



Unit 1

Introduction to IBM System p servers and AIX system administration



Unit objectives

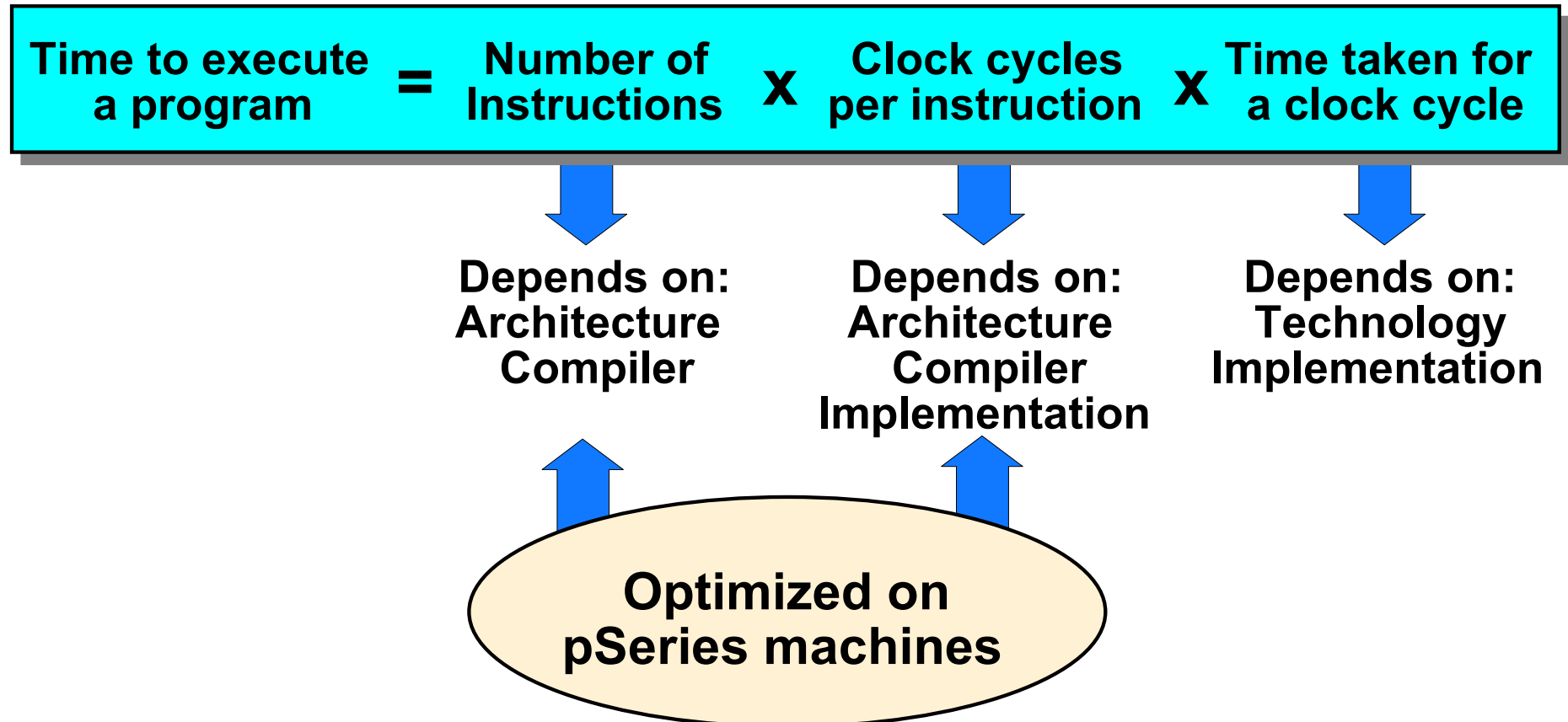
After completing this unit, you should be able to:

