z/OS Introduction and Workshop

Overview of IBM Z Systems Environment

Unit Objectives

After completing this unit, you should be able to:

- Describe IBM Z Systems Family of Processors
- List 5 IBM Z Systems Operating Systems
- Discuss IBM Z Virtualization Technology
- Discuss Systems Support and Services Technical Roles
- Locate Supporting IBM Z Systems Redbook Technical References

Role of the mainframe in World Wide Economy

The IBM “mainframe” is a large scale computing platform that controls and processes critical data.

Designed for the business world with 5 decades of technical advancements following strict design criteria that has defined expectations of a “mainframe”.

The mainframe - a major tool of business and government for nearly 5 decades as a result of:

Upward Compatibility

Investment protection of business critical applications with decades of functional advancements and tuning

Time tested technology with applied evolution is a matured technology and frequently superior technology

Data processing economies of scale

Reduced costs of doing business with increased capability

Industry Trusted and Recognized

Reliability, Availability, Serviceability, Security, Scalability

IBM Z Systems Environment

Hardware Architecture

Five Unique Operating Systems

Virtualization

IBM Z Systems Hardware Architecture

- ***Redundancy and automatic failover***
  - *Z means zero downtime*

- ***I/O Architecture***
  - *Throughput capability only found in IBM Z family*
  - *Channel adapters with supporting unique I/O protocol with its own processors and memory per adapter.*
  - *Fiber optic cable connectivity to disk, tape, printers and network*

Five Unique Operating Systems

- ***z/OS***
  - *http://www.ibm.com/systems/z/os/zos*
- ***z/VM***
  - *http://www.ibm.com/systems/z/os/zvm*
- ***z/TPF***
  - *http://www.ibm.com/systems/z/os/tpf*
- ***z/VSE***
  - *http://www.ibm.com/systems/z/os/zvse*
- ***Linux on IBM Z System (LinuxONE)***
  - *http://www.ibm.com/systems/z/os/linux*

