

# AIX Workload Partitions (WPARs) & IBM PowerVM Workload Partitions Manager for AIX



# Agenda

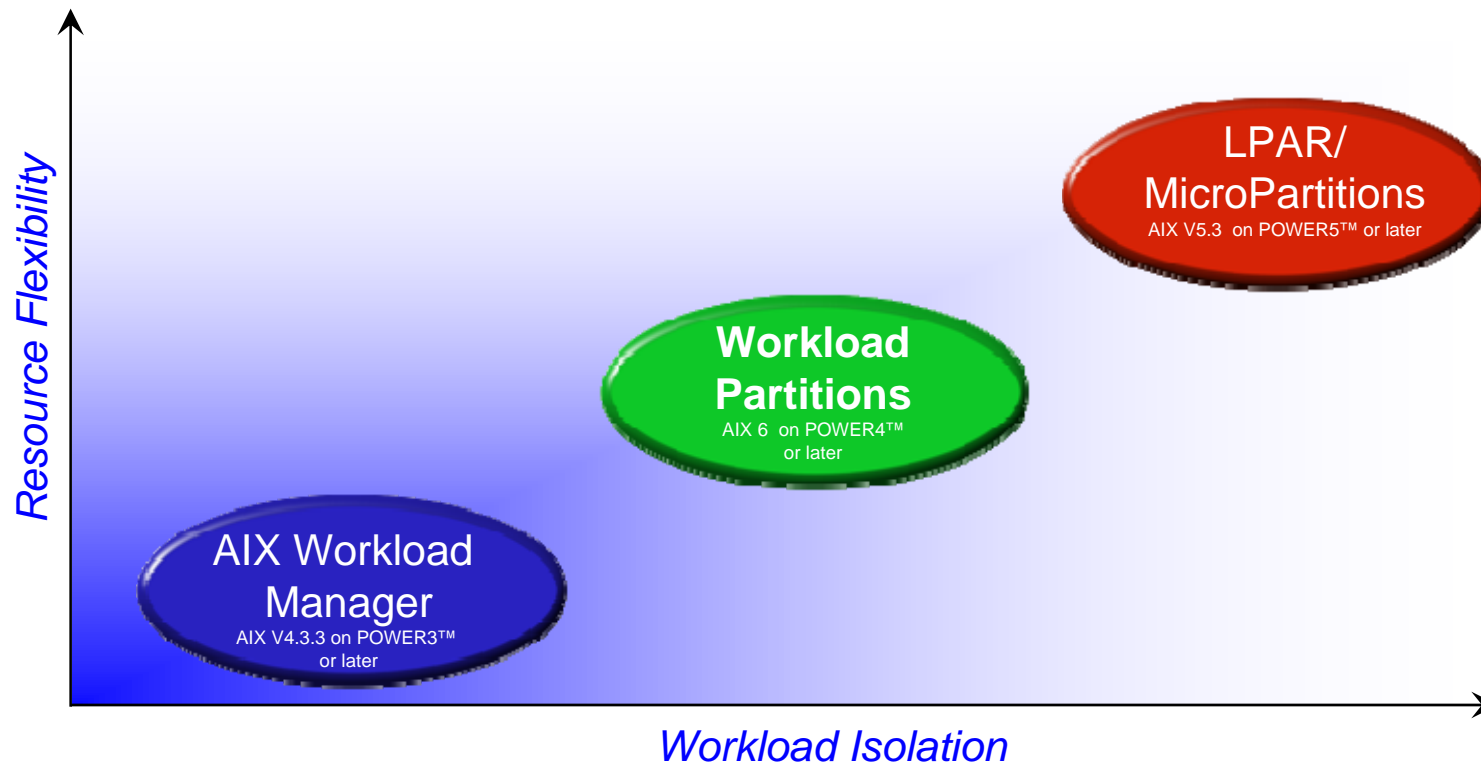
- AIX Workload Partitions (WPARs)
- Functional Enhancements for WPARs
- LPARs v/s WPARs – Comparison
- AIX 5.2 Workload Partitions for AIX 7
- IBM PowerVM Workload Partitions Manager for AIX

# Agenda

- **AIX Workload Partitions (WPARs)**
- Functional Enhancements for WPARs
- LPARs v/s WPARs – Comparison
- AIX 5.2 Workload Partitions for AIX 7
- IBM PowerVM Workload Partitions Manager for AIX

# IBM Power Systems Virtualization Continuum

## AIX Workload Partitions complement Logical Partitions

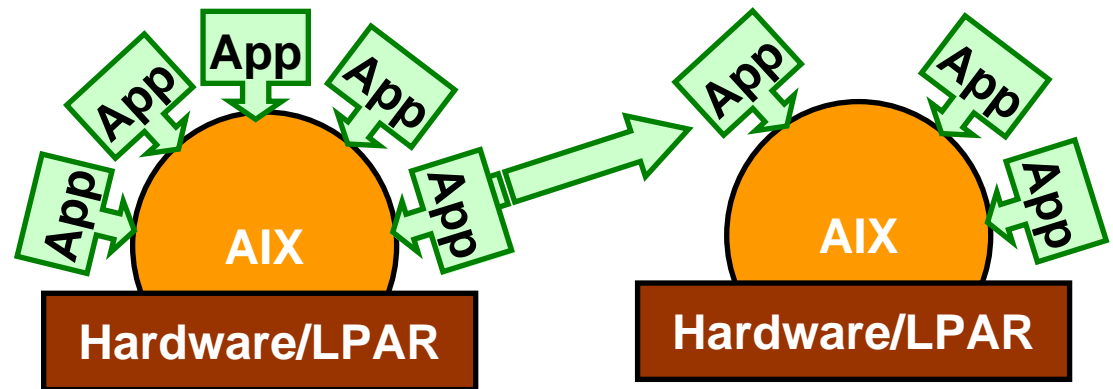
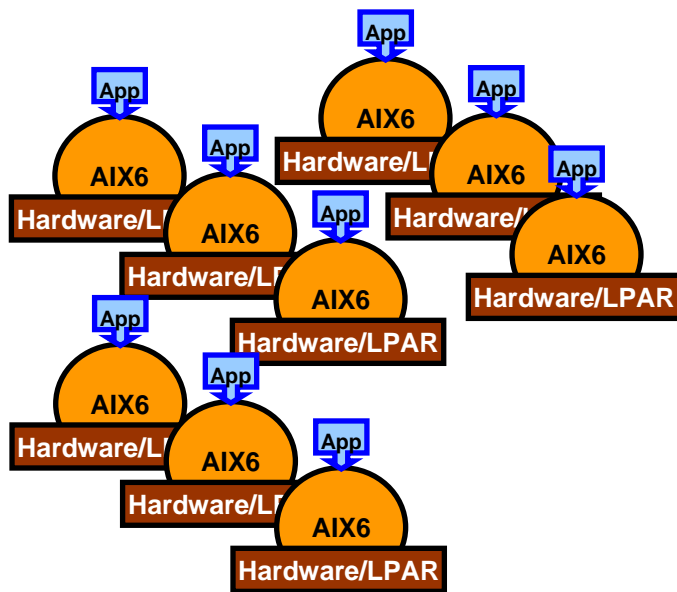


# Workload Partitions (WPARs) Concept

Consolidation of isolated workloads within a single AIX instance

Pre-requisite: AIX 6 or higher

App = WPAR

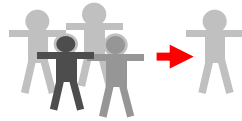


WPAR Manager → Live Application Mobility:

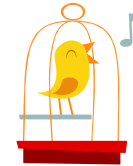
- Move WPARs between AIX instances without restarting the applications

# Reasons for Workload Partitions (WPAR)

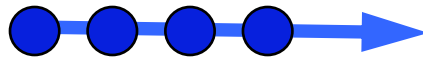
1) Reduced AIX System Administration



2) Application Encapsulation, monitoring and control



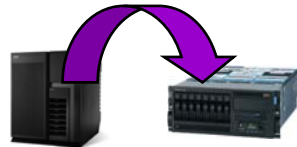
3) Rapid environment creation of a new application



4) Separate Admin / Security at WPAR level



5) Live Application Mobility  
Can be automated, policy-based



6) Reduced memory use  
Minimum WPAR ~ 64MB

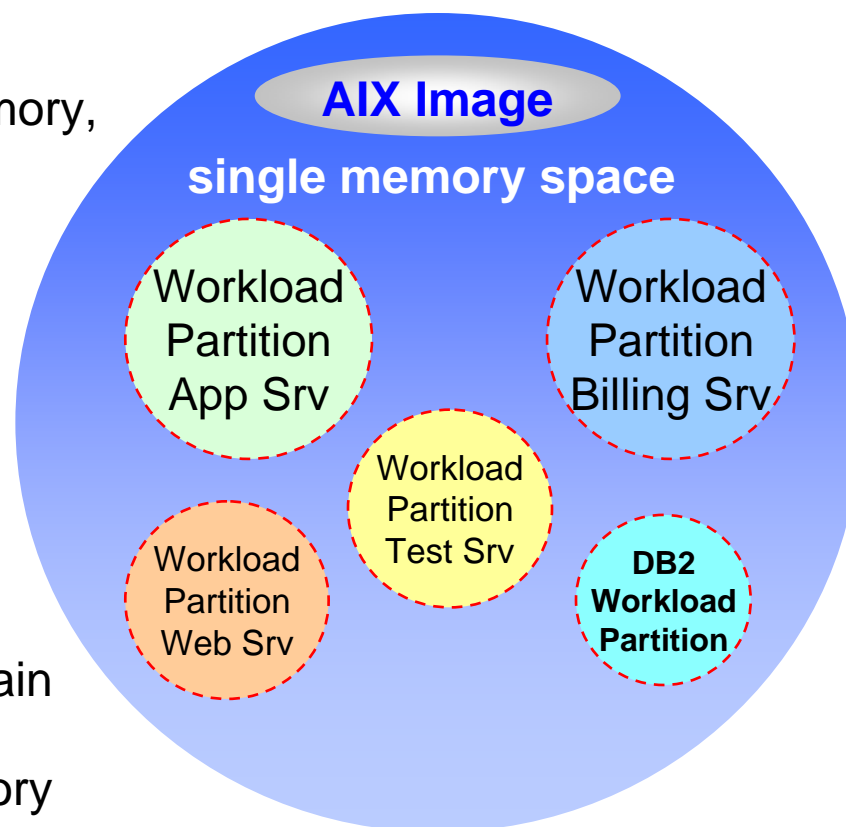


# AIX Workload Partitions – in a Nutshell

- WPARs are part of AIX 6 / AIX 7
- Single Global AIX kernel shares CPU, Memory, I/O between WPARs
- Two types of WPARs
  - System, Application

## For each Workload Partition (WPAR)

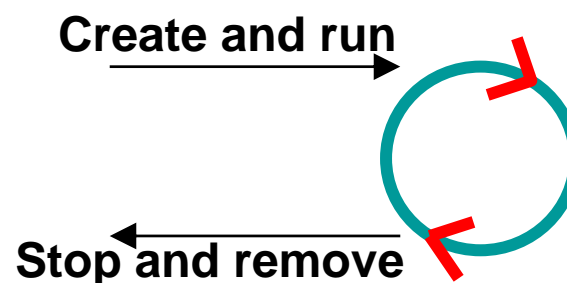
- Independent Start / Stop
- Own network address (aliased)
- Separate Administrative and Security domain
  - users, processes, IPC, cron, inetd, syslog
- Obtains regulated share of CPU and memory
- Isolated file systems: /, /home, /var, /tmp
- Optional private /usr and /opt file systems
- Shared system resources
  - Processor, Memory, I/O Devices, OS