- 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

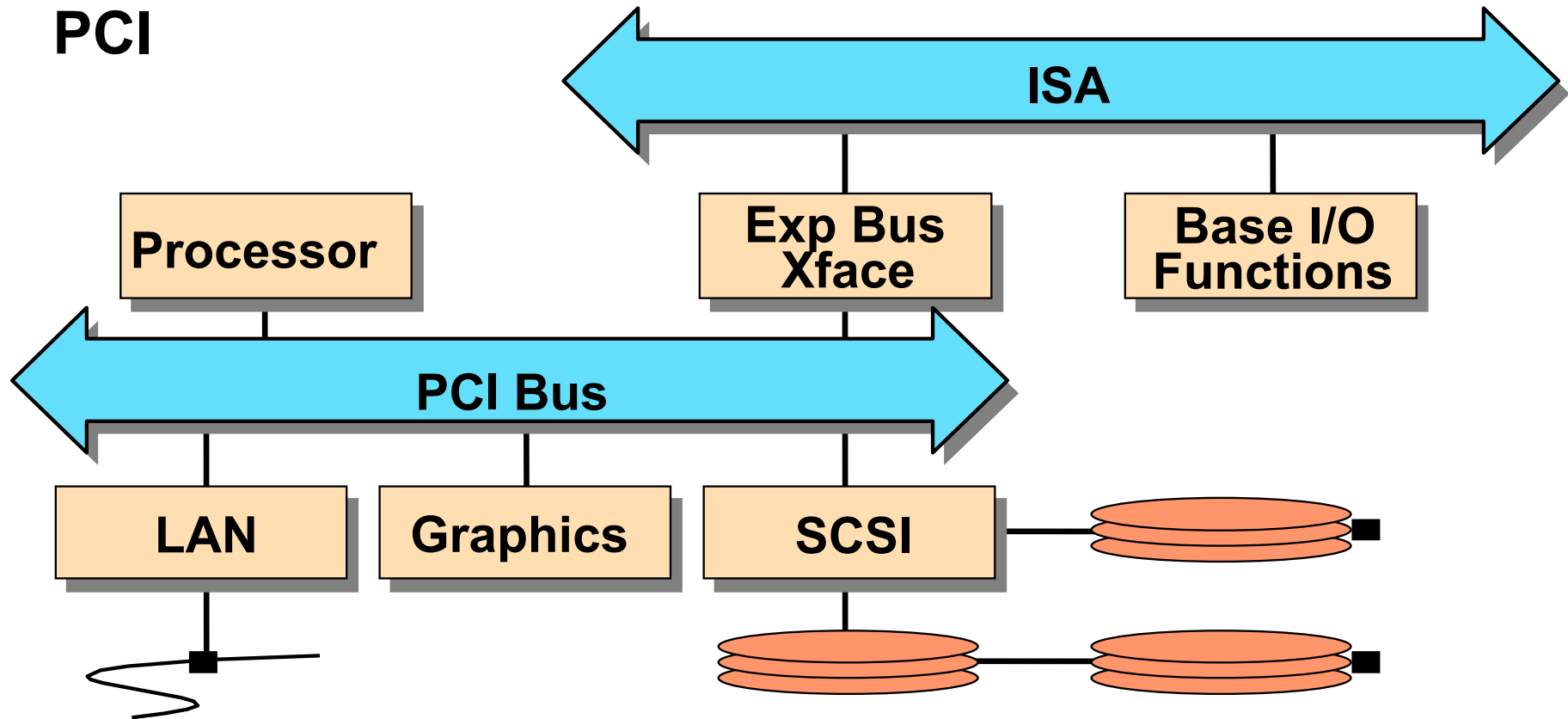
What is RISC technology?

