



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

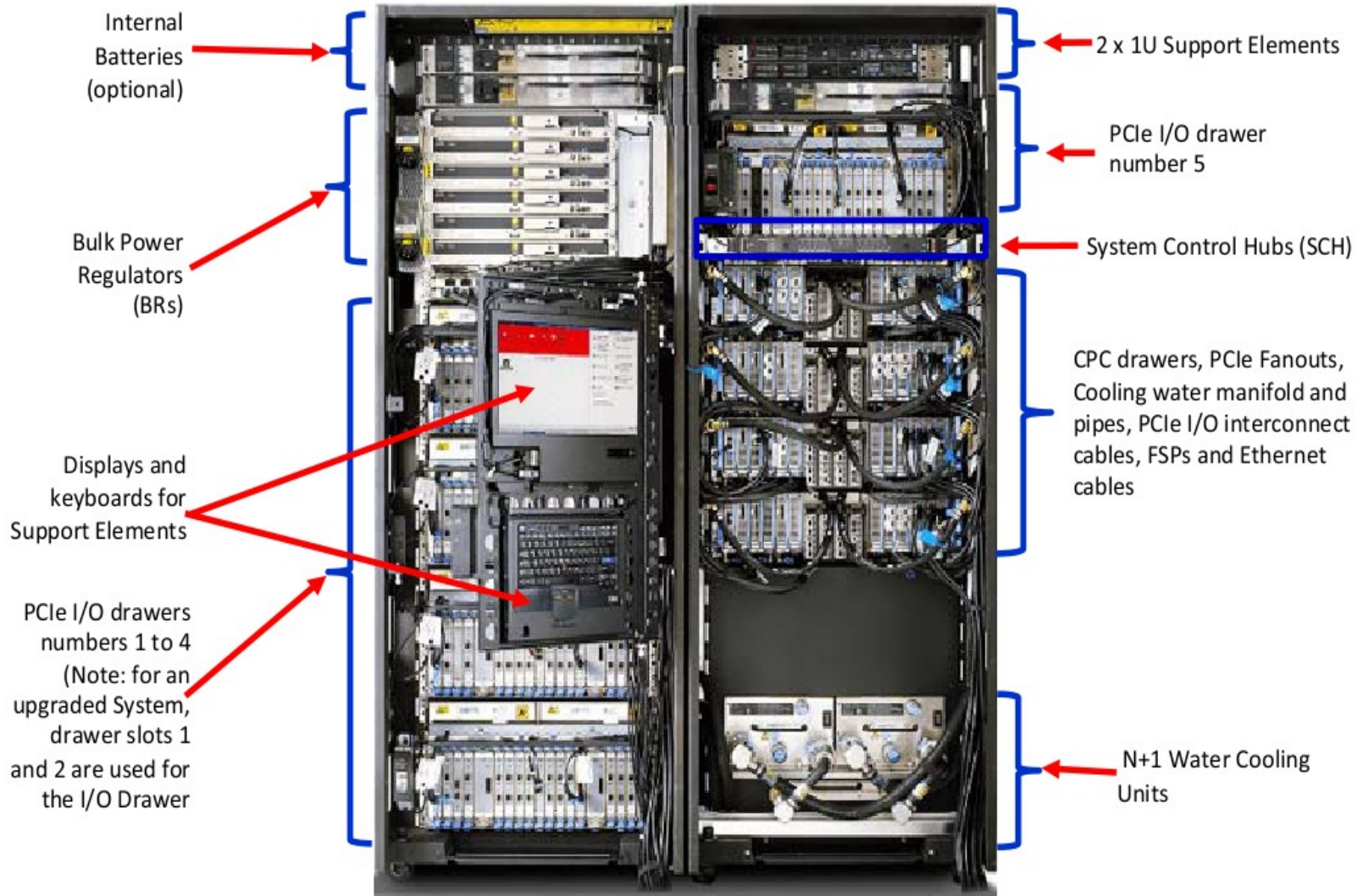
IBM Mainframe – The original DNA