# Application Workload Partitions

*Application Workload Partitions provide lightweight isolation*

- Isolate an individual application
- Light-weight, one process
  - can start further processes
- Created & started in seconds
- Starts when application starts
- Automatically removed
  - when application stops
- Shares global file system
- Good for HPC
  - Long running applications

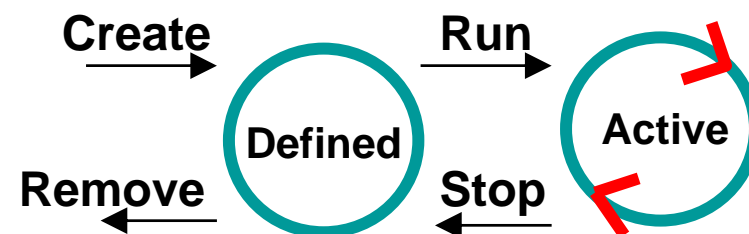




# System Workload Partitions

*System Workload Partitions are easy to setup and manage*

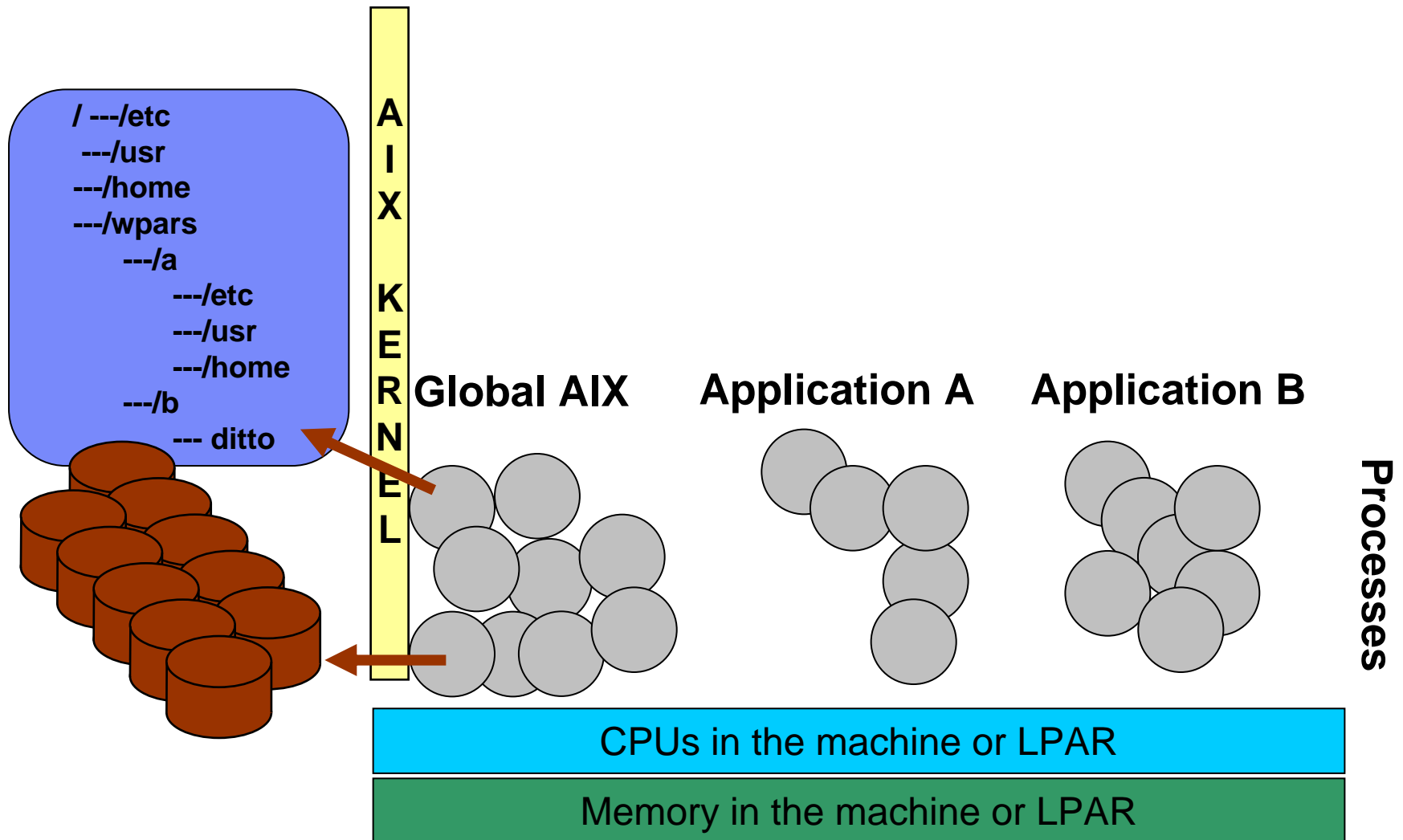
- Complete virtualized OS environment
  - Runs multiple services and applications
- Needs to be created - owns its file systems
- Removed only when requested
- Like another AIX system
  - Own root user, users, and groups
  - Can be stopped and restarted
  - Own system services like inetd, cron, syslog
- Does not share writable file systems with other WPARs or the global system.
- Integrated with RBAC – granular security
- Good for most purposes



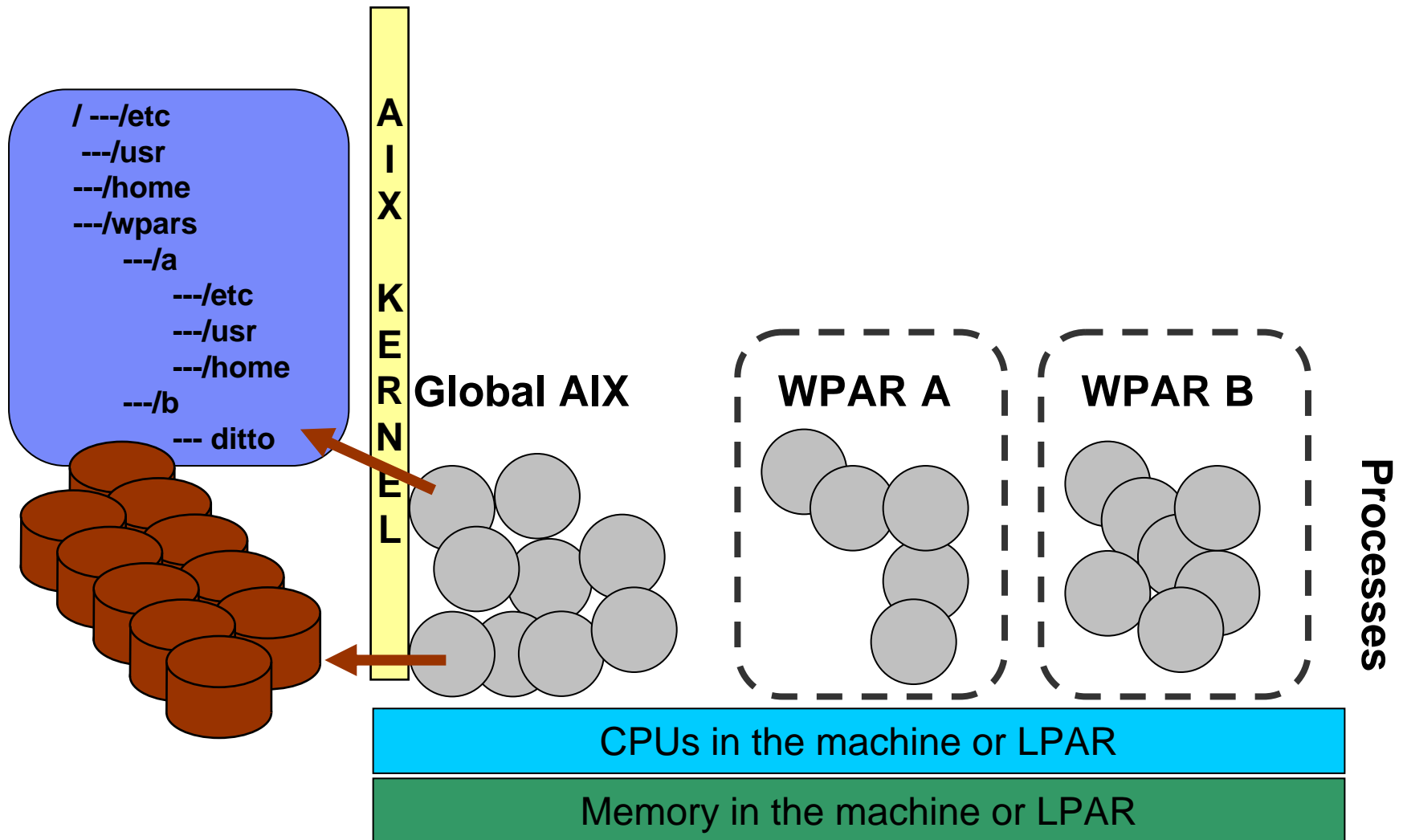
# Workload Partitions Isolation

- Process environment
  - Processes can only see and signal other processes within a WPAR
  - Processes can only construct IPC mechanisms within a WPAR
    - Pipes, shared memory, semaphores & message queues
- File system space
  - Non-read-only filesystems are created & WPAR processes are **chrooted** to these
  - Processes within a WPAR see files only in these filesystem
  - Typically contains a unique copy of /, /home, /var, /tmp
  - Default read-only /usr, /opt from Global AIX
- Network environment
  - WPAR has separate IP address, hostname, and hostids
  - To others the WPAR looks like a stand alone system
  - For applications within a WPAR it appears to be a stand-alone system
  - Users may login to the System WPAR using telnet, ssh, rlogin, etc.

