMA at IBM Software Maintenance for AIX Operating System, or by calling 1-800-IBM-4YOU.

alt_disk_install	"Alternate disk installation." A method for installing fixes which reduces the amount of time the computer is down while upgrading, and makes it easier to recover should a problem occur. Information about alt_disk_install can be found in the AIX installation guides, which can be reached from at <u>AIX documentation in the "Information Center"</u> site. Choose the AIX version, then click on "Installation guides." Click on "Installation Guide and Reference" or "Installation Guide." There will be a whole chapter on "Alternate disk installation." For alternate disk installation information on AIX version 5.3, go to <u>IBM eServer pSeries Information Center for AIX 5L version 5.3</u> Click on "AIX documentation," click on " installation and maintenance." Look in the " Installing the Base Operating System" section of the Installation Guide and Reference."
APAR	Authorized Program Analysis Report [IBM]- description and history of a possible defect and its resolution. Each APAR is given a unique number. If it is confirmed that a defect does exist, and it is fixed, the fix is called a PTF, "Program Temporary Fix."
apply	A method of putting on a fix which makes it easy to to back off the fix. Additional information about applying fixes can be found in the Installation Guides in the AIX documentation at <u>http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base/aix.htm</u>. Choose the version of AIX you have, then open the "Installation Guide" or "Installation and Reference Guide." Check the glossary. For information about applying fixes in the "applied state" in AIX version 5.3, go to <u>IBM eServer pSeries Information Center for AIX 5L version 5.3</u> Click on "AIX documentation," click on " installation and migration." Check the " Installing the Base Operating System" section in the index of the " Installation Guide and Reference."
capacity planning	A strategy for anticipating future workloads of your computers, with the aim of creating a computing environment that can handle the future workload. There is an IBM redbook for AIX on pSeries that focuses on this topic, called "IBM eServer pSeries Sizing and Capacity Planning: A Practical Guide." Search for "SG24-7071-00" at <u>http://www.redbooks.ibm.com</u>.
cert advisory	A cert advisory is a public alert regarding the possible breach of computer security. The cert organization has main website, <u>http://www.cert.org</u>. There will be a transition soon to the "US-Cert" site, <u>http://www.us-cert.gov</u>. You can sign up to receive e-mail alerts when a cert advisory is issued by visiting the US-Cert site.

commit	A method of putting on a fix which is harder to retract than applying a fix. Additional information about committing fixes can be found in the "Installation Guide" or "Installation Guide and Reference" in the AIX documentation at http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base/aix.htm. Choose the version of AIX, then open the installation Guide. Check the glossary. For information about committing fixes in AIX version 5.3, go to IBM eServer pSeries Information Center for AIX 5L version 5.3 Click on "AIX documentation" --> "Installation and migration." --> "Installing AIX" --> quot; Maintaining optional software products."
defect	Operating system code or hardware that is not working as designed.
Duty Manager	An IBM representative whose function is to listen to customer concerns, accept positive and negative feedback, and find the proper resource that will help resolve a customer concern. A Duty Manager can be reached by calling 1-800-IBM-SERV.
EAS	"Enhanced AIX Operating System" - A type of IBM technical support contract which was withdrawn as of July 2003. EAS was replaced by the contract known as "AIX SWMA."
eServer ®	A computer which is self-configuring, self-healing, self-optimizing, and self-protecting. Several types of very different IBMcomputers can be described as eServers, and will often have other names to describe them as well. Example, " IBM eServer pSeries."
ftp	"file transfer protocol" - An internet protocol for transmitting files across a network.
how-to	In support, "how-to" problems are those problems which are not due to a defect in the code or hardware. Resolving a how-to problem might involve running some operating system commands or re-configuring something rather than fixing a defect in IBM code or hardware. Sometimes a how-to problem is simply solved by education, communication, or pointing to documentation.
IBM	International Business Machines
IBM Business Partner	A formalized relationship between a company (usually an Independent Software Vendor) and IBM. Being a Business Partner confers some advantages and privileges. See the Partnerworld site for more information.
Maintenance Package	A group of fixes in one convenient package. Also known as "Recommended Maintenance Level," "Fix Pack," or "Recommended Maintenance Package."

mksysb	A method for backing up the operating system in AIX. Information about performing a mksysb can be found in the AIX 5.2 and 5.1 Installation Guides which are accessible from http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base/aix.htm. Click on the version of AIX, click on "Installation Guides: Installation Guide and Reference". Look for a section regarding "System Backups." Or, look in the "System's Users Guides: Operating Systems and Devices". For AIX 5.3, consult IBM eServer pSeries Information Center for AIX 5L version 5.3. Click on "AIX documentation" --> "System management" --> " Installation Guide and Reference" --> "System Management Concepts; Operating Systems and Devices" --> "Backup and Restore."
non-defect	Problem is not code-related. The code is working as designed. In support, "non-defect" or "how-to" is any problem that is not due to a defect in the code.
ODM	"Object Data Manager." Manages system data. Changes made to the operating system through smit or manually are maintained in the ODM.
Partnerworld	The entry "web portal" for IBM Business Partners, at http://www.ibm.com/partnerworld
PDF	"Portable Document Format" - A special type of file format which can be read by a free application from http://www.adobe.com called "Adobe Reader."
PMR	"Problem Management Record" - An electronic tracking mechanism where IBM support personnel can retain a history of observations, debugging efforts, contacts with the customer, and action plans during the course of working on a customer problem. Each PMR has a 5 digit unique number, a 3 digit branch number related to geographical location, and a 3 digit code that relates what country the PMR origninated in. Customers can update the PMR in addition to IBM support personnel, if they are registered with Software Service Request for pSeries.
positive identification	A problem that can be identified directly through evidence, without a need to eliminate possible factors one by one, as is done in the process of elimination.
Power ®	A type of processor. Power ® is actually an acronym, which stands for "Power Optimization With Enhanced RISC." There are Power4 or Power5 microprocessors ("chips") in pSeries machines, depending on what model of pSeries. Read more about it in this "POWER to the people" article.

