

**IBM Parallel System Support Programs for AIX
Read This First
Version 3 Release 1.1**

Document Number GI10-0641-03

Fourth Edition (March 2000)

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Read This First

Thank you for your order. The material you have received is listed on the enclosed Packing List. Please review the Packing List to ensure you have received all items listed.

Please review the following publications prior to installing your SP system.

- *IBM RS/6000 SP: Planning, Volume 2, Control Workstation and Software Environment*
- *IBM Parallel System Support Programs: Administration Guide*
- *IBM Parallel System Support Programs: Installation and Migration Guide*

The most current information is available as READMEs on CD ROM. Also included in this order is the most current recommended corrective service for this product. Please review the service README file for details on the installation of service. View the softcopy service README files the same way you would view the softcopy README for the product CD ROM(s).

NOTE: For the most up-to-date copy of this document please look in the following url under READ THIS FIRST.

http://www.rs6000.ibm.com/resource/aix_resource/sp_books/pssp/index.html

Included in this Memo to Licensees are:

- Summary of Enhancements
- Additional Resource Information
- **PSSP Compatibility, Limitations, Restrictions & Prerequisites**
- PSSP packaging
- Viewing the softcopy README documents from CD ROM
- AIX 4.3.3 Minimal Image
- List of Program Materials

Summary of Enhancements

PSSP V3.1.1 is a new Modification of Parallel System Support Programs that can run on SP Systems, including the new POWER3 SMP High Nodes, new POWER3 SMP High Node single frame server, and RS/6000 Enterprise Servers that are attached to SP Systems. PSSP V3.1.1 supports AIX 4.3.2, or later.

New functional enhancements include:

- Support for new nodes and related hardware

The POWER3 Symmetric MultiProcessor (SMP) thin, wide and high nodes are PCI-based 64-bit SMP nodes with integrated fast ethernet that are ideal for applications having significant floating-point content, such as seismic processing, engineering analysis, scientific research, chemical modeling, and electronic automation.

Note: POWER3 SMP High nodes require AIX 4.3.3 and PSSP 3.1.1. Service for AIX 4.3.3 and PSSP 3.1.1 is also required. The following AIX APARs are recommended. IY04819, IY04782, IY04804, and for GPFS customers IY05124.

- TaskGuides

SP TaskGuides are a form of advanced online assistance designed to walk you through complex or infrequently performed tasks. Each TaskGuide does not simply list the required steps. It actually performs the steps for you, automating the steps to the highest degree possible and prompting you for input only when absolutely necessary. You might recognize them as *wizards*. For further details see `/usr/lpp/ssp/README/ssp.tguides.README`.

The following TaskGuides are available:

- Set Site Environment Information
- Add Frames
- Configure New Nodes
- Create Node Image

- Shared Memory Message passing function

This function is for performance enhancement of Parallel Environment V2.4 (5765-543) customers. Parallel Environment service is required to enable this function. The description of the functionality is in the README file of Parallel Environment V2.4 APAR # IY02462.

- SP Switch Advanced Diagnostics Tools

New switch diagnostics, intended for the experienced System Administrator or CE, include tests to repair and re-instate failing switch links, to isolate malfunctioning switch adapters, identify suspect switch chips, and provide error log analysis to assist in problem determination and isolation.

Additional Resource Information

RS/6000 SP Resource Center

The SP Resource Center has been updated in this modification. The SP Resource Center provides one simple interface for all softcopy documentation and information resources. It consists of HTML, Java, and Javascript files and runs in a web browser. The SP Resource Center provides access to a variety of information including publications, READMEs, Redbooks, Whitepapers, SP product information, as well as up-to-date service information. The SP Resource Center contains links to documents that are locally installed, or if a document is not installed, the link points to the document on the IBM World Wide Web site.

The latest version of the RS/6000 SP Resource Center may be downloaded from:

<http://www.rs6000.ibm.com/support/sp/resctr.html>

For security information, please refer to the RS/6000 SP Security Support web page located at:

<http://www.rs6000.ibm.com/support/sp/security/>

The security information will be included in an update of the SP Resource Center as a PTF in the future.

To preview or browse recently published RS/6000 SP documents for Parallel System Support Programs, visit our web page at:

http://www.rs6000.ibm.com/resource/aix_resource/sp_books/pssp/index.html

PSSP Compatibility, Limitations, Restrictions & Pre-requisites

Please refer to the README files within Parallel System Support Programs for AIX (PSSP for AIX) software for any restrictions or advisories as well as any required service before you begin to install your SP system.

Additional Restrictions and Considerations

Installation Considerations

- Nodes running the PSSP V2.2 or PSSP V2.3 level with boot install servers running at the PSSP V3.1.1 level will encounter a customization problem without the proper APAR applied:
 - Apply APAR IX81696 to nodes running PSSP V2.2 prior to customizing those nodes from a boot install server at the PSSP V3.1.1 level.
 - Apply APAR IX81710 to nodes running PSSP V2.3 prior to customizing those nodes from a boot install server at the PSSP V3.1.1 level.

SMP Node Considerations

- For Symmetric Multiprocessor (SMP) nodes there is the possibility that a processor may be configured off-line due to hardware errors. If this occurs, the node can still boot with a remaining processor, but the normal PSSP mechanisms don't report that a processor is off-line to an administrator. If you wish to be notified if this occurs, you can set up SP Problem Management to inform you that fewer than expected processors are on-line. To do this issue the **pmandef** command whose handle name is "processorsOffline" in the **/usr/lpp/ssp/install/bin/pmandefaults** file. Then you will receive mail on the control workstation when a node boots and there are fewer processors on-line than expected. The "processorsOffline" event can also be monitored by SP Perspectives by registering for the event definition. To do this, select the "Load Defaults" action in the Event Perspective. See the RS/6000 SP PSSP Administration Guide for more information about SP Problem Management and SP Perspectives.

SP-Attached Server Restrictions/Considerations

- After installing your SP-Attached Server ensure that your **s1_tty** is login enabled on your server. If this tty is disabled then your hardmon **s1term** will not function.

1. See which tty is defined to Serial Port S1:

```
# lsdev -Cc tty
tty0 Available 01-S1-00-00 Asynchronous Terminal
tty1 Available 01-S2-00-00 Asynchronous Terminal
```

In this example tty0 is defined for the S1 Serial Port which is connected to our **s1term** through hardmon. Before executing the chdev command below, insure that:

- a. There are no other devices assigned to the s1 tty (i.e. /dev/console), and
- b. There are no getty's already running on the tty (This equates to -- is it already enabled?).