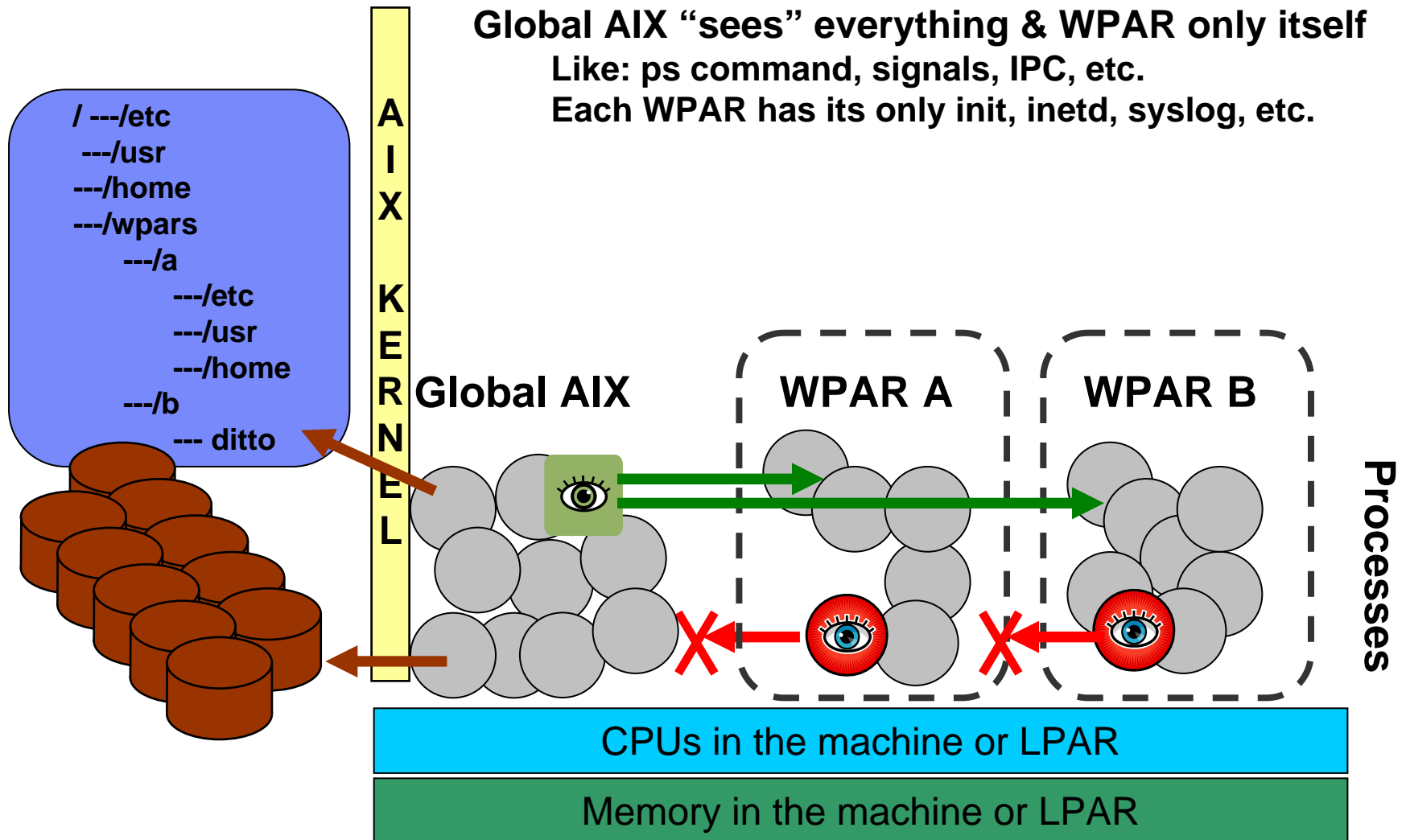
# AIX running Multiple Applications



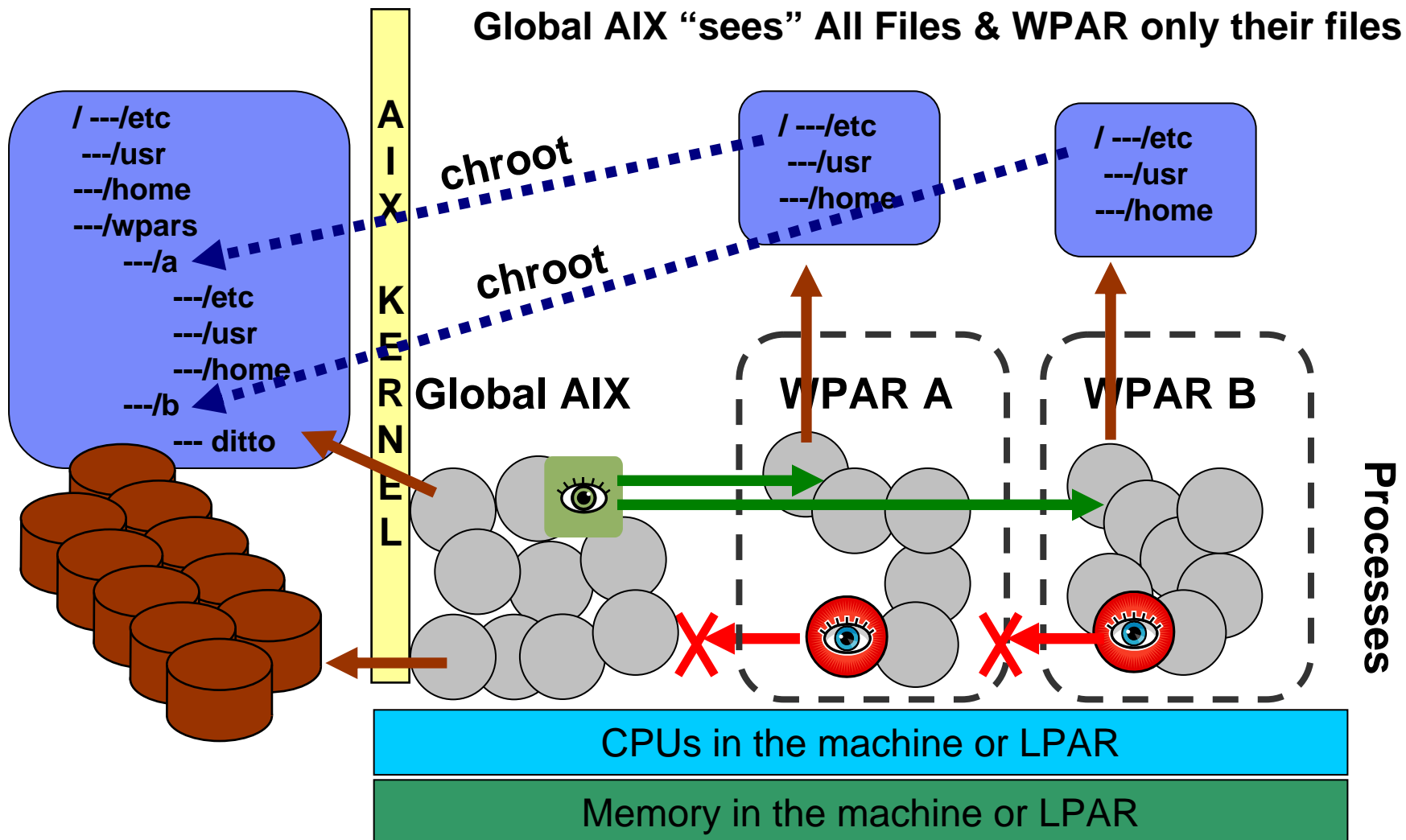
# Global AIX & WPARs



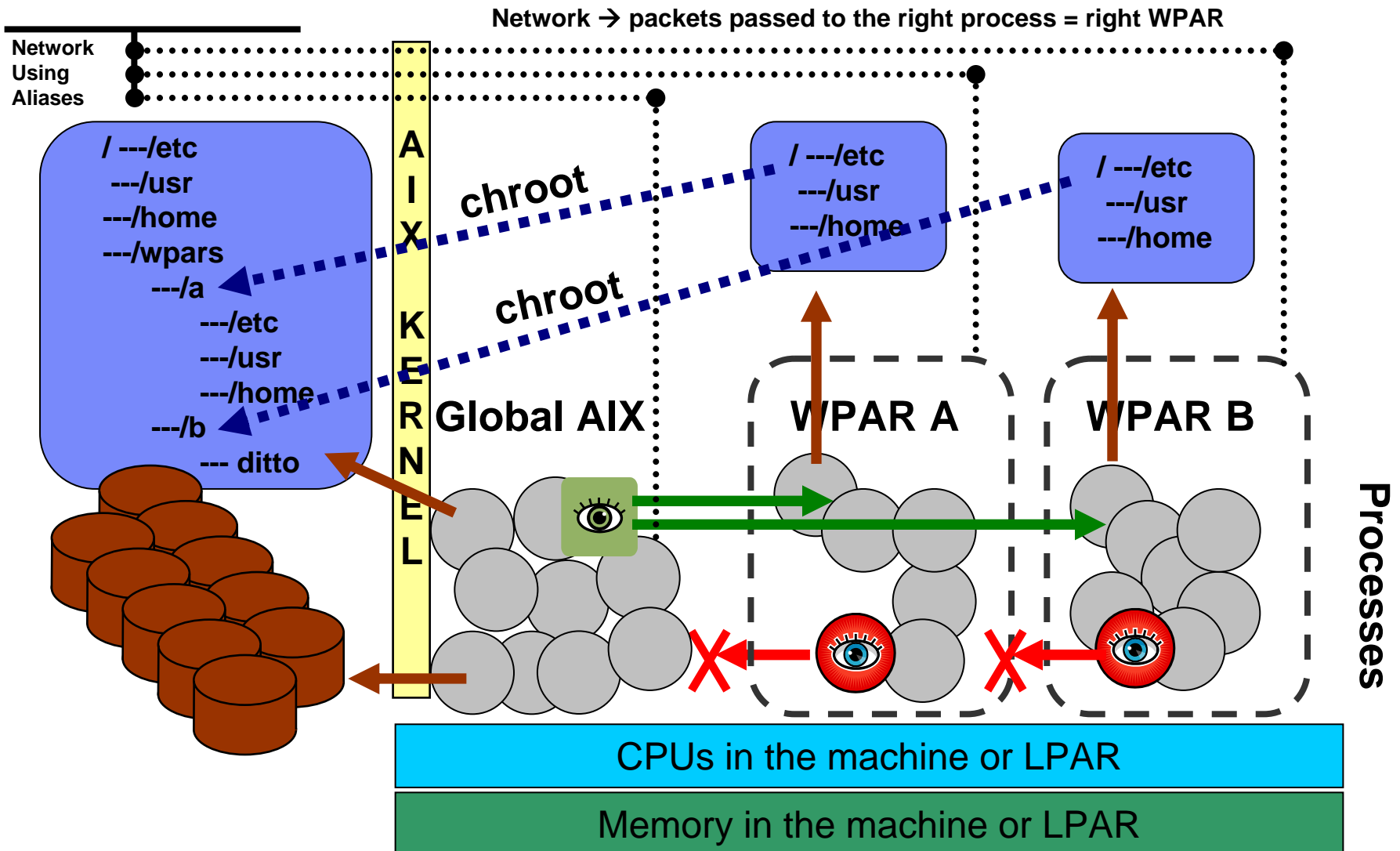
# Global AIX & WPARs Isolation of Processes



# Global AIX & WPAR Isolation of Filesystems



# Global AIX & WPAR Networking



# Workload Partitions Environment

- Security
  - WPAR root is less privileged than Global root
  - Configurable privilege profile applied to WPAR
  - Included as part of AIX Common Criteria certifications
- System services
  - Mail, NFS client, inetd, syslog, cron, ... executed independently
- Resource Controls
  - Memory, CPU and other resources allocated to each WPAR can be set
- WPAR Servicability
  - Error Logging, Trace, Auditing, Accounting from within a WPAR
  - WPAR aware statistics and performance tools



# Resource Control

- GUI → WPAR Manager → Edit WPAR
- Command-Line Interface (CLI)

chwparr -R

active=yes

shares\_CPU=n

shares\_memory=n

totalProcesses=n

rset=rset

active=no

CPU=min%-soft%,hard%

memory=min%-soft%,hard%

totalThreads=n

procVirtMem=n[M|G|T]

Examples:

- Switch control on (default)
- 200 CPU shares
- Set min, softmax, hardmax
- Use only CPU four (rset)

**chwparr -R active=yes wp04**

**chwparr -R shares\_CPU=200 wp04**

**chwparr -R CPU=10-50,75 wp04**

**chwparr -R rset=sys/cpu.00004 wp04**

- Removing resource control

→ use -K option:

chwparr -K -R rset wp04 or chwparr -K -R shares\_CPU wp04

Then flip "Resource Control" off and back to "Activate" (-R active=no/yes)

## IBM Products Supporting Shared System WPARs

- Subset of IBM Products that support shared system WPARs
  - DB2 Enterprise Server Edition – 9.7
  - Lotus Domino – 8.5.1, 8.5.2
  - Tivoli Directory Server – 6.1, 6.2
  - IBM License Metric Tool – 7.2, 7.2.1
  - WebSphere Application Server Community Edition – 2.1
  - WebSphere MQ – 6.0.2, 7.0, 7.0.1

**Note:** This is not an exhaustive list. Since there are multiple types of shared system WPAR configurations, please consult individual product documentation to understand the details and any limitations of their shared system WPAR support.

