z/OS Introduction and Workshop

z/VM
Hybrid & Cloud Computing
DevOps

Unit Objectives

After completing this unit, you should be able to:

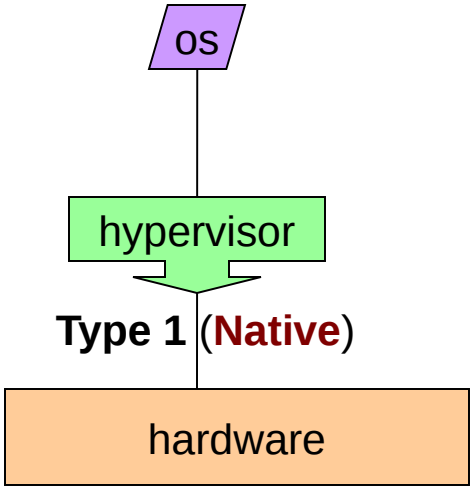
- Describe differenced between virtualization and hypervisor
- List 2 types of hypervisor
- Describe the difference between the 2 types of hypervisors

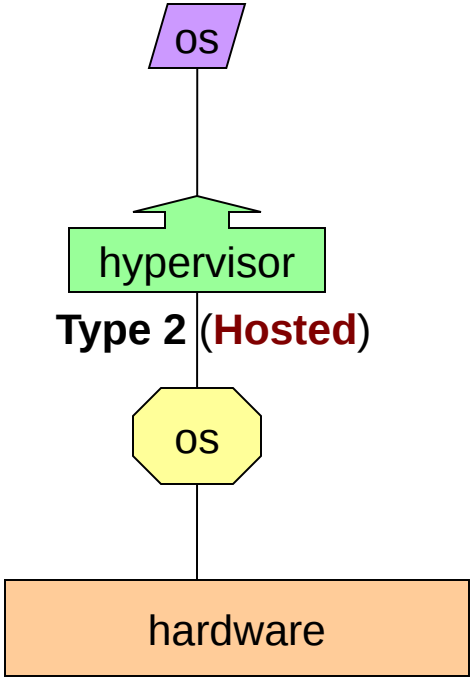
Virtualization is the engine that ***enables cloud*** computing

Hypervisor is a virtualization manager

2 Types of Hypervisors

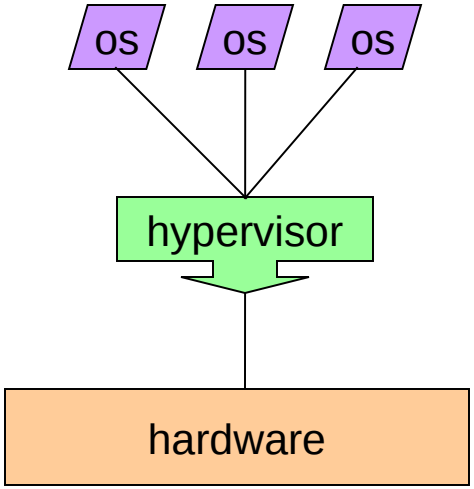
1. Native
2. Hosted



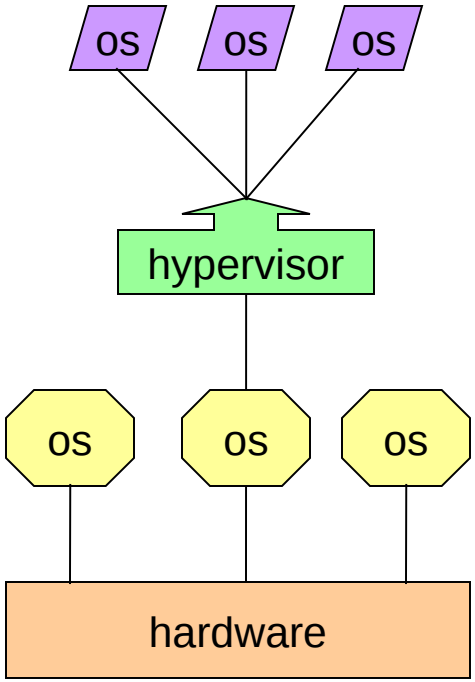


Levels of Flexibility

An operating system controlled hypervisor is more flexible, enabling automated virtualization (perfect for cloud computing architecture)



Type 1 (**Native**)



Type 2 (**Hosted**)

