

# Making System z the Center of Enterprise Computing

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Accenture

August 5 at 3:00 pm in room 305  
Sessions # 7167



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## Presentation Abstract:

- How to exploit the best aspects of z/OS and Enterprise Virtualization to create a cost effective and highly reliable application Eco System. The presentation will use real examples of combining z/OS and Linux on System z to create a cost effective and highly reliable enterprise solution. This includes leveraging DB2 with zIIP engines, and Java, COBOL and Oracle RAC all running on Linux on System z, to create a simplified and scalable solutions. I will also highlight some of the cost savings models illustrating how this solution reduced Oracle software cost by over 80% and mainframe costs by 30% or more.
- Learn how to enable z/OS workload to run on Linux for System z
- Review case studies of Oracle and COBOL application running on System z

# Objectives

- Review the value proposition of the System z in enterprise computing
  - What is Mainframe Optimization
  - What are the options on the mainframe
    - Uber- virtualization
    - Oracle super scaling
    - Enabling COBOL - z/OS workload to run on Linux for System z
- The mainframe is not dead and neither is COBOL

# Mainframe Optimization (MFO)

- MFO is an approach that positions the best of z/OS to enable Linux on System z
- Why is it important today?
  - Typically the Mainframe is the single largest line-item on an IT budget
  - IT budgets are getting reduced by 10% - 50%
  - The mainframe is the logical place to start
- How to reduce costs by 20%-80% without leaving the mainframe

# There are five key aspects to Mainframe Optimization:

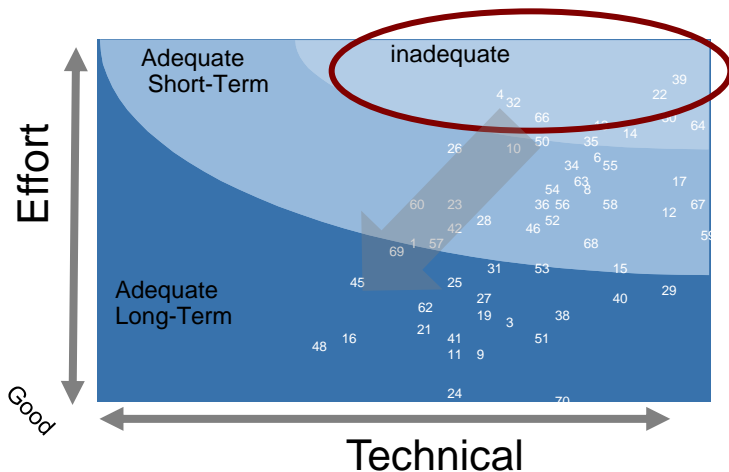
1. Understanding your baseline costs
2. Server Consolidation – “Uber-virtualization” of distributed platform to System z / Linux
3. Oracle Consolidation – Consolidate multiply Oracle instances onto a smaller foot print and reduce the number or Oracle licenses
4. Partial Migration – z/OS based applications to Linux on System z

## Mainframe Optimization

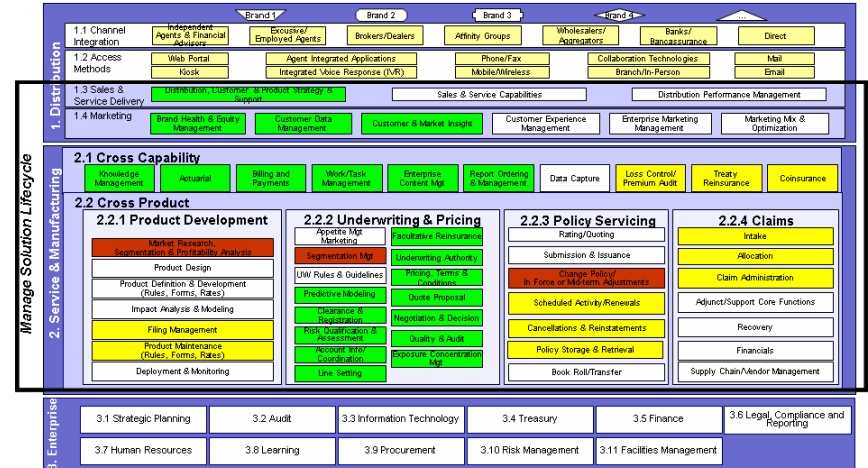
*Prioritizing the work and measuring the benefits during the journey*

- Accommodate changes in business imperatives
- Proactively understand the affects of the different levers within portfolio
- Measure and monitor the progress – focus on the quantifiable results

Continuously prioritize the portfolio



Show the progress using a business view



Business focus view showing the results keeps IT aligned with the changing business imperatives

Illustrative Key of Complexity:

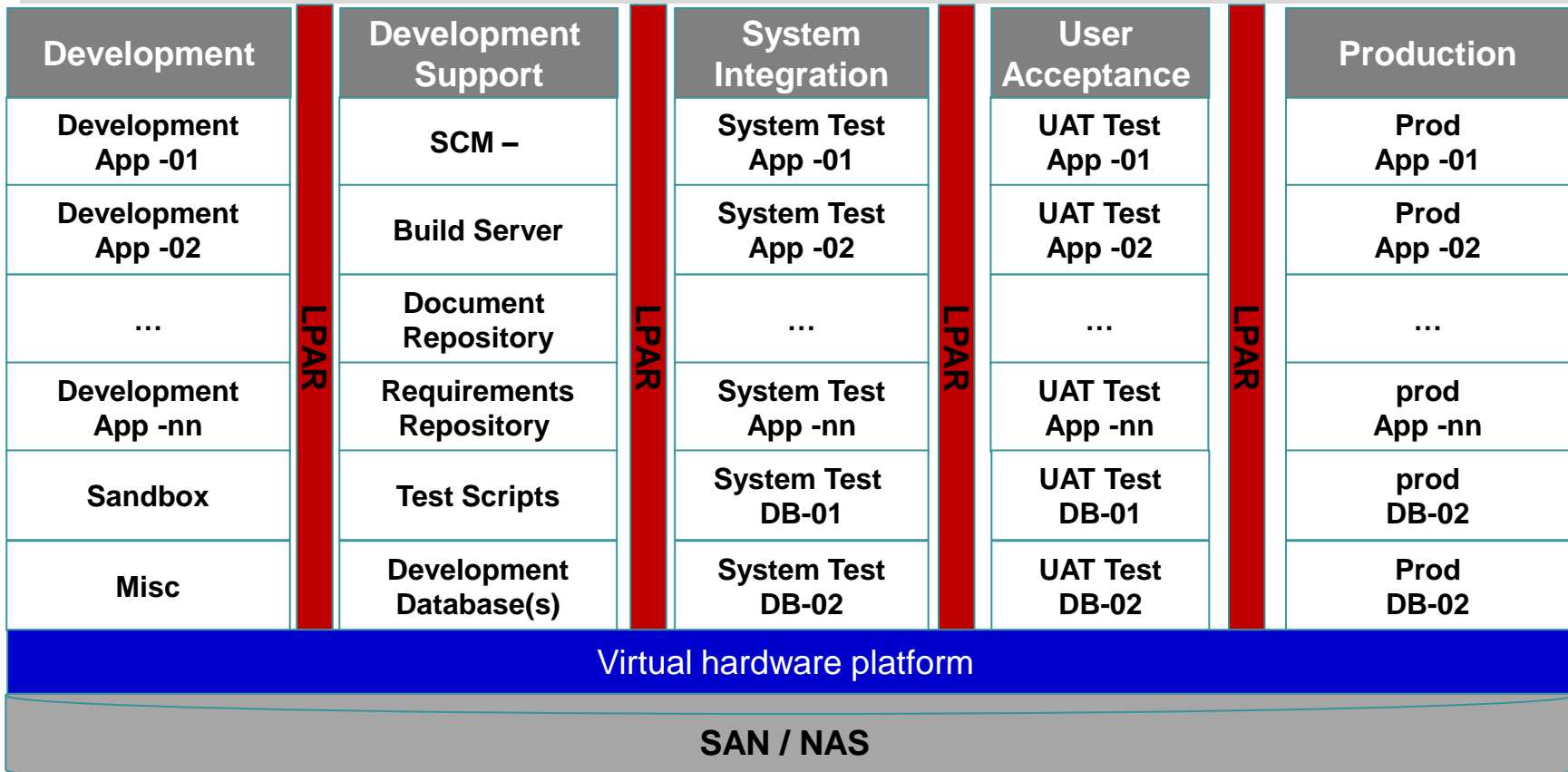
Orange = High  
Blue = Normal

Yellow = Medium  
Others = not in scope

# Server consolidation

## - Running the organization in a box

- Levering the tried and true LPAR technologies enables organization to exploit cost effective, scalable, and stable Open Source deployment
  - The ability to co-locate tightly coupled solutions
  - The ability to optimize hardware during functional consolidation
  - The ability to prioritize (share) hardware to meet business needs now (Dev/Test/Prod)



## Value Proposition: Oracle Consolidation

### Global Company

- Achieve super scalability on a small footprint
- Oracle software costs reduced by 85%\*
- Physical footprint reduced by 80% (3 Racks vs. 15 racks)\*\*
- Background
  - 2 Node OracleRac Cluster
  - >36TB
  - Single tables of 3+ Billion rows
  - Full primary and foreign keys
  - Indexes
  - Referential Integrity turned on
- Results Achieved
  - Over 7 hours the application averaged >240,000 TPS
  - Multi-row inserts / updates
  - CPU utilization was ~50% on the Oracle server
  - Application is Java running on the IFL as well