IBM Mainframes & Flagship Operating System

IBM Z Systems Family of 'Mainframes' Architecture

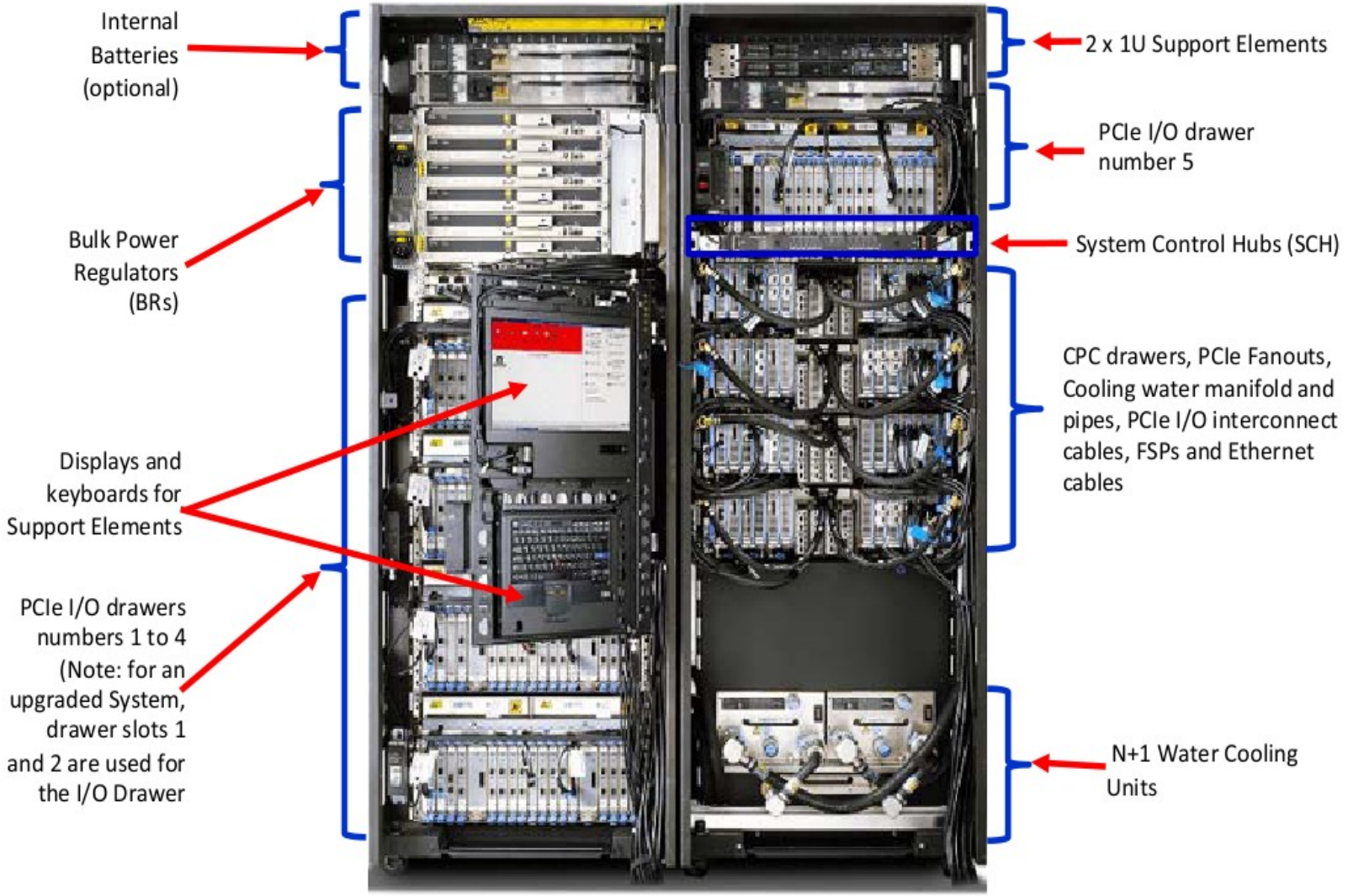
- z/Architecture (2000) z/OS

IBM Mainframe – The original DNA
https://en.wikipedia.org/wiki/IBM_System/360_architecture