Enterprise Computing Technology Decisions

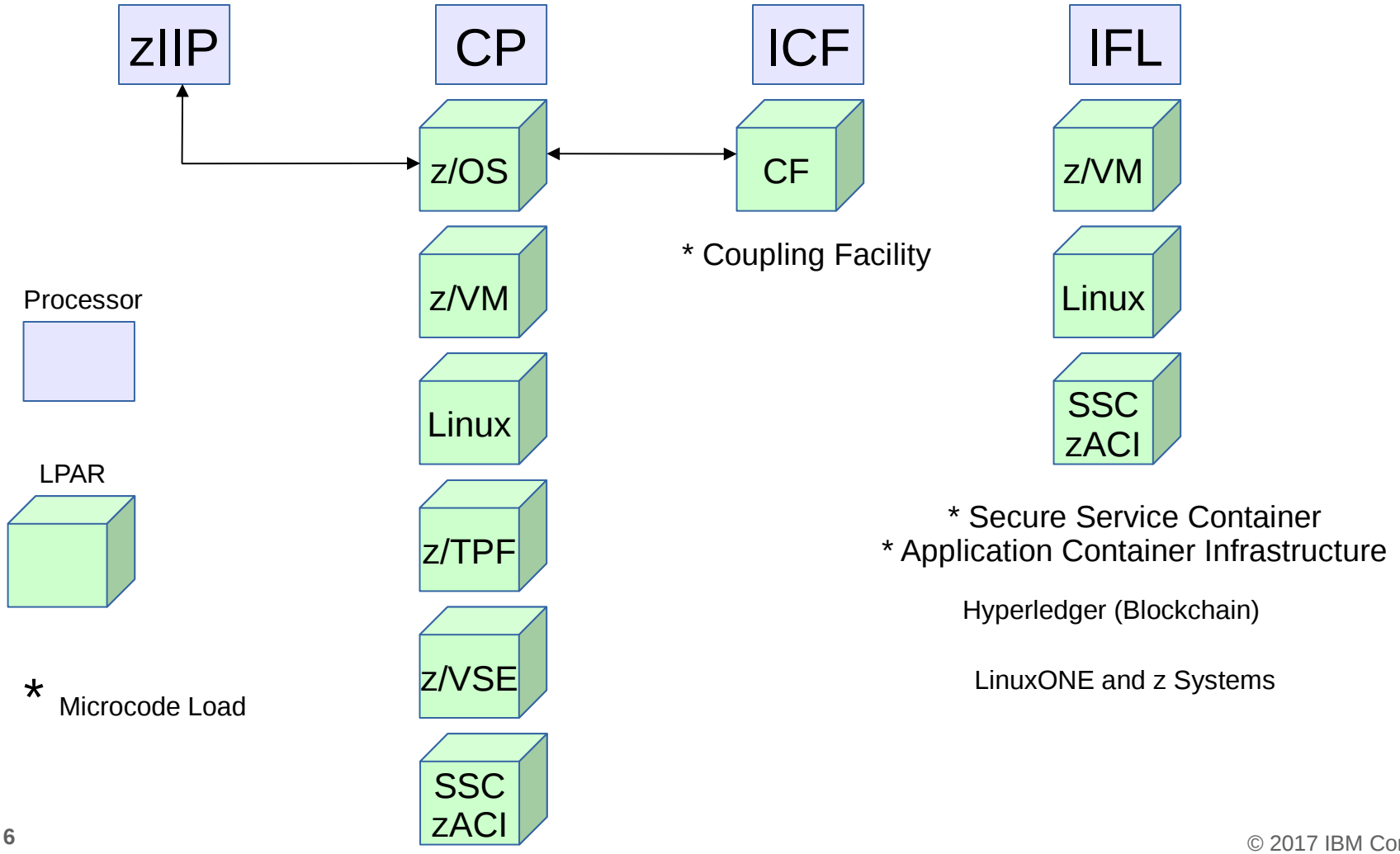
Lots of expensive power

Lots of physical servers

