



IBM eServer iSeries

UNIX Consolidation with eServer i5

April 27, 2005

ON DEMAND BUSINESS™

Agenda

Welcome

Matthew Schellenberg, Infrastructure Simplification
Sales Manager, iSeries Americas

Simplify your Infrastructure

Craig Johnson, AIX 5L Product Manager for iSeries

AIX 5L for the UNIX Professional

Arland Ranne, Senior IT Consultant, pSeries

Migration Considerations

Ann Detjen, Business Development Manager, IBM
Migration Factory

Implementing AIX 5L on eServer i5

Vess Natchev, AIX 5L Specialist, iSeries Technology
Center

Questions and Answers



IBM eServer iSeries

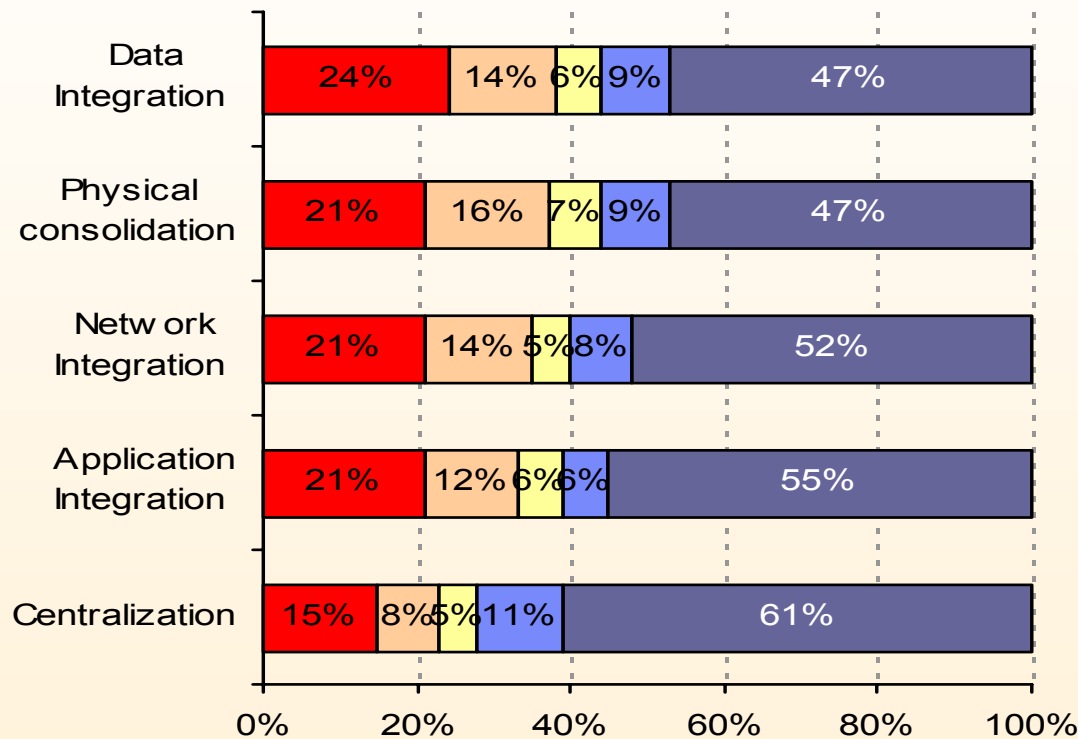
Simplify your Infrastructure

Craig Johnson
iSeries Product Manager for AIX 5L

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Infrastructure Simplification

- 45% of customers plan to simplify their environment in next two years



combining data from different sources into a single repository for central management/control

replacing several small servers with a fewer number of larger, more powerful servers

virtualizing the network and network access to enable central management and control

moving applications and/or data to a new platform to co-locate the application/data

reducing the number of physical locations

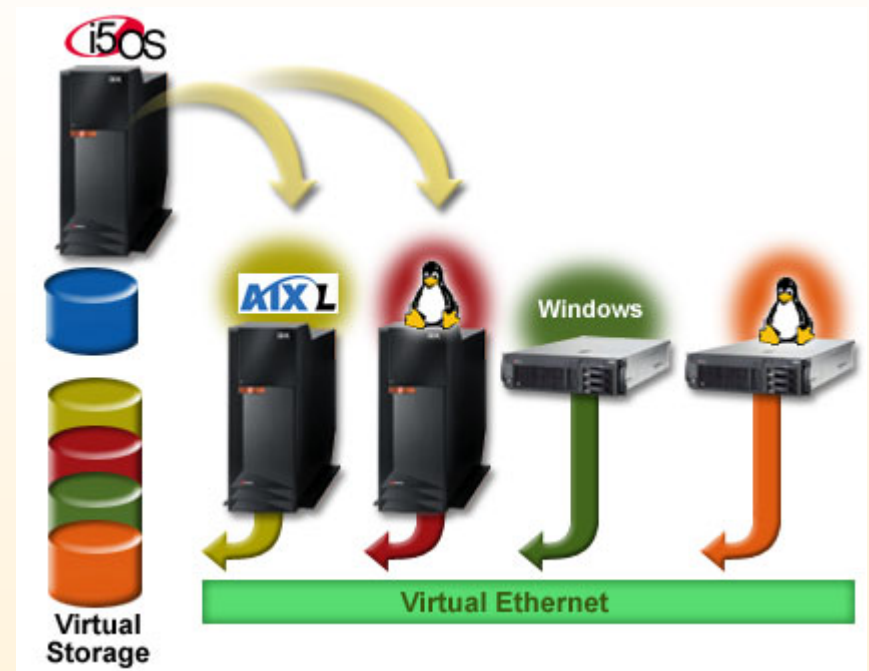
Response categories:

- Planned in 2004
- Planned within 18 months
- Planned within two years
- Being considered but no target date set
- No plans

Source: IBM it Trends 1H 04

Simplify your Infrastructure with eServer i5

- **Reduce complexity and costs**
 - Pool your resources by managing multiple environments on a single server
- **Handle constant changes**
 - Automatically respond to changes in processor demand with logical partitioning
- **Save time and money**
 - Simplify management of IT resources with storage virtualization
- **Increase business flexibility**
 - Expand with broad application portfolio
- **Deliver business continuity**
 - Protect consolidated resources



Common POWER5 Product Portfolio

eServer i5

520
Up to 2-way

550
Up to 4-way

570
Up to 16-way

595
Up to 64-way

eServer p5

p5-520
p5-520 Express

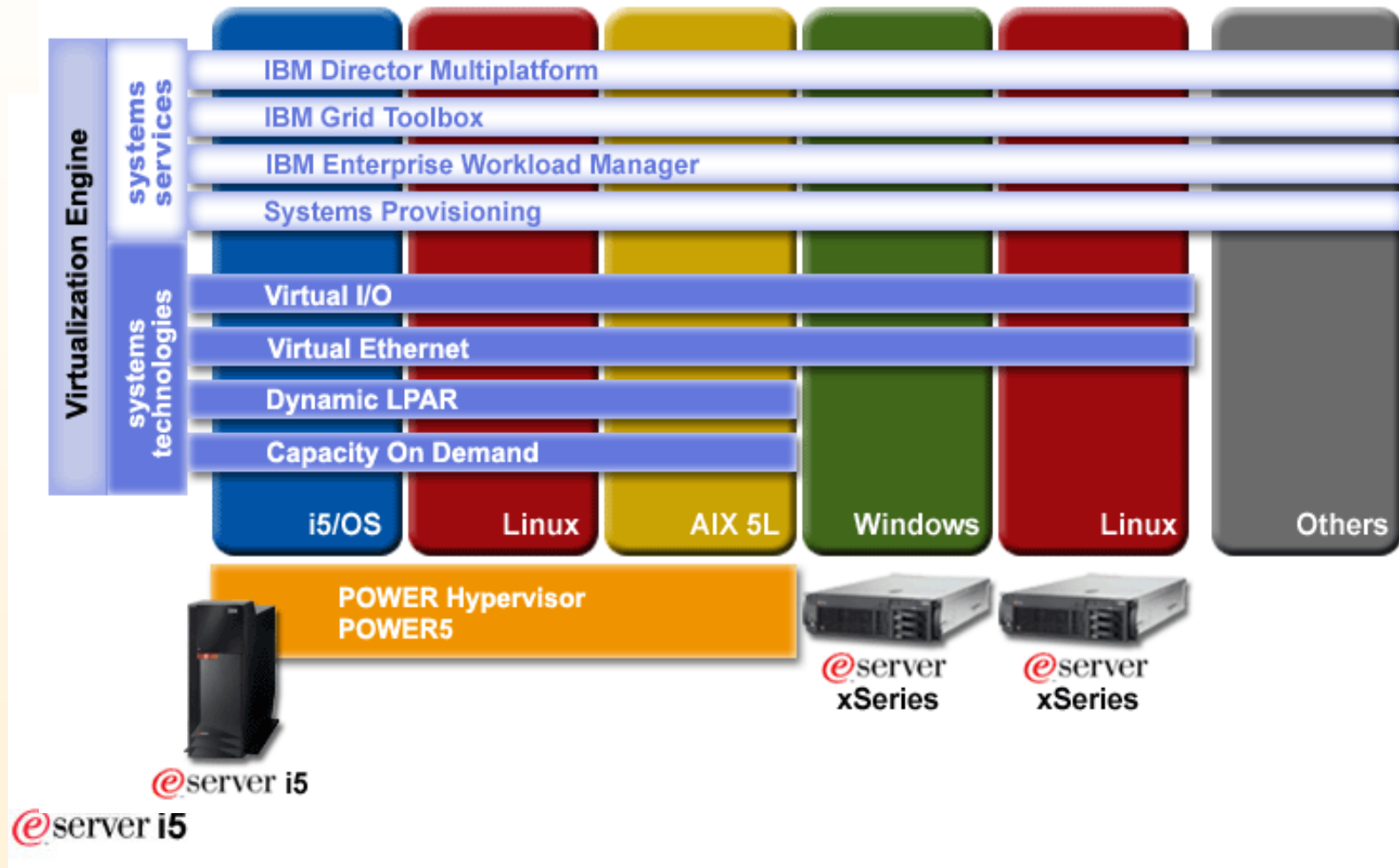
p5-550
p5-550 Express

p5-570
p5-570 Express
Up to 8-way

p5-590
Up to 32-way

p5-595
Up to 64-way

IBM Virtualization Engine on IBM eServer i5



Innovative Technology

■ Logical Partitioning

- Multiple Operating Systems
 - i5/OS V5R3
 - AIX 5L V5.3 or V5.2
 - Linux – Red Hat and Novell SUSE
- Micro-Partitioning
 - Up to 10 partitions per processor
- Automatic Processor Movement
- Dynamic Memory and I/O movement
- Hardware Management Console

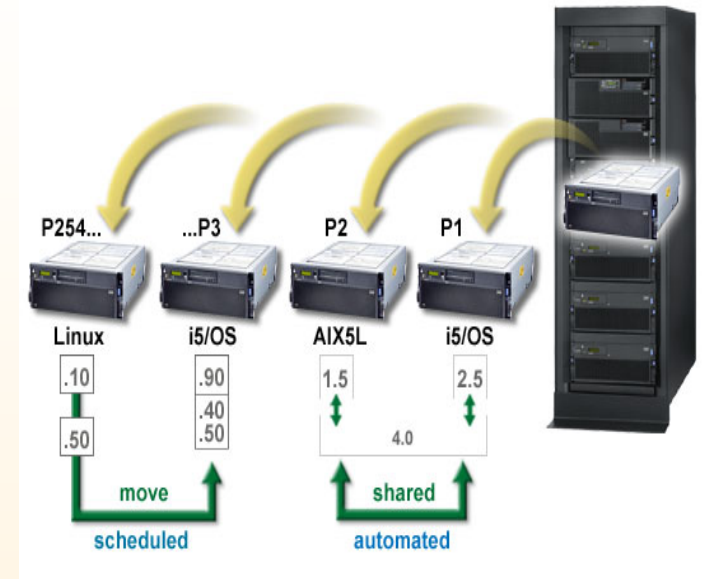
■ I/O Flexibility

- Virtual Storage and Ethernet
- Direct attachment options



Virtualization Enhancements for POWER5 Servers

	iSeries	eServer i5
Maximum # of partitions	32	254
Partitions per Processor	Up to 10	Up to 10
Processor Movement	Static Dynamic	Static Dynamic Automatic
Maximum # of Virtual Ethernets	16	4094
Maximum Virtual Disk per partition	2 TB	64 TB
Partition Management	Primary	HMC
Operating Systems	i5/OS OS/400 Linux	i5/OS Linux AIX 5L