2. Enable login on that tty for example:

```
# chdev -l tty0 -a login=enable
```

After an IPL you may have LEDs displayed through hardmon even though the SP-Attached Server has a blank operator panel. Those LEDs can be ignored.

You will have hardmon **s1term** performance degradation if the SAMI rs-232 cable is not connected to the operator panel.

- Ensure, when specifying "starting switch port number" through sframe or smit, that this number corresponds to a valid and unused switch node number in your SP system.
- Always use hardmon as your interface to your SP-Attached Server's operator panel. If for some reason you need to use the operator panel do the following:
 1. On your control workstation issue

```
stopsrc -s hardmon
```
 2. Disconnect the rs-232 cable from your operator panel on the SP-Attached Server.
 3. On your control workstation issue:

```
startsrc -s hardmon
```
 4. Once you have completed using the operator panel connect the rs-232 cable to your operator panel on the SP-Attached Server. Once the cable has been reconnected normal hardmon function for your SP-Attached Server will resume.
- If your existing RS/6000 S70 family server is running an IPV6 network you must disable the network connection before attaching it to your SP System.

Configuration Management Considerations

- To stop configuration manager errors from occurring in the future, if you do not have a graphics adapter in your SP, you should run the following:

```
rmdev -d1 gxme0
rmdev -d1 rcm0
rmdev -d1 lft0 (if it exists)
/usr/lib/install/sm_inst installp_cmd -u -f'devices.graphics.com' '-g'
```

This should take care of the problem.

Control Workstation Default Configurations

- An option in the configurator session displays a list of four separate CWS configurations that are recommended for new customers. There is one configuration for Model 43P-140 and three additional configurations for Model F50. These defaults may be added upon as customer needs increase. Marketing has the option of specifying alternative configurations for different customer environments.

Following is the list of the default configurations:

– 43P-140

PRODUCT	DESCRIPTION
7043-140	- RS/6000 43P Model 140
	-Base 1 MB L2 Cache
	-CD ROM Drive
	-1.44MB 3.5" Diskette Drive
	-Integrated SCSI-2 F/W Adapter
	-Integrated Ethernet Adapter
2830	-POWER GXT130P Graphics Adapter (PCI)
2909	-18.2 GB 1" Ultra SCSI Hard Disk Drive
2943	- 8 Port Async Adapter, EIA-232/422 (PCI)
2968	-10/100 Mbps Ethernet PCI Adapter
3144	-18.2 GB 1" Ultra SCSI Hard Disk Drive
3630	-P260 Color Monitor
4102	-Select 128 MB DIMM
4315	-Select 233MHz Pluggable Processor
6041	-Mouse-Ivory
6159	-12GB/24GB 4mm Tape Drive
8700	-Quiet Touch Keyboard, Stealth Black - English (US)
9300	-Language - English (US)

– F50 small

PRODUCT	DESCRIPTION
7025-F50	- RS/6000 Model F50
	- CD-ROM Drive
	- 1.44MB 3.5" Diskette Drive
	- Base SCSI 6 - Pack 1 Kit
	- Integrated SCSI-2 F/W Adapter 1
	- Integrated SCSI-2 F/W Adapter 2
	- Integrated Ethernet Adapter
2830	-POWER GXT130P Graphics Adapter (PCI)
2943	- 8 Port Async Adapter, EIA-232/422 (PCI)
2968	-10/100 Mbps Ethernet PCI Adapter
2985	-Ethernet BNC/RJ-45 Adapter (PCI)
3101	-18.2 GB 1" Ultra SCSI Disk Drive Select
3104	-18.2 GB 1" Ultra SCSI Hot Swap Disk
3628	-P260 Color Monitor, Stealth Black
6041	-Mouse-Ivory
6159	-12GB/24GB 4mm Tape Drive
8700	-Quiet Touch Keyboard, Stealth Black - English (US)
9083	-Base 128MB (4X32MB) SDRAM DIMMs
9300	-Language - English (US)
9303	-Base 1-way 604e 166MHz Processor Card, 256KB L2 Cache

– F50 Medium

PRODUCT	DESCRIPTION
7025-F50	- RS/6000 Model F50
	-CD-ROM Drive
	-1.44MB 3.5" Diskette Drive
	-Base SCSI 6-Pack 1 Kit
	-Integrated SCSI-2 F/W Adapter 1
	-Integrated SCSI-2 F/W Adapter 2
	-Integrated Ethernet Adapter

2830 -POWER GXT130P Graphics Adapter (PCI)
 2943 -8 Port Async Adapter, EIA-232/422 (PCI)
 2968 -10/100 Mbps Ethernet PCI Adapter
 3101 -18.2 GB 1" Ultra SCSI Disk Drive Select
 3104 -18.2 GB 1" Ultra SCSI Hot Swap Disk
 3628 -P260 Color Monitor, Stealth Black
 4106 -Select 256 MB (2X128MB) SDRAM DIMMs
 4223 -Ethernet 10Base2 Transceiver
 4357 -Select 2-Way 604e3 332MHz Processor Card, 2x256 KB L2 Cache
 6154 -20GB/40GB 8mm Tape Drive
 6159 -12GB/24GB 4mm Tape Drive
 8700 -Quiet Touch Keyboard, Stealth Black - English (US)
 8741 -3 button mouse - Stealth Black
 9300 -Language - English (US)
 9800 -Power cord - US/Canada (125V, 15A)