Lots of cables

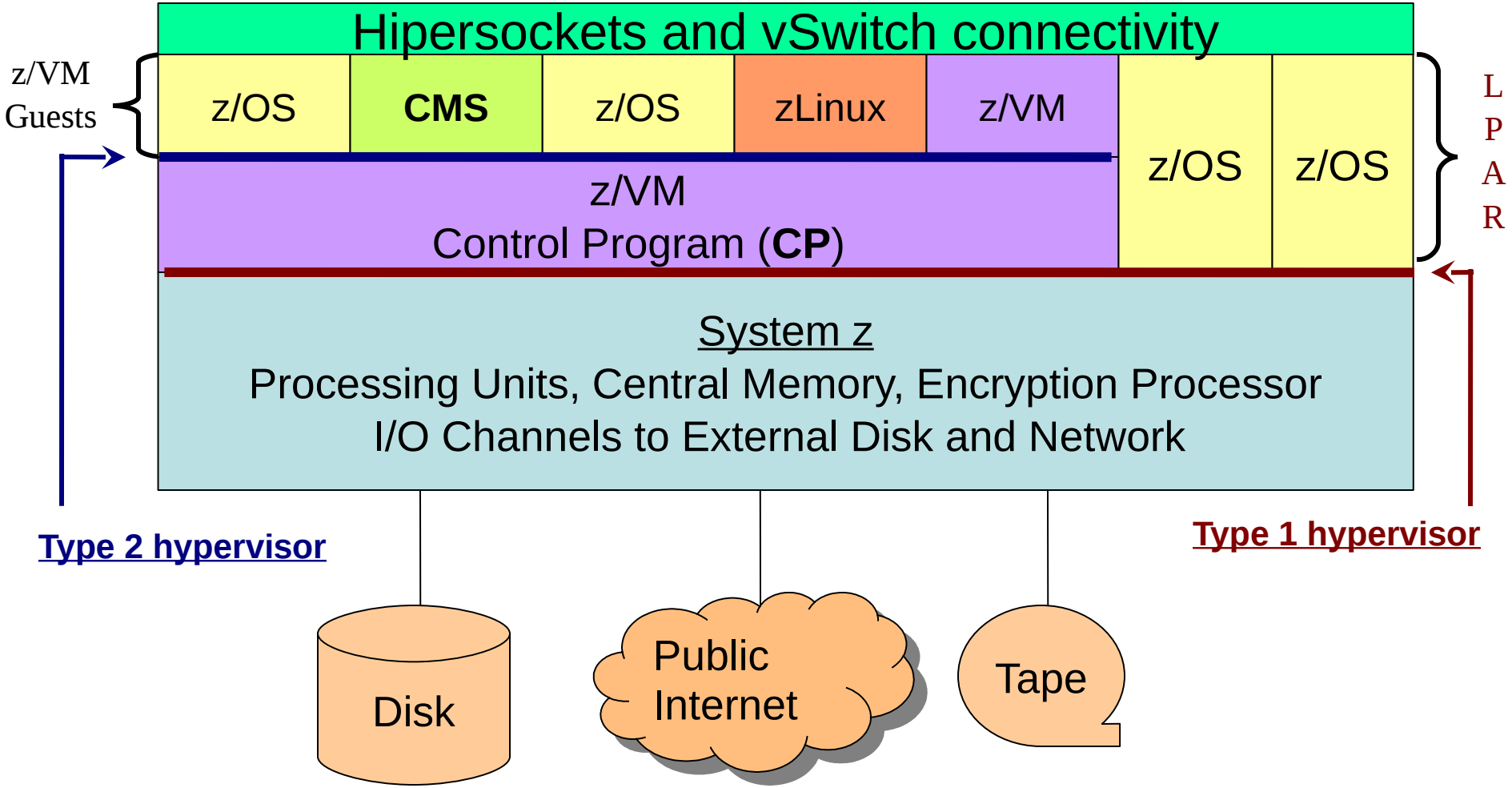
Data Centers with 30,000 – 60,000 – 180,000 Servers