IBM Virtualization Engine
Systems Technologies

AIX 5L on eServer i5 Servers

▪ AIX 5L 5.3

- Micro-partitioning, up to 10 per processor
- Automatic Processor Movement
- Virtual storage and Ethernet

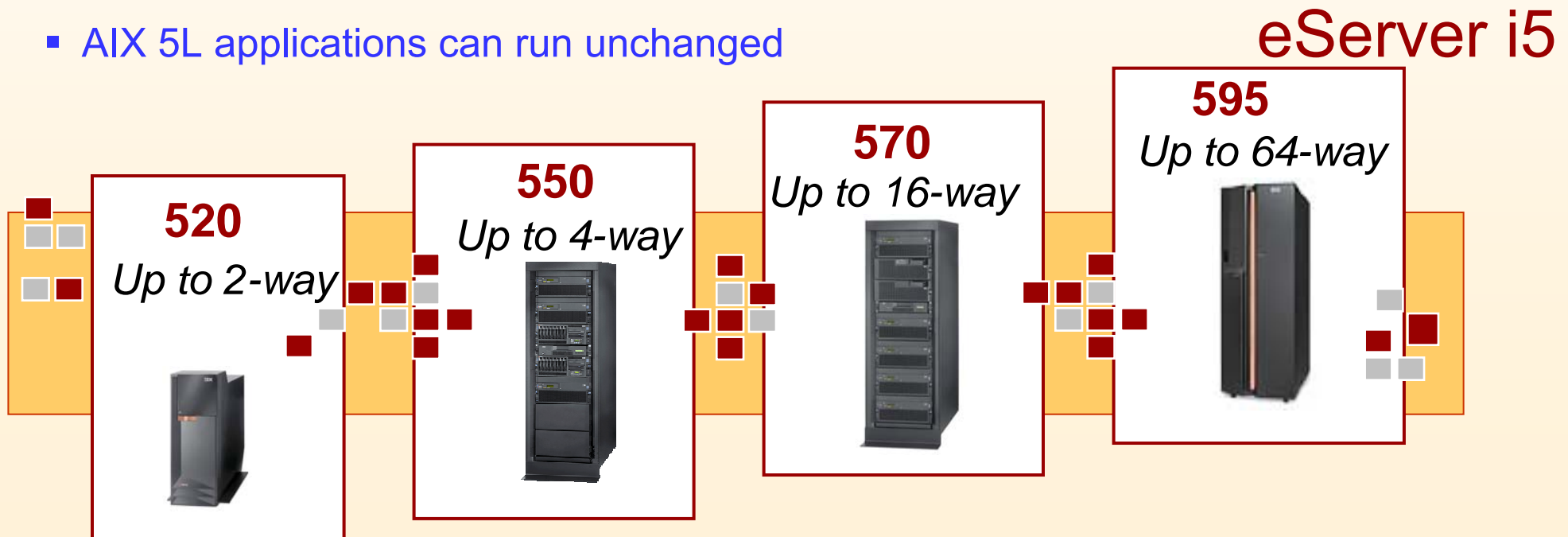
▪ AIX 5L 5.2

- 1 processor(s) per partition
- Dynamic Processor Movement
- Supports variety of direct I/O devices



eServer i5 is also a UNIX Server

- eServer i5 and eServer p5 offer POWER5-based servers
- eServer i5 runs the same AIX 5L as eServer p5
- AIX 5L is priced per active processor running AIX 5L
- AIX 5L performance on eServer i5 is equivalent to eServer p5 with the same configuration
- AIX 5L applications can run unchanged



Greif

■ Background

- World leader in industrial packaging products & services for various industries.
- 175 operating locations in more than 40 countries.

■ Objectives

- Consolidate regional applications and 100+ servers
- Move to a single ERP global instance
- Introduce high availability

■ Solution

- IBM eServer i5 570 8-way with 9 Logical Partitions (LPARs)
 - 2 i5/OS Processors ,6 AIX 5L Processors, + Linux
 - Migrated Baan+Oracle solution from HP/EMC to eServer i5 AIX partition
 - Consolidated regional applications into centralized i5/OS architecture (BPCS)
 - Migrated Domino environment from Windows to i5/OS
 - Moving some infrastructure applications to Linux



“The eServer i5 570 system rapidly improves the rate at which Greif can integrate operations into its IT infrastructure which is critical to support the company's growth objectives.”

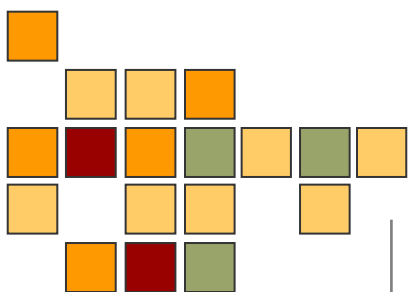
Ken Andre, Global Director, Business Information Services, Greif

http://www-1.ibm.com/servers/eserver/series/success/greif_video.html



IBM eServer iSeries

AIX 5L for the UNIX Professional



Arland Ranne
eServer, pSeries
Sr IT Specialist
aranne@us.ibm.com



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AIX 5L At a Glance



Innovate and Accelerate with AIX 5L

- **Market Momentum:** AIX 5L is rapidly emerging as the fastest growing UNIX operating system in the market today.
- **Mainframe Inspired:** AIX 5L delivers the reliability, availability and security of a mainframe environment including industry leading virtualization capabilities to help you increase server utilization and lower costs.
- **Broad Application Support:** Independent software vendors recognize AIX 5L as a premier UNIX operating system.
- **Compelling Performance:** New simultaneous multithreading with AIX 5L v5.3 on POWER5 systems delivers up to 40% performance improvement over AIX 5Lv5.2.
- **Ease of Migration:** IBM's customized service offerings make migration from competitive UNIX platforms to AIX 5L quick and easy - consolidate all of your UNIX workload onto AIX 5L.

AIX 5L Release Content

AIX 5L V5.3 *April 2005*

AIX 5L V5.2 *October 2002*

AIX 5L V5.1 *May 2001*

Enterprise Scalability

- New, 64-bit kernel
- 32-bit Binary compatible with AIX v4
- POWER4™ Optimization
- New 64-bit JFS2 filesystem. 1 TByte
- 32-way SMP, 256G memory

Flexible Resource Management

- Fine grained, Static Logical Partitions
- Enhanced Workload management

Reliability, Availability, Serviceability

- Network Interface Takeover, Virtual IP
- Multiple network gateway support
- Automated resource monitor/response
- Automatic CPU Deallocation

Multi-platform Affinity

- Linux® Affinity, Linux interoperability
- SVR4 UNIX Affinity

Resource Management

- Dynamic Logical Partitioning
- Capacity Upgrade on Demand
- Dynamic LUN (disk) resize
- Time-of-day Workload mgmt

Enterprise Scalability

- JFS2 support for 16TB
- POWER4+ Optimization

Secure Environment

- EAL4/CAPP Certification
- LDAP interoperability
- Pluggable Auth Module

RAS

- CPU Hot-Sparing
- Multi-path I/O
- Physical location diagnostics

Datacenter Management

- Cluster Systems Mgmt
- EZ-NIM install management
- Template-based tuning

Resource Management

- Micro-Partitioning™
- Virtual Ethernet
- Ethernet sharing
- Virtual SCSI disk
- Advanced Accounting
- Partition Load Manager
- JFS2 Filesystem Shrink

Enterprise Scalability

- POWER5™ support
- Designed for 64-way SMP
- SMT processor
- 1024 disk volume group
- NFSv4

Development Environment

- POSIX Realtime APIs
- Linker/Loader Affinity
- “procmon” and Trace GUI
- Linker/Loader affinity

Datacenter Management

- SUMA patch tool
- NIM enhancements

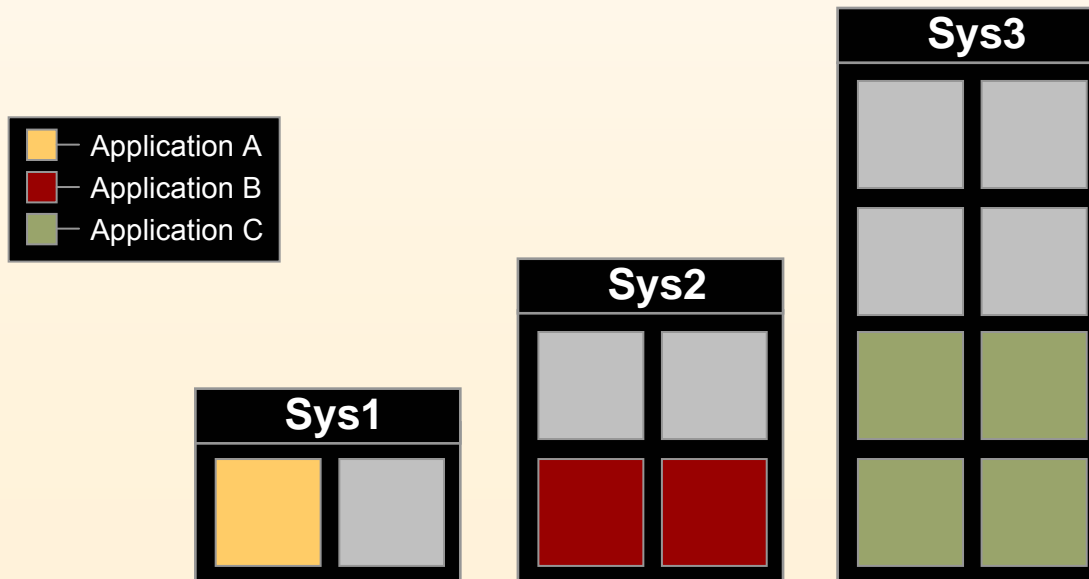
Many organizations today run a single application on one or more servers

Buying more processing power than needed and getting . . .

more to manage

more costs

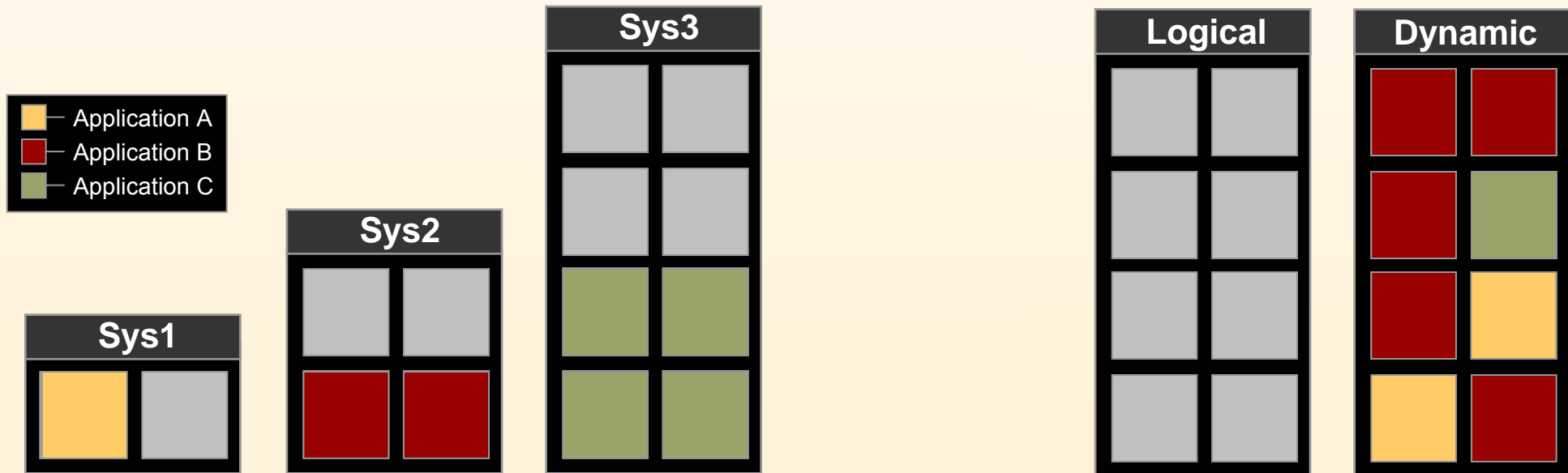
more headaches



IBM partitioning innovations help solve this problem

In 2001: Logical Partitioning enabled consolidation of multiple application workloads