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

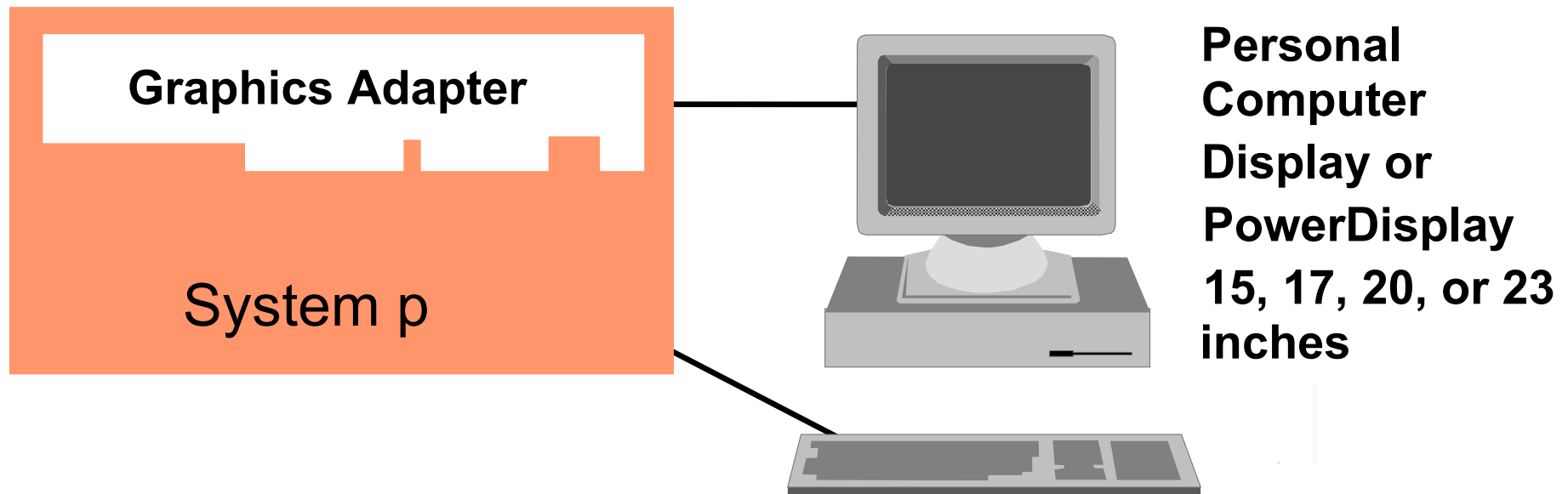


System p bus types



Workstation configuration

Single-User Graphical Workstation



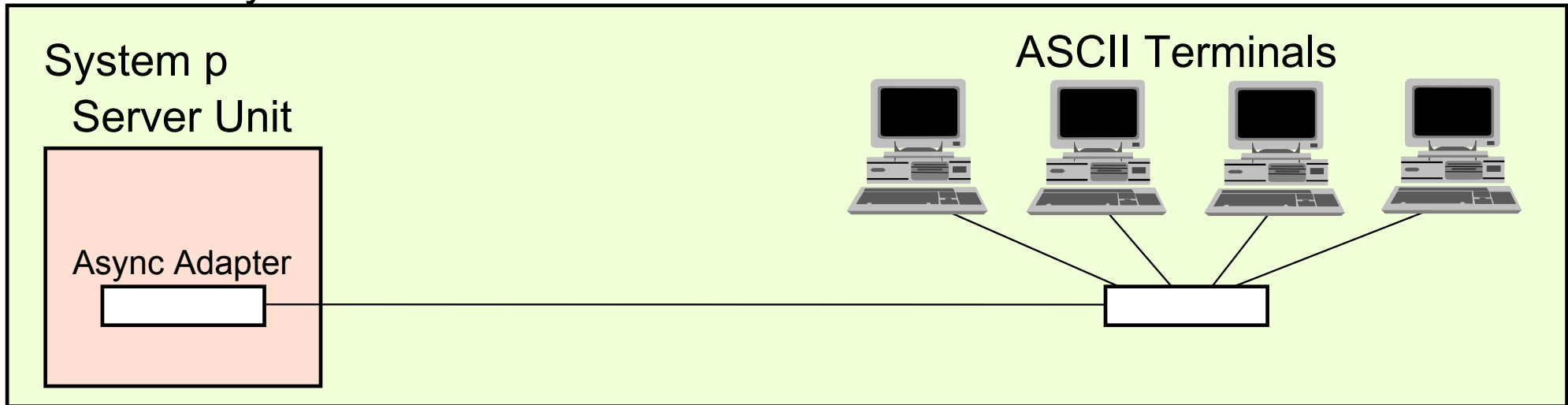
- 1280 x 1024 Resolution
- Up to 16 M colors

Built-in Adapters

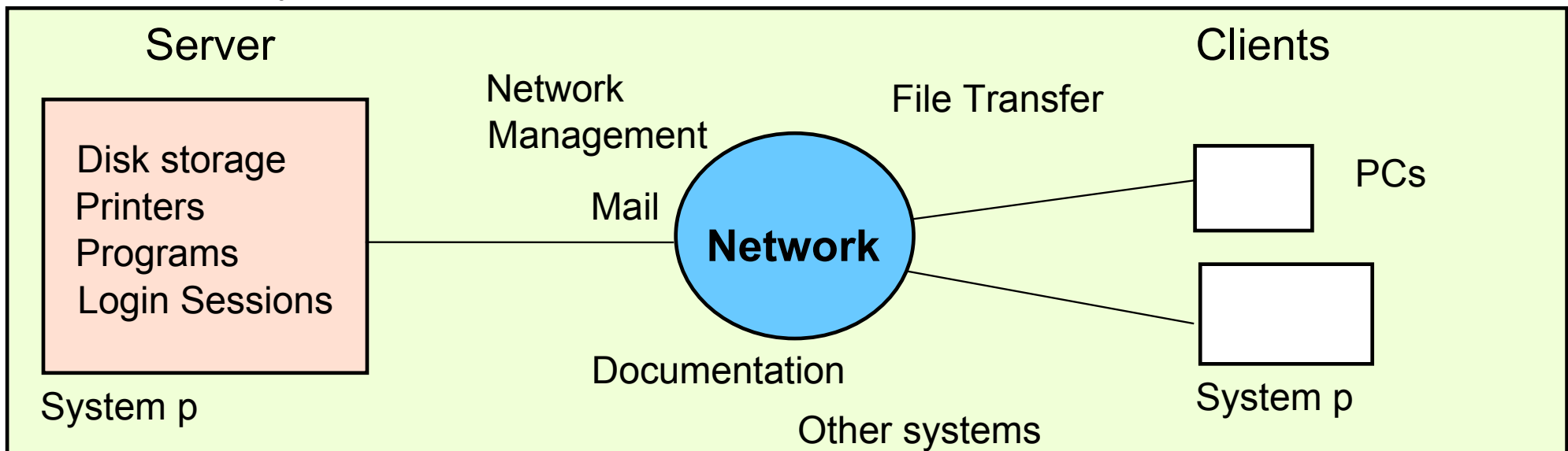
- | | |
|--------------------|------------|
| ▶ Two serial ports | ▶ Diskette |
| ▶ SCSI | ▶ Ethernet |
| ▶ Keyboard | ▶ Tablet |
| ▶ Mouse | |