z Systems Processor Characterization, Operating Systems, and Microcode Load



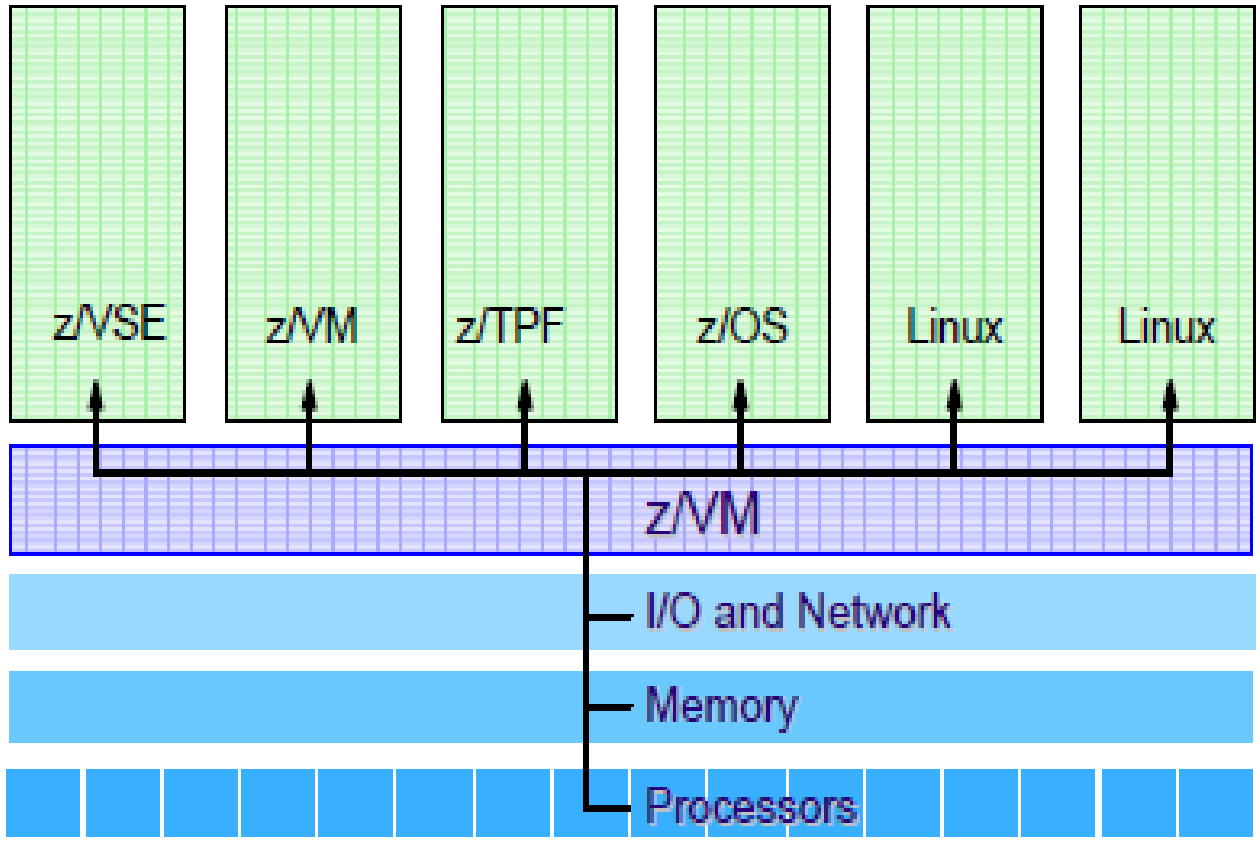
z System Environment Diagram

Virtualization (TCO incentive)



z/VM Operating System

A *Virtual Machine* simulates the existence of a dedicated real machine, including processor functions, storage, and input/output resources.