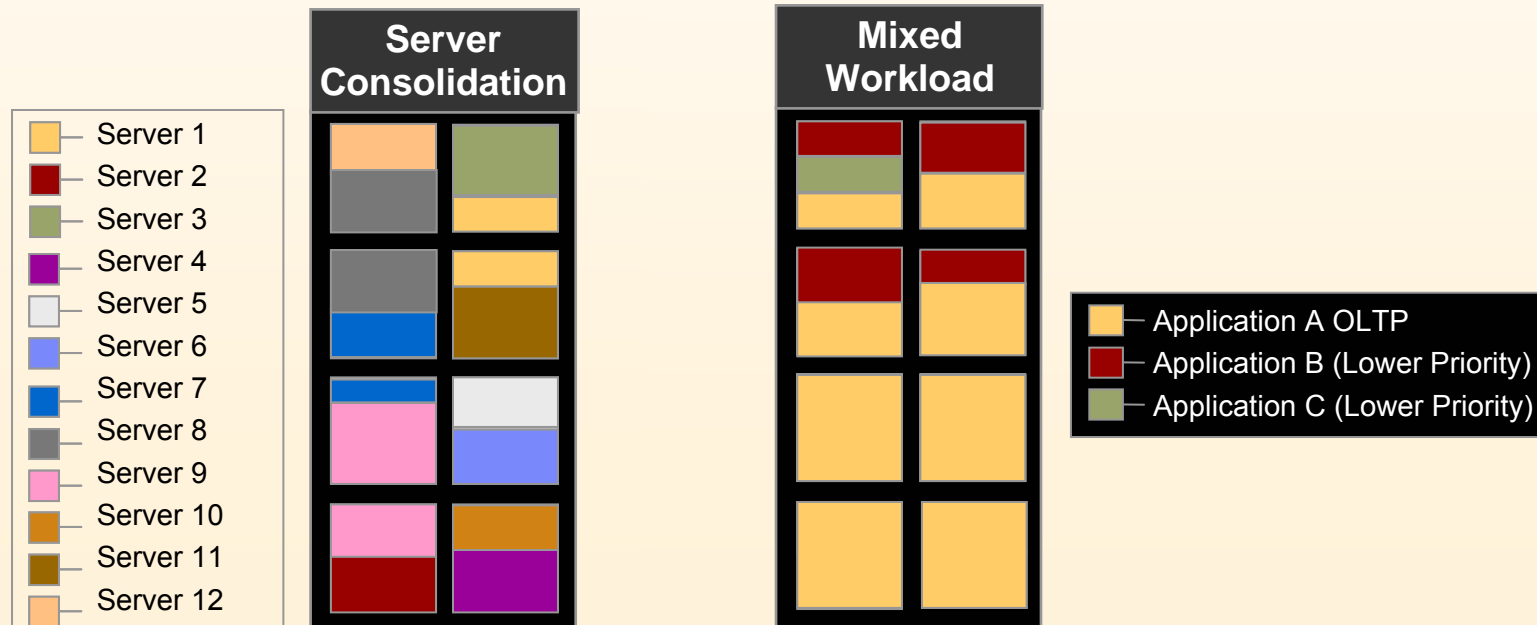
In 2002: Dynamic Logical Partitioning, enabled dynamic reassignment of workloads



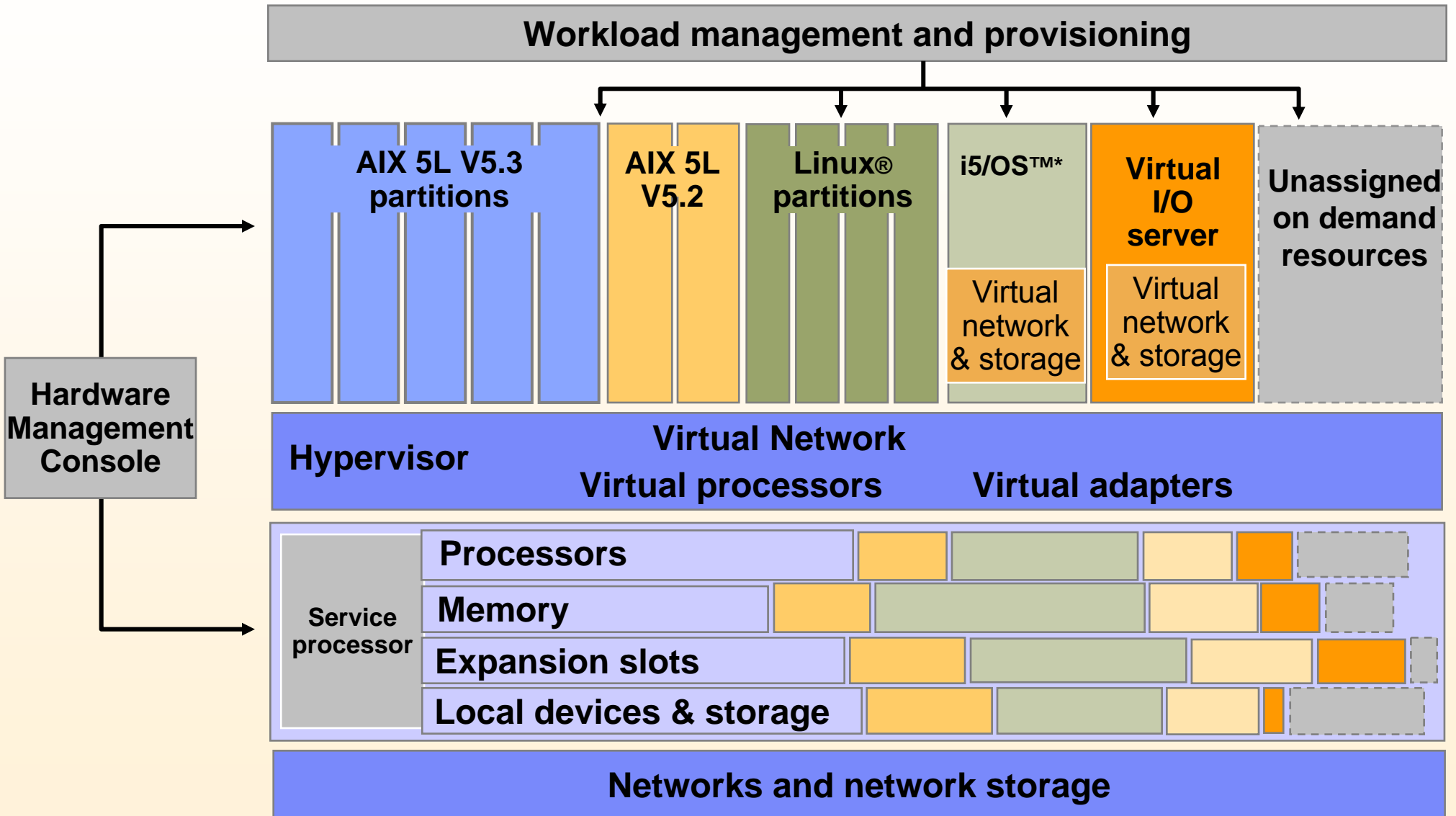
Micro-Partitioning™ enables even more flexibility

Designed to support both server consolidation and a mixed workload

- *simplify your environment*
- *rapidly respond to changing needs*
- *drive higher system utilization*
- *automatically*
- *for less*
- *and, with fewer headaches*



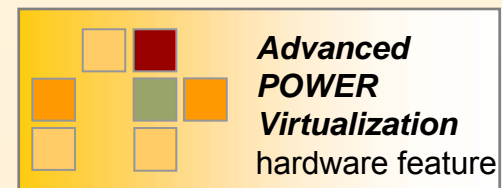
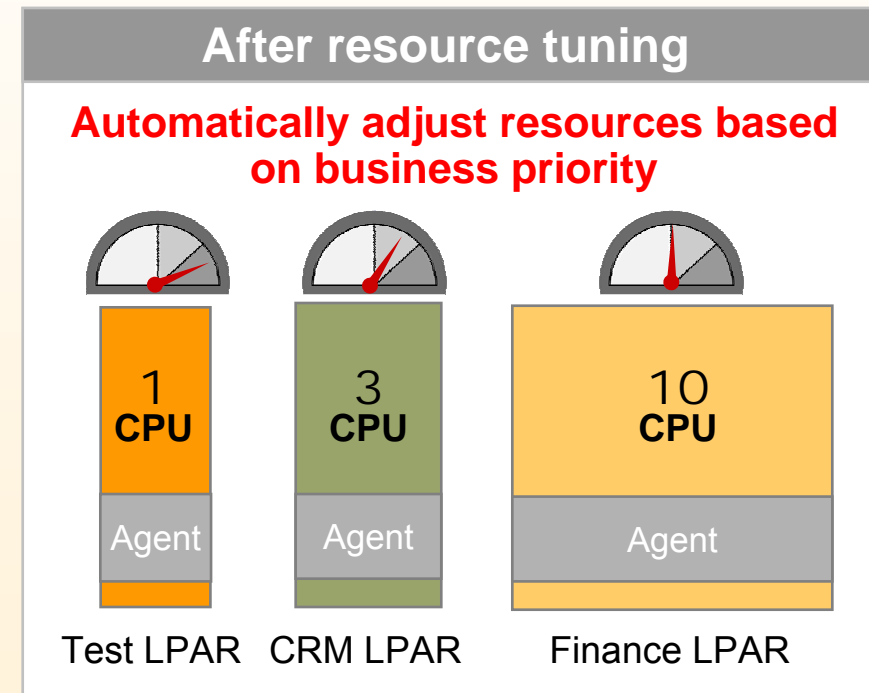
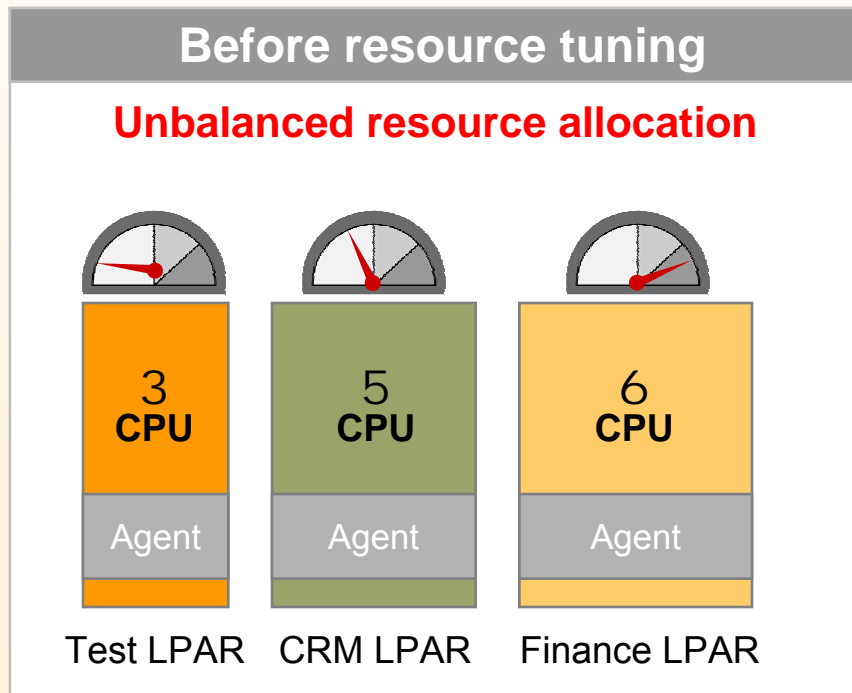
eServer i5 and p5 systems virtualization architecture



*Planned for select p5-570 models

Partition Load Manager

- Policy-based, automatic partition resource tuning
- Dynamically adjust CPU and memory allocation
- Works with AIX 5L V5.2 and V5.3