Server configurations

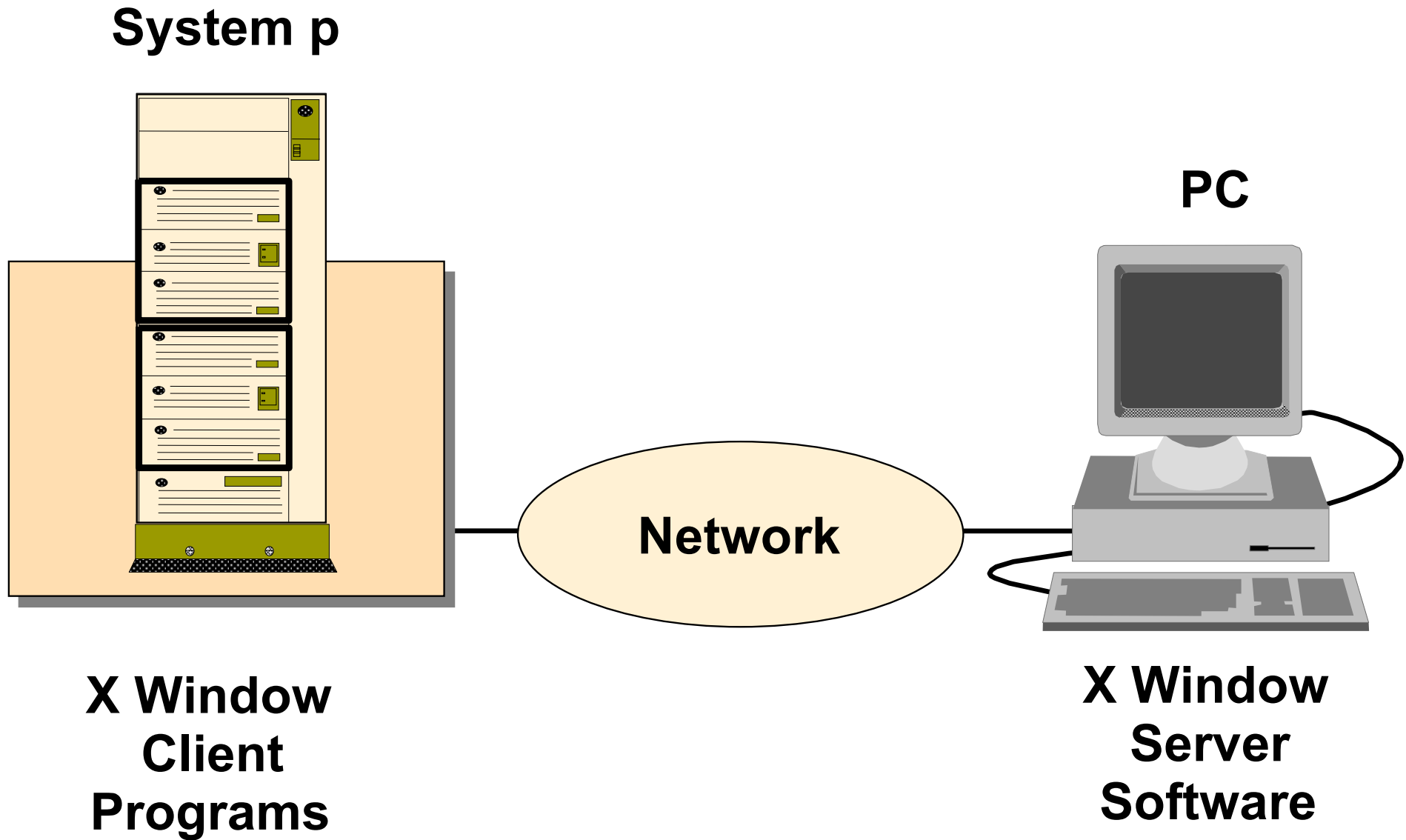
Multuser System



Networked System

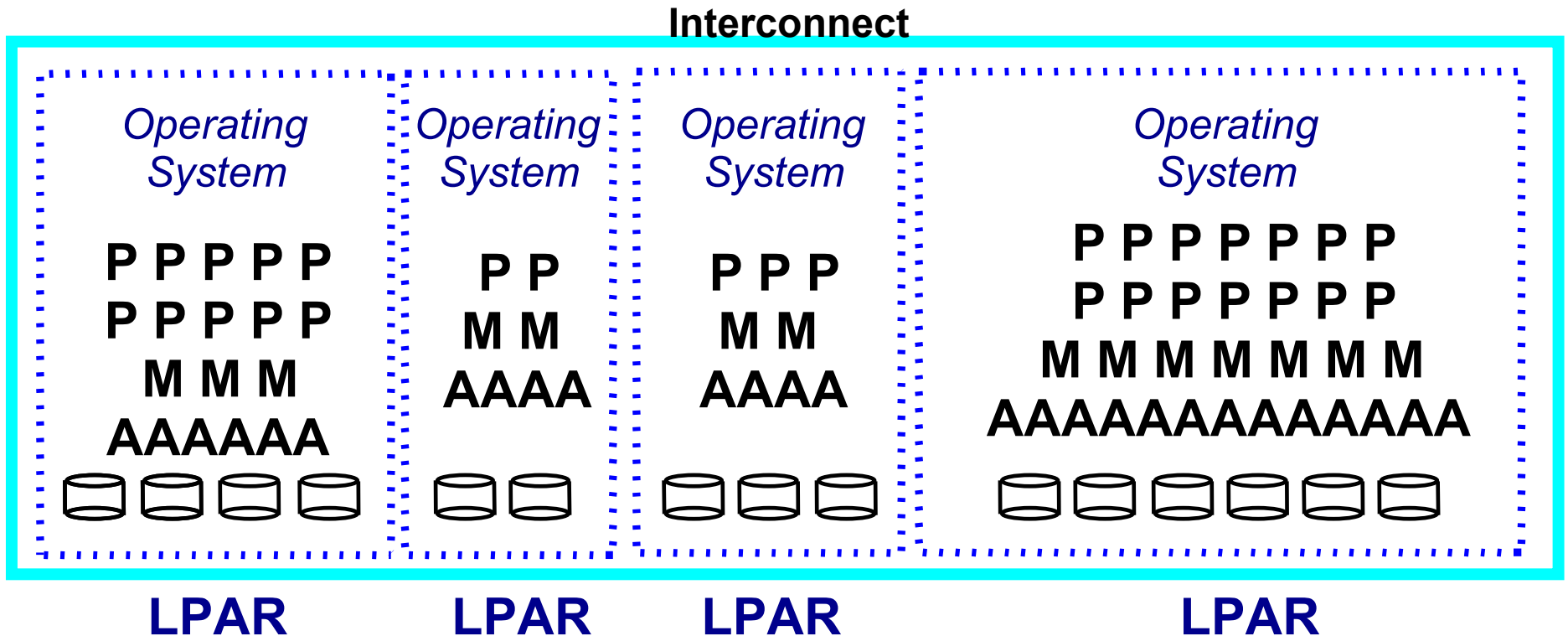


PC connectivity



Logical partitioning (LPAR)