## IBM Products Supporting Detached System WPARs

- Subset of IBM Products that support detached system WPARs
  - DB2 Enterprise Server Edition – 9.1, 9.5, 9.7
  - Lotus Domino – 8.5.1, 8.5.2
  - Tivoli Directory Server – 6.1, 6.2
  - Tivoli Access Manager for e-Business – 6.1, 6.1.1
  - Tivoli Composite Application Manager for WebSphere - 6.1
  - IBM License Metric Tool – 7.2, 7.2.1
  - WebSphere Application Server Community Edition – 2.1
  - WebSphere Application Server – 6.1, 7.0
  - WebSphere MQ – 6.0.2, 7.0, 7.0.1
  - WebSphere Enterprise Service Bus – 7.0
  - WebSphere Portal Server – 6.1.5, 7.0
  - WebSphere Process Server – 7.0
  - IBM SDK for Java – 5.0 SR8+ 6.01+
  - WebSphere eXtreme Scale - 7.1

## IBM Virtualization Capacity License Counting Rules

- To be eligible for Virtualization Capacity (Sub-Capacity) licensing, Customers must agree to the terms of the International Passport Advantage Agreement (IPAA) Attachment for Sub-capacity Licensing Terms
  - <http://www.ibm.com/software/lotus/passportadvantage/subcapacityattachments.html>
  - <http://www.ibm.com/software/lotus/passportadvantage/subcaplicensing.html>
  
- IBM AIX System Workload Partitions
  - [ftp://ftp.software.ibm.com/software/passportadvantage/SubCapacity/Scenarios\\_Power\\_Systems\\_AIX\\_System\\_WPARs.pdf](ftp://ftp.software.ibm.com/software/passportadvantage/SubCapacity/Scenarios_Power_Systems_AIX_System_WPARs.pdf)
  
- IBM AIX Application Workload Partitions
  - not supported

## DB2 in WPARs

- DB2 installed inside Detached (non-shared) System WPARs
- DB2 9.7 installed in global AIX under /usr or /opt filesystems
  - DB2 binaries shared with Shared System WPARs
  - DB2 instances and DAS created in Shared System WPARs
  - Each System WPAR manages own DB2 instances and DAS related to the DB2 copy
  - DB2 instances and DAS created in a WPAR not visible from other WPARs or global

# WebSphere in WPARs

- WebSphere Application Server Version 6.1 or 7.0
  - Detached (non-shared) System WPARs
- WebSphere Application Server Version 6.0 (or older)
  - not supported
- Related WebSphere Technotes:
  - [Guidelines for using IBM WebSphere Application Server with an IBM AIX application WPAR](#)
  - [An insufficient free disk space error might occur when installing WebSphere Application Server](#)
  - [Guidelines for installing WebSphere Application Server into an AIX System WPAR from the global environment](#)
  - [Guidelines for installing WebSphere Application Server V7.0 into an AIX System WPAR from within the WPAR](#)
  - [Guidelines for installing WebSphere Application Server into an AIX System WPAR from within the WPAR](#)
  - [Installing WebSphere MQ in AIX Workload Partitions](#)
  - [Installing WebSphere Portal on an AIX Workload Partition \(WPAR\)](#)

## Oracle in WPARs

- **Only AIX 6.1 System WPARs supported**
  - Oracle DB 10gR2 (10.2.0.4 or higher)
  - Oracle DB 11gR2 (11.2.0.2)
- Installation requires APAR # IZ52319 & IZ54871
- Single Instance Mode
- Oracle's ASM (Automatic Storage Management)
  - not supported
- Live Application Mobility (LAM)
  - not supported
- Related My Oracle Support website documents:
  - IBM AIX Workload Partition (WPAR) Installation Doc [ID 889220.1]
  - SUPPORT FOR ORACLE DATABASE ON WPARS UNDER AIX 6.1 [ID 753601.1]

# SAP in WPARs

## ■ SAP supports WPARs for production systems

- Applications based on SAP NetWeaver Application Server for ABAP and JAVA
  - AIX 6.1 or higher
- SAP NetWeaver Master Data Management (MDM)
  - currently not supported
- System WPARs only (Shared or Detached)
  - Pre-install preparation steps required for Shared System WPARs
- Live Application Mobility (LAM)
  - currently not supported
- Versioned WPARs (AIX 5.2 WPARs)
  - currently not supported
- No resource control
- Dedicated or Shared Processor Pool LPAR



# SAP Notes

- Related SAP Notes

Number	Short Description
1105456	SAP Installations in AIX WPARs
1492000	General Support Statement for Virtual Environments
1087498	Support for AIX 6.1
1137862	Using SAP systems with AIX 6.1
1380038	Installing Oracle on WPAR shared system on IBM AIX 6.1
1458918	Support for AIX 7.1
710975	FAQ: which saposcol should be used on AIX
1515356	saposcol on AIX: High cpu usage by saposcol in WPARs
1278153	Startup of Instance failed on AIX 6.1 TL1 SP2 in a WPAR
1243397	5.) corrections new operating system monitor
1142243	MaxDB release for virtual systems
720261	System requirement AIX - liveCache/MaxDB 7.4 to 7.8

# Workload Partitions (WPARs) Product Offerings

- Base WPAR comes with AIX 6 / AIX 7
  - Basic WPAR functions
  - AIX command line / SMIT access only
  - No Live Application Mobility
  
- AIX 5.2 WPAR for AIX 7 (Versioned WPAR)
  - FC 5765-H38
  - Licensed Program Product (Fee)
  - **POWER7 & AIX 7.1**
  - SWMA includes phone and limited defect support for AIX 5.2
  
- Workload Partitions Manager
  - FC 5765-G83
  - Systems Director Plug-in (60 day trial)
  - Enablement for **Live Application Mobility**
  - Manual or Automated (Policy-based) Application Mobility
  - Cross System Management for WPARs
  - Licensed Program Product
    - also available as part of AIX EE



The screenshot displays the 'IBM PowerVM Workload Partitions Manager for AIX' web interface. At the top, it says 'Version Setup advisor'. Below that, it states 'Create, manage and relocate workload partitions (WPARs). Discover systems capable of supporting WPARs.'

The main section is 'Workload Partitions Resource Status', which shows '6 Workload partitions and their problem severity'. A green circle represents the status of the WPARs. A legend indicates:
 

- 0 WPARs with Critical status (red X)
- 0 WPARs with Warning status (yellow triangle)
- 0 WPARs with Information status (blue 'i')
- 6 WPARs with OK status (green square)

There are two sidebars: 'Common views' with links like 'View Power Systems summary', 'Health summary', 'View WPAR capable systems', and 'View relocation policies'; and 'Common tasks' with links like 'Create workload partition', 'View workload partitions', 'Relocate workload partition', 'Application configuration', and 'Create relocation domain'.

The 'Manage Resources' section shows '6 Workload partitions (WPARs)', '6 System WPARs', and '0 Application WPARs'.

The 'License Information' section at the bottom states 'IBM PowerVM Workload Partitions Manager for AIX Installed'.

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- [AIX Workload Partitions \(WPARs\)](#)
- **Functional Enhancements for WPARs**
- [LPARs v/s WPARs – Comparision](#)
- [AIX 5.2 Workload Partitions for AIX 7](#)
- [IBM PowerVM Workload Partitions Manager for AIX](#)

## Workload Partitions Enhancements

- Base Support (including mobility) (AIX 6.1 **GA**)
- NFS Support (NFS Client) (AIX 6.1 **TL01**)
- Named Network Interfaces (AIX 6.1 **TL02**)
- Asynchronous mobility (AIX 6.1 **TL02**)
- Network Isolation (AIX 6.1 **TL02**)
  - Optional WPAR-Specific Routing
    - Addresses requirement for firewall/boundary enforcement, even between WPARs on the same node
    - WPAR shares global routes (default)
- NIM Support for WPAR (AIX 6.1 **TL02**)
- IPv6 Support for WPAR (AIX 6.1 **TL02**)

## Workload Partitions Enhancements (contd.)

- WPAR Storage Devices Support (AIX 6.1 **TL03**)
  - Storage devices must be connected via SAN
  - Disk, Tape, and CD-ROM devices supported
  
- Clone WPAR action within WPAR Manager (AIX 6.1 **TL03**)
  - Create another instance of an existing WPAR
  - No need to recreate WPAR and re-install application(s) if another WPAR instance is required
  
- WPAR owned Root Volume Group (AIX 6.1 **TL04**)
  - “rootvg” volume group
  - WPAR owns all the root file systems (/ , /tmp, /var, etc.)
  
- SAN mobility (AIX 6.1 **TL04**)
  
- WPAR Manager as an IBM Systems Director plug-in (AIX 6.1 **TL04**)

## Workload Partitions Enhancements (contd.)

- VxFS Support (AIX 6.1 **TL04**)
  - No VxFS-specific logic
  - Support via namefs mount (any fs that supports POSIX fs semantics)
- WPAR Error Logging Framework (AIX 6.1 **TL05**)
- VIOS vSCSI disks support (AIX 6.1 **TL06**)
- WPAR migration to AIX 7.1 support (AIX 6.1 **TL06**)
- FC Adapter + resources attached under it (**AIX 7.1**)
- Trusted Kernel Extensions support (**AIX 7.1**)
- Versioned WPAR running AIX 5.2 (**AIX 7.1**) \*\*\*

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## WPAR versus LPAR

- Hardware partitions (LPARs, Virtual Systems)
  - Run multiple OS's on a single hardware system
    - i.e. AIX, IBM i, and Linux
  - I/O sharing across OS's (with VIOS)
  - Best resource control, isolation
  - LPAR Mobility – can move a partition to a different hardware system
  
- AIX Workload Partitions (WPARs)
  - Single AIX instance with multiple AIX WPARs
  - Protect applications from interfering with each other (“good enough” isolation)
  - Confines root users to specific resources
  - Easy to setup
  - WPAR/Application Mobility – with WPAR Manager (AIX EE)



## WPAR versus LPAR (contd.)

- Creation
  - Create WPAR in ~5 minutes & LPAR in 10s of minutes
  - Rapid cloning is easy = “disposable images” – create, use, & delete
- Less memory
  - AIX boot memory per LPAR = 512MB but WPAR ~64MB
  - Share application code. WPARs = lower man-power, disk, memory
- Less updates
  - Maintain one Global AIX plus syncwpar command – not dozens of AIX instances
  - Run WPAR buckets: run Global AIX at different AIX levels. WPAR upgrade means move + syncwpar
- Less admin
  - Global AIX admin can access ALL WPARs
  - Global AIX simpler Performance Monitoring than lots of AIX LPARs
  - Backups are easy & small – default WPAR backup ~75MB file