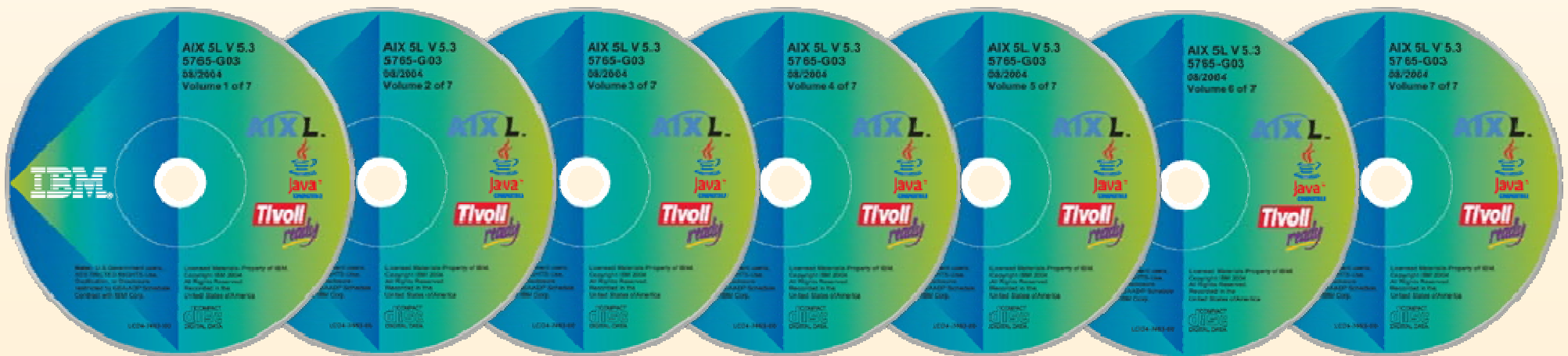


AIX Licensing and Packaging

AIX 5L V5.2 and V5.3 separately priced on POWER5 systems

- Provides customers the flexibility to order AIX 5L, Linux, or i5/OS on POWER5 systems to best meet their server environment needs
- AIX 5L is priced by active CPU

AIX 5L releases will remain as part of system entitlement on POWER4 and earlier pSeries systems.



AIX 5L V5.3 Scalability

Support for larger SMP server environments and high performance computing workloads

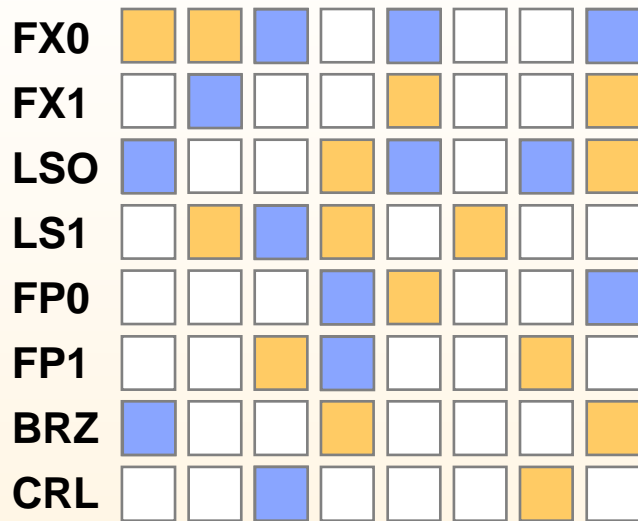
- Micro-Partitions support
 - **Up to 10 partitions per physical processor**
- Simultaneous Multithreading Processor (SMT)
 - **2 Logical processors per physical core**
- Designed to support 64 way SMP configurations
 - **128 way with SMT processors**
- Dynamic Large Page pool size
- Enhanced support for large device configurations
- 128MB - smaller memory size for partitions (POWER5)
 - **Increase/decrease memory in 16Mbyte increments**
- Kernel locking scalability
- LVM support for 1024 disk volume group
 - **New VG type “scalable”**



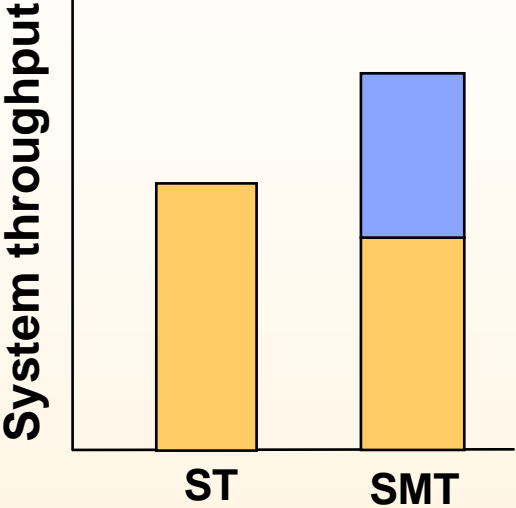
AIX 5L V5.3 & POWER5: Simultaneous multi-threading

Increased performance and throughput for most workloads

POWER5 (simultaneous multi-threading)



Appears as 4 CPUs per chip to the operating system (AIX 5L V5.3 and Linux)



- Utilizes unused execution unit cycles
- Presents symmetric multiprocessing (SMP) programming model to software
- Natural fit with superscalar out-of-order execution core
- Dispatch two threads per processor: *“It’s like doubling the number of processors.”*
- Net result:
 - **Better performance**
 - **Better processor utilization**

AIX5L V5.3 Advanced Accounting

Accurate billing data for comprehensive, usage-based charge-back

- **New, mainframe-inspired accounting subsystem**
- **Administrator-defined projects (cost centers)**
- **Classification can include an entire partition/system or all the way down to individual applications**
- **Allows accurate billing of customers in server consolidation environments**
- **Supports SMP servers, dedicated LPARs and Micro-Partitions**
- **Accounting data includes**
 - Processing utilization, disks I/O, network interfaces, virtual devices and more



AIX 5L 5.3 Enterprise Storage

Standards-based support for current and emerging storage environments

- JFS2 File system shrink
- NFS V4
- Quotas for JFS2
 - **Limit classes for quotas**
 - *Group users into quota classes*
 - **New support for quotas greater than 2GB**
- LVM support for 1024 disk volume group
 - **New VG type “scalable”**
- Scalability enhancements for *fsck* and *logredo*
- Increased I/O throughput for large block operations
- Virtual SCSI host and client support for LPAR
- Service Location Protocol (SLP) support for iSCSI
- “Common Host Bus Adapter” (HBA) API version 2



AIX 5L V5.3 NFS Version 4

- **New protocol developed under IETF framework (RFC 3530)**
 - Significantly different than NFS V2/V3, not a set of incremental changes
 - Reuses and builds on existing NFS core components
- **Kerberos RPC security can be used with NFSv3**
- **New Access Control List functionality**
 - Supported on JFS2 and GPFS
- **Divided into mandatory and optional features**
 - Most advanced features are optional
 - *For example: Geographic sharing to aid replication and migration*
- **New security**
 - Identity for access is a string / principal name (joe@sec_realm). Not numbers (uid, gid) as in V2/V3
- **TCP mandated for transport (not UDP)**
- **Multi-Platform considerations**
 - V4 adds considerations for non-UNIX platforms

The logo for NFS v4, with 'NFS' in large black letters, 'v' in red, and '4' in large black letters.

AIX 5L V5.3 Reliability, Availability, Serviceability

Improved system resilience through data capture, analysis and automated recovery

- **Better handling of spurious fiber channel device interrupts**
- **Trace enhancements**
 - Single Process Trace
 - SNAP interface to capture application data
 - Configurable trace buffer size greater than 10Mbytes
- **Dump enhancements**
 - DVD support for system dumps
 - Core file compression and other enhancements
- **Enhanced First Failure Data Capture (FFDC)**
- **Enhanced Power management scripts**
- **Error log hardening**
- **Concurrent microcode update support for POWER5 systems**
- **I/O Drawer Dynamic configuration (vary-on/vary-off) (POWER5)**



AIX 5L V5.3 System Management

Tools for managing your systems environment

- **Service Update Management Assistant (SUMA)**
 - Policy-based automatic download of updates
- **NIM Enhancements**
 - NIM communications security
 - *Secure replacement for rsh, client server secure ports*
 - Highly Available NIM – NIM backup master
 - Post install configuration of Etherchannel and Virtual IP Address
 - Pre and Post migration scripts support
- **NIM on Linux (Intel) (NIMoL)**
 - Subset of functionality to particularly support blade environment
- **eManager – EFIX management enhancements**
- **Security Scrubbing – Wipe out a drive prior to install**
- **“Java Web Start” Web-based System Manager client**
- **Web-based SM support for Virtualization, Adv. Accounting**



AIX 5L V5.3 Service Update Management Assistant

- Policy-based automate download of fixes from IBM to the customer's fix distribution center
- Policy can include different type of fixes to retrieve
 - *Specific APAR*
 - *All Critical fixes*
 - *Fixes associated with a particular fileset*
 - *I/O Server fixes (for Micro Partition environment)*
 - *All fixes*
 - *Entire Maintenance Level*
 - *Specific PTF*
 - *Security Fixes*
- Notification of requestor via email
- Advance notice of reboot requirement
- SMIT or command line interface



```

Create a New SUMA Task

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

[Entry Fields]

DISPLAY name for this task      []
ACTION                          Download      +
* Directory for item STORAGE    [/usr/sys/inst.images] +
TYPE of item to request         APAR       +
NAME of item to request         []
LEVEL of item to request        []
Get PREREQUISITES/COREQUISITES? yes          +
Get IFREREQUISITES?            yes          +
Get SUPERSEDING items?         yes          +
Get items which fix REGRESSIONS/PEs? IfAvailable +
REPOSITORY to filter against    [/usr/sys/inst.images] +
* BASE ML to filter against     [5300-01]  +
* SYSTEM or lspp path to filter against [localhost] +
* MAXIMUM total download size (MB) [256]      #
EXTEND file systems if space needed? yes       +
* MAXIMUM file system size (MB) [2048]        #

Scheduling Options:
* NOTIFY email address          []            +
* Repeat FREQUENCY              [1]       #
* Repeat Frequency UNITS        hours +
* Starting TIME                  [1139]    +
* Starting DAY                   [15]      +
* Starting MONTH                 February +
* Starting YEAR                  [2004]   +

F1=Help      F2=Refresh      F3=Cancel      F4=List
F5=Reset     F6=Command     F7=Edit       F8=Image
F9=Shell     F10=Exit       Enter=Do
  
```


AIX 5L V5.3 Security & Directory

System intrusion detection and authentication enhancements

- Planned Common Criteria Evaluation for AIX 5.3
- Remove 8 character user ID limit
- NFSv4 ACL support on JFS2 and GPFS
- Change initial login license limit to 32767
- Server-based LDAP authentication
- Kerberos-based LDAP client/server connection
- Preferred server configuration option for LDAP client
- Support for passwd.adjunct NIS map
- PAM exploitation by network applications
- Rewrite of libs.a and libcs.a for scalability and performance



AIX 5L V5.3 New and updated Commands and Libraries

■ Many command enhancements

- “*ps -T*” to list all child processes
- Add “+=” and “%” operators to *make*
- “*nohup*” an existing process
- timestamped shell histories
- *cron* logging controls
- recursive *grep*
- *tar* recursion control
- New *date* formats
- Restricted Korn shells
- *fuser* update – different kill options
- *find* files changed in the last N minutes
- *perl* upgrade from 5.8.0 to 5.8.2
- Man page formatting and enhanced support for html-based man pages
- Add *getloadavg* system call
- Expand max line length for *grep*, *awk*, *vi*, *ed*, and *head* to 8192 or greater



```

$ ps -T 1
  PID  TTY  TIME CMD
    1  -  0:00 init
  4156  -  0:00 \--shlap
  5722  -  0:00 \--rgsr
  6014  -  0:00 \--cron
  7246  -  0:00 \--syncd
  7508  -  0:00 \--errdemon
  8256  -  0:00 \--n4bg
  8514  -  0:00 \--n4rp
  9030  -  0:00 \--nfsSM
  9932  -  0:00 \--rpc.lockd
 11974  -  0:00 \--random
 14044 lft0 0:00 \--ksh
 14340  -  0:00 \--diagd
 17420  -  0:00 \--uprintfd
 18394  -  0:00 \--srcmstr
  3964  -  0:00 \--hostmibd
  4620  -  0:00 \--rmcd
 10388  -  0:00 \--syslogd
 10670  -  0:00 \--IBM.AuditRMd
 10924  -  0:00 \--aixmibd
 11694  -  0:00 \--rpc.statd
 12254  -  0:00 \--writesrv
 13234  -  0:00 \--biod
 13596  -  0:00 \--qdaemon
 14326  -  0:00 \--portmap
 15102  -  0:00 \--sendmail
 15316  -  0:00 \--inetd
 13024  -  0:00 | \--telnetd
 17892 pts/1 0:00 | \--ksh
 13332 pts/1 0:00 | \--ps
 15580  -  0:00 \--snmpmibd
 15618  -  0:00 \--IBM.ServiceRMd
 16302  -  0:00 \--rpc.lockd
 17082  -  0:00 \--IBM.CSMAgentRMd
 17338  -  0:00 \--IBM.ERrmd
 18080  -  0:00 \--snmpdv3ne
  