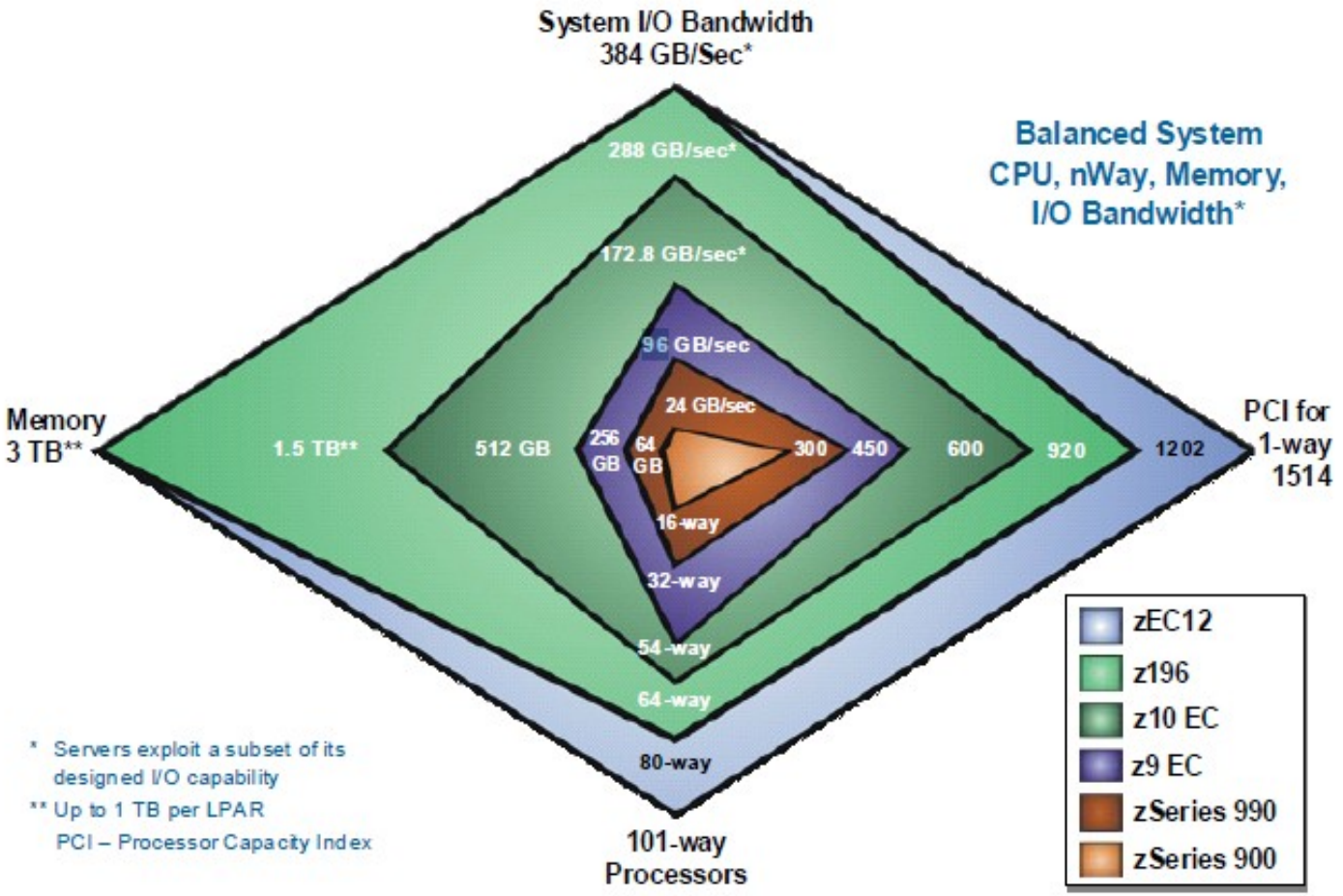
Previous IBM 'Mainframe' Architectures

- *System 390 Architecture (1990) OS/390*
- *System 370 Architecture (1970) MVS*
- *System 360 Architecture (1964) MVT*

IBM Z (z13)