- Resources allocated in flexible units of granularity



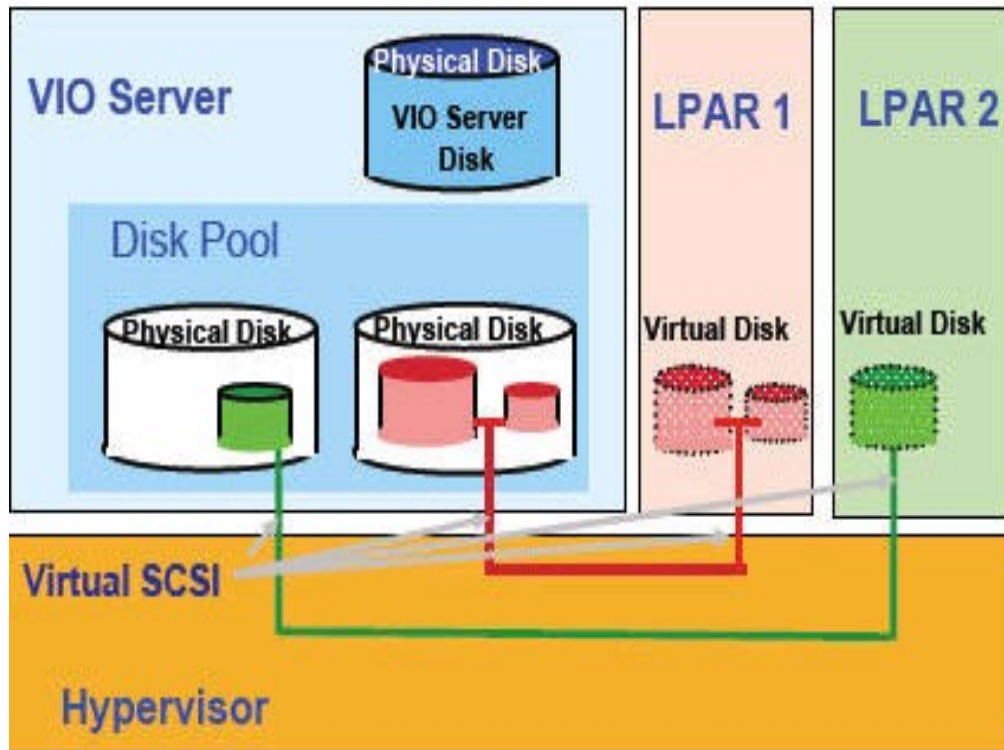
A = Adapter

M = Memory

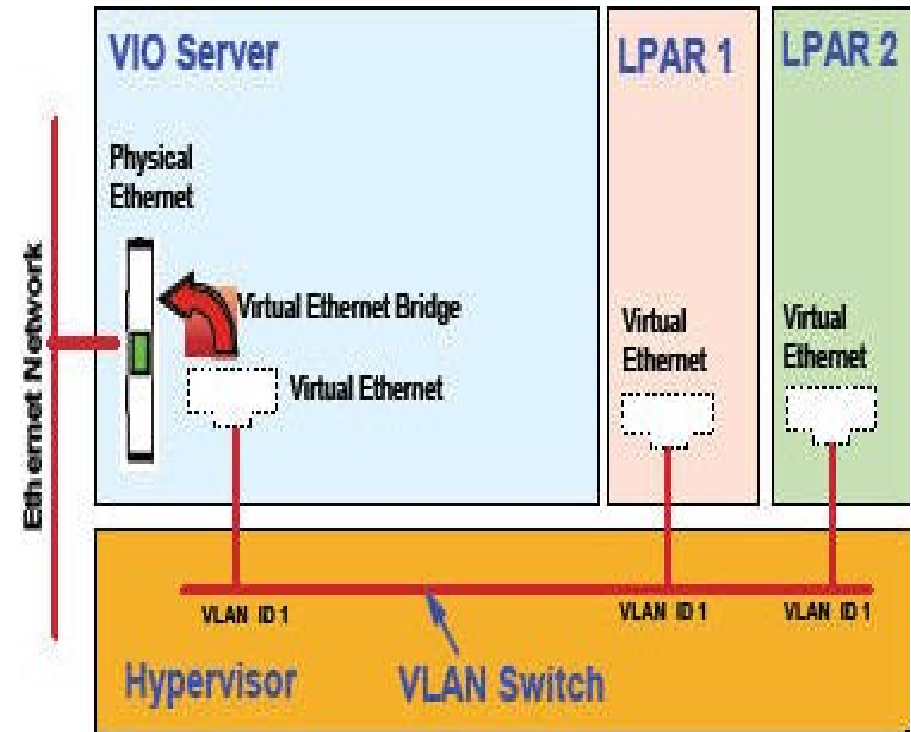
P = Processor

 **= Disk**

Logical partition virtualization