```

ps -T example

AIX 5L V5.3 Development Environment

Software development and debugging tools

- *procmon* – New process performance monitoring tool
- Debug *malloc* enhancements - thread debugging
- Linker/Loader compatibility enhancements
- *dbx* enhancements: disable/enable watchpoints
- Additional POSIX Realtime APIs
- New malloc algorithm “watson” for multithreaded applications
- *iostat* support for AIO
- *kdb* enhancements
- Java-based *trace* GUI
- "Java aware" *dbx*
- Java 1.4
- AIX development workbench
 - Included but not officially supported as a standalone application



AIX 5L V5.3 Development Environment – POSIX Realtime

■ New POSIX Interfaces Supported

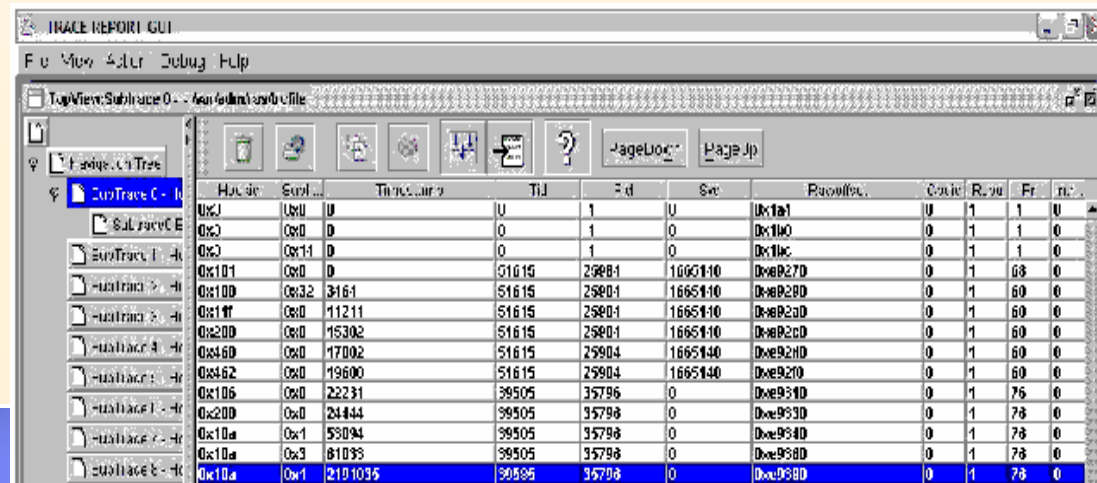
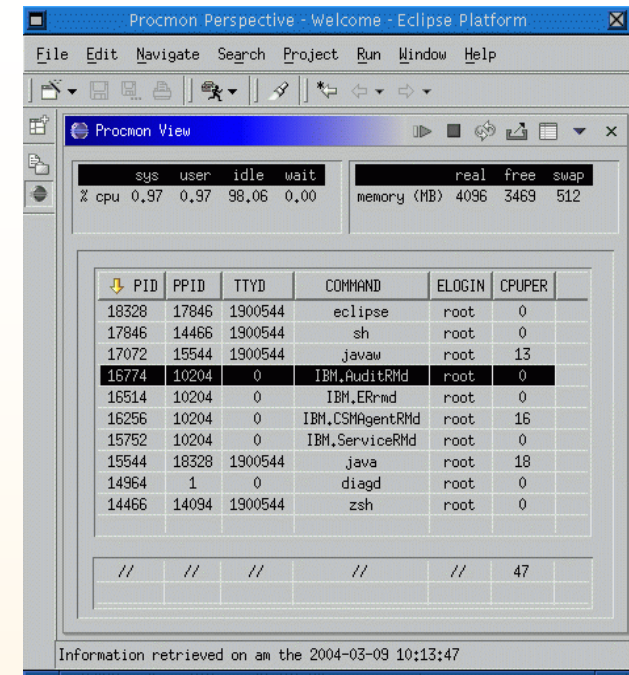
- Barriers
- Spin Lock
- Clocks
- Thread Options
- Memlock
- Priority Scheduling
- Message Passing
- Semaphores
- Timers
- Advisory info



POSIX®

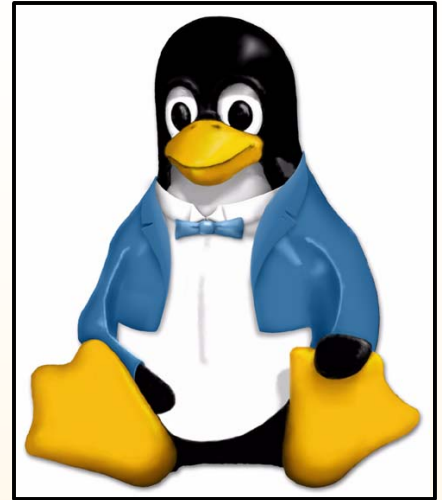
AIX 5L V5.3 Performance Tool changes

- *procmon* : Process performance monitor
 - Configurable display
 - Run kill, renice, performance tools on processes
- *gprof* and *xprofiler* support for threads
- *iostat* support for Asynchronous I/O
- *sar* displays *avwait* & *avserv* disk metrics
- *mpstat* command to display logical processor statistics
- *lparstat* command to display configuration, utilization
- *libperfstat* support for micro-partitioning and SMT
- *PMAPI*: new tools and APIs
- *trace* graphical interface
 - Java GUI version of *trcrpt*
 - Configurable display



AIX 5L V5.3 Affinity features

- POSIX Realtime APIs
- GNOME desktop 2.4
- Removal of 8 character userid limit
- Linker/Loader compatibility enhancements
- *dbx* enhancements
- LDAP server-side authentication
- man page formatting
- grep, awk, vi line length expansion
- *passwd-adjunct* NIS map
- NFS v4
- CSM integration with IBM Director
- += operator for *make*



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- **Broad Application Support:** Independent software vendors recognize AIX 5L as a premier UNIX operating system.
- **Compelling Performance:** New simultaneous multithreading with AIX 5L v5.3 on POWER5 systems delivers up to 40% performance improvement over AIX 5Lv5.2.
- **Ease of Migration:** IBM's customized service offerings make migration from competitive UNIX platforms to AIX 5L quick and easy - consolidate all of your UNIX workload onto AIX 5L.

AIX 5L Summary

- ***Robust scalable UNIX platform for critical applications***
 - ***Strong affinity with Linux for flexible solutions that fit your business***
- ***Connections needed for ebusiness and network computing***
 - ***Security you can count on***
 - ***Systems and network management that puts you in control***
- ***Industry standards-based platform that offers freedom of choice***
- ***Service and support to keep a business running***





IBM eServer iSeries

Migration Considerations

The Migration Factory

+ 1-866-Migr8te

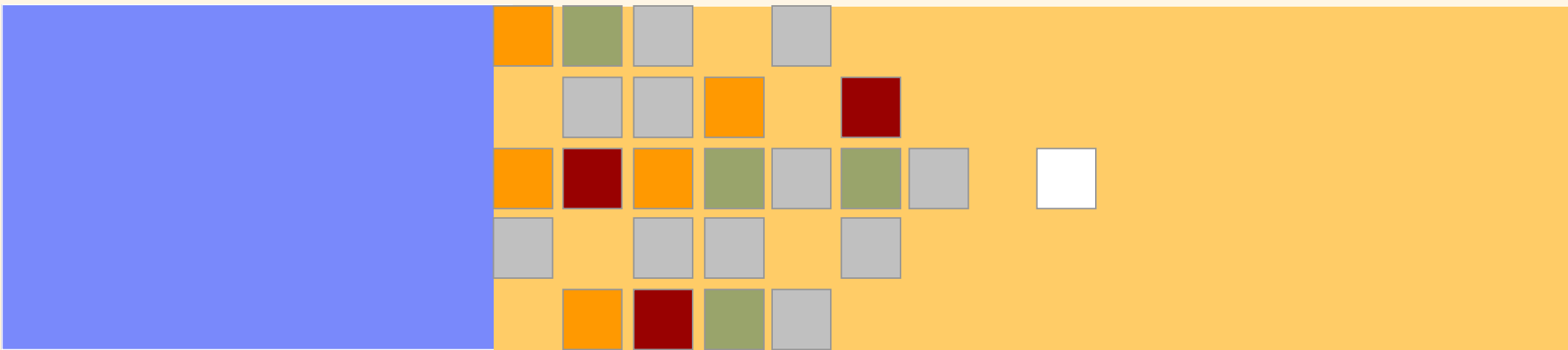
Migr8te@us.ibm.com

Ann Detjen
Business Development Manager
IBM Migration Factory



Migration Concerns and Risk

- Technical...can it be done?
- Cost...can it be done within the budget?
- Schedule...can it be done on time?
- Operational...will it work?



When your “Application Environment” faces a change....

What are your options?

- 1 Do nothing.**
 - Live with vendor commitments*
 - Run in an unsupported mode, hardware and software*
- 2 Completely replace the application.**
 - Replace the application with ISV package or re-write it.*
- 3 Protect your investment.**
 - *Migrate*
 - *Rehost*
 - *Renovate*
 - *Consolidate*

The Migration Factory's core competencies



- Provide and leverage many person-years of application migration experience
- Since 1985.....*it's the only thing we do*
- Mitigate and reduce the risk in moving applications from one platform to another
- Reduce the cost of moving applications from one platform to another
- Support success through process, expertise and project management

“Proven, Repeatable, Definable”