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## AIX 5.2 Limitations

- AIX 5.2 – Limitations
  - Think POWER3, RS64, POWER4
  - No shared CPU or virtual CPU
  - Only dedicated adapters
  - No VIOS support
  - No Simultaneous Multi-Threading
  - No DVD or Virtual Optical
  
- AIX 5.2 – History
  - Oct 2002 – AIX 5.2 released
  - Aug 2004 – AIX 5.3 released for POWER5
  - Mid 2005 – “functionally stabilized”
  - Mid 2007 – Last TL (TL10) released
  - Mid 2008 – Withdrawn from marketing
  - Mid 2009 – End of Support (TL10 SP8)

## AIX 5.2 – History Lesson

- Why still running on 4 to 10 years old systems
  - If it ain't broke, don't fix it
  - AIX upgrade?  
“No way man!!”  
= retest of newer middle-ware and application versions
  
- AIX 5.2 WPARs offers
  - Same AIX, same middle-ware and same applications
  - Lots of hidden bonuses

## POWER7 advantages brought to AIX 5.2

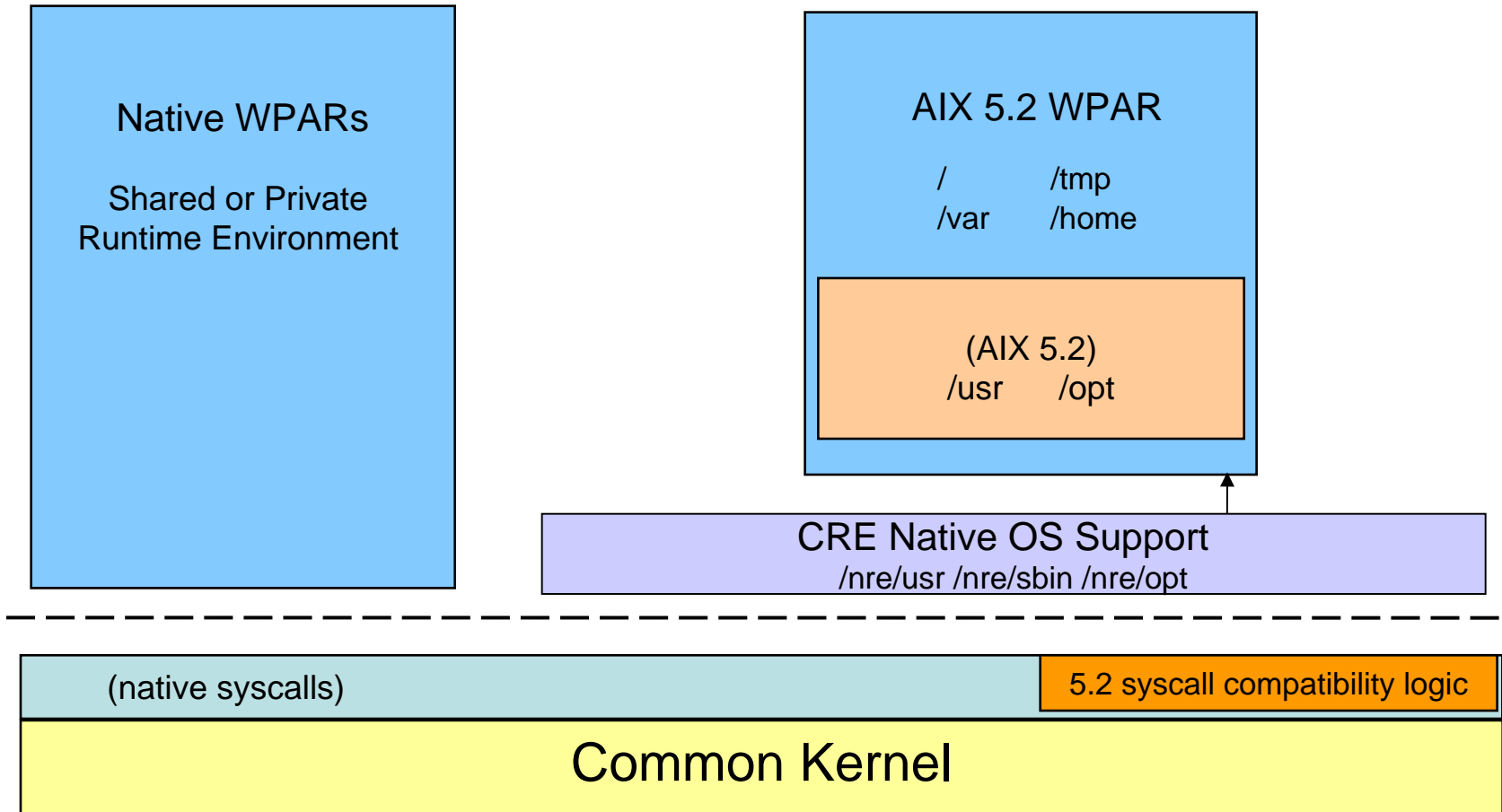
### Remove the older machine

- Reduced electricity & cooling costs
- Free up rack space
- Stop hardware maintenance

### New POWER7 system

- Boost performance with POWER7
  - Or reduce CPU count = reduced software licenses
- Access to AIX7/PowerVM features
  - VIOS → virtual disks + virtual networks + SMT4 + AME + ...
- WPARs only sees file systems
  - SAS/SSD disks, DVD, 10Gb Ethernet, 8Gb Fibre Channel, ...

# AIX 5.2 WPAR Product Info



## AIX 5.2 WPAR Product Info (Continued)

- Versioned WPAR Environment (VWPAR)
  - created by global administrator from mksysb image
  - application stack is not modified – ie. 5.2 libraries used by applications
  - WPARized – modified boot, shutdown, device support, and a few system utilities
- Versioned WPAR Administrative Model
  - same administrative model as Native WPARs. Uses mkwpar, startwpar, ...
  - new (-C) command argument to mkwpar to specify compatibility runtime environment
  - Operating System level internally calculated, stored in WPAR config file, and pushed into kernel
  - additional software (bos.wpars, vwpar.52, wio.common) installed into 5.2 WPAR
- System call compatibility logic (not layer)
  - maps input, output parameters, and return codes according to legacy semantic
  - transparent to applications – wholly contained in the kernel
- Access to Native OS Support
  - code is mounted from native runtime environment
  - Select commands which must be level of NRE replace AIX files inside versioned WPAR
  - Includes configuration methods, ODM, LVM, FS, a few libraries, and performance commands

## Implementation Considerations

- Each VWPART is a separate installation domain
  - Private software inventory with legacy runtime and new filesets
  - Some legacy commands and data files are overlaid with *native* equivalents
  - *Installp* and *emgr* processes in AIX 7.1 will manage these overlaid files, allowing PTFs and interim fixes to be installed without interfering with overlay (overlay set aside during install processing, then restored)
  
- WPAR's administrator performs updates



## Creating AIX 5.2 WPAR is easy

1. Create AIX 5.2 mksysb (AIX 5.2 media is not shipped)
2. Backup other VGs (if any)
3. Copy to Global AIX 7 (or NFS mount)
4. Install Versioned WPAR Program Product (5765-H38) on Global AIX 7 (once)
5. Create AIX 5.2 WPAR  

```
mkwpar -C -B mksysb-file -n wp52
```
6. ... about 13 minutes ...
7. `startwpar wp52`
8. `lswpar -t L` (list all Legacy type wpars)
9. Get your other VGs online and start your application

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## IBM PowerVM Workload Partitions Manager for AIX

- Standalone Licensed Program (V1.2.1) replaced by IBM Systems Director plug-in
  - V2.1.0 - GA October 2009
  - V2.2.1 now available
- IBM Systems Director Plug-in (Fee based)
  - Bundled with AIX Enterprise Edition
- Browser-based interface for easy management of WPARs
- Supports basic WPAR lifecycle operations (create, clone, delete, view/modify properties, start, stop, etc.)
- **Enables Live Application Mobility (WPAR relocation)**

## Steps to Get WPAR Manager Up and Running

- Install or migrate to IBM Systems Director Server 6.2.1
- Install or migrate to WPAR Manager 2.2.1 Plug-in
  - 60-day Evaluation Period activated on first use
- Follow Instructions in Setup Advisor to:
  - Discover WPAR-capable AIX systems
  - Authenticate and get access to AIX managed systems
  - Install WPAR Manager sub agent on managed AIX systems
  - Collect inventory & discover existing WPARs
  - Configure WPAR Manager Settings
  - Start Creating/Managing WPARs
- Request WPAR Manager media to receive permanent key

# WPAR Manager Entry on Director Welcome Page

The screenshot shows the IBM Systems Director interface. On the left is a navigation pane with categories like Automation, Availability, Inventory, Energy, Release Management, Security, System Configuration, System Status and Health, Task Management, and Settings. The main area displays a list of system components, each with a green checkmark icon. The 'WPAR Manager 2.2.1.0' entry is highlighted with a red rectangular box. Other entries include Automation Manager, Configuration Manager, Active Energy Manager, Remote Access, Storage Management, Network Management, BladeCenter and System x Management, Power Systems Management, System z Management, and VMControl Enterprise Edition.

Component	Status	Version	Actions
Automation Manager	Ready	6.2.0.1	Event Automation Plans, Active and Scheduled Jobs
Configuration Manager	Ready	6.2.0.1	Configuration Plans, Configuration Templates
Active Energy Manager	Evaluation period expires on Dec 9, 2010 (in 40 days).	4.3.0	Purchase License
Remote Access	Ready	6.2.0.1	Setup Remote Control
Storage Management	Ready	6.2.0.1	SMI-S Providers, Systems And Volumes, Storage Subsystems And Volumes
Network Management	Ready	6.2.0.1	View all network systems
BladeCenter and System x Management	Ready	6.2.0.1	View I/O module plug-ins, BladeCenter chassis and members, Servers and service processors
Power Systems Management	Ready	6.2.0.1	AIX/Linux virtual servers, IBM i virtual servers
System z Management	Ready	6.2.0	z/VM hosts, Linux on System z, HMC and managed System z servers
<b>WPAR Manager</b>	Ready	2.2.1.0	View workload partitions, Setup advisor
VMControl Enterprise Edition	Evaluation period for IBM Systems Director VMControl Enterprise Edition expires on December 9, 2010 (40 days).	2.3.0	Workloads, Virtual Servers and Hosts, Virtual Appliances, Server system pools, Storage Control, Purchase license

# WPAR Manager Summary Page

WPAR Manager
?

## IBM PowerVM Workload Partitions Manager for AIX

Version  
Setup advisor

Create, manage and relocate workload partitions (WPARs). Discover systems capable of supporting WPARs.

---

### Workload Partitions Resource Status

2 Workload partitions and their problem severity

- ✘ 0 WPARs with Critical status
- ⚠ 0 WPARs with Warning status
- i 0 WPARs with Information status
- 2 WPARs with OK status

**Common views**

- [View Power Systems summary](#)
- [Health summary](#)
- [View WPAR capable systems](#)
- [View relocation policies](#)

---

### Manage Resources

2 Workload partitions (WPARs)  
2 System WPARs  
0 Application WPARs

**Common tasks**

- [Create workload partition](#)
- [View workload partitions](#)
- [Relocate workload partition](#)
- [Application configuration](#)
- [Create relocation domain](#)

---

### License Information

IBM PowerVM Workload Partitions Manager for AIX  
Installed

# WPAR Manager Setup Advisor

Start Manage Learn

IBM® Systems Director contains the following plug-ins. Depending on its "readiness," the plug-in might be ready to use, or might require additional setup and configuration.