Virtual Disk

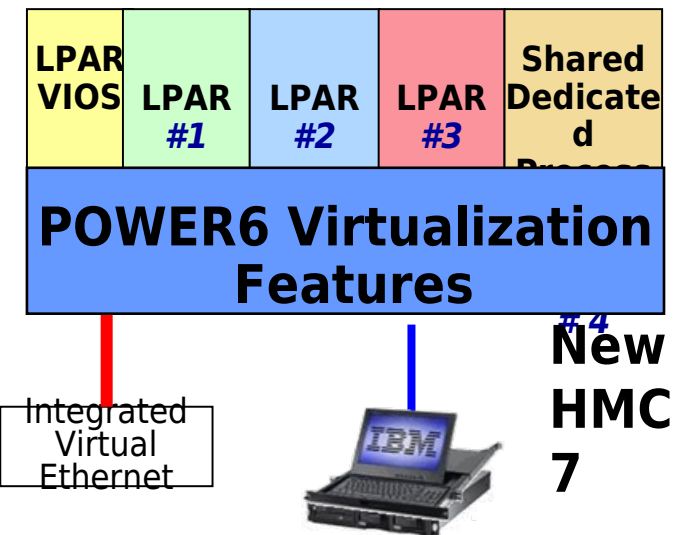


Virtual Ethernet

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

POWER6



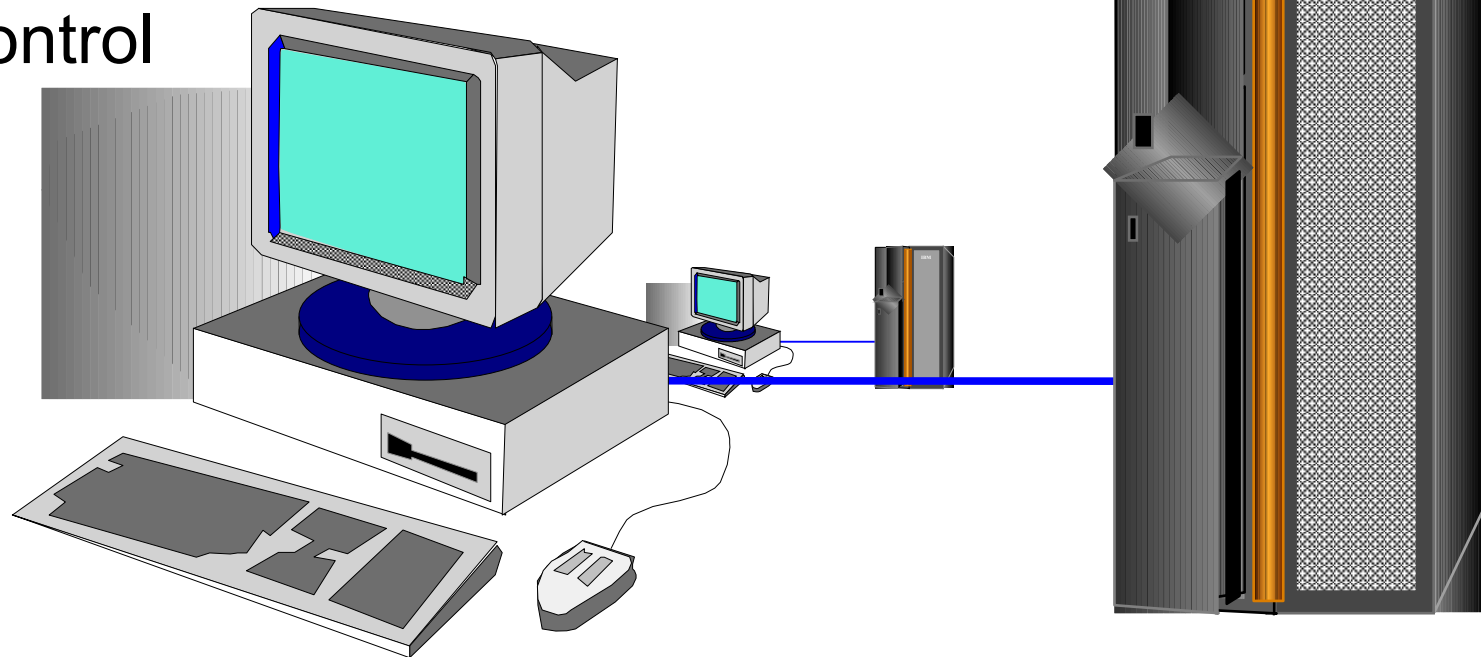
AIX 6 highlights

- 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