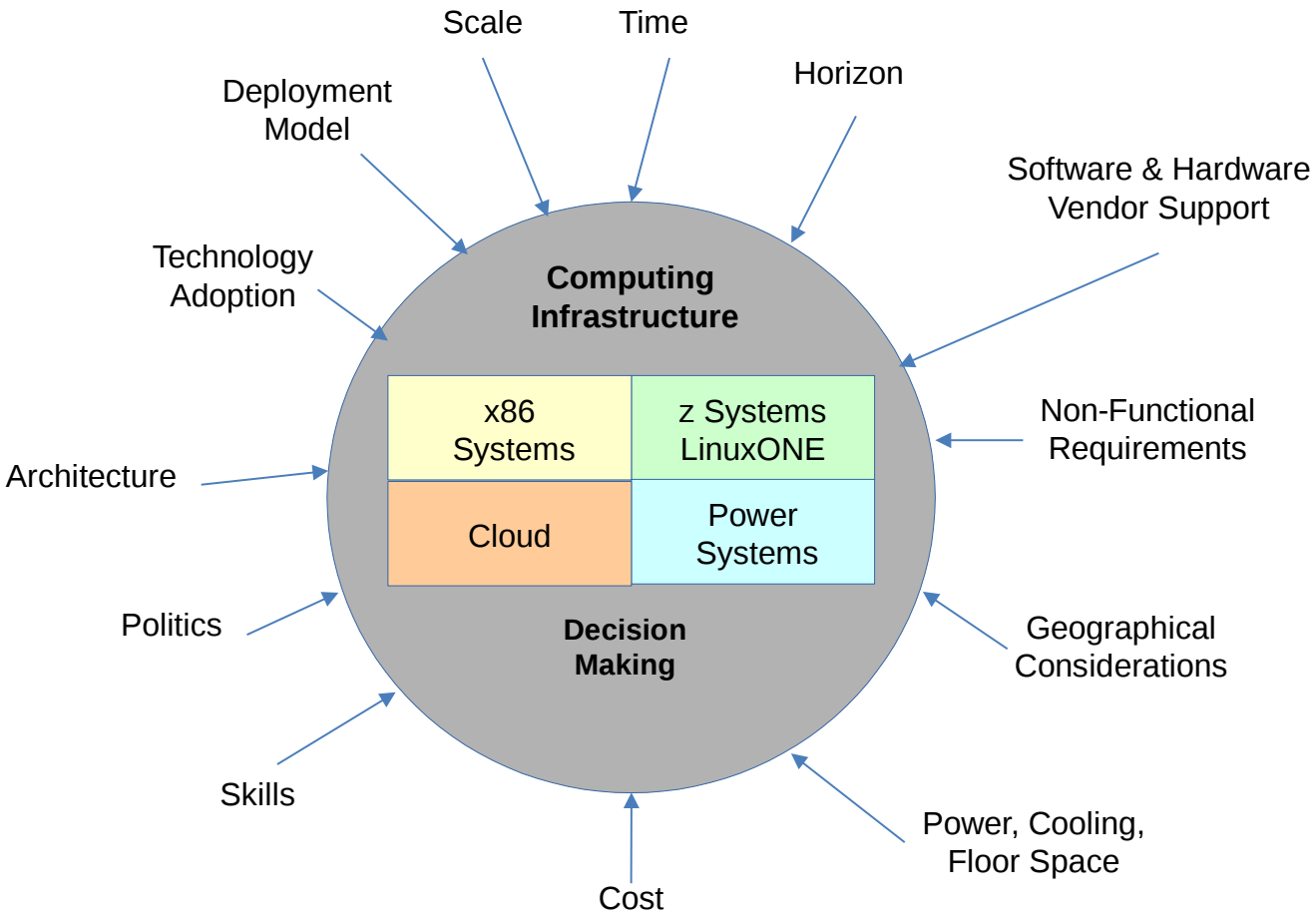


z/VM and Linux Guest Images

- Install z/VM from DVD
- Configure z/VM network connection
- Install linux as z/VM ‘model’ linux
- Copy ‘model’ linux disk and z/VM definitions to quickly create new operational linux

z/VM and Linux on IBM System z
The Virtualization Cookbook

Enterprise Computing Technology Decisions



Enterprise Computing Technology Decisions

How about a single computer system with the following attributes:

- Can host 5 unique operating systems simultaneously, including Linux
- Can run many thousands of the these operating systems concurrently
- Network delay between the operating systems is near zero
- Unparalleled business data throughput capability
- Known for high speed, scalability, and security
- Has unparalleled high availability technology

This single computer system :

- Enables server consolidation significantly reducing costs
- Can have access to all critical data eliminating costly ETL
- Design characteristics that serve the most strict SLA
- Enables SOE, SOR, and SOI capabilities

z Systems

- 141 Customer Usable CPUs (5+ GHz)
- 10 TeraByte of Processing Memory
- 85 LPARs
- 832 GB/sec throughput

Each adapter has it's own processor and memory for I/O to attached devices or cryptographic work