Experienced across all industry sectors

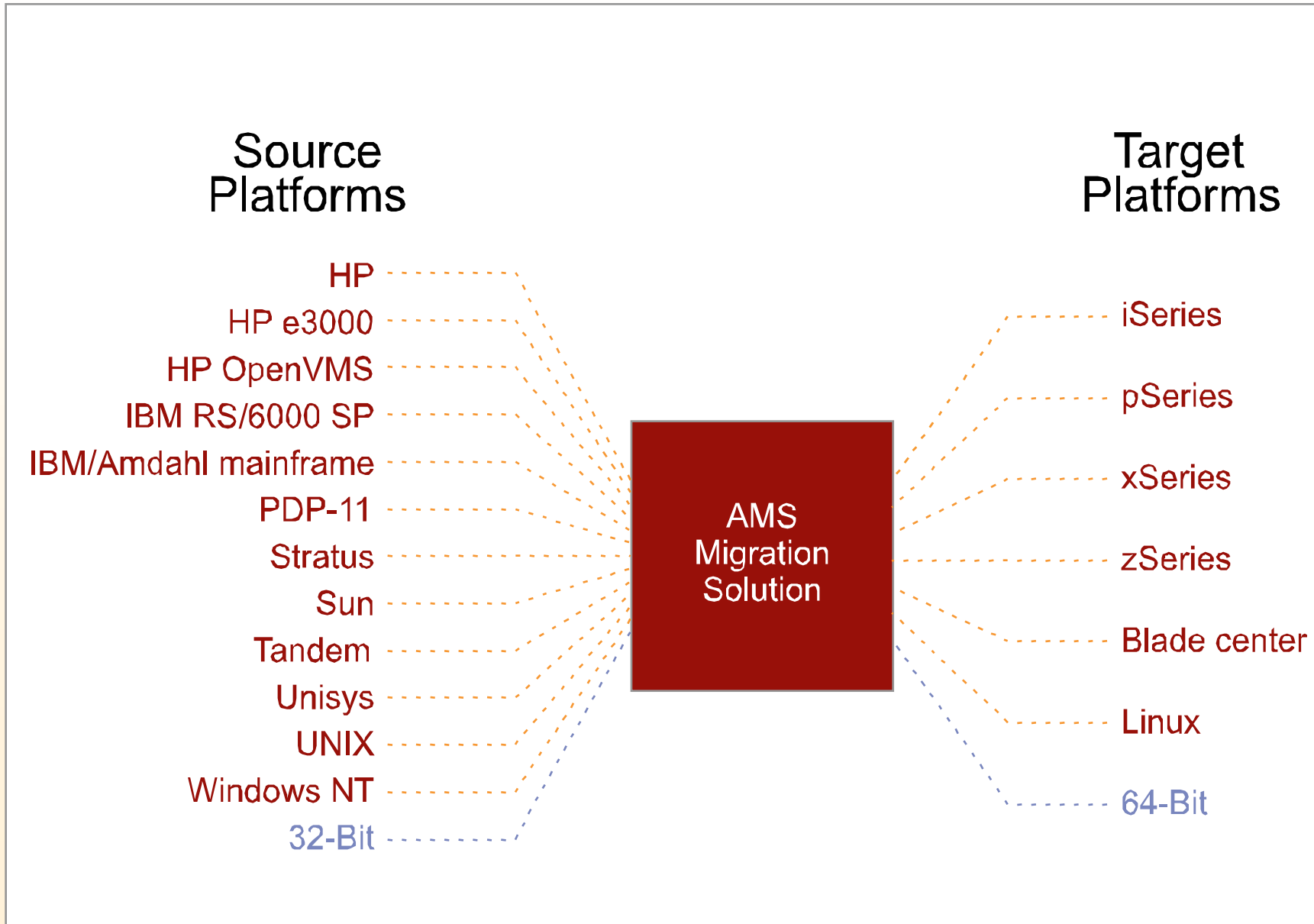
***Banking, finance, manufacturing, education,
chemical and petroleum, telecommunications,
aerospace and defense and more.***



Migration Factory Core Competencies

- Application Porting & Migration to AIX and Linux
Sun Solaris
 - Solaris C/C++ Migration OfferingHP HP-UX, Tru64 UNIX
Sequent DYNIX/ptx
IBM / OEM Mainframe
Others
 - HP 3000 MPE
 - HP VMS / OpenVMS
 - HP/Tandem NSK
 - SGI Irix
 - DG-UX
 - Windows
- Database/Data Migration, Conversion, Upgrade
 - Oracle, DB2, Informix, Sybase, Rdb etc.
 - Select Automated Data Migration Tools for Cross Platform Data Migration
 - Oracle Database Migration Services Offering
- SAP, PeopleSoft & Oracle E-Business Suite Migration
- Server, Application & RDBMS Consolidation

Platform Migration Scenarios



The Migration Process - Summary

Prequalification

- Technical questionnaire
- Define the timeframe for a response
- Customer meeting with the migration factory

Assessment

- Review the current effort
- Define the approach and plan
- Estimate schedule and cost

Migration

- Baseline
- Migrate and Test
- Acceptance Test
- UAT
- Deploy










Lessons Learned...



- For custom applications...migrate like for like.
- Recode only when necessary
- Reuse the code base where ever possible
- Migrating NEW applications in development involves too much risk
- Utilize migration “tools” whenever possible
- ISV applications and databases can be upgraded to new versions as part of the migration process

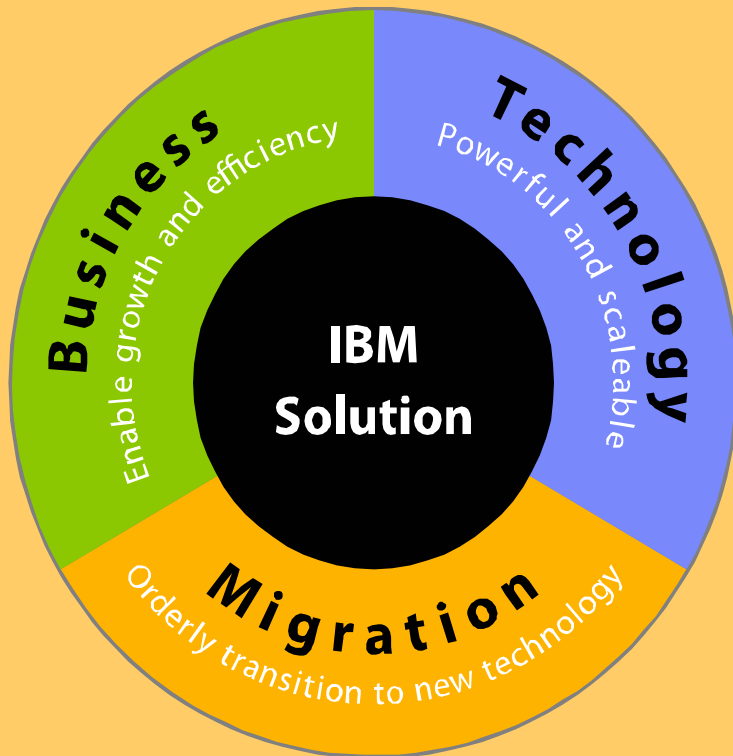
Test it, Test it....and then Test it Again..

What does The Migration Factory offer?

-   **1 In-depth skills for moving business logic applications and databases to IBM.**

-   **2 Migration expertise for custom-coded applications and many packaged ISV applications, legacy and UNIX environments**
-   **3 Seamless integration with IBM service groups**
-   **4 Twenty years of experience, the people, tools and a proven process...enhanced by *global* IBM support**
-   **5 The process to help you understand the size, scope, risk, effort, and cost of a migration project, before it starts**



The Total Solution



- **Technology**

- IBM's new Power technology offers vastly superior performance, scalability, and reliability.

- **Business**

- IBM's technology provides the best price performance for customers positioning themselves for the future.

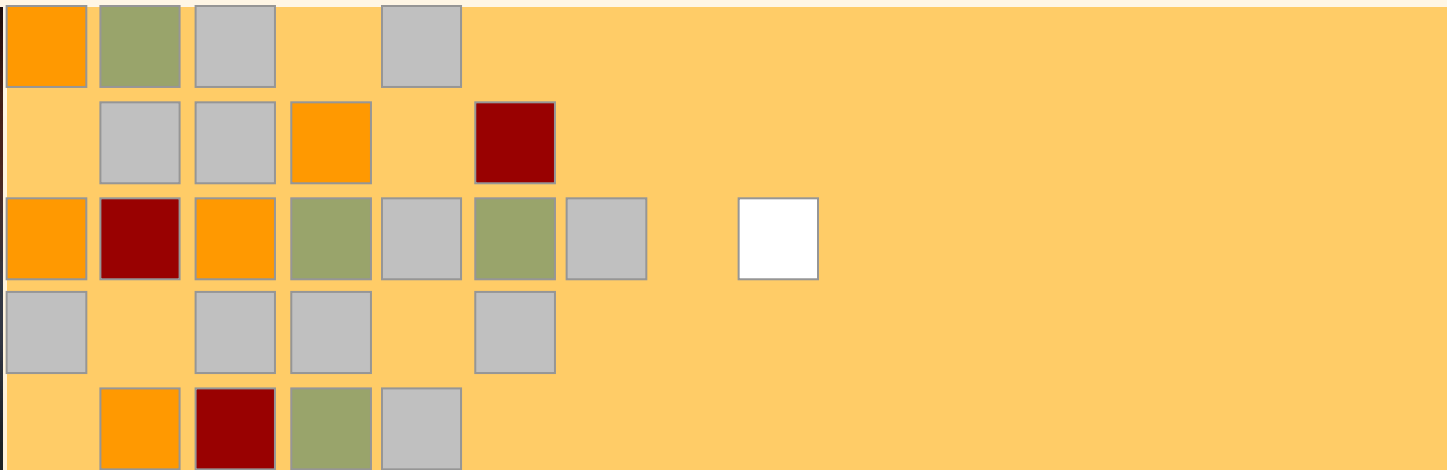
- **Migration**

- Protect the Customers Investment
- Reduce the "Worry"
- The Cost Effective Solution
- Minimize the risk

Contact the IBM Migration Factory

- Email: migr8te@us.ibm.com
- Voice: +1.866.MIGR8TE
- Local IBM sales team or IBM Business Partner

Give us the chance to tell you.. "it can't be done"





IBM eServer iSeries

Implementing AIX 5L on eServer i5

Vess Natchev
iSeries Technology Center



AIX 5L on eServer i5 Features

❑ Mission-critical UNIX on eServer i5

- 64-bit AIX 5L running on POWER5
- Consolidate i5/OS and AIX 5L storage
- “Killer app” example: database

❑ POWER5 LPAR Enhancements

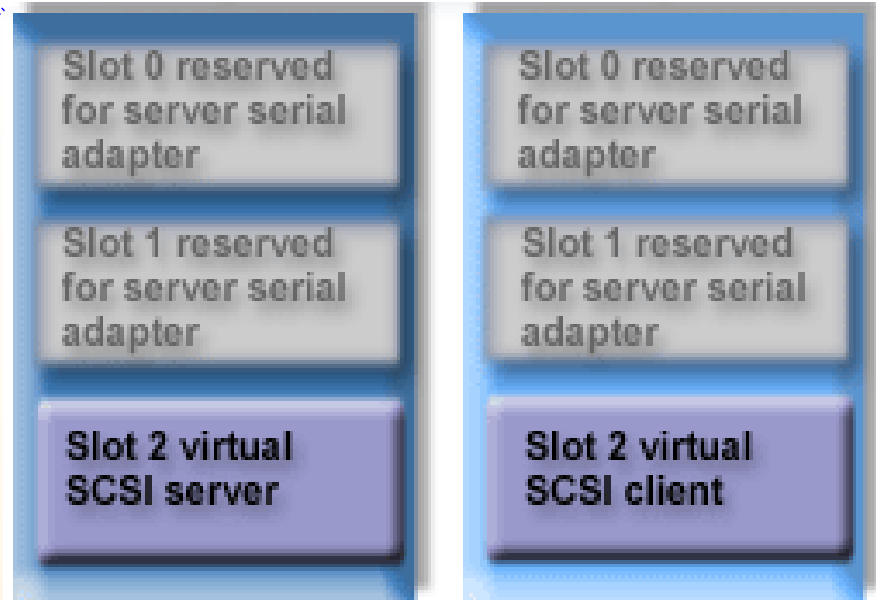
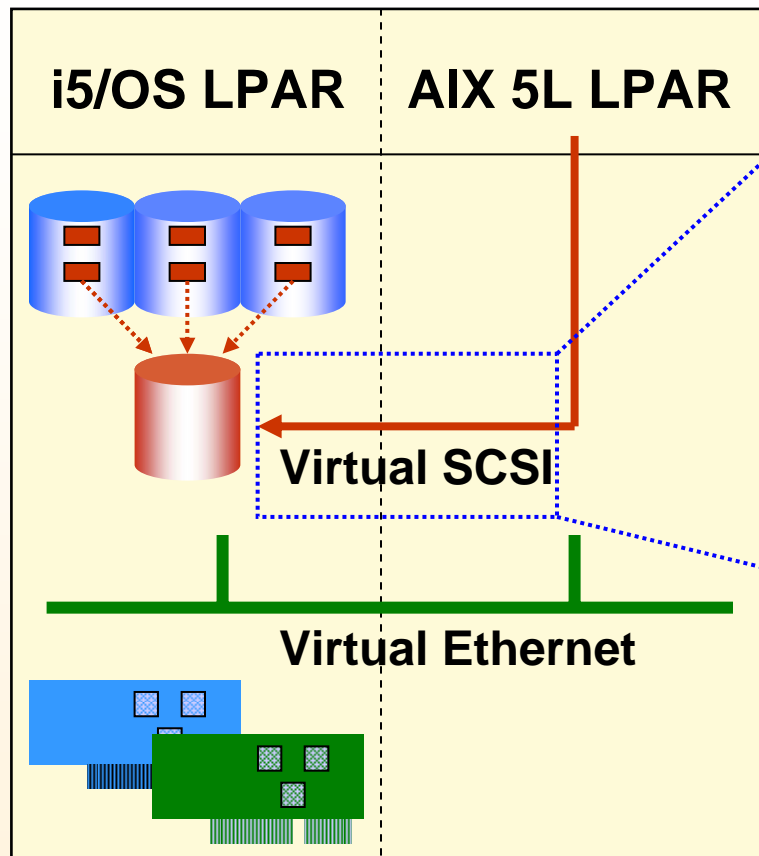
- Micro-partitioning (AIX 5L 5.3)
- Up to 254 AIX 5L LPARs
- Automatic CPU balancing
- Virtual Storage and Ethernet (AIX 5L 5.3)