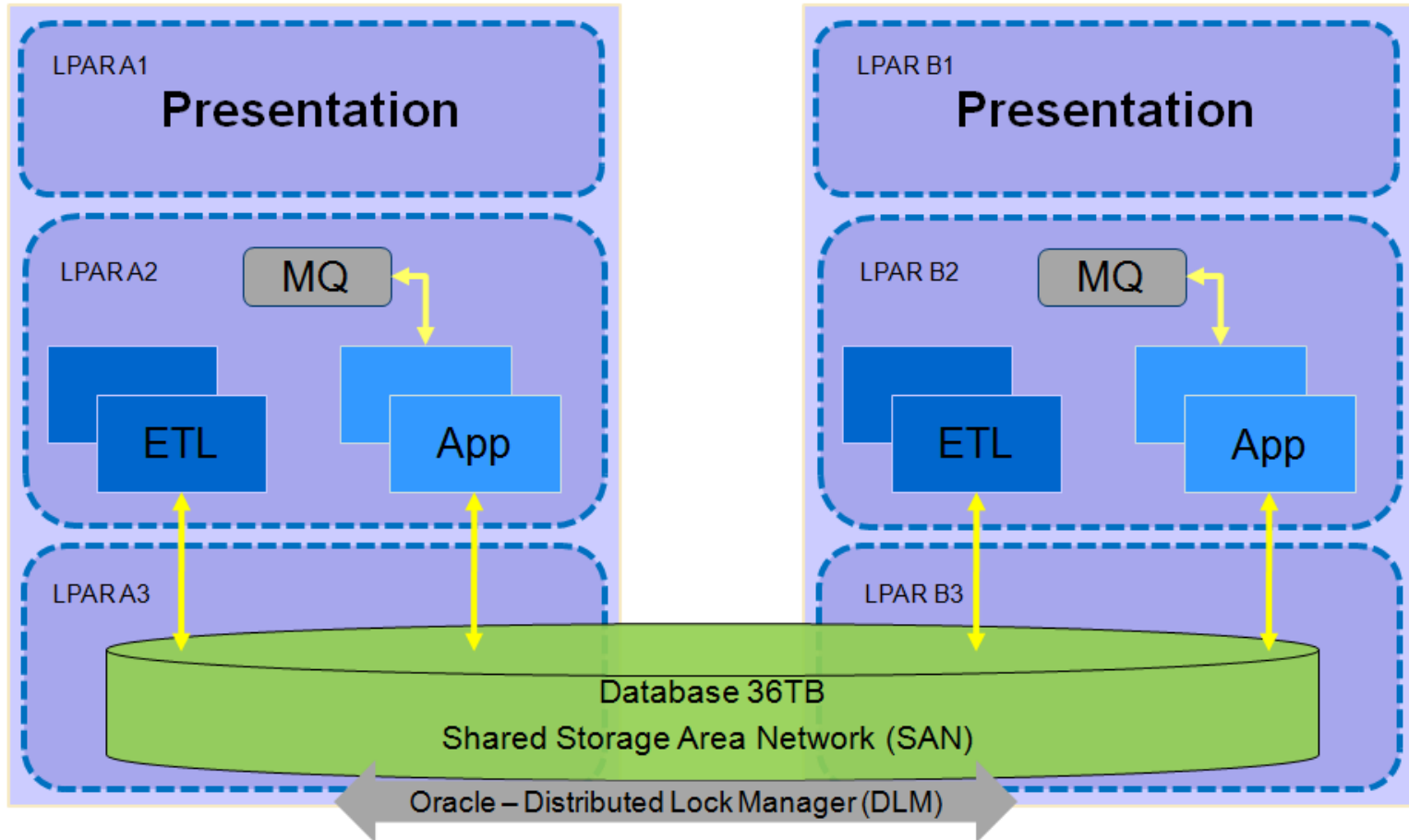
\* Oracle would have required 224 Intel processors to support the same load or 4 node Superdome plus equivalent hardware for just production DR

\*\* excluding Disk



# Oracle

## - Achieve Super Scalability on a Small Footprint



## Value Proposition: Application Migration

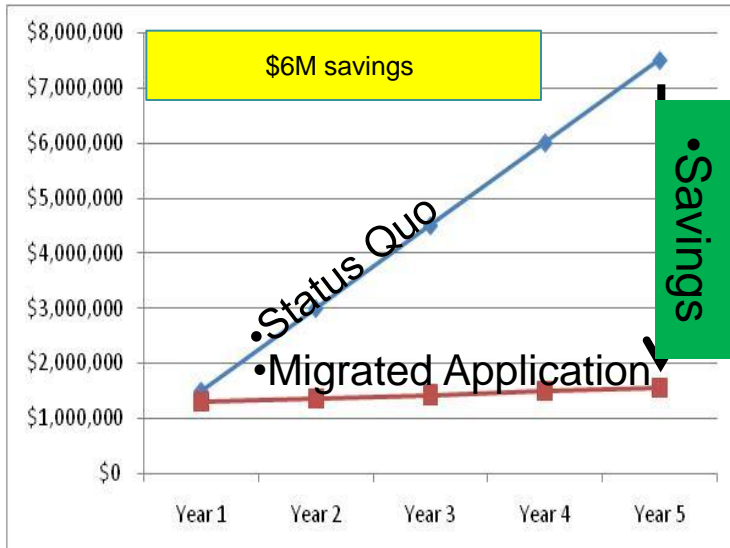
### Small Application Migration

A small application currently costing \$1.5M/year to operate becomes \$0.1M or a five year savings of over \$6M (Including the cost of migration)

### Partial Application Migration\*

Moving a portion of a 5,000 MIP application to an IFL allows a cost reduction of \$40-55M and a cost avoidance savings of \$70-\$90M

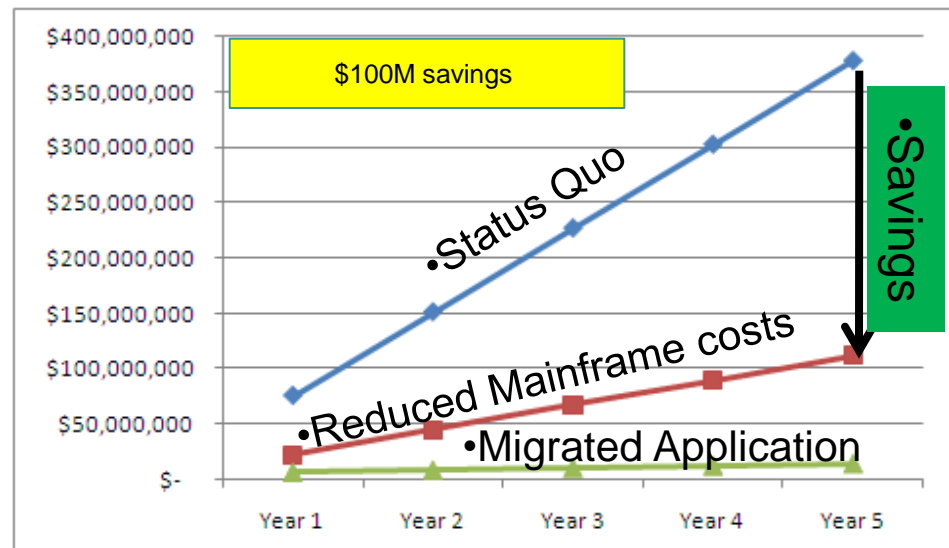
\* Patent Pending



Illustrative cost comparisons:

Example 1:

z/OS \$XX/CPU Hour vs IFL \$Y.Y/YCPU Hour



Illustrative cost comparisons:

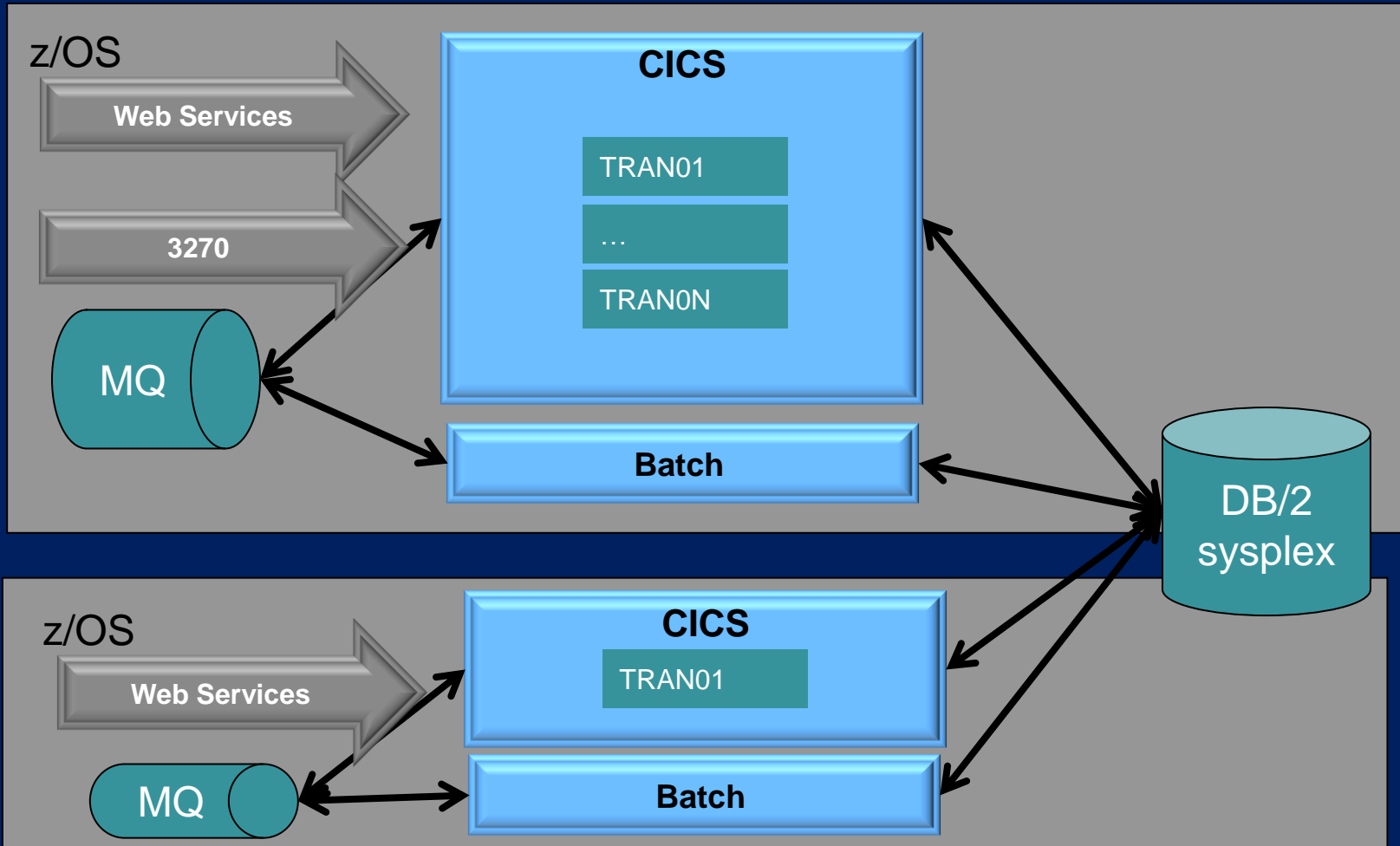
Example 2:

z/OS engine \$ XXX vs. IFL engine XXX / 90

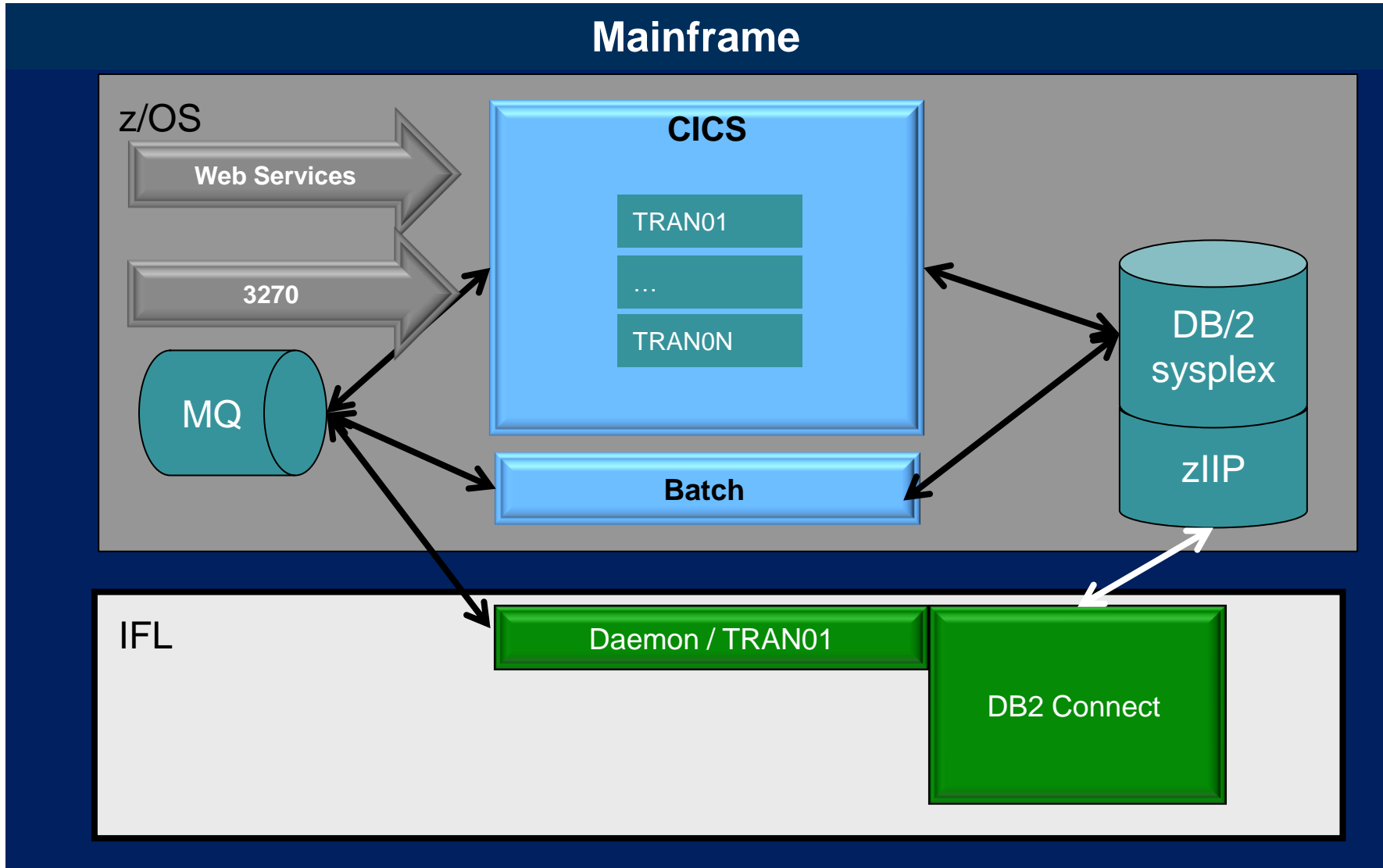
Comparable Intel server required 5-10 more or 2-3x