- F50 Large

PRODUCT	DESCRIPTION	
7025-F50	- RS/6000 Model F50	
	-CD-ROM Drive	
	-1.44MB 3.5" Diskette Drive	
	-Base SCSI 6-Pack 1 Kit	
	-Integrated SCSI-2 F/W Adapter 1	
	-Integrated SCSI-2 F/W Adapter 2	
	-Integrated Ethernet Adapter	
2443	-Integrated SCSI to DASD 6-Pack 16-Bit Cable and Terminator	Terminator
2447	-16-Bit PCI SCSI SE Adapter to 6 SCSI Bays Cable	
2830	-Power GXT130P Graphics Adapter (PCI)	
2944	-128-Port Async Controller (PCI)	
2968	-10/100 Mbps Ethernet PCI Adapter	
2985	-Ethernet BNC/RJ-45 Adapter (PCI)	
3101	-18.2 GB 1" Ultra SCSI Disk Drive Select	
3104	-18.2 GB 1" Ultra SCSI Hot Swap Disk	
3628	-P260 Color Monitor, Stealth Black	
4106	-Select 256 MB (2X128MB) SDRAM DIMMs	
4110	-256MB (2x128MB) SDRAM DIMMs	
4223	-Ethernet 10Base2 Transceiver	
4357	-Select 2-Way 604e3 332MHz Processor Card, 2x256 KB L2 Cache	Cache
6154	-20GB/40GB 8mm Tape Drive	
6159	-12GB/24GB 4mm Tape Drive	
6205	-PCI Dual Channel Ultra2 SCSI Adapter	
6519	-SCSI Hot Swap 6-Pack	
8131	-4.5mm Controller Cable	
8133	-RJ-45 to DB-25 Converter Cables (4 cables per set)	
8137	-Enhanced Async Node 16-Port EIA-232	
8700	-Quiet Touch Keyboard, Stealth Black - English (US)	
8741	-3 button mouse - Stealth Black	
9300	-Language - English (US)	
9800	-Power cord - US/Canada (125V, 15A)	

General Corrections for all PSSP 3.1.1 Documents: The IBM RS/6000 SP Maintenance Information Volumes 1–4 (GA22-7375, GA22-7376, GA22-7377, and GA22-7378) were restructured after the PSSP publications were published. The following list contains the new book titles, form numbers, and a brief description of each book:

IBM RS/6000 SP:

- *Installation and Relocation, GA22-7441*
This book contains installation and relocation procedures, maintenance agreement inspections and qualifications, and identification of frame types and their standard and optional components.
- *System Service Guide, GA22-7442*
This book contains general SP system service procedures, the system Start MAP, and MAPs and parts catalog for the frames and power subsystems. Use this book to begin a diagnostic procedure to isolate a problem to a specific major component of the SP system.
- *SP Switch Service Guide, GA22-7443*
This book contains service procedures, MAPs, and parts catalog information specific to the SP Switch.
- *Uniprocessor Node Service Guide, GA22-7445*
This books contains service procedures, MAPs, and parts catalog information specific to all uniprocessor-type nodes.
- *604 and 604e SMP High Node Service Guide, GA22-7446*
This book contains service procedures, MAPS, and parts catalog information specific to these nodes.
- *SMP Thin and Wide Node Service Guide, GA22-7447*
This book contains service procedures, MAPS, and parts catalog information specific to these nodes.
- *POWER3 SMP High Node Service Guide, GA22-7448*
This book contains Service procedures, MAPS, and parts catalog information specific to this node.

As an alternative to ordering the individual books, you can use GBOF-5437 to order the RS/6000 hardware service library.

Corrections to the Installation and Migration Guide

- Chapter 5: Reconfiguring the RS/6000 SP System
Deleting a Frame, Node, or SP-Attached Server
 - Step 2: Unpartition Your System
If your existing system has multiple partitions defined and you want to delete a frame, you need to bring the system down to one partition before you can delete the additional frame.

Changes to the Administration Guide from PSSP V3.1: The Administration Guide for PSSP 3.1.1 has the following organization differences from PSSP 3.1:

- 'Appendix A: Using an Alternate Boot System Image' and 'Appendix B: Mirroring a Root Volume Group' have been rewritten and consolidated as 'Appendix A: Managing Root Volume Groups'.
- 'Appendix E: System Monitor Variables' has been removed. See 'Appendix D: Listing SP Resource Variables' in the PSSP Administration Guide 3.1.1 for instruction on how to obtain descriptions of system monitor variables.

Security Considerations

- If you wish to use Kerberos 5 authentication, you must perform the following steps prior to enabling the authentication method (Step 34 in the PSSP Installation & Migration Guide):
 - Install and configure DCE authentication on the CWS and all nodes in the partition.

For more information on DCE configuration, see "Distributed Computing Environment for AIX, version 2.2, Quick Beginnings" (SC23-4188-00).

- When the AIX authenticated remote commands are enabled for Kerberos 5 authentication, be aware that a problem may be encountered when the DCE security server is in a different subnet than any part of the SP. Examples of this are:
 - a multi-partitioned SP system where Kerberos 5 enabled partitions are in different subnets
 - the DCE security server is on a system external to the SP and the system is off of the SP's subnet
 - multiple subnets exist within the SP, the DCE security server is on the CWS, but the CWS is not directly connected to all of the subnets.

The following error message received as a result of remote command processing indicates the problem may have occurred:

```
kerberos: Couldn't get credentials for the server:  
Cannot contact any KDC for requested realm.
```

Note: The problem is only encountered with AIX remote command processing and only when the Kerberos V5 authentication method is enabled on the client and server hosts (which requires that AIX DCE V2.2 or later is installed and configured on the client and server hosts for Kerberos V5 support).

The problem relates to address information in the **/etc/krb5.conf** file. **/etc/krb5.conf** is automatically generated by DCE and is used by the AIX remote commands for Kerberos V5 authentication.

Should you encounter this problem, please refer to the RS/6000 SP Security Support web page located at:

<http://www.rs6000.ibm.com/support/sp/security/>

or contact IBM Service for help on resolving this problem.

DCE Considerations

- If DCE has been installed but has not been setup and configured completely, many of the kerberos commands will fail with DCE errors. This is because when DCE is installed, links are created in /usr/bin to /usr/lpp/dce/bin for the commands kinit, klist, etc. The workaround is to use the path /usr/lpp/ssp/kerberos/bin for the kerberos commands until DCE setup and configuration has been completed.

AIX Considerations

Note: When using a *mksysb*, any AIX corrective service (PTFs) applied to that *mksysb* must also be placed in the *lppsource* directory and the Shared Product Object Tree (SPOT) must be updated. The AIX corrective service applied to the minimal images is listed under the "Software Requirements" section in this document.

In order to update the SPOT, perform the following steps on the control workstation and all of the boot/install servers:

- Deallocate the SPOT from all clients using the **unallnimres** command.
- On the control workstation only, copy the install images for PTFs to the *lppsource* directory that corresponds to the appropriate SPOT. For example, copy the PTFs into /spdata/sys1/install/aix432/lppsource.
- For Boot Install Server (BIS) nodes, it is necessary to add the BIS hostname to the *.rhosts* file on the control workstation.
- Issue **inutoc** in the *lppsource* directory.
- Issue **nim -o check -F <lppsourceName>**
- Issue **smit nim_res_op**
- Select the appropriate SPOT.
- Select the "update_all" function.
- Hit <F4> in the "Source of Install Images" field and select the appropriate *lppsource*.
- Hit enter twice to initiate the update
- After the update completes, run **setup_server** to reallocate the SPOT to the necessary clients.