Capable of running 1000's of operating systems concurrently with near zero communication between operating systems

z13 Technical Guide

http://www.redbooks.ibm.com/redbooks/pdfs/sg248251.pdf

Enterprise Computing Technology Decisions

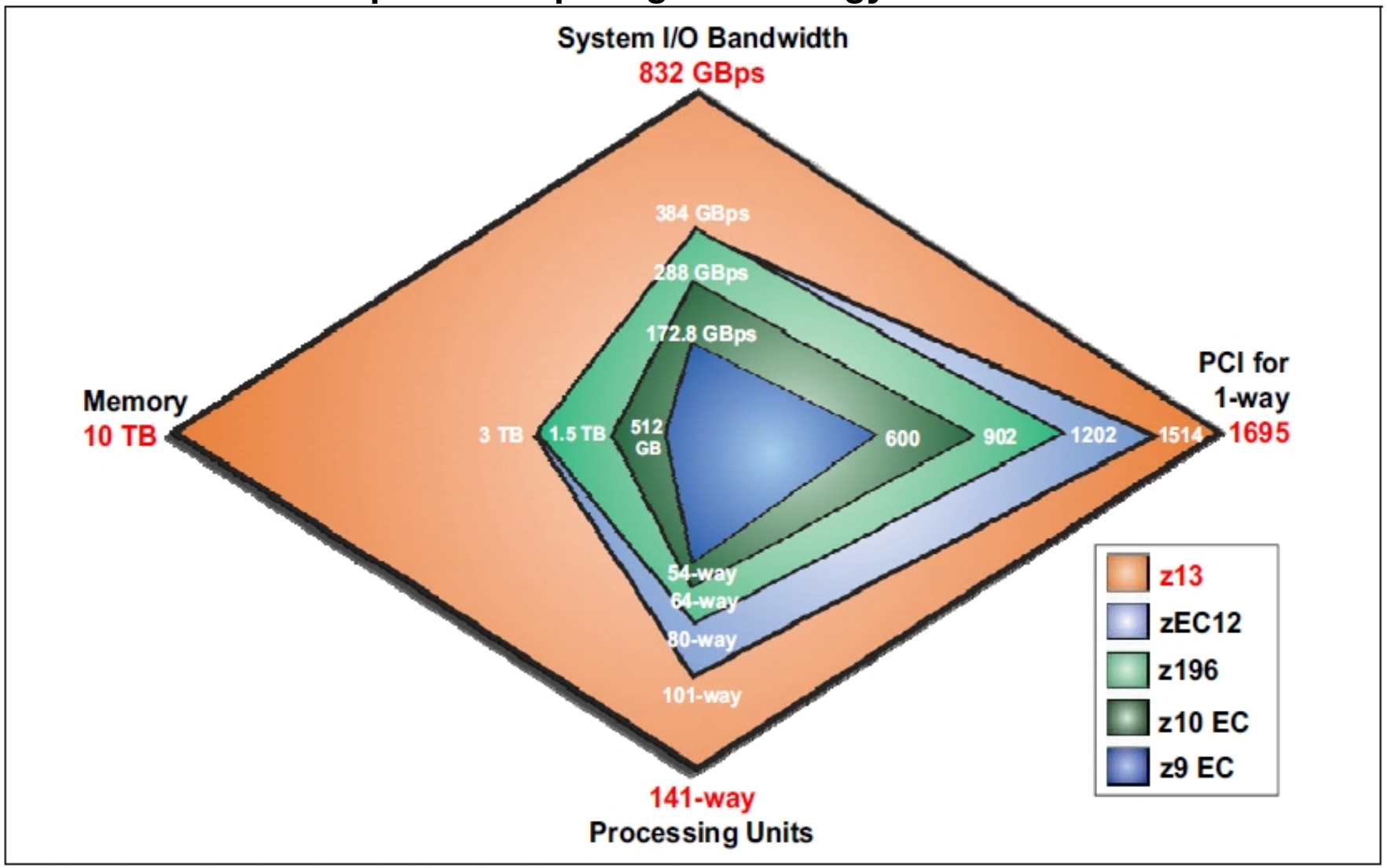
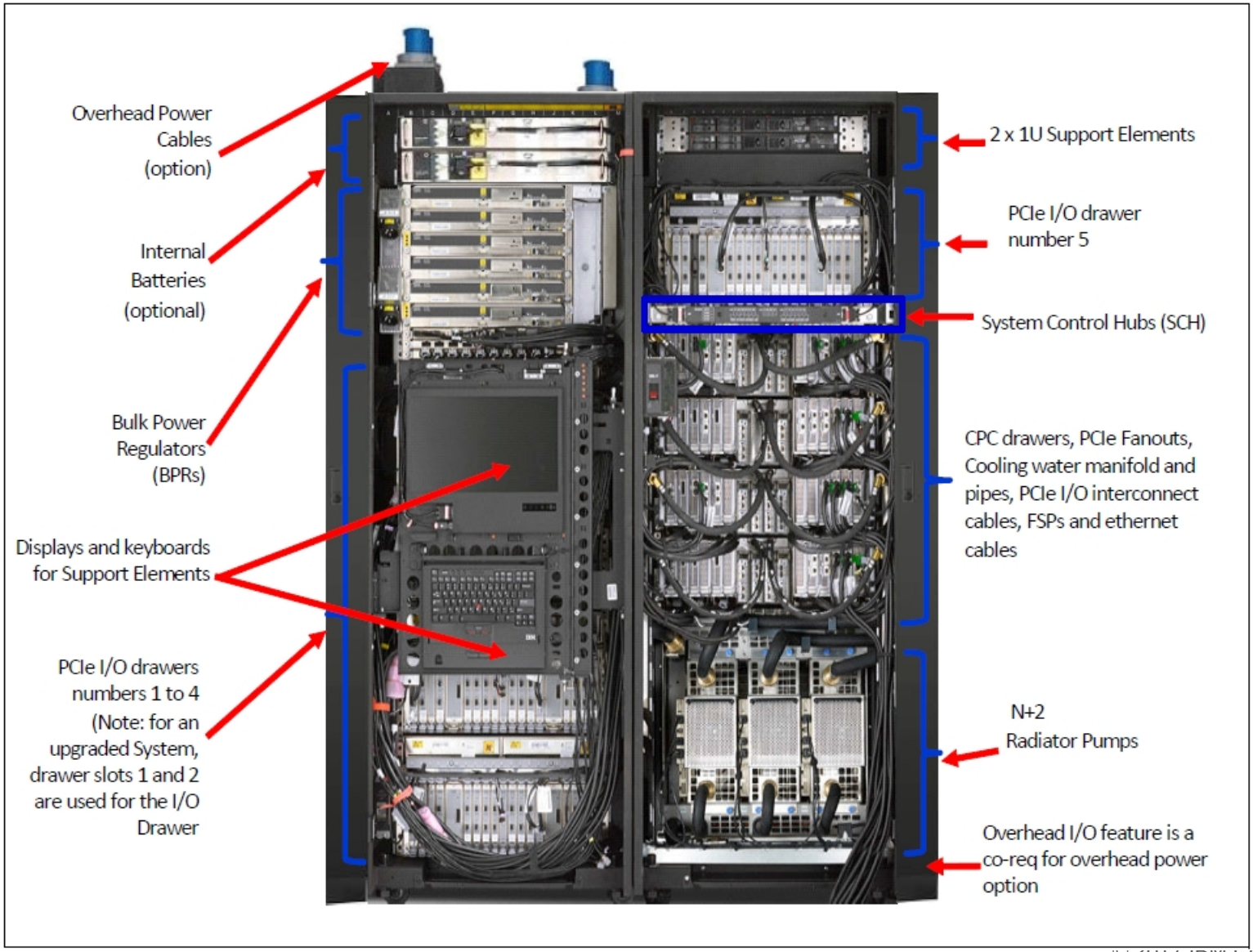


