Unit 1
Introduction to IBM System p servers and AIX system administration
Unit objectives

After completing this unit, you should be able to:

- Define terminology and concepts of IBM System p servers
- List common configurations available for IBM System p servers
- Describe the roles of the system administrator
- Obtain root access with the su command
What is RISC technology?

Reduced Instruction Set Computing (RISC) processors aim to:

• Implement the most used instructions in hardware
• Execute multiple instructions in one cycle
• Provide synergy between hardware and software

Time to execute a program = Number of Instructions × Clock cycles per instruction × Time taken for a clock cycle

Optimized on pSeries machines

Depends on:
- Architecture
- Compiler

Implementation

Depends on:
- Technology
- Implementation
System p bus types

PCI

ISA

Processor

Exp Bus Xface

Base I/O Functions

PCI Bus

LAN

Graphics

SCSI
Workstation configuration

Single-User Graphical Workstation

- 1280 x 1024 Resolution
- Up to 16 M colors

Personal Computer Display or PowerDisplay 15, 17, 20, or 23 inches

Built-in Adapters
- Two serial ports
- SCSI
- Keyboard
- Mouse
- Diskette
- Ethernet
- Tablet
Server configurations

Multiuser System

System p
Server Unit
Async Adapter
ASCII Terminals

Networked System

Server
Disk storage
Printers
Programs
Login Sessions
System p

Network
File Transfer
Mail
Documentation
Other systems

Clients
PCs
System p

© Copyright IBM Corporation 2008
PC connectivity

System p

X Window
Client Programs

Network

PC

X Window
Server Software
Logical partitioning (LPAR)

- Resources allocated in flexible units of granularity
Logical partition virtualization
POWER6 system highlights

- **POWER6 processor technology**
  - 5th implementation of multi-core design
  - ~100% higher frequencies

- **POWER6 system architecture**
  - New generation of servers
  - New IO
    - PCIe, SAS / SATA
    - GX+ 12x IO drawers
  - Enhanced power management

- **Enhanced virtualization**
  - Partition Mobility (SoD)
  - Dedicated shared processors
  - Integrated Virtual Ethernet

- **Availability**
  - New RAS features
    - Processor instruction retry
  - Power management
AIX 6 highlights

• Workload partitions
  – Multiple instances of AIX images in single LPAR
  – WPAR mobility (on POWER4, POWER5, or POWER6)
  – WLM infrastructure for resource balance and constraint

• Security
  – Enhanced RBAC (roles)
  – Trusted AIX
  – Trusted execution
  – Encrypted filesystems
  – AIX Security Expert enhancements

• RAS
  – Virtual storage protection key
  – Processor recovery

• Performance
  – Dynamic page sizes and 32 TB memory support
  – Processor folding for donating dedicated
  – SPURR accounting for variable clock speeds
  – Math APIs for Decimal Floating Point (DFP)
  – Drivers for POWER6 related hardware
  • SAS, SATA, PCI-Express, HEA, and so forth
HMC management

- Hardware Management Console (HMC)
- Partition configuration and control
  - Dynamic partitioning for LPARs (AIX 5L V5.2 and later)
- Capacity Upgrade on Demand (CUoD)
- Diagnostics
- Operational management
- Remote HMC control
Remote access to the HMC

1. Alternate HMC
2. Windows, Linux, or AIX via the Web browser or WebSM
3. SSH access to HMC commands

© Copyright IBM Corporation 2008
HMC default console view
Role of the system administrator

- Pre-installation planning of:
  - User accounts/groups
  - Storage allocation/paging space
  - Subsystem (printing, networks, and so forth)
  - Standard naming conventions
  - Determine system policies
- Install and configure hardware
- Configure the software
- Configure the network
- System backup
- Create/manage user accounts
- Define and manage subsystems
- Manage system resources (for example, disk space)
- Performance monitoring
- Capacity planning
- Managing licenses for products
- Document system configuration and keep it current
Who can perform administration tasks?

• Usually exclusive to the root user
  – Bypasses any file permissions
  – Very dangerous to login as root
  – Keep the root password secure

• Some tasks can be performed by other users in special groups such as system, security, printq, and lp

• The su command allows you to obtain root's permissions or permissions of any user whose password you know

```
$ su root

or

$ su - root
```
1. What type of adapter are you likely to require for communicating from a logical partition?
   a. Asynchronous
   b. Graphics
   c. Ethernet

3. True or False? The adapters seen by the AIX operating system, in an LPAR, may be either physical or virtual.

4. True or False? The su command allows you to get root authority even if you signed on using another user ID.
1. What type of adapter are you likely to require for communicating from a logical partition?
   - Asynchronous
   - Graphics
   - Ethernet

3. True or False? The adapters seen by the AIX operating system, in an LPAR, may be either physical or virtual.
   True, with POWER5 the LPAR can have virtual SCSI and Virtual Ethernet adapters.

5. True or False? The su command allows you to get root authority even if you signed on using another user ID.
   But, you must also know the root password.
Exercise 1: root login methods

• Direct logins to root
• Using the `su` command
Unit summary

• Common configurations
  – Single-user graphics workstation
  – Multiuser ASCII
  – Networked system
  – X Window-enabled PC

• New features for:
  – POWER6
  – AIX 6

• System administrator's role:
  – Pre-installation planning
  – Install hardware, software, network
  – Manage user accounts, system resources, licenses
  – Backup/recovery
  – Define subsystems
  – Performance monitoring, capacity planning