Refresh Last refreshed: June 21, 2010 11:39:31 PM CDT

- IBM Systems Director Server 6.2.0**  
Ready  
Manage Users
- Discovery Manager 6.2.0**  
14 Systems have no inventory collected.  
System Discovery Navigate Resources  
View and Collect Inventory
- Status Manager 6.2.0**  
Ready  
Health Summary Monitors
- Update Manager 6.2.0**  
Ready  
Update IBM® Systems Director Check for Updates
- Automation Manager 6.2.0**  
Ready  
Event Automation Plans Active and Scheduled Jobs
- Configuration Manager 6.2.0**  
Ready  
Configuration Plans Configuration Templates
- Virtualization Management 6.2.0**  
Ready  
Download VMControl
- Remote Access 6.2.0**  
Ready  
Setup Remote Control
- Storage Management 6.2.0**  
Ready  
SMI-S Providers Systems And Volumes  
Storage Subsystems And Volumes
- Network Management 6.2.0**  
Ready  
View all network systems
- BladeCenter and System x Management 6.2.0**  
Ready  
View I/O module plug-ins BladeCenter chassis an  
Servers and service processors
- Power Systems Management 6.2.0**  
Ready  
AIX/Linux virtual servers IBM i virtual servers
- System z Management 6.2.0**  
Ready  
z/VM hosts Linux on system z  
HMC and managed System z servers
- WPAR Manager 2.2.1.0**  
Ready  
View workload partitions [Setup advisor](#)

WPAR Manager

### IBM PowerVM Workload Partitions Manager for AIX

Create, manage and relocate workload partitions (WPARs). Discover systems capable of supporting WPARs.

[Version Setup advisor](#)

#### Workload Partitions Resource Status

2 Workload partitions and their problem severity

- 0 WPARs with Critical status
- 0 WPARs with Warning status
- 5 WPARs with Information status
- 2 WPARs with OK status

#### Manage Resources

2 Workload partitions (WPARs)  
1 System WPARs  
1 Application WPARs

Common views:  
[View Power Systems summary](#)  
[Health summary](#)  
[View WPAR capable systems](#)  
[View relocation policies](#)

Common tasks:  
[Create workload partition](#)  
[View workload partitions](#)

Setup Advisor

Welcome

Welcome to the WPAR Manager setup advisor.

This setup advisor guides you through the process of setting up the Workload Partitions Manager so that you can fully utilize its capabilities.

< Back Next > Finish Cancel

# System Discovery

Setup Advisor

IBM® Systems Director
Welcome root

Problems 0
Compliance 0

Help | Logout

View: All tasks

WPAR Manager X Setup Advisor X System Disc... X

--- Select Action ---

- Welcome
- My Startup Pages
- Find a Task
- Find a Resource
- Navigate Resources
- Automation
- Availability
- Inventory
- Release Management
- Security
- System Configuration
- System Status and Health
- Task Management
- Settings

i

**ATKCOR102I**

The following job has been created and started successfully: System Discovery - 9.19.51.92 - July 30, 2010 10:03:10 AM CDT

Display Properties
Close Message

Use system discovery to discover manageable resources now or schedule your discovery to run later. You can discover a resource for a single IP address, discover resources of the same type for a range of IP addresses, or use a discovery profile. Discovery profiles enable you to customize discoveries, including importing IP addresses, and requesting access to and collecting inventory for the discovered resources.

Select a discovery option:

Single IPv4 address

IP address:

9 . 19 . 51 . 92

Select the resource type to discover:

All

Discover Now
Processing discovery protocols
Stop
New Discovery...

Schedule...

Advanced Tasks

- Create new profile
- Manage discovery profiles
- Discovery jobs

Discovered Manageable Systems:

Name	Discovered	Type	Access	Problems	Compliance	IP Address...	OS Type
ec14.dfw.ibm.com	New	Operating Sy...	No access	OK	OK	9.19.51.92	

48

Power your planet.

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# Request Access

The screenshot shows the IBM Systems Director interface. At the top, there's a navigation bar with 'Welcome root', 'Problems' (0), and 'Compliance' (0). Below this is a breadcrumb trail: 'WPAR Manager > Setup Advisor > System Disc... > No Access S...'. The main content area displays a table titled 'No Access Systems'. A red arrow points from the 'No access' status in the table to the 'Request Access' dialog box below.

Select	Name	Type	Access	Problems	Compliance	IP Address...	OS Type	OS V
<input type="checkbox"/>	ec14.dfw.ibm.com	Operating Sy...	No access	OK	OK	9.19.51.92		
<input type="checkbox"/>	IBM 9117MMB 100414P 14	Virtual Server	Unknown	OK	OK			

**Request Access**

Specify the user ID and password to authenticate Systems Director to one or more target systems. Then click Request Access to grant all authorized Systems Director users access to the target system(s).

\*User ID:  
root

\*Password:  
\*\*\*\*\*

**Request Access** **Close**

Selected targets:

Name	Access
ec14.dfw.ibm.com	No access

Page 1 of 1 | 1 | Total: 1

# Install WPAR Manager Subagent

**Agent Installation**  
Select the agent code to be installed

Select the agent code to be installed

Select a valid target then add it to the selected list.

Show: **Agent Package Groups**

**Agent Installation**  
The following systems have been selected

The following systems have been selected

Select a valid target then add it to the selected list.

Show: **All OperatingSystems with Full Access**

Available:  
All OperatingSystems with Full Access (View Members)

Select	Name	Access	Problems	Compliance
<input type="checkbox"/>	connor.dfw.ibm.com	OK	OK	OK
<input type="checkbox"/>	ec09.dfw.ibm.com	OK	OK	OK
<input type="checkbox"/>	ec10.dfw.ibm.com	OK	OK	OK
<input type="checkbox"/>	ec11.dfw.ibm.com	OK	OK	OK
<input type="checkbox"/>	ec12.dfw.ibm.com	OK	OK	OK
<input type="checkbox"/>	ec14.dfw.ibm.com	OK	OK	OK
<input type="checkbox"/>	glvm1.dfw.ibm.com	OK	OK	OK
<input type="checkbox"/>	jordan.dfw.ibm.com	OK	OK	OK
<input type="checkbox"/>	kaitlyn.dfw.ibm.com	OK	OK	OK
<input type="checkbox"/>	sahmc1.dfw.ibm.com	OK	OK	OK

Selected:  
ec12.dfw.ibm.com  
ec10.dfw.ibm.com  
ec14.dfw.ibm.com  
ec11.dfw.ibm.com

Page 1 of 2 Total: 13

# Collect Inventory

IBM® Systems Director

Welcome root

Problems 0x 0! Compliance 0x 0!

Help | Logout IBM

WPAR Manager X Setup Advisor X Agents(1) X

--- Select Action ---

View: All tasks

- Welcome
- My Startup Pages
- Find a Task
- Find a Resource
- Navigate Resources

- Automation
- Availability
- Inventory
- Release Management
- Security
- System Configuration
- System Status and Health
- Task Management
- Settings

Setup Advisor

- ✓ Welcome
- ✓ Discovery
- ✓ Get Access
- ✓ Install Agents
- ➔ Inventory
  - Settings
  - Create WPARs
  - Summary

### Collect Inventory

Collect inventory on managed systems to discover existing workload partitions.

Collecting inventory is a two-step process:

1. Click the button below to display the View and Collect Inventory page. Make sure the "Target systems" field contains the systems in which you installed the subagent. Select "All Software Inventory" option from the "View by" field and click the Collect Inventory button. Once the Collect inventory job completes the systems will be recognized as WPAR-capable.
2. Collect inventory on the same systems but selecting the "Extended WPAR Inventory" option. This step discovers any existing WPARs on the WPAR-capable systems and collects additional properties used by WPAR Manager.

Go to View and Collect Inventory

[Read more about viewing and collecting inventory in IBM Systems Director.](#)

< Back Next > Finish Cancel

# Collect Inventory

Collect "All Software Inventory" first, so that systems with WPM agents will be identified as "WPAR-capable."  
Next, collect inventory on the same systems selecting "Extended WPAR Inventory" option.

Target systems: ec14\_mm

View by: All Software Inventory

Collected Items

Select	Name	System n...	Installati...	Version
<input type="checkbox"/>	Account APIs	ec14_mm	Installed	8.1.0.0-LWI
<input type="checkbox"/>	Additional runtime components for Eclipse...	ec14_mm	Installed	8.1.0.0-LWI
<input type="checkbox"/>	Apache Commons Components	ec14_mm	Installed	8.1.0.0-LWI
<input type="checkbox"/>	Artex CAS Feature	ec14_mm	Installed	1.1.0
<input type="checkbox"/>	Bridge between webservices and authentic...	ec14_mm	Installed	8.1.0.0-LWI
<input type="checkbox"/>	CIM over CAS subagent	ec14_mm	Installed	6.2.0
<input type="checkbox"/>	Common Agent Feature	ec14_mm	Installed	1.4.2.2
<input type="checkbox"/>	Common Collection Engine Provider	ec14_mm	Installed	6.2.0.1
<input type="checkbox"/>	Eclipse Equinox Feature	ec14_mm	Installed	8.1.0.0-LWI
<input type="checkbox"/>	Eclipse Help Feature	ec14_mm	Installed	8.1.0.0-LWI
<input type="checkbox"/>	Eclipse OSGI and Update Components	ec14_mm	Installed	8.1.0.0-LWI

# WPAR Manager Settings

The screenshot shows a 'Setup Advisor' window with a sidebar on the left containing a list of steps: Welcome, Discovery, Get Access, Install Agents, Inventory, Settings (highlighted with a yellow arrow), Create WPARs, and Summary. Below the sidebar are '< Back' and 'Next >' buttons. The main content area is titled 'Configure WPAR Manager Settings' and contains the following text: 'Specify the values for configuration properties used by WPAR Manager.', 'WPAR Manager has a few configuration settings that should be reviewed and edited before the product is ready to use.', 'Go to the Application Configuration task: Configuration', and 'Read more about Application Configuration for WPAR Manager.' A red arrow points from the 'Configuration' button to a second window titled 'Application Configuration'. This window has a tab labeled 'WPAR Manager Settings' and contains the text: 'View or change configuration settings for the WPAR Manager application on this page.', '\*Shared Directory: /var/adm/WPAR', and two checkboxes: 'Enable debug information for relocation logs' (unchecked) and 'Preserve workload partition definitions after the workload partitions have been deleted' (checked). At the bottom of the 'Application Configuration' window are buttons for 'OK', 'Apply', 'Restore Defaults', and 'Cancel'.