Figure 1-2 Platform design: The z13 versus its predecessors

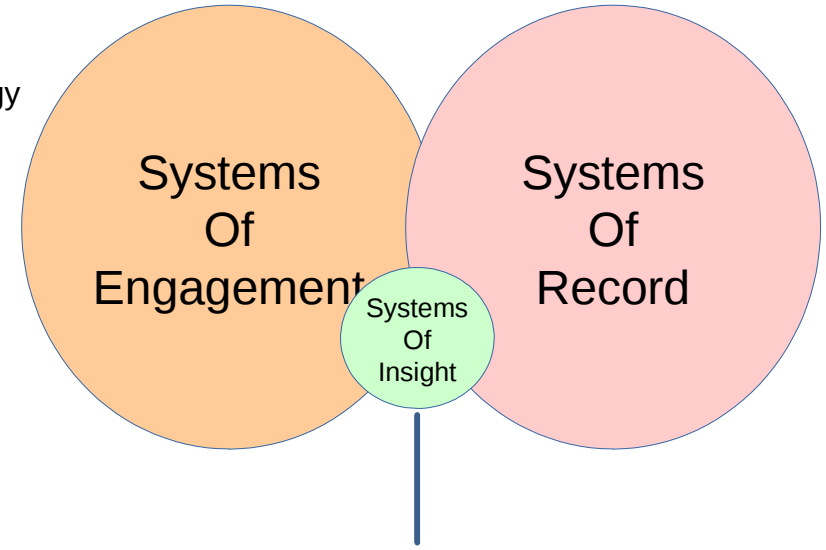
Enterprise Computing Technology Decisions