Note: The following APAR is included in the minimal image and must be installed on both the control workstation and the nodes.

- AIX 4.3.3 - **REQUIRED**
IY04634 - AIX 4330-01 RECOMMENDED MAINTENANCE FOR AIX 4.3

Note: For customers who require AIX 4.3.3 to support RS/6000 SP POWER3 SMP High Nodes, be sure to include necessary service. This information can be found in the SP2 Forum or from your service representative.

Software Requirements

- AIX 4.3.2 (5765-C34), or later, on the control workstation and nodes. In order to use the SP switch diagnostics or TaskGuides the Java runtime environment (Java.rte.bin 1.1.6.0), which is part of AIX 4.3.3, or later, is required.
- At least one concurrent use license of C for AIX compiler or C++ compiler installed on the SP complex, which includes the control workstation. It should be the version supported by the operating system on the nodes. For compatibility with PSSP V3.1.1, currently available versions include:

- AIX 4.3.3, or later.

C for AIX, V4.4, or later

Visual Age C++ Professional for AIX V4.0, or later

Note: PSSP V3.1.1 does not support IBM Visualage C++ Professional for AIX, Version 4.0 incremental compiler and C++ runtime library Version 4.0. It does support the batch IBM C and C++ Version 3.6.4 compilers and the Version 3.6.4 C++ runtime libraries that are also included in Visualage C++ 4.0.

Compilers are necessary for service of PSSP. Also, without the compiler, dump diagnosis tools like **crash** will not function fully. At least a one-user license must be obtained, but if you intend to do C development work, you will have to decide how many users you wish supported at a given time.

If you are doing C or C++ development work, the runtime libraries on the nodes must be equal to or later than the level used to compile any of the nodes. See the announcements on the compilers for details on compatibility.

- To use the LAPI function, which is within PSSP, you must also use Parallel Environment V2.4.

The license for PSSP V3.1.1, which includes the HACWS, IBM Recoverable Virtual Shared Disk, and Performance Toolbox Parallel optional filesets, is included in the SP hardware price. However, PSSP must be separately ordered.

The HACMP Enhanced Scalability feature of HACMP 4.3.1, or later, (5765-D28) is supported on PSSP V3.1.1. Refer to HACMP software announcements for more detailed information.

IBM Performance Toolbox Parallel Extensions (PTPE) (Separate optional fileset of PSSP, V3.1.1):

- Performance Toolbox for AIX, V2.2 (5765-654)
 - Agent Component installed on each node that you want to monitor
 - Performance Manager on at least one node or workstation in the network for monitoring

HACWS (Separate optional fileset of PSSP, V3.1.1):

- On both of the control workstations:
 - PSSP V3.1.1 (5765-D51)
 - Any level of AIX that is supported with PSSP V3.1.1.
 - Any level of HACMP that is supported with the level of AIX that you are using. Refer to the appropriate HACMP documentation to determine what levels of HACMP are supported with the level of AIX you are using.

The HACMP Enhanced Scalability feature is supported by HACWS.

Note: Please make sure you have the latest appropriate service levels of HACMP, HA Enhanced Scalability, and PSSP V3.1.1.

IBM Virtual Shared Disk and IBM Recoverable Virtual Shared Disk (Separate optional filesets of PSSP, V3.1.1):

- On both the control workstation and the nodes:
 - PSSP V3.1.1 (5765-D51)
 - Any level of AIX that is supported with PSSP V3.1.1.

Service

- The URL address of the RS/6000 SP service and support information is located on the Internet at the following URL:

<http://www.rs6000.ibm.com/support/sp/>

This page contains all the service bulletins and flashes as well as PTF and APAR reports for all current releases of PSSP, LoadLeveler, Parallel Environment, and NetTAPE.

Compatibility

- Because the SP system and PSSP use IBM RS/6000 POWER2, PowerPC, POWER architecture, and AIX 4.3.3 (or later), programs written for the RS/6000 Systems will run on properly configured SP processor nodes without recompilation. In some cases, improved performance can be achieved by recompiling with the latest versions of the IBM XL Fortran compilers to further exploit the POWER2 and PowerPC technology.
- PSSP V3.1.1 is a functional enhancement of and complete replacement of PSSP V3.1. PSSP V3.1 can no longer be ordered.
- When running with PSSP V3.1.1, the following products must be at the levels specified, or later:
 - LoadLeveler (5765-D61) V2R1
 - Parallel Environment for AIX V2R4 (5765-543).
 - Parallel ESSL for AIX V2R1M1 (5765-C41)
 - General Parallel File System (5765-B95) V1R1, or V1R2
 - HACMP V4R3M1, or later (5765-D28), Enhanced Scalability feature.
 - CLI/OS. V2R2 (5648-129)

Refer to the *IBM RS/6000 SP: Planning, Volume 2, Control Workstation and Software Environment* (Form Number GA22-7281) for a matrix of supported combinations of SP licensed programs for compatibility statements on nodes running on different levels of AIX and PSSP.

Limitations

- PSSP V3.1.1 does not support Internet Protocol, V6 networks (IP V6) on either the control workstation or the nodes.

Note: If you are attaching an existing Enterprise Server, and that server is connected to an IP V6 network, you will need to remove the server from the network before making the SP attachment.
- PSSP V3.1.1 does not exploit the 64 bit architecture of AIX 4.3.3, or later.

- An SP System does not support C2 evaluation.
- An SP System with more than one control workstation requires special procedures to maintain hardware control for control workstation fail-over. For details contact your IBM representative.

Migration and Coexistence

- The following service must be applied to your existing SP system prior to migrating your control workstation to PSSP 3.1.1. Coexistence also requires this service.