# Create WPARs

The image shows two overlapping windows from the IBM Setup Advisor. The background window is titled "Setup Advisor" and has a sidebar with a list of tasks: Welcome, Discovery, Get Access, Install Agents, Inventory, Settings, and Create WPARs (highlighted with a yellow arrow). The main content area of this window is titled "Create Workload Partitions" and contains the following text: "Use a wizard to create workload partitions on your systems." "If you are ready to create one or more workload partitions on your managed systems, you can use a wizard to guide you through the task of creating your first WPAR." "Go to the Create WPAR wizard:" followed by a "Create WPAR" button. Below this is a link: "Read more about creating a workload partition in IBM Systems Director." The foreground window is titled "Create Workload Partition" and shows the "Welcome" step of the wizard. Its sidebar lists the wizard steps: Welcome (highlighted with a yellow arrow), General, Devices, Filesystems, Options, Network, Routing, Security, Resource controls, Advanced settings, and Summary. The main content area of this window says: "Welcome to the create workload partitions wizard." "This wizard will guide you through the process of creating a workload partition. Several panels will be presented to specify the properties that will be used to create the WPAR." There is a checked checkbox for "Show this Welcome page next time". At the bottom of this window are buttons for "< Back", "Next >", "Finish", and "Cancel". A large red arrow points from the "Create WPAR" button in the background window to the "Create Workload Partition" window.

# Resource Navigator – WPARs Groups

Breadcrumbs show how we navigated to the page starting from 'Navigate Resources' in the Director Menu

The screenshot shows the 'Navigate Resources' window with a breadcrumb trail: **Groups > Workload Partitions Groups (View Members)**. Below the breadcrumb is a search bar with 'Search the table...' and a 'Search' button. The main content is a table with the following data:

Select	Name	Type	Description
<input type="checkbox"/>	All Application Workload Partitions (0)	Dynamic: System Container	Contains all the Application WPARs that have been discovered.
<input type="checkbox"/>	All System Workload Partitions (6)	Dynamic: System Container	Contains all the System WPARs that have been discovered.
<input type="checkbox"/>	All Workload Partitions (6)	Dynamic: System Container	Contains all the workload partitions discovered.
<input type="checkbox"/>	Versioned WPAR-capable Systems (1)	Dynamic: Operating System	Contains systems that are configured to manage and host versioned workload partitions.
<input type="checkbox"/>	Workload Partition Definitions (0)	Dynamic: System Container	Contains the definitions of workload partitions that have been deleted.
<input type="checkbox"/>	WPAR-capable Systems (4)	Dynamic: Operating System	Contains systems that are configured to manage workload partitions.

At the bottom of the window, there is a pagination bar showing 'Page 1 of 1', 'Selected: 0', 'Total: 6', and 'Filtered: 6'.

# Workload Partitions and Hosts View

IBM® Systems Director

Welcome root

Problems 0x 0! Compliance 0x 0!

Help | Logout IBM.

View: All tasks

- Welcome
- My Startup Pages
- Find a Task
- Find a Resource
- Navigate Resources

Automation

Availability

Inventory

- System Discovery
- View and Collect Inventory
- Views
  - Workload Partitions and Hosts**
  - Platform Managers and Members
  - Storage System Pools and Members
  - Server System Pools and Members
  - Virtual Servers and Hosts
  - Workloads and Members

Energy

Release Management

Security

System Configuration

System Status and Health

Task Management

Settings

Workload Partitions and Hosts

Workload Partitions and Hosts (View Members)

Actions Search the table... Search

Select	Name	WPARType	WPARState	Checkpointable	rootvg	Versioned	Access	Problems
<input type="checkbox"/>	ec10.dfw.ibm.com						OK	OK
<input type="checkbox"/>	ec11.dfw.ibm.com						OK	OK
<input type="checkbox"/>	ec12.dfw.ibm.com						OK	OK
<input type="checkbox"/>	wp01	System	Active	False	False		OK	OK
<input type="checkbox"/>	wp02	System	Defined	False	False		OK	OK
<input type="checkbox"/>	ec14.dfw.ibm.com						OK	OK

Page 1 of 1 | Selected: 0 Total: 6 Filtered: 6

Use the scroll bar to see additional information, e.g. CPU and Memory utilization for Hosts and WPARs



# Workload Partitions Management (host context)

Workload Partitions and Hosts (View Members)

Actions | Search the table... Search

Select	Name	WPARType	WPARState	Checkpoi...	rootvg	Versioned	Access	Problems
<input type="checkbox"/>	ec10.dfw.ibm.com						OK	Information
<input type="checkbox"/>	mm79	System	Active	True	False		OK	OK
<input type="checkbox"/>	wp04	System	Defined	True	True		OK	OK
<input type="checkbox"/>	ec11.dfw.ibm.com						OK	Information
<input type="checkbox"/>	ec12.dfw.ibm.com						OK	Information
<input type="checkbox"/>	wp01	System	Active	False	False		OK	OK
<input type="checkbox"/>	wp02	System	Active	False	False		OK	OK
<input checked="" type="checkbox"/>	ec14.dfw.ibm.com						OK	Information
<input type="checkbox"/>	mm78			False	False	-	OK	OK
<input type="checkbox"/>	wp03			False	False	5.2	OK	OK

Page 1 of 1 | 1

Related Resources  
Topology Perspectives  
Create Group  
Remove...  
Rename...  
Add to  
AIX Management  
Automation  
Inventory  
Power On/Off  
Release Management  
Security  
System Configuration  
System Status and Health  
Workload Partitions Management  
Properties

Create workload partition...  
Create versioned workload partition...  
Restore workload partition...

# Workload Partitions Management (WPAR context)

Workload Partitions and Hosts (View Members)

Actions | Search the table... Search

Select	Name	WPARType	WPARState	Checkpoi...	rootvg	Versioned	Access	Problems
<input type="checkbox"/>	ec10.dfw.ibm.com						<input checked="" type="checkbox"/> OK	<input checked="" type="checkbox"/> Information
<input checked="" type="checkbox"/>	mm75		Active	True	False		<input checked="" type="checkbox"/> OK	<input checked="" type="checkbox"/> OK
<input type="checkbox"/>	wp04		Defined	True	True		<input checked="" type="checkbox"/> OK	<input checked="" type="checkbox"/> OK
<input type="checkbox"/>	ec11.dfw.ibm.com						<input checked="" type="checkbox"/> OK	<input checked="" type="checkbox"/> Information
<input type="checkbox"/>	ec12.dfw.ibm.com						<input checked="" type="checkbox"/> OK	<input checked="" type="checkbox"/> Information
<input type="checkbox"/>	wp01		Active	False	False		<input checked="" type="checkbox"/> OK	<input checked="" type="checkbox"/> OK
<input type="checkbox"/>	wp02		Active	False	False		<input checked="" type="checkbox"/> OK	<input checked="" type="checkbox"/> OK
<input type="checkbox"/>	ec14.dfw.ibm.com						<input checked="" type="checkbox"/> OK	<input checked="" type="checkbox"/> Information
<input type="checkbox"/>	mm78		Defined	False	False	-	<input checked="" type="checkbox"/> OK	<input checked="" type="checkbox"/> OK
<input type="checkbox"/>	wp03		Active	False	False	5.2	<input checked="" type="checkbox"/> OK	<input checked="" type="checkbox"/> OK

Context menu for wp04:

- Related Resources
- Topology Perspectives
- Create Group
- Back up...
- Clone...
- Compatibility...
- Delete...
- Edit...
- Relocate...
- Remove...
- Stop...
- Synchronize...
- Add to
- Automation
- Inventory
- Release Management
- Security
- System Status and Health
- Properties

Page 1 of 1 | Total: 10 | Filtered: 10

# WPAR Features – Topology Map

Topology map of a WPAR including device information

The description field specifies whether the device is part of the WPAR rootvg

The screenshot shows the IBM Navigator for System interface. On the left, a table lists system workload partitions (WPARs). A context menu is open over the 'photon' WPAR, with 'WPAR Topology Map' selected. A red arrow points from this menu item to the topology map view on the right. The topology map shows a central 'photon' WPAR connected to various devices. A device named 'hdisk32' is highlighted, and its details are shown in the 'Details' pane on the right. The 'Description' field in the details pane is circled in red and points to the callout text.

Select	Name	WPARType	WPARState	Access	HostingSystem	Description
<input type="checkbox"/>	avi	System	Defined	OK	coffeepot04.austin.i...	WPAR
<input type="checkbox"/>	chkpoint_rootvg	System	Defined	OK	maris.austin.ibm.com	WPAR
<input type="checkbox"/>	chkpoint		Defined	OK	maris.austin.ibm.com	WPAR
<input type="checkbox"/>	chkpoint		Defined	OK	maris.austin.ibm.com	WPAR
<input type="checkbox"/>	gravito					
<input type="checkbox"/>	hmm					
<input checked="" type="checkbox"/>	photon					

Name	Value
Name	hdisk32
Status	OK
Type	Storage Volume
Description	WPAR rootvg device
Allocation State	Exported

WPAR Topology Map view can be accessed from the WPAR Action Menu

# WPAR Metrics and Monitors

Common WPAR Metrics monitors contains typical AIX system utilization metrics

The screenshot shows the IBM Systems Director interface. On the left is a navigation pane with categories like Automation, Availability, Inventory, Release Management, Security, System Configuration, System Status and Health, Task Management, and Settings. The main area displays the 'Monitor View' for WPAR 'wp04'. A table lists several metrics:

Select	Name	Monitor Name	Monitor T...	Threshold...	Current	Warning
<input type="checkbox"/>	wp04	CPU Utilization (%)	Individual		...	
<input type="checkbox"/>	wp04	Disk Utilization (%)	Individual		...	
<input type="checkbox"/>	wp04	File System Utilization (%)	Individual		...	
<input type="checkbox"/>	wp04	Memory Utilization (%)	Individual		...	
<input type="checkbox"/>	wp04	Number of Processes	Individual		...	
<input type="checkbox"/>	wp04	Number of Threads	Individual		...	

At the bottom of the table, it shows 'Page 1 of 1', 'Selected: 0', 'Total: 6', and 'Filtered: 6'. A red callout box points to the table with the text: 'Common WPAR Metrics monitors contains typical AIX system utilization metrics'.