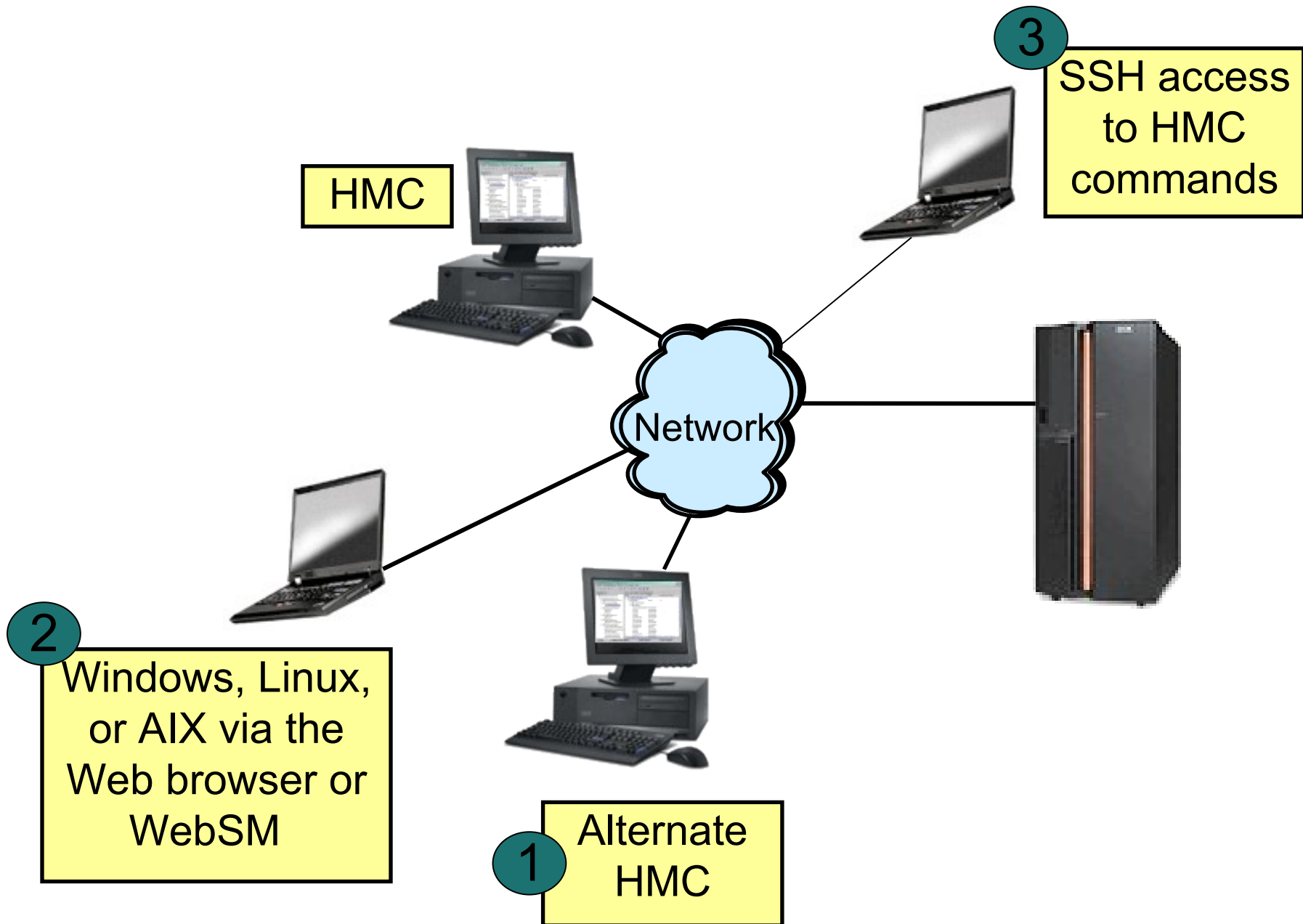


HMC management

- 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



HMC default console view

https://10.31.198.151 - rt1s3hmc: Hardware Management Console Workplac...