The minimum service level for PSSP 2.2 support is PTF set 26 which consists of the following PTFs:

PSSP PTFs by component	Curr PTF	Perf Toolbox	File Set Level
ssp.authent	2.2.0.6	ptpe.docs	1.1.0.1
ssp.basic	2.2.0.20	ptpe.gui	1.1.0.4
ssp.clients	2.2.0.15	ptpe.program	1.1.0.5
ssp.csd.cmi	2.2.0.0		
ssp.csd.hsd	2.2.0.9		
ssp.csd.vsd	2.2.0.16		
ssp.csd.gui	2.2.0.2		
ssp.csdsysctl	2.2.0.4		
ssp.css	2.2.0.20		
ssp.docs	2.2.0.7		
ssp.gui	2.2.0.10		
ssp.ha	2.2.0.16		
ssp.hacws	2.2.0.2		
ssp.jm	2.2.0.3		
ssp.public	2.2.0.1		
ssp.pman	2.2.0.5		
ssp.sysctl	2.2.0.5		
ssp.sysman	2.2.0.15		
ssp.top	2.2.0.0		

The minimum service level for PSSP 2.3 support is PTF set 17. To determine which ptf filesets are installed on your PSSP 2.3 system, use the command **lsipp -h ssp.***. The necessary ptf filesets and their corresponding release levels are listed below:

PSSP PTFs by Comp	File Set Level	Perf Toolbox	File Set Level
ssp.authent	2.3.0.6	ptpe.gui	1.1.0.1
ssp.basic	2.3.0.15		
ssp.clients	2.3.0.10		
ssp.csd.cmi	2.3.0.2		
ssp.csd.gui	2.3.0.1		
ssp.csd.hsd	2.3.0.4		
ssp.csd.sysctl	2.3.0.3		
ssp.csd.vsd	2.3.0.14		
ssp.css	2.3.0.15		
ssp.docs	2.3.0.8		
ssp.gui	2.3.0.6		
ssp.ha	2.3.0.15		
ssp.hacws	2.3.0.2		
ssp.jm	2.3.0.3		
ssp.perlpkg	2.3.0.1		
ssp.pman	2.3.0.4		
ssp.public	2.3.0.1		
ssp.spmgr	2.3.0.3		
ssp.st	2.3.0.3		
ssp.sysctl	2.3.0.6		
ssp.sysman	2.3.0.11		
ssp.top	2.3.0.2		
ssp.top.gui	2.3.0.2		
ssp.topsvcs	2.3.0.13		

The minimum service level for PSSP 2.4 support is PTF set 10. To determine which ptf filesets are installed on your PSSP 2.4 system, use the command **lsipp -h ssp.***. The necessary ptf filesets and their corresponding release levels are listed below:

PSSP PTFs by component	Service level	Perf Toolbox	File Set Level
ssp.authent	2.4.0.3	ptpe.gui	1.1.0.0
ssp.basic	2.4.0.9		
ssp.clients	2.4.0.7		
ssp.csd.hsd	2.4.0.2		
ssp.csd.sysctl	2.4.0.3		
ssp.csd.vsd	2.4.0.7		
ssp.css	2.4.0.8		
ssp.docs	2.4.0.6		
ssp.gui	2.4.0.5		
ssp.ha	2.4.0.8		
ssp.pman	2.4.0.3		
ssp.st	2.4.0.2		
ssp.sysman	2.4.0.5		
ssp.top	2.4.0.2		
ssp.topsvcs	2.4.0.8		
ssp.unicode	2.4.0.1		

PSSP Packaging

The RS/6000 SP system software includes the IBM Parallel System Support Programs for AIX (PSSP), a comprehensive suite of applications for the installation, operation, management, and administration of the RS/6000 SP system. PSSP provides a single point of control for administrative tasks and helps increase productivity by letting administrators view, monitor, and control system operation.

Packaging information is located in the *IBM Parallel System Support Programs for AIX: Installation and Migration Guide*.

Other IBM Products

A large number of system and application software products developed by IBM can be run on the SP system. For example:

- IBM LoadLeveler
 - Distributed, network-wide job management
- IBM Parallel Environment for AIX
 - Parallel application development and execution
 - Message passing parallel task communications
- IBM General Parallel File System for AIX (GPFS)
 - Data file system for parallel access to large files
- ADSM/6000
 - System and user data management
- PTX/6000
 - Performance monitoring
- NetView for AIX
 - Enterprise network management
- Trouble Ticket for AIX
 - Problem management
- PSF/6000
 - Printing support
- Job Scheduler for AIX
 - Schedules production batch workload in a distributed AIX environment

Independent Software Vendor Products

There is an aggressive program in place to enable and encourage independent software vendors to enable and port their applications to the RS/6000 SP system.

Viewing softcopy of the README documents

To view a softcopy of any READMEs from the IBM Software Distribution Facility (SDF) media:

- View the components on the media with one of these commands:

```
installp -l -d /dev/rmt0.1 (for tape)
installp -l -d /cdrom      (for CD ROM)
```

Find the desired component name.

- View a softcopy of any README from the SDF CD ROM with the following command. Please note it may take several minutes to display each file.

```
installp -i -d /dev/rmt0.1 ssp          (PSSP install options)
installp -i -d /dev/rmt0.1 rsct.basic   (RS/6000 Cluster Technology options)
installp -i -d /dev/rmt0.1 rsct.clients (RS/6000 Cluster Technology options)
installp -i -d /dev/rmt0.1 ssp.ptpegui (spperfmon perspective)
installp -i -d /dev/rmt0.1 ssp.vsd     (IBM Virtual Shared Disk)
installp -i -d /dev/rmt0.1 spimg       (separate CD ROM)

installp -i -d /cdrom ssp              (PSSP install options)
installp -i -d /cdrom rsct.basic       (RS/6000 Cluster Technology options)
installp -i -d /cdrom rsct.clients     (RS/6000 Cluster Technology options)
installp -i -d /cdrom ssp.ptpegui     (spperfmon perspective)
installp -i -d /cdrom ssp.vsd         (IBM Virtual Shared Disk)
installp -i -d /cdrom spimg           (separate CD ROM)
```

- After installation, the READMEs can be found in the following directories:

```
/usr/lpp/ssp/README
/usr/sbin/rsct/README
/usr/lpp/ssp.hacws/README
/usr/lpp/csd/README
/usr/lpp/ptpe/README
/usr/lpp/spimg/README
```

AIX System Minimal mksysb Image and Required AIX PTFs

AIX 4.3.3 Image Content

The following fix is required and is included in the minimal **mksysb** image for AIX 4.3.3. If you do not use this minimal **mksysb** image, the fixes must be applied to your AIX 4.3.3 operating system prior to creating your **mksysb** image which you will use to install your nodes. Whichever image you use you must update your SPOT and lppsource directory with these fixes according to the instructions listed in "AIX Considerations" under "Additional Restrictions" in this document.