https://en.wikipedia.org/wiki/IBM_System/360_architecture

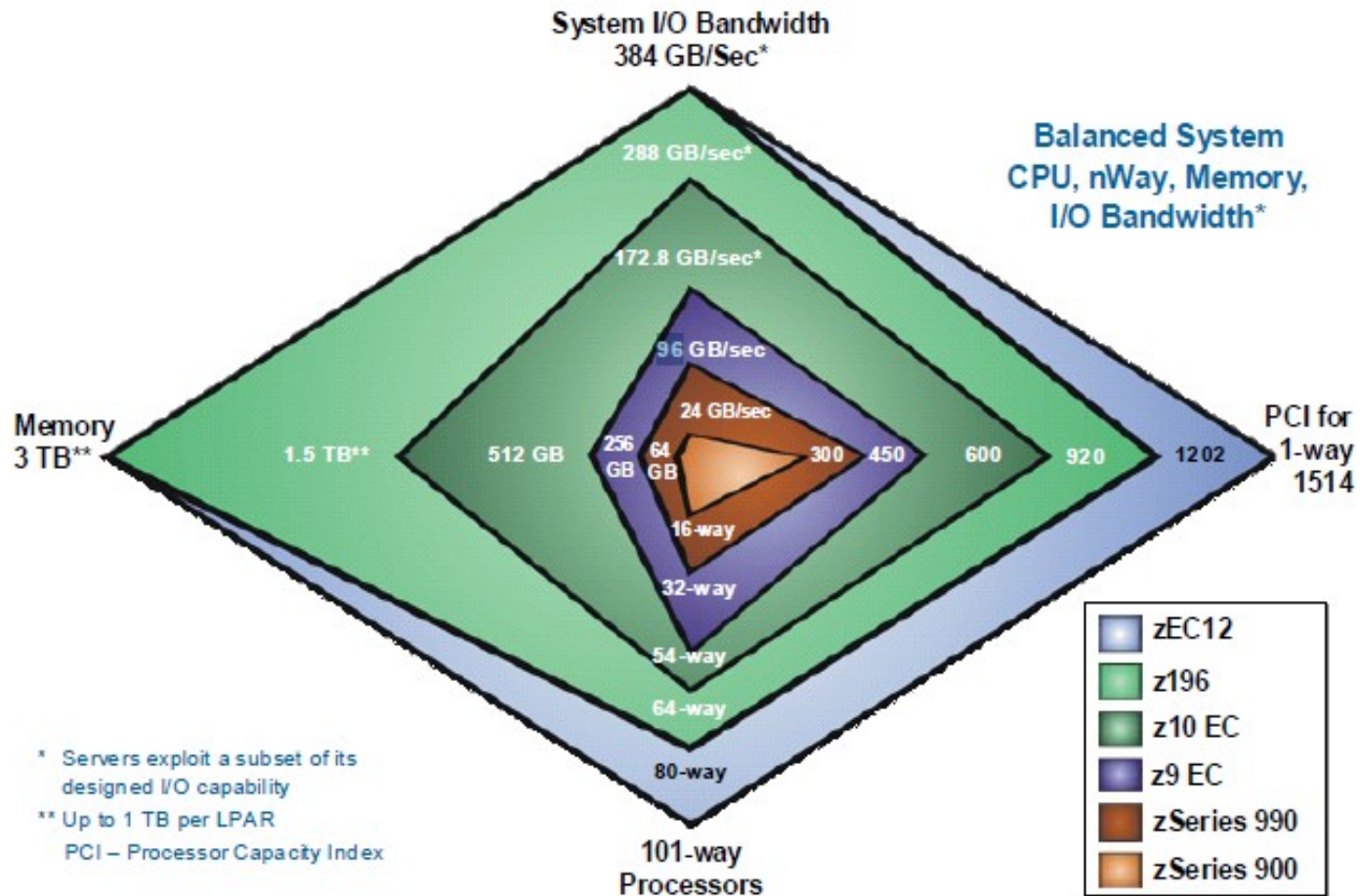
Previous IBM 'Mainframe' Architectures