Hardware Management Console

hscroot | Help | Logoff

- Welcome
- Systems Management**
 - Servers
 - Custom Groups
- System Plans
- HMC Management
- Service Management
- Updates

Status: Open Serviceable Event

Contents of: Systems Management

Select	Name	Description
<input type="checkbox"/>	Servers	Contains managed system objects.
<input type="checkbox"/>	Custom Groups	Contains all custom groups created.

Total: 2 Filtered: 2 Selected: 0

Tasks: Systems Management

Manage Custom Groups

Transferring data from 10.31.198.151...

10.31.198.151

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
```

Checkpoint

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

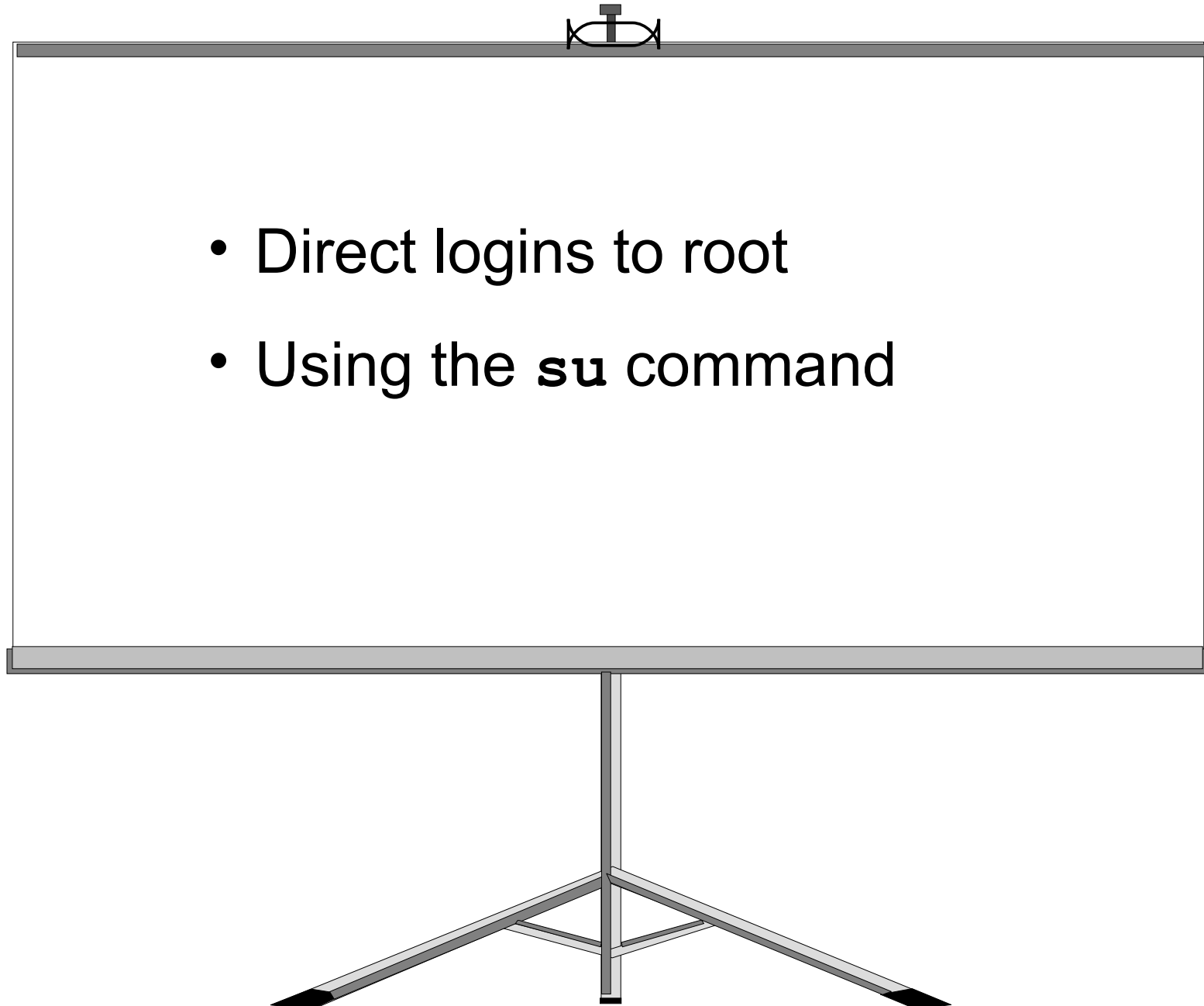
3. True or False? The adapters seen by the AIX operating system, in an LPAR, may be either physical or virtual.

4. True or False? The su command allows you to get root authority even if you signed on using another user ID.

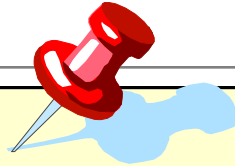
Checkpoint solutions

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



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