IY04634 - AIX 4330-01 RECOMMENDED MAINTENANCE FOR AIX 4.3

The following AIX APARs are also recommended and not in the minimal image. IY04819, IY04782, IY04804, and for GPFS customers IY05124.

Fileset	Level	State	Description
bos.acct	4.3.3.0	C	Accounting Services
bos.adt.base	4.3.3.0	C	Base Application Development Toolkit
bos.adt.debug	4.3.3.1	C	Base Application Development Debuggers
bos.adt.include	4.3.3.1	C	Base Application Development Include Files
bos.adt.lib	4.3.3.0	C	Base Application Development Libraries
bos.adt.libm	4.3.3.0	C	Base Application Development Math Library
bos.adt.syscalls	4.3.3.0	C	System Calls Application Development Toolkit
bos.diag.com	4.3.3.0	C	Common Hardware Diagnostics
bos.diag.rte	4.3.3.1	C	Hardware Diagnostics
bos.diag.util	4.3.3.1	C	Hardware Diagnostics Utilities
bos.docregister.com	4.3.3.0	C	Docregister Common
bos.help.msg.en_US.com	4.3.3.0	C	WebSM/SMIT Context Helps - U.S. English
bos.help.msg.en_US.smit	4.3.3.0	C	SMIT Context Helps - U.S. English
bos.iconv.com	4.3.3.0	C	Common Language to Language Converters
bos.iconv.ucs.com	4.3.3.0	C	Unicode Base Converters for AIX Code Sets/Fonts
bos.loc.iso.en_US	4.3.3.0	C	Base System Locale ISO Code Set - U.S. English
bos.mp	4.3.3.1	C	Base Operating System Multiprocessor Runtime
bos.msg.en_US.diag.rte	4.3.3.0	C	Hardware Diagnostics Messages - U.S. English

bos.msg.en_US.docregister.com	4.3.1.0	C	Docregister Common Messages - U.S. English
bos.msg.en_US.mp	4.3.0.0	C	Base Operating System MP Messages - U.S. English
bos.msg.en_US.net.tcp.client	4.3.3.0	C	TCP/IP Messages - U.S. English
bos.msg.en_US.rte	4.3.3.0	C	Base Operating System Runtime Msgs - U.S. English
bos.msg.en_US.txt.tfs	4.3.1.0	C	Text Formatting Services Messages - U.S. English
bos.net.ncs	4.3.3.0	C	Network Computing System 1.5.1
bos.net.nfs.client	4.3.3.1	C	Network File System Client
bos.net.tcp.client	4.3.3.1	C	TCP/IP Client Support
bos.net.tcp.server	4.3.3.1	C	TCP/IP Server
bos.net.tcp.smit	4.3.3.0	C	TCP/IP SMIT Support
bos.rte	4.3.3.0	C	Base Operating System Runtime
bos.rte.Dt	4.3.0.0	C	Desktop Integrator
bos.rte.ILS	4.3.3.0	C	International Language Support
bos.rte.SRC	4.3.3.0	C	System Resource Controller
bos.rte.X11	4.3.0.0	C	AIXwindows Device Support
bos.rte.aio	4.3.3.1	C	Asynchronous I/O Extension
bos.rte.archive	4.3.3.0	C	Archive Commands
bos.rte.bind_cmds	4.3.3.0	C	Binder and Loader Commands
bos.rte.boot	4.3.3.0	C	Boot Commands
bos.rte.bosinst	4.3.3.0	C	Base OS Install Commands
bos.rte.commands	4.3.3.0	C	Commands
bos.rte.compare	4.3.3.0	C	File Compare Commands
bos.rte.console	4.3.3.0	C	Console
bos.rte.control	4.3.3.1	C	System Control Commands
bos.rte.cron	4.3.3.0	C	Batch Operations
bos.rte.date	4.3.3.0	C	Date Control Commands
bos.rte.devices	4.3.3.0	C	Base Device Drivers
bos.rte.devices_msg	4.3.3.0	C	Device Driver Messages
bos.rte.diag	4.3.3.0	C	Diagnostics
bos.rte.edit	4.3.3.0	C	Editors
bos.rte.filesystem	4.3.3.0	C	Filesystem Administration
bos.rte.iconv	4.3.3.0	C	Language Converters
bos.rte.ifor_ls	4.3.3.0	C	iFOR/LS Libraries
bos.rte.im	4.3.3.0	C	Input Methods
bos.rte.install	4.3.3.1	C	LPP Install Commands
bos.rte.jfscomp	4.3.1.0	C	JFS Compression
bos.rte.libc	4.3.3.1	C	libc Library
bos.rte.libcfg	4.3.3.0	C	libcfg Library
bos.rte.libcur	4.3.3.0	C	libcurses Library
bos.rte.libdbm	4.3.3.0	C	libdbm Library
bos.rte.libnetsvc	4.3.0.0	C	Network Services Libraries
bos.rte.libpthread	4.3.3.1	C	pthread Library
bos.rte.libqb	4.3.3.0	C	libqb Library