# Mainframe Application Configuration Typical

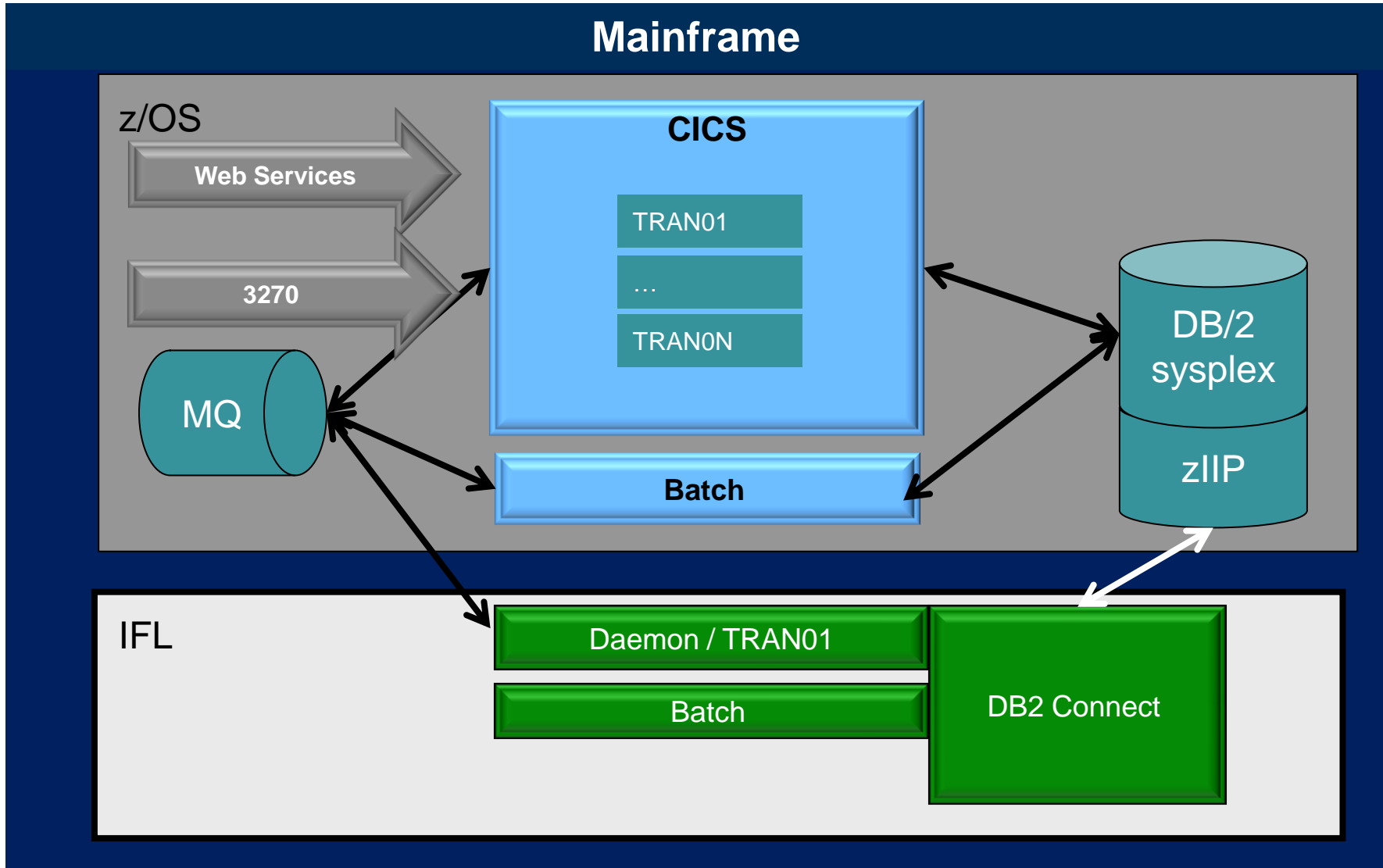
## Mainframe



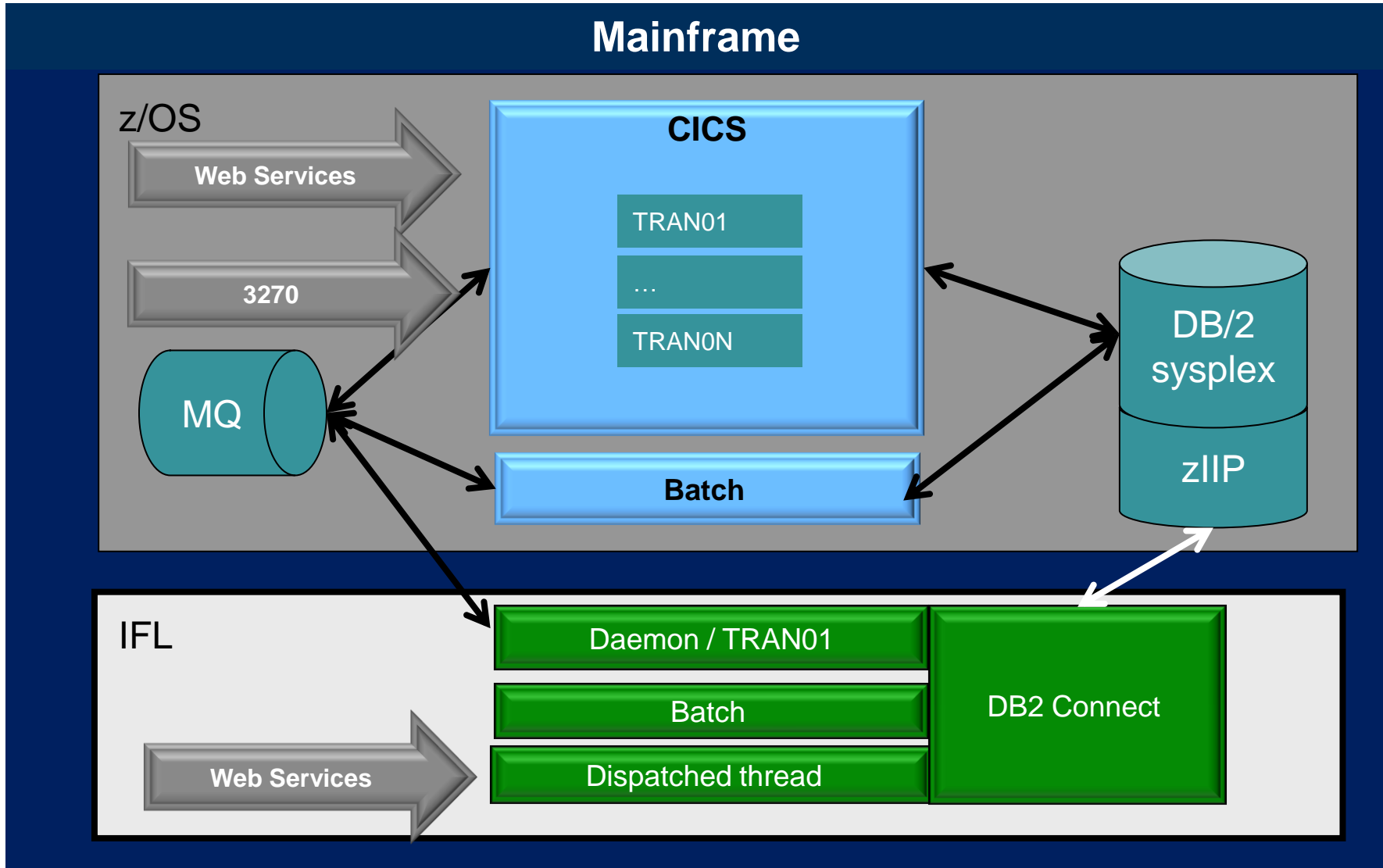
# Mainframe Application Configuration Coexistence with the IFL