IBM Z design comparison for high end systems



IBM Z design comparison for high end systems

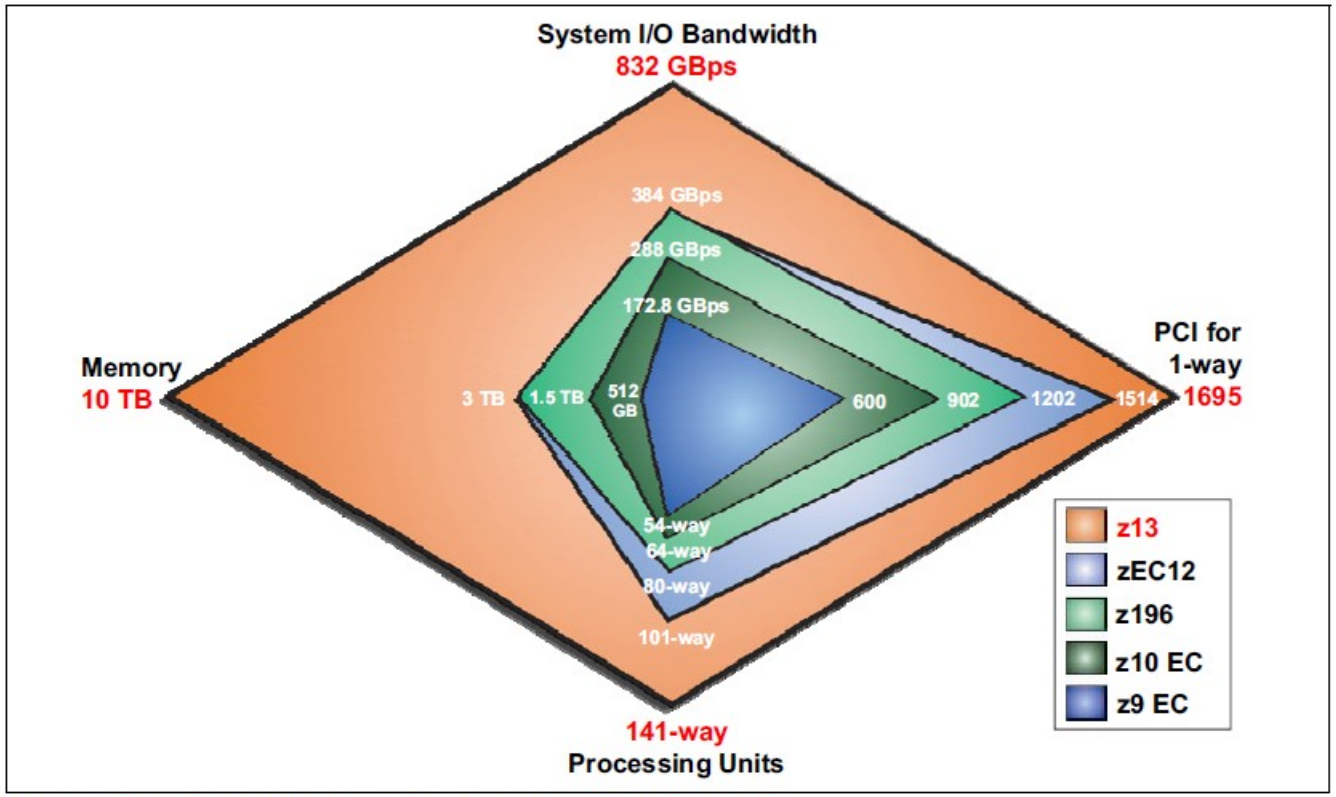
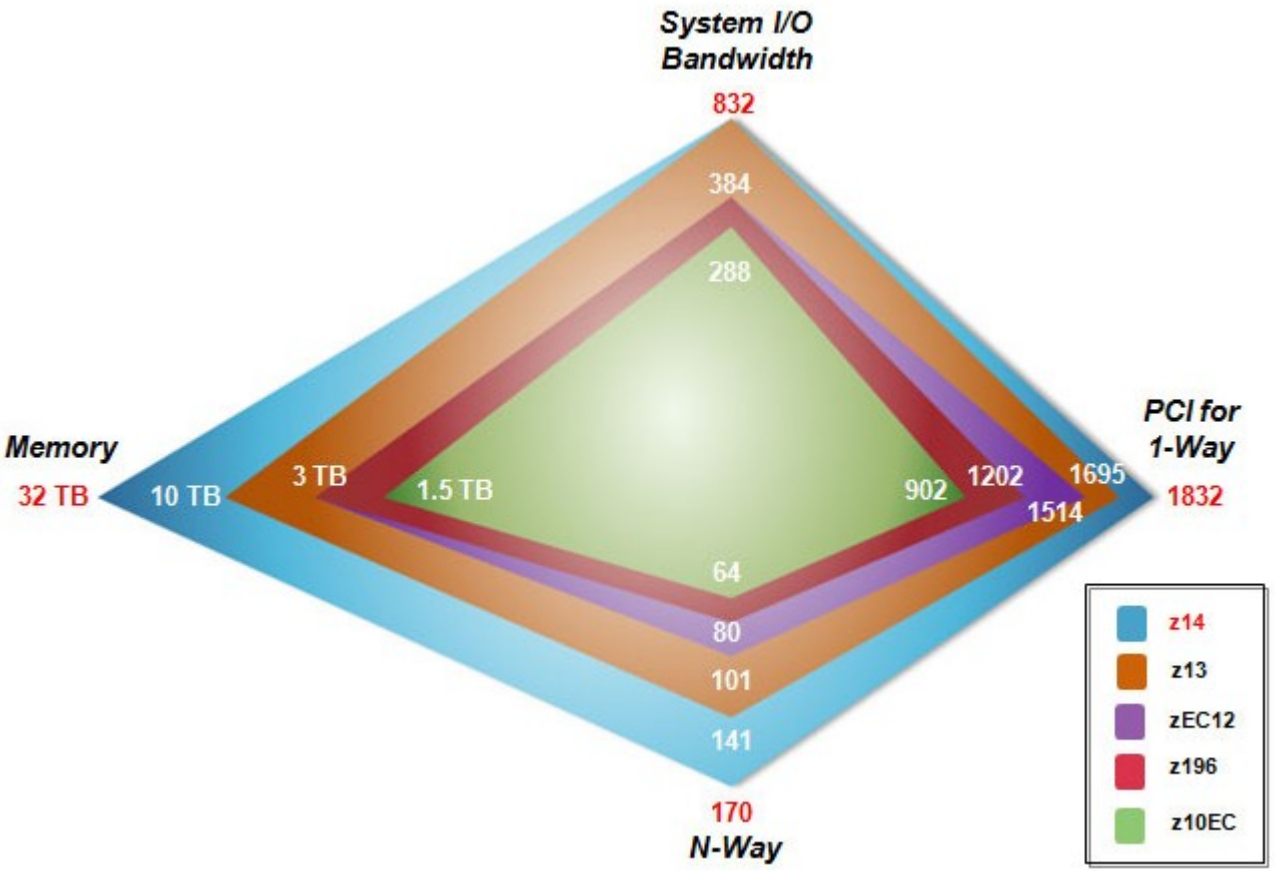