- *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

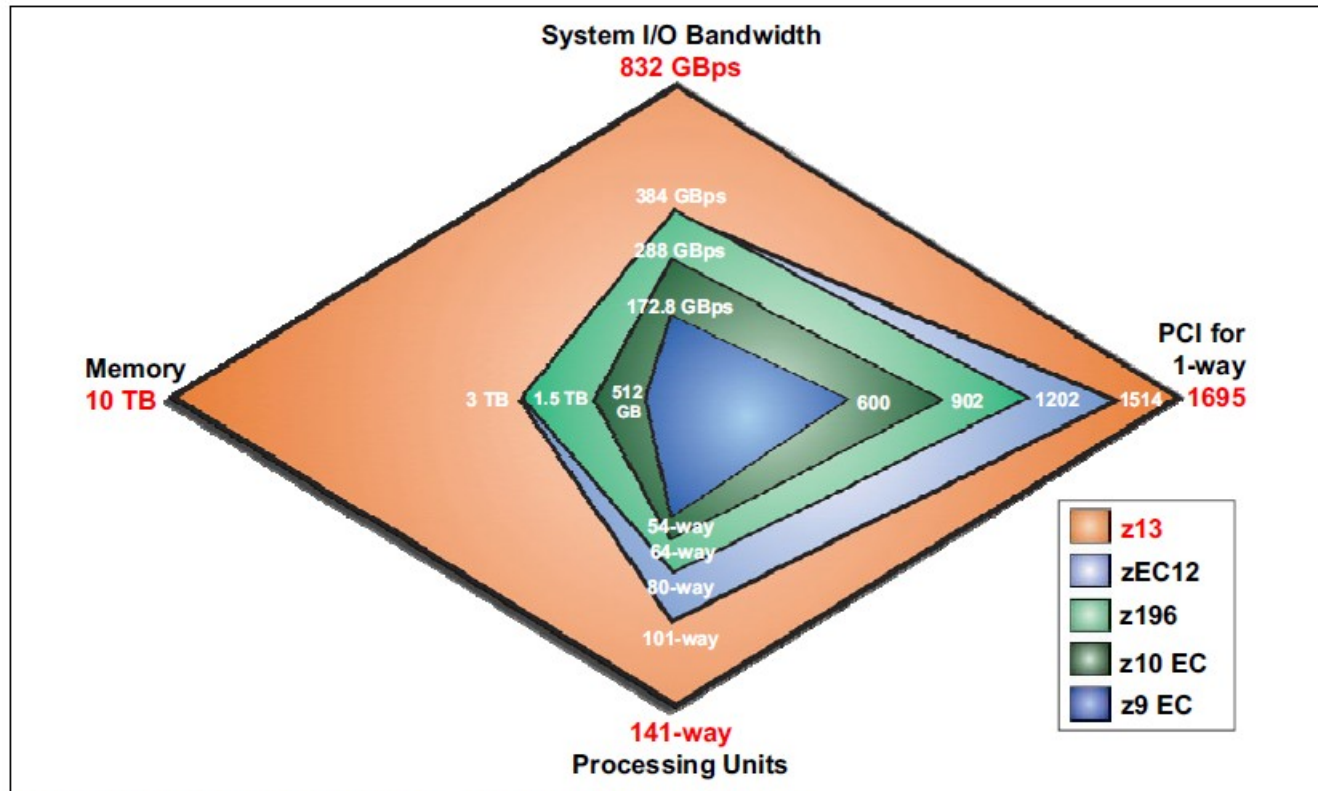
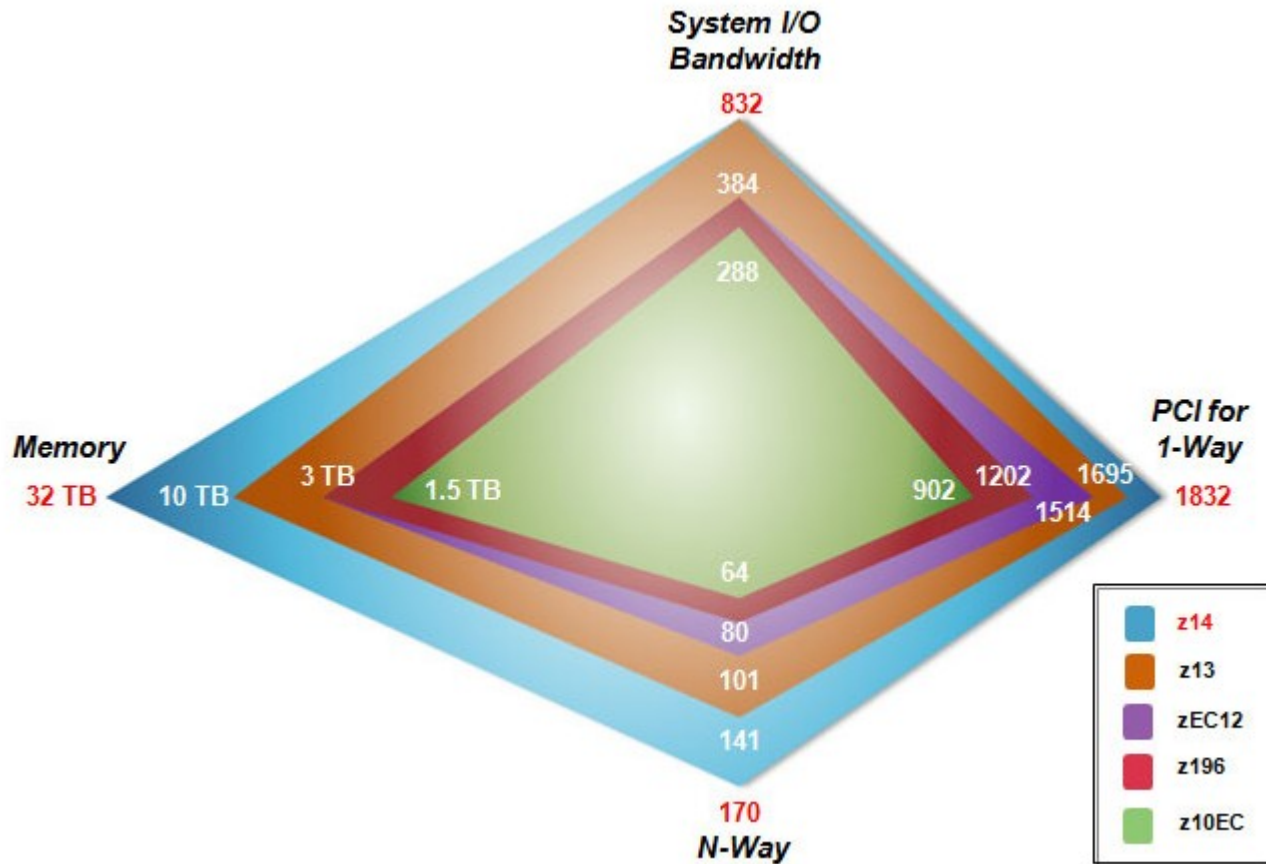