❑ Across eServer i5 and p5

- AIX 5L 5.2: whole-processor granularity, direct I/O
- AIX 5L 5.3: Up to 10 LPARs/processor, virtual I/O

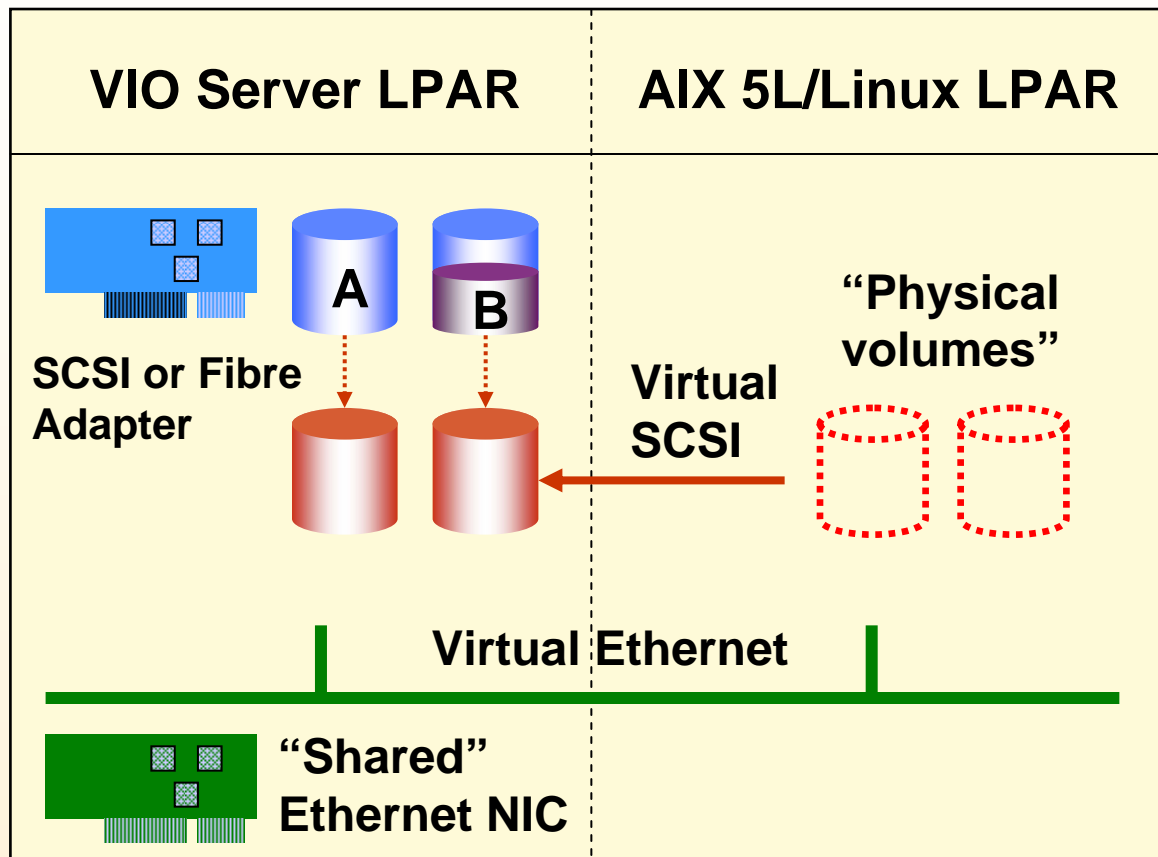


Virtualization for AIX 5L: i5/OS



- Virtual SCSI server and client adapters
- Configured in HMC
- Virtual disk for AIX 5L is created in IFS
- AIX 5L sees virtual disk as physical drive
- Leverage RAID-5, multiple disk arms, scatter-loading, single-level storage
- No support for Virtual CD/DVD or tape

Virtualization for AIX 5L: VIO Server



□ Virtual I/O Server:

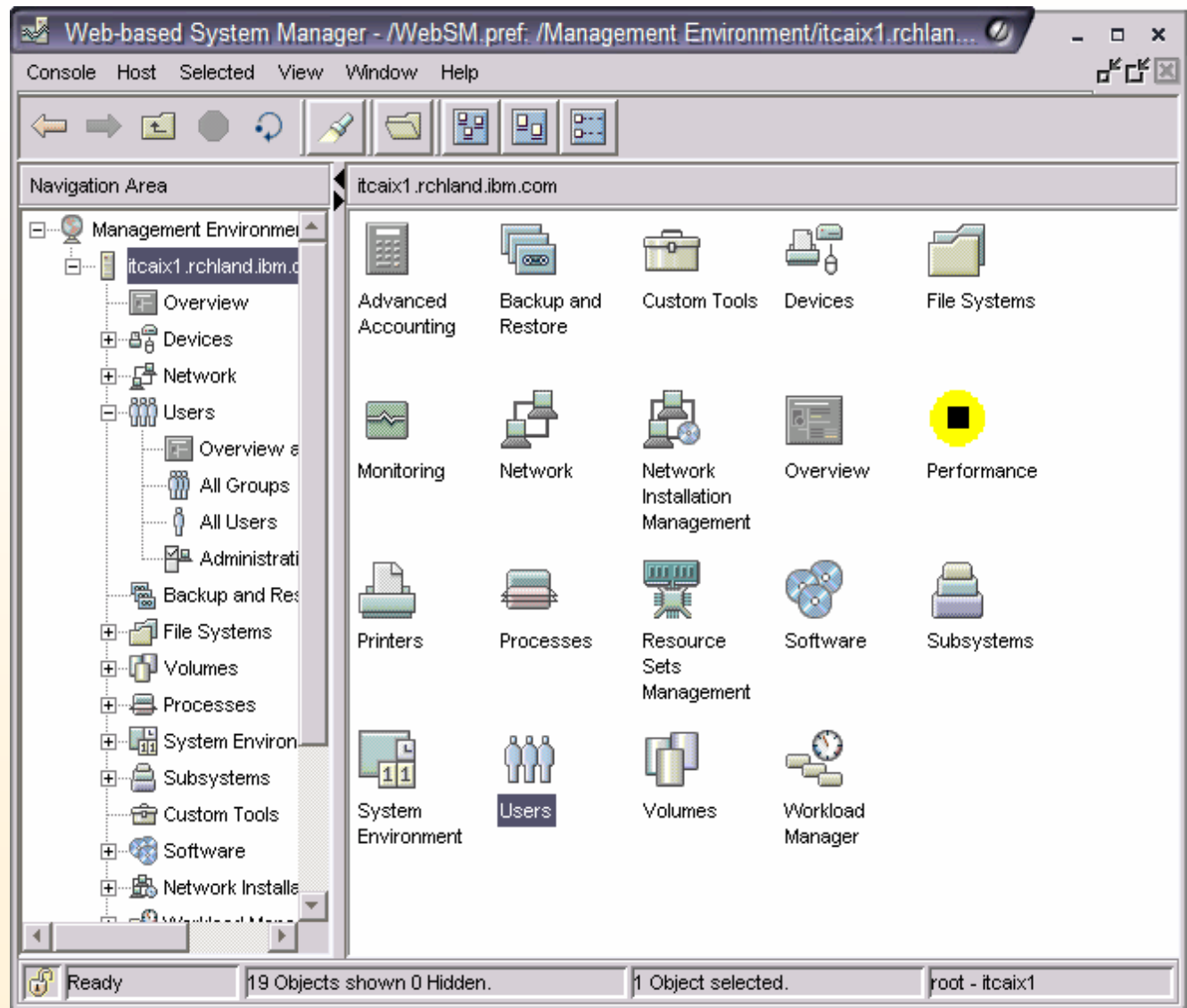
- Special "appliance" AIX 5L partition
- Not full version of AIX 5L; limited command-line management interface
- Identical on eServer i5 and p5
- Part of Advanced POWER Virtualization feature
- **Leverage POWER5 virtualization and existing investment in FASTT, other external storage**

□ VIO Server provides:

- Virtual storage and "shared" Ethernet networking to AIX 5L or Linux partitions
- Very similar functionality to virtual storage and networking in i5/OS

AIX 5L System Management: WebSM

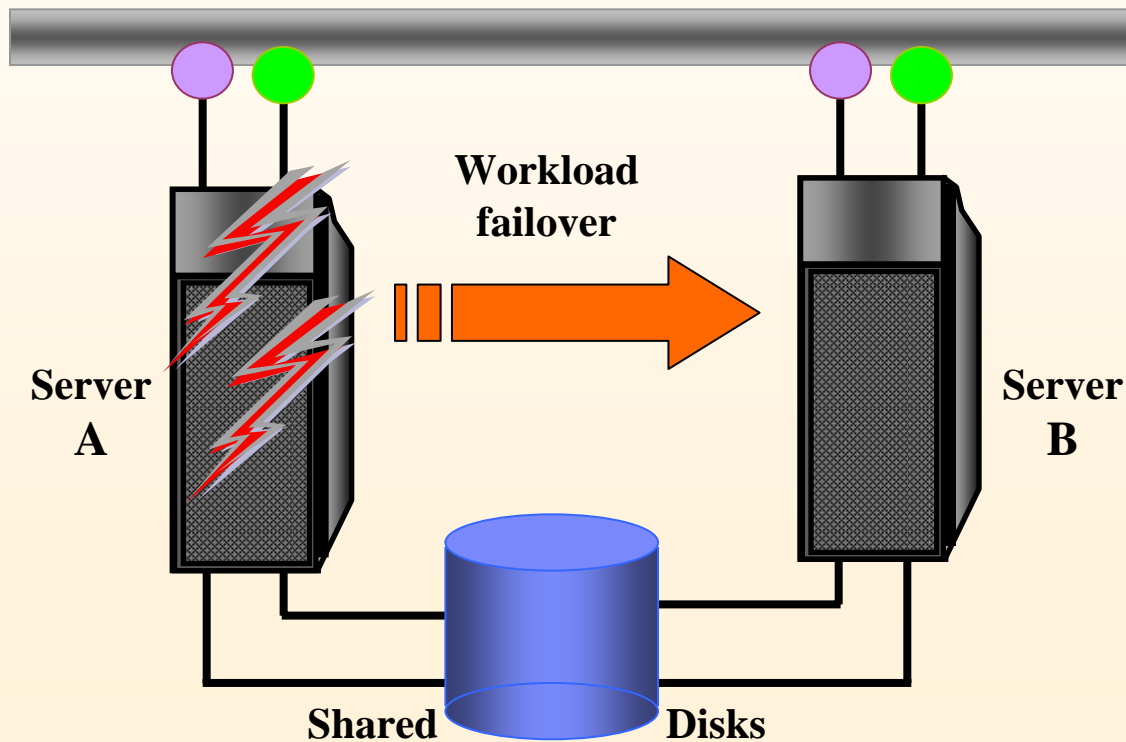
- ❑ Web-based System Manager
- ❑ Installs with AIX 5L
- ❑ Remote client connects to server running in AIX 5L
- ❑ Secure connection
- ❑ Similar to iSeries Navigator
- ❑ All aspects of system management
- ❑ Download WebSM client for Windows, Linux from your HMC!
http://your_hmc/remote_client.html
- ❑ Common PC look and feel; interface similar to HMC