## WPAR Manager CLI (Command Line Interface)

- WPAR Manager 2.2.1 delivers WPAR Manager CLI for the first time
  - Allows centralized WPAR Management from CLI
  - Scripting of common WPAR Manager tasks
- Actions performed via WPAR Manager CLI are recorded in the Systems Director Active and Scheduled Jobs view for auditing purposes
- Not all WPAR Manager functionality available through the WPAR Manager CLI yet
  - run `smcli wparmgr/help` to list all the commands available
- No NLS support for WPAR Manager CLI in this release

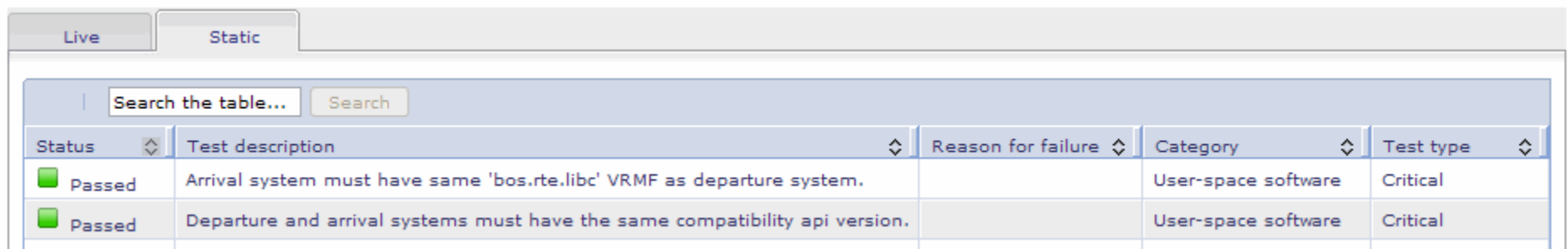
## Live Application Mobility (WPAR Relocation)

- File systems available from source and destination
- WPAR-owned rootvg (SAN or vSCSI) or NFS based
- Pass compatibility tests

Live		Static		
Search the table... <input type="text"/> <input type="button" value="Search"/>				
Status	Test description	Reason for failure	Category	Test type
Passed	Departure and arrival systems must have identical operating system types.		Kernel software	Critical
Passed	Departure and arrival systems must have the same compatibility api version.		User-space software	Critical
Passed	Arrival system must have processor class at least as high as departure system.		Hardware configuration	Critical
Passed	Departure and arrival systems must be at the same OS Level.		Kernel software	Critical
Passed	Arrival system must have same 'bos.rte' VRMF as departure system.		Kernel software	Critical
Passed	Arrival system must have same 'bos.wpars' VRMF as departure system.		Kernel software	Critical
Passed	Arrival system must have same 'bos.rte.libc' VRMF as departure system.		User-space software	Critical
Passed	Arrival system must have at least as many storage keys as departure system.		Hardware configuration	Critical
Passed	MCR Data Version of arrival system must be compatible with departure system		User-space software	Critical

## Static Mobility

- Backup on source / Restore on destination
- This works regardless of disk type & even with different AIX Global levels \*\*\* (-C command argument)
- Pass compatibility tests



Status	Test description	Reason for failure	Category	Test type
Passed	Arrival system must have same 'bos.rte.libc' VRMF as departure system.		User-space software	Critical
Passed	Departure and arrival systems must have the same compatibility api version.		User-space software	Critical

# WPAR Relocation Policies

**WPAR Manager**

## IBM PowerVM Workload Partitions Manager for AIX

Version Setup advisor

Create, manage and relocate workload partitions (WPARs). Discover systems capable of supporting WPARs.

### Workload Partitions Resource Status

2 Workload partitions and their problem severity

- 0 WPARs with Critical status
- 0 WPARs with Warning status
- 0 WPARs with Information status
- 2 WPARs with OK status

**Common views**

- View Power Systems summary
- Health summary
- View WPAR capable systems
- View relocation policies**

**Link to manage WPAR Relocation Policies**

### Manage Resources

2 Workload partitions (WPARs)  
2 System WPARs  
0 Application WPARs

**Common tasks**

- Create workload partition
- View workload partitions
- Relocate workload partition
- Application configuration
- Create relocation domain

### License Information

IBM PowerVM Workload Partitions Manager for AIX  
Installed



## WPAR Relocation Policy

- Policy changed from WPAR Manager 1.2.1
  - Simplified policy algorithm and user interface
  - Using standard Systems Director Groups and Jobs interfaces
- Policy monitors CPU and/or memory utilization in each system
  - Set maximum utilization threshold and averaging period
  - Define **Relocation Domain** = Group of WPAR-capable AIX systems (using Systems Director Groups)
- If average CPU/Memory over most recent averaging period exceeds max threshold, a policy violation is registered
- Policy violation triggers policy analysis
  - WPAR Manager looks for another system in relocation domain whose overall CPU/Memory usage is less than current system
  - If a less busy system is found, a Relocate WPAR job may be created, or admin notified
  - Policy violation also shows up on Health Summary page.
- Track results of policy analysis and relocation by looking at Applied Activities on systems or WPARs

# WPAR Relocation Policy

The screenshot shows a web-based interface for managing WPAR Relocation Policies. At the top, there is a title bar 'Relocation Policy' and a sub-header 'Relocation policies'. Below this, there are controls for 'Create policy...', 'Actions', and a search bar. The main area is a table with columns: 'Select', 'Policy name', 'Automatic relocation', 'Averaging period', and 'Relocation domains'. The table contains seven rows of policy data. Annotations with red callouts provide additional context: one points to the 'Policy name' column header, another to the 'Averaging period' column, and a third to the 'Relocation domains' column. A footer bar shows pagination and selection statistics.

Select	Policy name	Automatic relocation	Averaging period	Relocation domains
<input type="checkbox"/>	sdfasfsadf	True	10	0
<input type="checkbox"/>	policyName	False	10	0
<input type="checkbox"/>	policy1	False	10	2
<input type="checkbox"/>	policy	False	10	0
<input type="checkbox"/>	name	False	10	0
<input type="checkbox"/>	Jorge D Rodriguez	True	10	0
<input type="checkbox"/>	afasfasf	False	10	0

Link to drill down to policy details

Performance metrics are averaged over a number of minutes (default = 10) -- specified when policy is created

Shows number of associated domains; click link to view list

# Problem Determination (WPAR Management)

Active and Scheduled Jobs

Active and Scheduled Jobs > Create workload partition - June 22, 2010 11:4... (Properties)

Name: Create workload partition - June 22, 2010 11:40:37 PM CDT Actions

General Targets History Logs Job Steps

Select an instance of the job to display the history of job steps for that instance in the table below.

Job Instance 6/22/10 at 11:40 PM

Job Steps

Name	Status
Create WPAR	Complete
Get WPARs	Complete
Retrieve WPAR Information	Complete
Get WPAR properties	Complete

**Create WPAR**

Creates a new WPAR with the given parameters on the target system.

Status: Complete

Return code: 0

Command:  
/usr/sbin/mkwpwr -n phonon -R active=yes

Standard error:

Standard output:  
mkwpwr: Creating file systems...  
/  
/home  
/opt

Close

Stop time
Jun 22, 2010 11:44:24 PM
Jun 22, 2010 11:44:25 PM
Jun 22, 2010 11:44:25 PM
Jun 22, 2010 11:44:29 PM

Page 1 of 1 | 1 | Total: 4

# Problem Determination (relocation)

- Enable mobility logging

The **Application Configuration** settings can be accessed from the WPAR Manager Summary Page → Common tasks area

Application Configuration

WPAR Settings

View or change configuration settings for the Workload Partitions Manager application on this page.

\*Shared Directory:  
/var/adm/WPAR

Enable debug information for relocation logs

Preserve Workload Partition definitions after the Workload partitions have been removed.

OK Apply Restore Defaults Cancel

- Relocation debug level should be enabled to debug a relocation problem only.
- It is advised to disable logging after the debug analysis has been completed.

## WPAR Manager Problem Determination

- WPAR Manager problems are logged in the IBM Systems Director log files.
- WPAR Manager Agent does not have dedicated log files. It logs to the Common Agent log files.
- During live relocation, the WPAR Manager Agent creates log files on the departure and arrival systems that can be used to troubleshoot live relocation failures.

Component	Log File	Description
WPAR Manager	/opt/ibm/director/lwi/logs/error-log-*	IBM Systems Director log files
	/opt/ibm/director/lwi/logs/trace-log-*	IBM Systems Director trace log files
	/opt/ibm/director/WPARManager/wpmlInstall.log	WPAR Manager installation log file
WPAR Manager Agent	/opt/ibm/director/agent/logs/error-log-*	Common Agent log files
	/opt/ibm/director/agent/logs/trace-log-*	Common Agent trace log files
MCR (Live Relocation)	/var/opt/IBM/WPAR/agent/logs/mcr/<WPAR Name>.log	System and Application WPAR mcr log file. One log file on departure server and another on the arrival.

# References



# New WPAR Redbook – coming soon....

## IBM Redbooks

<http://www.redbooks.ibm.com>

### *Exploiting IBM AIX Workload Partitions*

**SG24-7955**

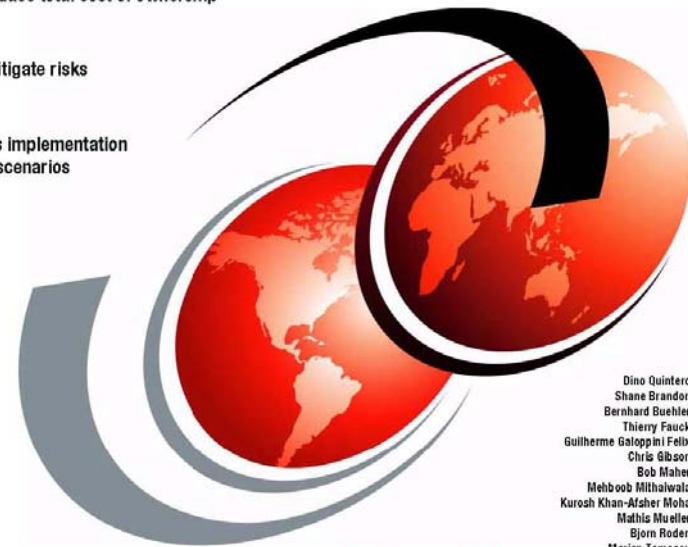
***Draft Version: July 2011***

  
SG24-7955-00

Draft Document for Review

## Exploiting IBM AIX Workload Partitions

- Helps reduce total cost of ownership
- Helps mitigate risks
- Contains implementation sample scenarios



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Bjorn Roden  
Marian Tomescu

ibm.com/redbooks

**Redbooks**



# References

## Redbooks:

### **Exploiting IBM AIX Workload Partitions (SG24-7955)**

- Draft version targeted for July 2011

### **Workload Partition Management in IBM AIX Version 6.1 (Dec 2008)**

- <http://www.redbooks.ibm.com/abstracts/sg247656.html?Open>

### **Introduction to Workload Partition Management in IBM AIX Version 6.1 (Nov 2007)**

- <http://www.redbooks.ibm.com/abstracts/sg247431.html?Open>

## Product Documentation:

### **IBM Workload Partitions for AIX (AIX 6.1)**

- [http://publib.boulder.ibm.com/infocenter/aix/v6r1/topic/com.ibm.aix.wpar/wpar\\_pdf.pdf](http://publib.boulder.ibm.com/infocenter/aix/v6r1/topic/com.ibm.aix.wpar/wpar_pdf.pdf)

### **IBM Workload Partitions for AIX (AIX 7.1)**

- [http://publib.boulder.ibm.com/infocenter/aix/v7r1/topic/com.ibm.aix.wpar/wpar\\_pdf.pdf](http://publib.boulder.ibm.com/infocenter/aix/v7r1/topic/com.ibm.aix.wpar/wpar_pdf.pdf)

### **AIX 5.2 Workload Partitions for AIX 7**

- [http://publib.boulder.ibm.com/infocenter/aix/v7r1/topic/com.ibm.aix.cre/cre\\_pdf.pdf](http://publib.boulder.ibm.com/infocenter/aix/v7r1/topic/com.ibm.aix.cre/cre_pdf.pdf)

### **IBM PowerVM Workload Partitions Manager for AIX**

- [http://publib.boulder.ibm.com/infocenter/aix/v6r1/topic/com.ibm.aix.wparlpp/wparlpp\\_pdf.pdf](http://publib.boulder.ibm.com/infocenter/aix/v6r1/topic/com.ibm.aix.wparlpp/wparlpp_pdf.pdf)

## IBM Systems Director:

### **IBM Systems Director Download Site**

- <http://www-03.ibm.com/systems/software/director/downloads/>





# Any Questions?

# Thank you for your time

Don't forget the feedback form 🙌



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