Figure 1-2 Platform design: The z13 versus its predecessors

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



IBM z13 and IBM z13s Technical Introduction

Bill White
Cecilia A De Leon
Edzard Hoogerbrug
Everson Palacio
Franco Pinto
Barbara Sannerud
Martin Soellig
John Troy
Jin J Yang

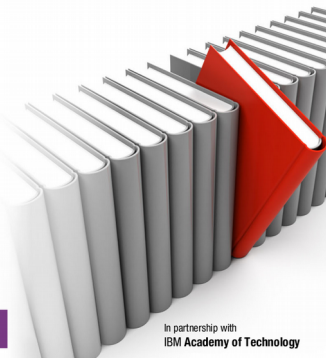


z Systems



IBM z13 Technical Guide

Octavian Lascu
Edzard Hoogerbrug
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Everson Palacio
Franco Pinto
Barbara Sannerud
Martin Soellig
John Troy
Jin J Yang



z Systems

In partnership with
IBM Academy of Technology



IBM z13 Configuration Setup

Paolo Bruni
Tom Carlielli
Mark Challen
Klaus Horn
Peter Hoyle
Kazuhiro Nakajima
Martin Soellig



z Systems



IBM z Systems Connectivity Handbook

Bill White
Frank Packheiser
Everson Palacio
Octavian Lascu

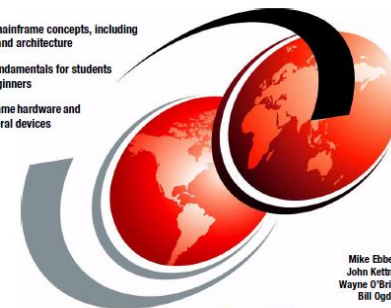


<http://www.ibm.com/redbooks>

IBM

Introduction to the New Mainframe z/OS Basics

Basic mainframe concepts, including
usage and architecture
z/OS fundamentals for students
and beginners
Mainframe hardware and
peripheral devices



Mike Ebbers
John Kettner
Wayne O'Brien
Bill Ogden

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IBM

ABCs of z/OS System Programming: Volume 1

Introduction to z/OS and storage
concepts
TSO/E, ISPF, JCL, and SDSF
z/OS delivery and installation



Paul Rogers

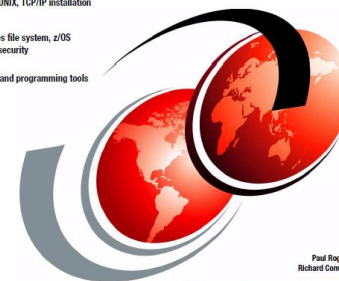
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ABCs of z/OS System Programming: Volume 9

z/OS UNIX, TCP/IP installation
zSeries file system, z/OS
UNIX security
Shell and programming tools



Paul Rogers
Richard Conway

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Unit summary

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