bos.rte.libs	4.3.3.0	C	libs Library
bos.rte.loc	4.3.3.0	C	Base Locale Support
bos.rte.lvm	4.3.3.1	C	Logical Volume Manager
bos.rte.man	4.3.3.1	C	Man Commands
bos.rte.methods	4.3.3.0	C	Device Config Methods
bos.rte.misc_cmds	4.3.3.0	C	Miscellaneous Commands
bos.rte.net	4.3.3.0	C	Network
bos.rte.odm	4.3.3.0	C	Object Data Manager
bos.rte.printers	4.3.3.0	C	Front End Printer Support
bos.rte.security	4.3.3.1	C	Base Security Function
bos.rte.serv_aid	4.3.3.0	C	Error Log Service Aids
bos.rte.shell	4.3.3.1	C	Shells (bsh, ksh, csh)
bos.rte.streams	4.3.3.0	C	Streams Libraries
bos.rte.tty	4.3.3.1	C	Base TTY Support and Commands
bos.sysmgmt.loginlic	4.3.3.0	C	License Management
bos.sysmgmt.nim.client	4.3.3.1	C	Network Install Manager - Client Tools
bos.sysmgmt.serv_aid	4.3.3.1	C	Software Error Logging and Dump Service Aids
bos.sysmgmt.smit	4.3.3.1	C	System Management Interface Tool (SMIT)
bos.sysmgmt.sysbr	4.3.3.1	C	System Backup and BOS Install Utilities
bos.sysmgmt.trace	4.3.3.1	C	Software Trace Service Aids
bos.terminfo.com.data	4.3.0.0	C	Common Terminal Definitions
bos.terminfo.dec.data	4.3.0.0	C	Digital Equipment Corp. Terminal Definitions
bos.terminfo.ibm.data	4.3.3.0	C	IBM Terminal Definitions
bos.terminfo.pc.data	4.3.2.0	C	Personal Computer Terminal Definitions
bos.terminfo.rte	4.3.3.0	C	Run-time Environment for AIX Terminals
bos.txt.spell	4.3.3.0	C	Writer's Tools Commands
bos.txt.spell.data	4.3.0.0	C	Writer's Tools Data
bos.txt.tfs	4.3.3.0	C	Text Formatting Services Commands
bos.txt.tfs.data	4.3.2.0	C	Text Formatting Services Data
bos.up	4.3.3.1	C	Base Operating System Uniprocessor Runtime
devices.base.diag	4.3.3.0	C	Base System Diagnostics
devices.base.rte	4.3.3.0	C	RISC System 6000 Base Device Software
devices.chrp.base.diag	4.3.3.1	C	RISC CHRP Base System Device Diagnostics
devices.chrp.base.rte	4.3.3.1	C	RISC PC Base System Device Software (CHRP)
devices.chrp.pci.rte	4.3.3.0	C	PCI Bus Software (CHRP)
devices.common.IBM.ARTIC.diag	4.3.3.0	C	Common ARTIC Diagnostics

devices.common.IBM.async.diag	4.3.3.0	C	Common Serial Adapter Diagnostics
devices.common.IBM.disk.rte	4.3.3.0	C	Common IBM Disk Software
devices.common.IBM.ethernet.rte	4.3.3.0	C	Common Ethernet Software
devices.common.IBM.fda.diag	4.3.3.0	C	Common Diskette Adapter and Device Diagnostics
devices.common.IBM.fda.rte	4.3.3.0	C	Common Diskette Device Software
devices.common.IBM.ktm_std.diag	4.3.0.0	C	Common Keyboard, Mouse, and Tablet Device Diagnostics
devices.common.IBM.ktm_std.rte	4.3.3.0	C	Common Keyboard, Tablet, and Mouse Software
devices.common.IBM.modemcfg.data	4.3.1.0	C	Sample Service Processor Modem Configuration Files
devices.common.IBM.ppa.diag	4.3.3.1	C	Common Parallel Printer Adapter Diagnostics
devices.common.IBM.ppa.rte	4.3.3.0	C	Common Parallel Printer Adapter Software
devices.common.IBM.scsi.rte	4.3.3.0	C	Common SCSI I/O Controller Software
devices.common.IBM.tokenring.rte	4.3.3.0	C	Common Token Ring Software
devices.common.base.diag	4.3.3.0	C	Common Base System Diagnostics
devices.common.rspcbase.rte	4.3.3.0	C	RISC PC Common Base System Device Software
devices.graphics.com	4.3.3.0	C	Graphics Adapter Common Software
devices.graphics.voo	4.3.0.0	C	Graphics Adapter VOO and Stereo Software
devices.mca.8d77.diag	4.3.3.0	C	8-bit SCSI I/O Controller Diagnostics
devices.mca.8d77.rte	4.3.3.0	C	8-bit SCSI I/O Controller Software
devices.mca.8d77.unicode	4.3.0.0	C	8-bit SCSI I/O Controller Microcode
devices.mca.8ee4.X11	4.3.3.0	C	AIXwindows Color Graphics Display Adapter Software

devices.mca.8ee4.diag	4.3.3.0	C	Color Graphics Display Adapter Diagnostics
devices.mca.8ee4.rte	4.3.3.0	C	Color Graphics Display Adapter Software
devices.mca.8ef5.diag	4.3.3.0	C	Ethernet High-Performance LAN Adapter (8ef5) Diagnostics
devices.mca.8ef5.rte	4.3.3.0	C	Ethernet High-Performance LAN Adapter (8ef5) Software
devices.mca.8efc.com	4.3.3.0	C	Common 16-bit SCSI I/O Controller Software
devices.mca.8efc.diag	4.3.3.0	C	16-bit SCSI I/O Controller Diagnostics
devices.mca.8efc.rte	4.3.3.0	C	16-bit SCSI I/O Controller Software
devices.mca.8f70.diag	4.3.3.0	C	Portmaster Adapter/A Diagnostics
devices.mca.8f95.diag	4.3.3.0	C	Ethernet High-Performance LAN Adapter (8f95) Diagnostics
devices.mca.8f95.rte	4.3.3.0	C	Ethernet High-Performance LAN Adapter (8f95) Software
devices.mca.8f9a.X11	4.3.3.0	C	AIXwindows GXT150M Graphics Adapter Software
devices.mca.8f9a.diag	4.3.3.0	C	GXT150M Graphics Adapter Diagnostics
devices.mca.8f9a.rte	4.3.3.0	C	GXT150M Graphics Adapter Software
devices.mca.8f9a.unicode	4.3.0.0	C	GXT150M Graphics Adapter Microcode
devices.mca.8fa2.diag	4.3.3.0	C	Token Ring High-Performance Adapter (8fa2) Diagnostics
devices.mca.8fa2.rte	4.3.3.0	C	Token Ring High-Performance Adapter (8fa2) Software
devices.mca.8fc8.diag	4.3.3.0	C	Token Ring High-Performance Adapter (8fc8) Diagnostics
devices.mca.8fc8.rte	4.3.3.0	C	Token Ring High-Performance Adapter (8fc8) Software
devices.mca.8fc8.unicode	4.3.0.0	C	Token Ring High-Performance Adapter (8fc8) Microcode
devices.mca.dee6.rte	4.3.0.0	C	Standard I/O (dee6) Adapter Software
devices.mca.df5f.com	4.3.3.0	C	Standard I/O Adapter Common Software
devices.mca.df5f.rte	4.3.0.0	C	Standard I/O (df5f) Adapter Software
devices.mca.edd0.com	4.3.3.0	C	Common Async Adapter Support
devices.mca.fff0.diag	4.3.0.0	C	X.25 CoProcessor/2 or Multiport/2 Adapter Diagnostics
devices.mca.fff0.rte	4.3.3.0	C	X.25 CoProcessor/2 or Multiport/2 Adapter Software