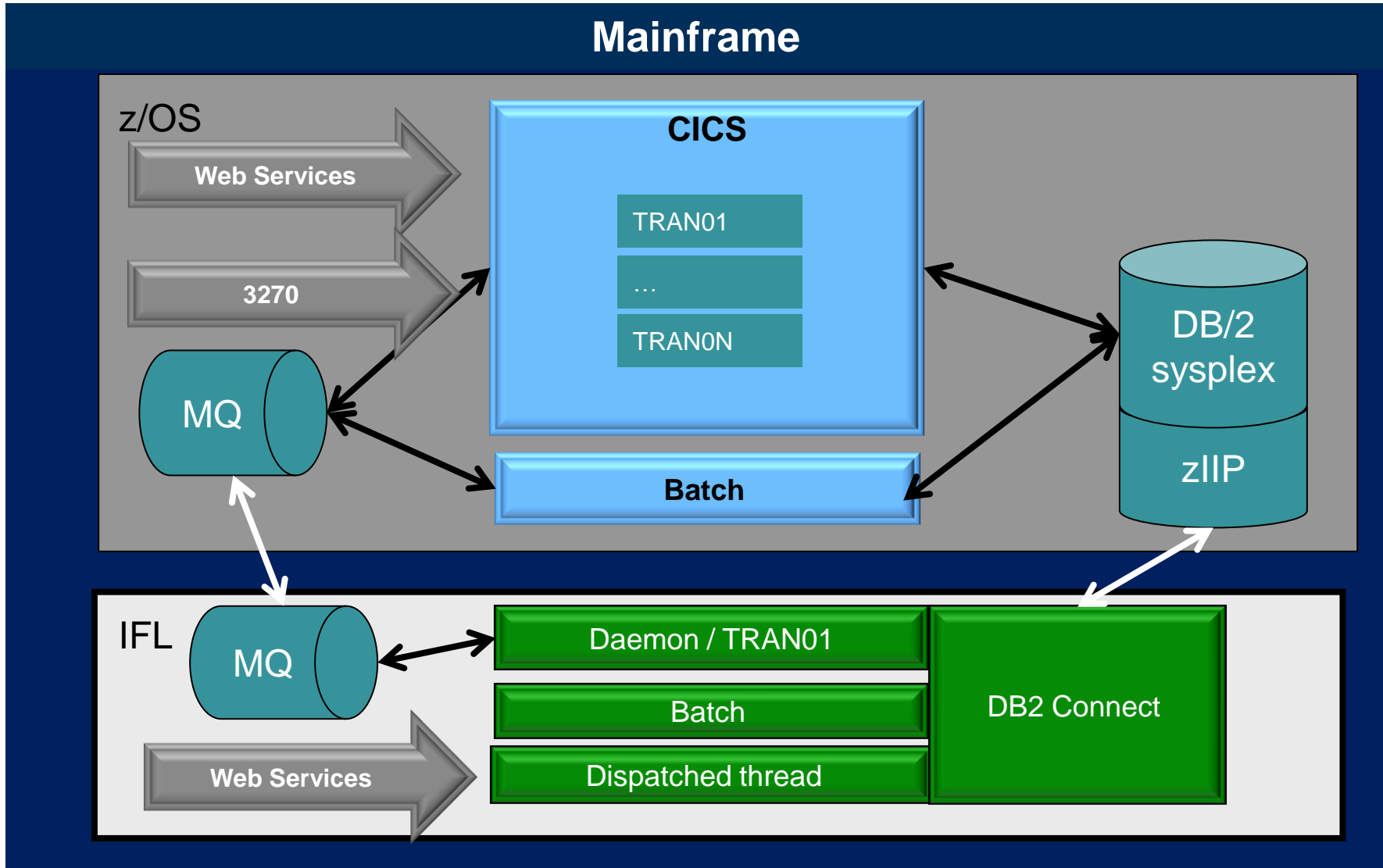
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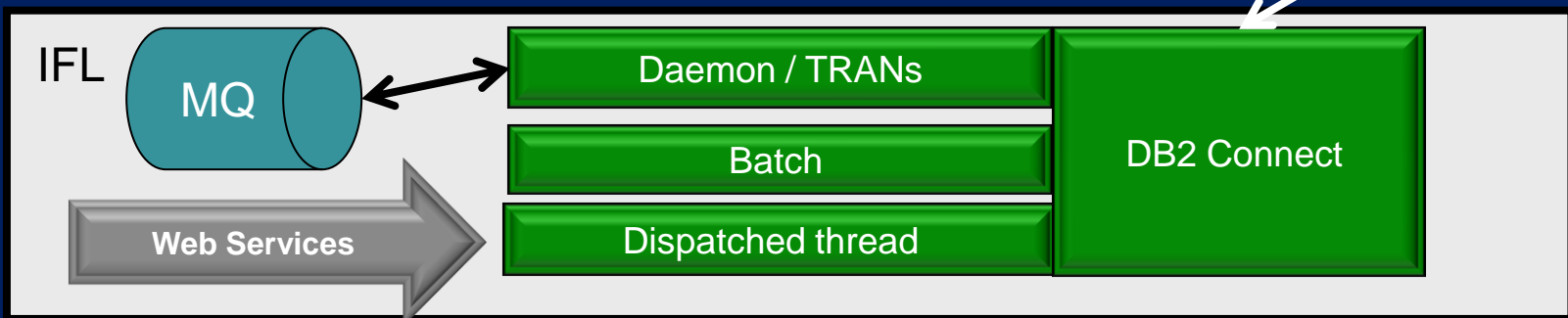
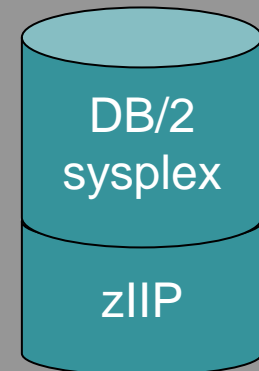
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## Mainframe