Figure 1-2 Platform design: The z13 versus its predecessors

IBM Z design comparison for high end systems



Virtualization

LPAR (PR/SM)

- *Hardware partitioning*
- *Processors and I/O Channels may be shared or dedicated*
- *Real memory must be dedicated*
- *Capable of hosting 1 of the 5 unique operating systems*

z/VM

- *Industrial strength hypervisor*
- *Operating system partitioning of CPUs, I/O devices, and **memory***
- *50+ years of technology evolution*
- *Capable of hosting 1000's of guest operating systems*

Hipersockets and VSwitch

- *All hosted operating systems capable of using internal hardware for network communication with near zero network delay*
- *Server consolidation benefits include elimination of cables and significantly reduced cost of power per server.*

Information Technology Organization

- *Chief Information Officer (CIO)*
- *Application Development Support and Services*
  - *Frequently organized by critical business services*
- *Information Technology Support and Services*
  - *Data Center Operation Staff*
    - *Production Control Analysts*
    - *Computer Operators*
    - *Tape Operators*
    - *Print Operators*
    - *Network Operators*
  - *Systems Administration*
    - *Systems Programmers*
    - *Security Administrators*
    - *Database Administrators*
    - *Disk Storage Administrators*

Information Technology Management Responsibilities:

Budget & Cost Control

- *Technology Contract Negotiations*
- *Hardware & Software Vendor Management*
- *Staff and Facilities*

Service Level Agreements

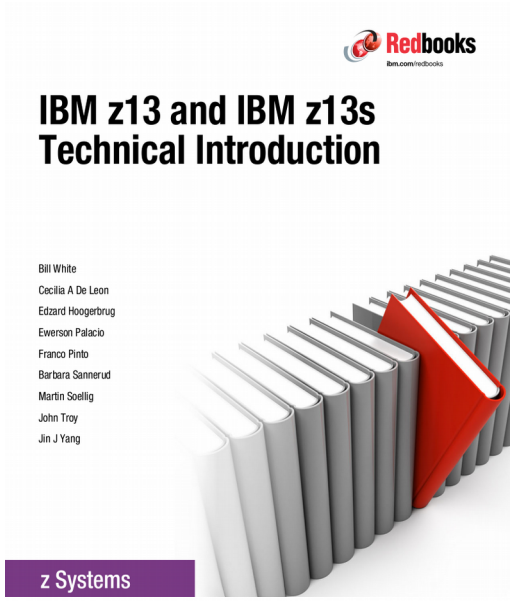
- *Availability and Downtime Avoidance*
- *Response Time Commitments*