devices.msg.en_US.base.com	4.3.3.0	C	Base System Device Software Msgs - U.S. English
devices.msg.en_US.diag.rte	4.3.3.0	C	Device Diagnostics Messages - U.S. English
devices.msg.en_US.rspc.base.com	4.3.2.0	C	RISC PC Software Messages - U.S. English
devices.msg.en_US.sys.mca.rte	4.3.3.0	C	Micro Channel Bus Software Messages - U.S. English
devices.rs6ksmp.base.rte	4.3.3.0	C	Multiprocessor Base System Device Software
devices.rspc.base.diag	4.3.3.0	C	RISC PC Base System Device Diagnostics
devices.rspc.base.rte	4.3.3.0	C	RISC PC Base System Device Software
devices.scsi.disk.diag.com	4.3.3.0	C	Common Disk Diagnostic Service Aid
devices.scsi.disk.diag.rte	4.3.3.0	C	SCSI CD_ROM, Disk Device Diagnostics
devices.scsi.disk.rspc	4.3.3.0	C	RISC PC SCSI CD-ROM, Disk, Read/Write Optical Software
devices.scsi.disk.rte	4.3.3.0	C	SCSI CD-ROM, Disk, Read/Write Optical Device Software
devices.scsi.tape.diag	4.3.3.0	C	SCSI Tape Device Diagnostics
devices.scsi.tape.rspc	4.3.3.0	C	RISC PC SCSI Tape Device Software
devices.scsi.tape.rte	4.3.3.0	C	SCSI Tape Device Software
devices.sio.fda.diag	4.3.2.0	C	Diskette Adapter and Device Diagnostics
devices.sio.fda.rte	4.3.3.0	C	Diskette Adapter Software
devices.sio.ktma.diag	4.3.3.0	C	Keyboard Tablet & Mouse Device and Adapter Diagnostics
devices.sio.ktma.rte	4.3.3.0	C	Keyboard Tablet & Mouse Device and Adapter Software
devices.sio.ppa.diag	4.3.1.0	C	Parallel Printer Adapter Diagnostics
devices.sio.ppa.rte	4.3.3.0	C	Parallel Printer Adapter Software
devices.sio.sa.diag	4.3.0.0	C	Built-in Serial Adapter Diagnostics
devices.sio.sa.rte	4.3.2.0	C	Built-in Serial Adapter Software
devices.sys.mca.rte	4.3.3.0	C	Micro Channel Bus Software
devices.sys.pci.rte	4.3.3.0	C	PCI Bus Software
devices.sys.slc.diag	4.3.3.0	C	Serial Optical Link Diagnostics
devices.sys.slc.rte	4.3.3.0	C	Serial Optical Link Software

devices.tty.rte	4.3.3.0	C	TTY Device Driver Support Software
ifor_ls.base.cli	4.3.3.0	C	License Use Management Runtime Code
ifor_ls.client.base	4.3.3.0	C	License Use Management Client Runtime
ifor_ls.client.gui	4.3.3.0	C	License Use Management Client GUI
ifor_ls.msg.en_US.base.cli	4.3.3.0	C	LUM Runtime Code Messages - U.S. English
perfagent.tools	2.2.33.1	C	Local Performance Analysis & Control Commands
perl.rte	5.5.3.0	C	Perl Version 5 Runtime Environment
printers.msg.en_US.rte	4.3.3.0	C	Printer Backend Messages - U.S. English
printers.rte	4.3.3.0	C	Printer Backend
xlC.aix43.rte	4.0.2.1	C	C Set ++ Runtime for AIX 4.3
xlC.cpp	4.3.0.1	C	C for AIX Preprocessor
xlC.msg.en_US.cpp	4.3.0.1	C	C for AIX Preprocessor Messages en_US
xlC.msg.en_US.rte	4.0.2.0	C	C Set ++ Runtime Messages--U.S. English
xlC.rte	4.0.2.0	C	C Set ++ Runtime

Customizations: The /(root) filesystem has been increased to 8MB.

The /var filesystem should be increased to 50MB.

Default number of licensed users was set to >64

Default maximum number of processes allowed per user was set to 256

Restrictions/Considerations: You should clean out /tmp after the image is installed, so there is maximum working space.

Note: AIX X-Windows has been removed (to reduce the image size) from the spimg in this release.

After you have installed your nodes, you should increase the dump space on each node to at least 32 MB. This is the minimum dump space required for the minimal image pre-installed on each SP node and supplied in the "spimg" installp image. If you are using a larger image, more dump space may be required. You may cause the dump space on a node to be increased during installation by specifying the extendlv command in the script.cust script. If script.cust is run multiple times (i.e. customization of nodes) then all statements will also be run multiple times. Refer to the sample script.cust in /usr/lpp/ssp/samples.

List of Program Materials

The Program Material consists of the following materials.

- Basic machine readable material - CD ROM.

External Label ID	Feature Number	Distribution Medium
Para Sys Supt Pgm	5803	CD ROM - 2 volumes
SP AIX Min Image	5803	
SP Resource Center	5802	CD ROM
Cumulative service for PSSP	5803	8-mm tape cartridge

Note: The specify codes for the translated languages are as follows: English - 2924, Japanese - 2962, Korean - 2986, and Traditional Chinese - 2987.

- Documentation

Title	Order Number
IBM RS/6000 SP: Planning, Volume 2, Control Workstation and Software Environment	GA22-7281
IBM Parallel System Support Programs for AIX: Administration Guide	SA22-7348
IBM Parallel System Support Programs for AIX: Installation and Migration Guide	GA22-7347
IBM Parallel System Support Programs for AIX: Diagnosis Guide	GA22-7350
IBM Parallel System Support Programs for AIX: Messages Reference	GA22-7352
IBM Parallel System Support Programs for AIX: Command and Technical Reference	SA22-7351
RS/6000 Cluster Technology: Event Management Programming Guide and Reference	SA22-7354
RS/6000 Cluster Technology: Group Services Programming Guide and Reference	SA22-7355
IBM Parallel System Support Programs for AIX: Managing Shared Disks:	SA22-7349
IBM Parallel System Support Programs for AIX: Performance Monitoring Guide and Reference	SA22-7353