Enterprise Computing Technology Decisions

Technology Categorization

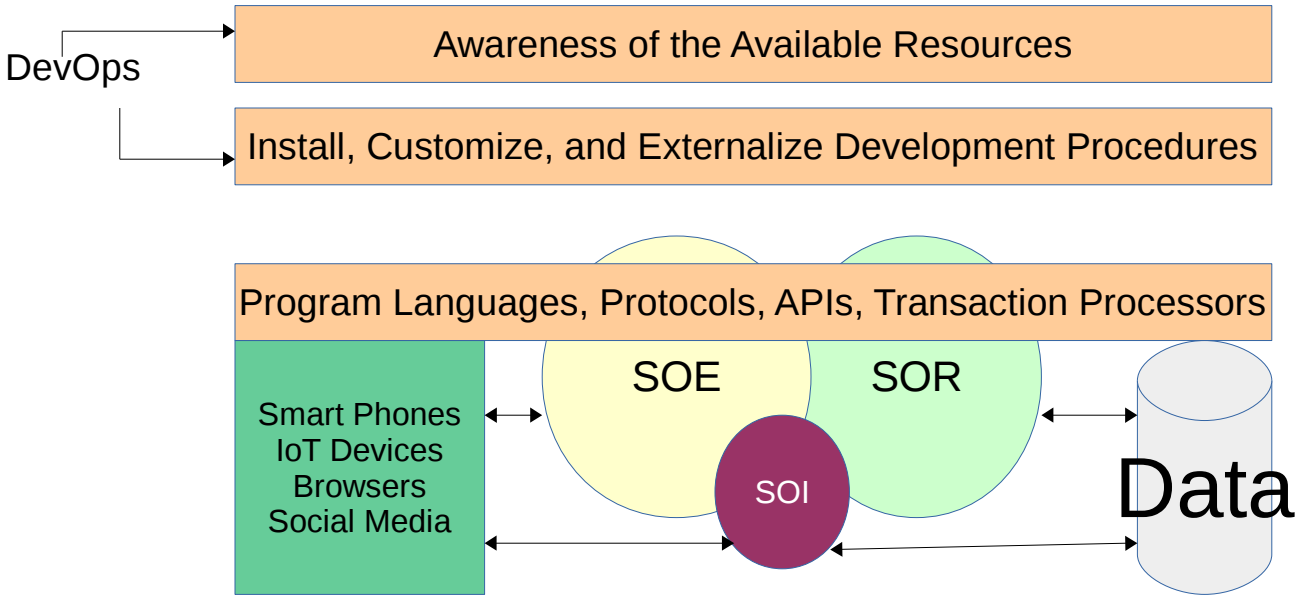
Customer Interface
Streaming Data
Disposable Data
New Frontier Technology



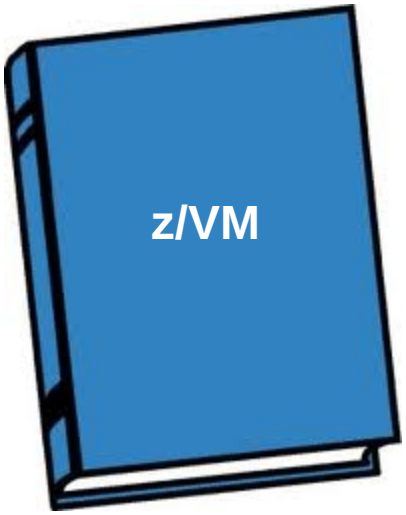
Business Back Office
Structured Data
Business Critical Data
Core Technology

Business Opportunity
Prescriptive Analytics
Analytics at Time of Transaction

Ops is more critical than ever to enable new Dev work
Dev must appreciate “law of the instrument”



z/VM Professional Manuals and Documentation



Redbooks

z/VM Basics

Unit summary

Having completed this unit, you should be able to:

- ✓ Describe differences between virtualization and hypervisor
- ✓ List 2 types of hypervisor
- ✓ Describe the difference between the 2 types of hypervisors