problem description	An explanation of what the computing or hardware problem is believed to be. The problem description should be as detailed as necessary to capture the nature of the problem. The problem description will be recorded in the PMR and may have to be revised when new information is discovered during problem determination.
problem determination	Steps taken to discover the root cause of the computing problem. Doing problem determination requires that the IBM technical support and/or the customer follow an action plan which is created by IBM technical support. Each step of problem determination is recorded in the PMR by IBM technical support so that there is a history of what attempts have been made to resolve the problem.
problem resolution	The steps which lead to the solution of the computing or hardware problem. The problem resolution is recorded in the PMR so that IBM technical support can benefit from the knowledge gained.
process of elimination	A debugging technique in which factors that could be causing the problem are eliminated one by one until the problem can be more clearly identified.
production machine	A machine which supports internal business functions or customers directly. As opposed to a test, staging, or development machine.
pSeries ®	The "p" stands for "performance." The pSeries is classified as a Unix server as well as an eServer. More information can be found in the report entitled "IBM eServer pSeries Facts and Features" at the pSeries Literature site.
PTF	"Program Temporary Fix" - Upgraded code that contains a fix for an APAR.
RAS	"Reliability, Availability, Serviceability" - Features in a computer which contribute to those 3 qualities. The higher the "RAS" the fewer unplanned outages there are, and the faster problems are able to fixed. These qualities are especially important in mission- critical endeavors. Each pSeries service guide will mention RAS features.
Recommended Maintenance Levels	Packages of AIX fixes tested and released together. Also known as "Recommended Maintenance Package," "Maintenance Level," and "ML."
Recommended Maintenance Package	Packages of AIX fixes tested and released together. Also known as "Recommended Maintenance Level," "Maintenance Level," "Maintenance Package," and "ML."
reproducible testcase	Any code, executables, or combination of computing elements which illustrate a failing situation in a reliable, consistent manner. The testcase can be used by IBM support personnel to reproduce the problem for the purpose of debugging it.

RISC	"Reduced Instruction Set Computing"- A technology that is the basis for the the fast execution of instructions in the RS/6000® machines.
root cause	The underlying reason for a computing or hardware problem.
RS/6000®	A brand of IBM machine based on the RISC technology. The RS/6000® machines are classified as Unix servers.
services	Some action that IBM accomplishes for the customer. As opposed to support, where IBM assists the customer but does not perform the work directly on the machine.
severity	A number given to a PMR to assist IBM technical personnel in ranking the urgency of a situation. A severity of 1 is considered a "high" severity. The lowest severity is 4. Please see the chart on the webpage entitled Contacting IBM where pSeries hardware and operating system severity is explained.
support	IBM assists and guides the customer to resolve a computing or hardware problem. The customer is the active link to the machine- IBM does not have direct access to the machine.
SupportLine	The former name for a type of AIX support contract. SupportLine or Support Line can also refer to the IBM technical support groups who provided the support, and who still provide support under different contract names.
SWMA	See "AIX SWMA"
tabs	The name for a way to display information on websites. Website tabs resemble manilla folder tabs - that part of the folder that sticks out so it can be labeled and seen. Clicking on the text of the tab shows you a different view in the same browser window.
testcase	Support uses this word in two ways. 1) Any data sent to IBM- outputs from commands, core dump files, snap files, etc. 2) A set of files, executables, or any computing elements which demonstrate a failing condition for the purpose of reproduction and debugging.
testcase server	A machine where IBM customers can upload testcases (or data) and download files from IBM. Each area of IBM support has a different machine or a different directory on a machine that only that area of support can access. IBM support groups should tell customers what their testcase server is named, and how to transmit data there.
Unix Server	A broad category of computers within IBM which all run Unix operating systems such as AIX or Linux.

| **unsupported configuration** | Using hardware or software which IBM does not support. Or, setting up a supported IBM product in a way that is not recommended, specified, implied, or intended in the manuals for that product. |
| **workaround** | Some action that results in alleviating a computing or hardware problem, but which does not solve the problem. |

Other resources for acronyms and terminology

| **IBM Software Support Handbook** | **http://techsupport.services.ibm.com/guides/acronyms.html**
Jump straight to the "Acronyms & other terms" section |
| **IBM Terminology** | **http://www.ibm.com/ibm/terminology/index.html** |

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