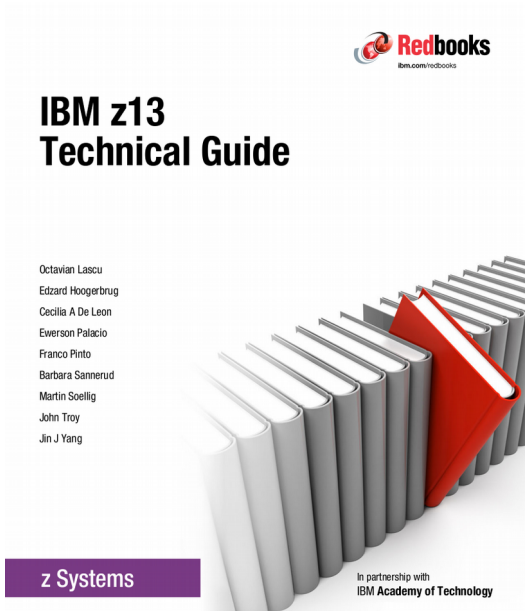
Change Management

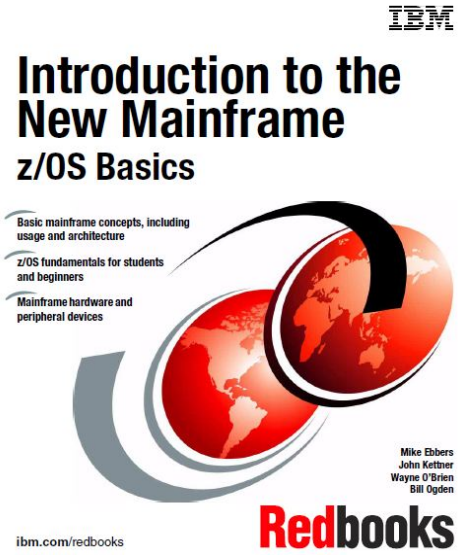
- *Maintain Hardware and Software Currency*
- *Risk Mitigation*

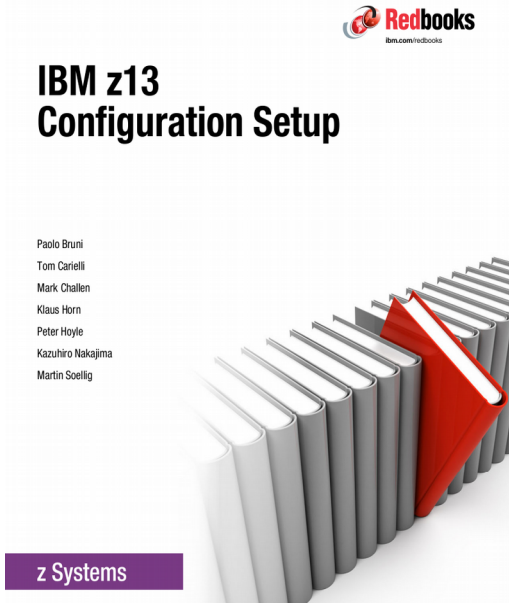
Disaster Recovery and Business Continuity

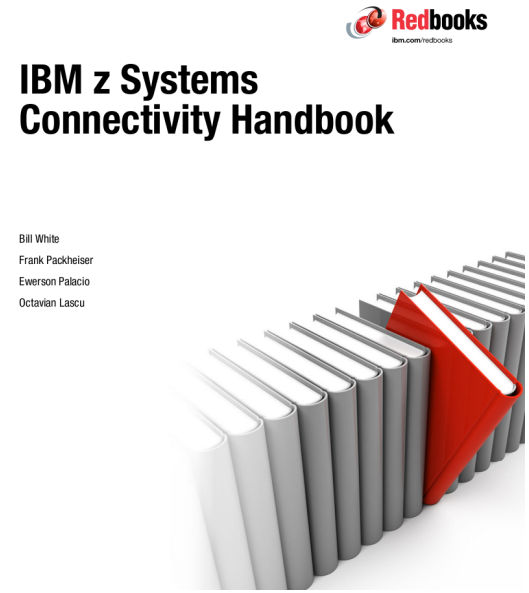
http://www.ibm.com/redbooks

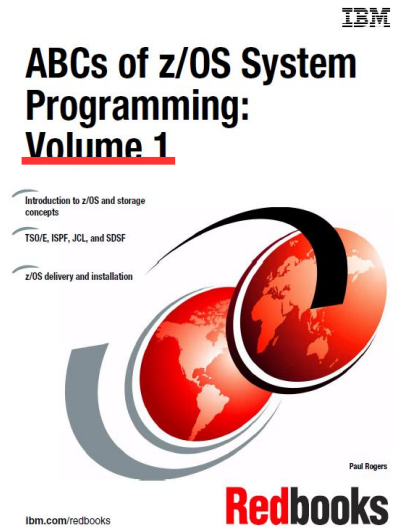


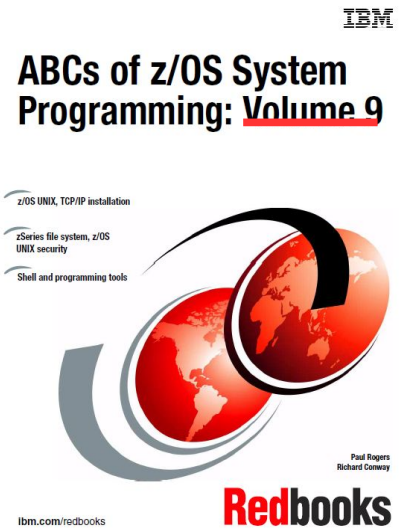












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