AIX 5L High Availability: HACMP

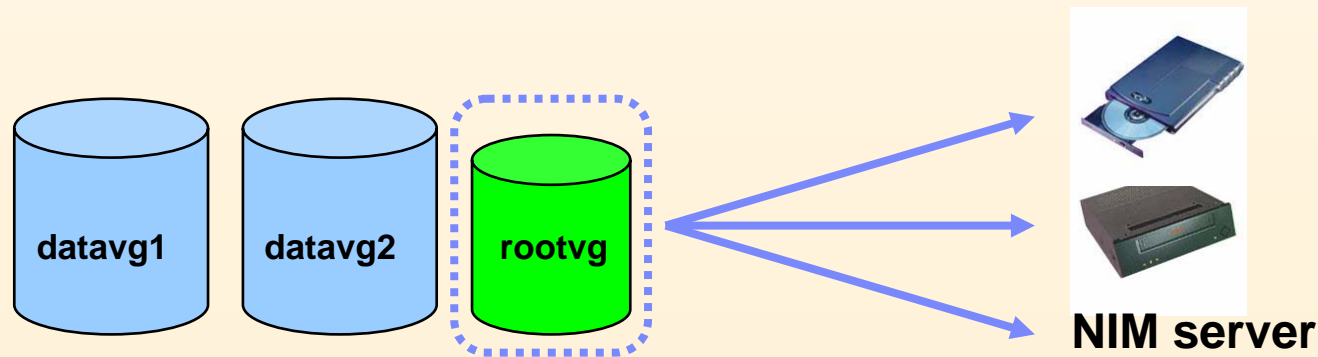
□ High Availability product that:

- Configures redundancy to **eliminate single points-of-failure**
- Automatically **detects failures** in application, hardware, storage or network
- **Failover to backups** or alternate systems
- Similar to i5/OS clustering with switched disk



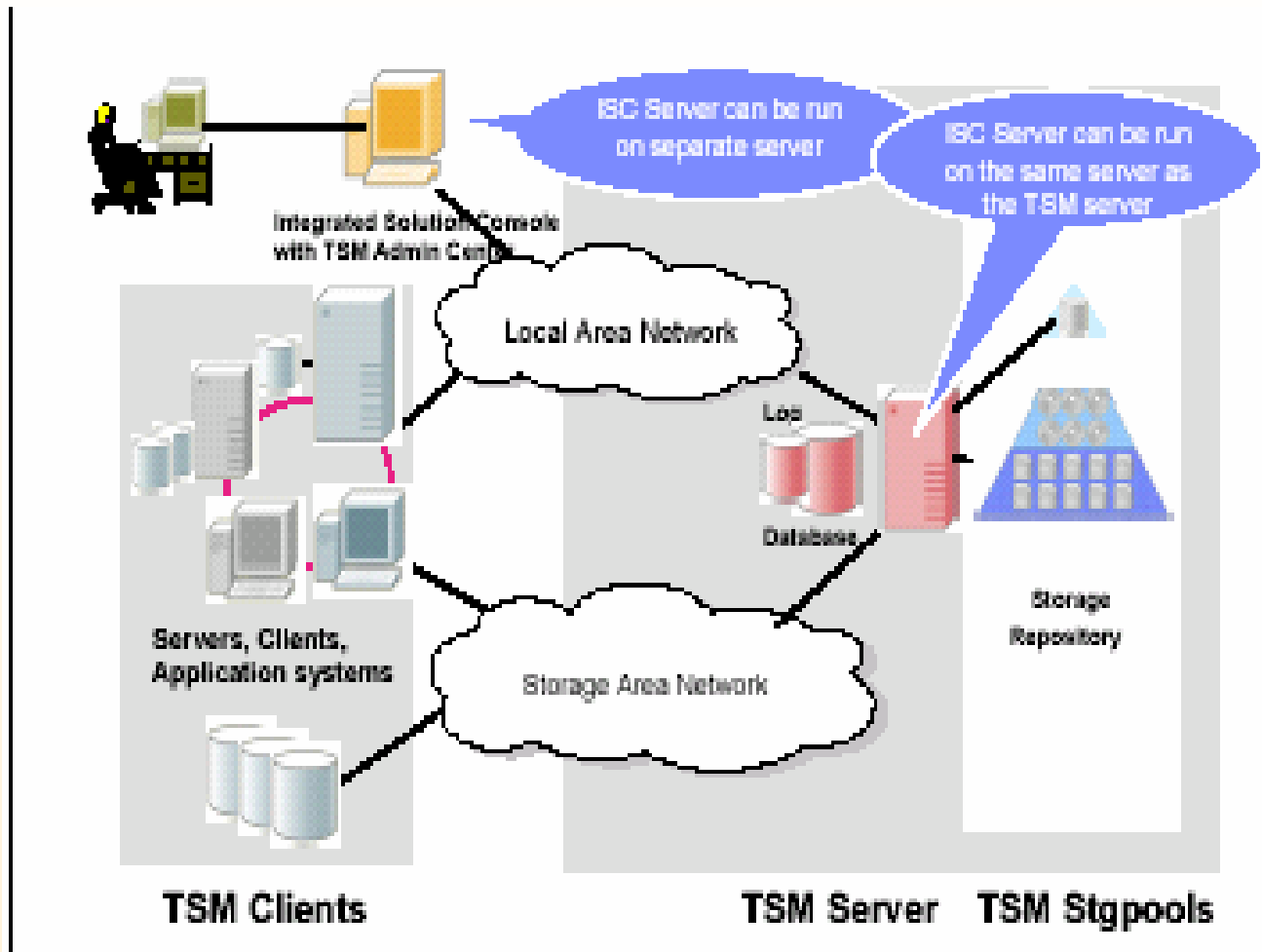
System-level Backup with mksysb

- ❑ The mksysb command creates a snapshot of the AIX 5L OS (or rootvg)
 - The snapshot can be written to tape, CD, or a file
 - The mksysb save image is bootable
 - The save preserves all settings, such as passwords
- ❑ mksysb is designed for disaster recovery
 - AIX 5L can be reinstalled from the save (from media or NIM server)
 - Does not provide incremental backup
 - Does not save other volume groups or logical volumes



File-level Backup with TSM

Tivoli Storage Manager (TSM)



- Provides file-level, incremental backups
- Works very well with mksysb for full system restores and DR
- Very wide use in AIX 5L computing environments
- TSM Server can be in AIX 5L, Linux or Windows
- In AIX 5L environments, TSM server and clients usually run in AIX 5L
- Mature product with extensive support available:
<http://www-306.ibm.com/software/tivoli/products/storage-mgr/>

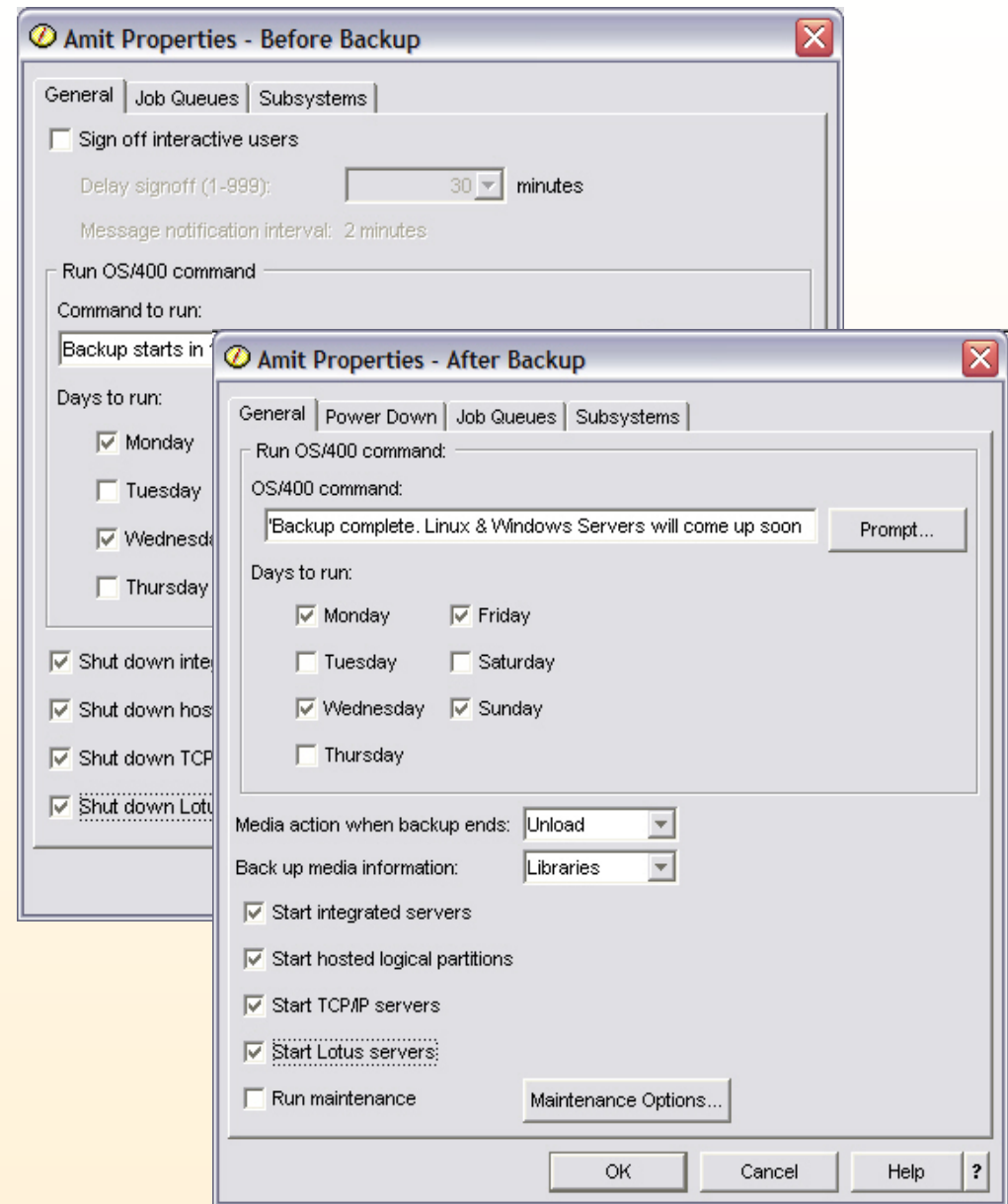
Backups for Hosted AIX 5L: BRMS

□ Backup Recovery Media Services

- i5/OS LPP
- Centralized, automated backups
- Supports i5/OS, and Virtual SCSI for AIX 5L and Linux partitions, IXA/IXS
- GUI management through iSeries Navigator

□ Simple backup policy creation

- Tasks before backup: shut down hosted partitions (AIX 5L, Linux)
- During backup: what to back up, when, where
- After backup: start hosted partitions



Additional AIX 5L and POWER5 Resources

- ❑ **AIX 5L on eServer i5 Web site:** <http://www-1.ibm.com/servers/eserver/series/aix>
- ❑ **AIX 5L on eServer i5 Course:** http://www-306.ibm.com/services/learning/ites.wss/us/en?pageType=course_search&sortBy=5&searchType=1&sortDirection=9&includeNotScheduled=15&rowStart=0&rowsToReturn=20&maxSearchResults=200&searchString=as570
- ❑ **AIX 5L on eServer i5 Redbook:** <http://publib-b.boulder.ibm.com/redpieces/abstracts/sg246455.html?Open>
- ❑ **POWER5 and HMC hardware documentation:** http://publib.boulder.ibm.com/infocenter/eserver/v1r2s/en_US/index.htm
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- ❑ **Fix Central:** <http://www-912.ibm.com/eserver/support/fixes>
- ❑ **DLPAR tips for AIX 5L:** <http://www-128.ibm.com/developerworks/eserver/articles/DLPARchecklist.html>
- ❑ **Service Agent:** https://www-306.ibm.com/services/cwi/portal/pagr/128/pa.128/161?category=5&locale=en_US
- ❑ **Software Update (SUMA):** <http://www-1.ibm.com/servers/aix/whitepapers/suma.htm>
- ❑ **Standalone Diagnostic CD:** <http://techsupport.services.ibm.com/server/mdownload>



IBM eServer iSeries

Questions and Answers

www.ibm.com/series/aix

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