z/OS



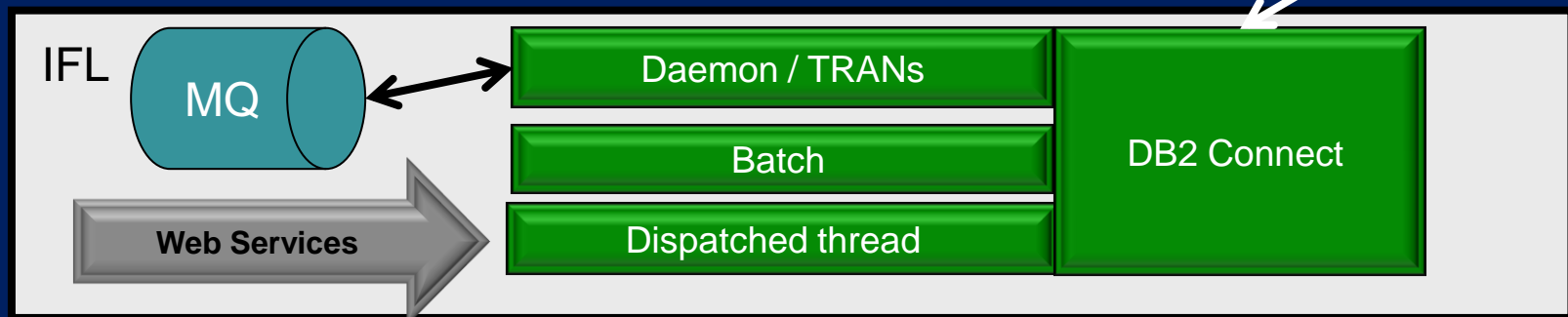
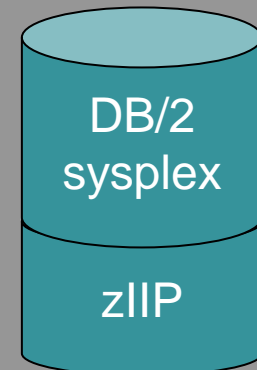


# Mainframe Application Configuration Coexistence with the IFL

## Mainframe

z/OS

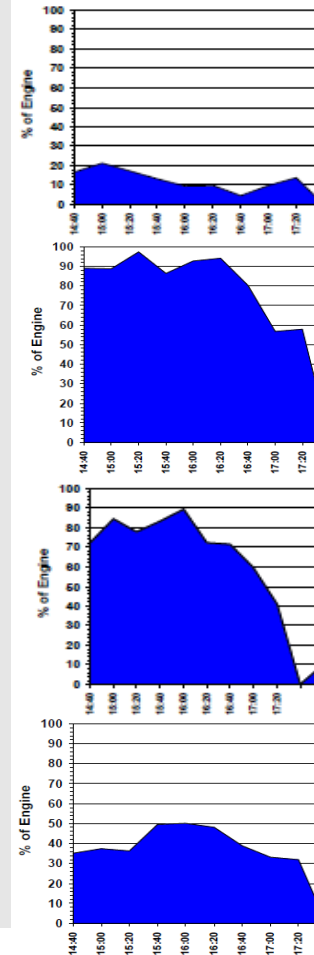
Let z/OS enable Linux on System z to be a safe place for Mission Critical Enterprise Applications



# Summary of CICS Workload Migration

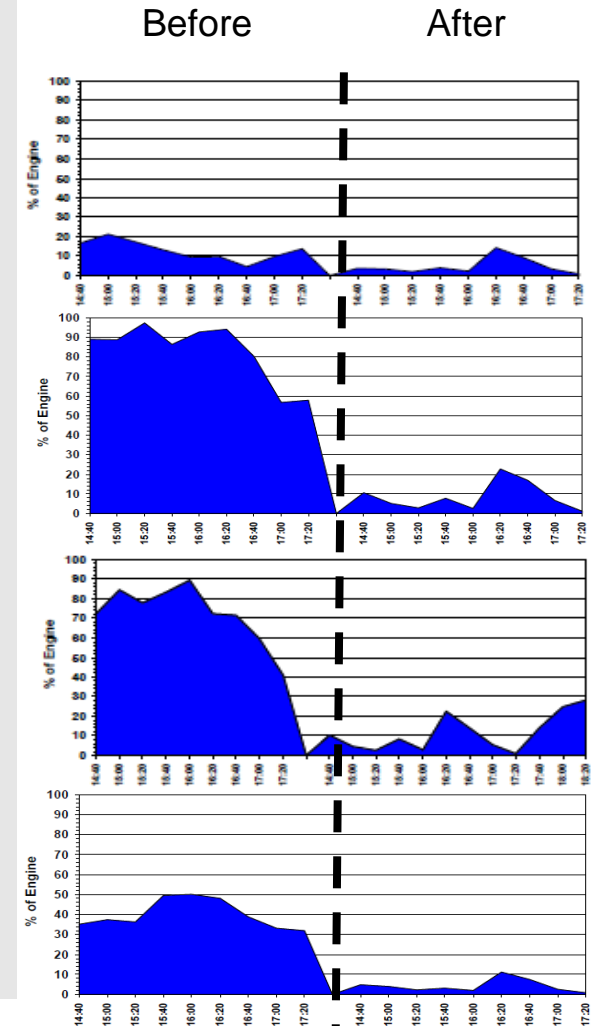
- Trans ABC & EFG response time increased from .4s to 12s
- CPU utilization on CECA remained consistent
  - **XYPA** and **XYPC** decreased (**This is good**)
  - **XYOA** and **XYUA** increased (**out of scope workload**)
- CPU Utilization on CECB remained consistent due to growth in XYOB and XYUB (**out of scope workload**)
- CPU Utilization decreased for both CICSONE and BATCHONE work
  - XYPA saw largest decrease (**savings of 1 engine**) ~ 760 MIPS
  - XYPC saw decrease (**saving of .5 engines**) ~ 380 MIPS
  - 1705 QAZ jobs ran on 3/17 - 3525 QAZ jobs ran on 6/3
- CPU Utilization for MQ increased 5-7% on all 4 lpars
- CPU Utilization for DDFPTS increased - transactions doubled
- IFL utilization increased from 15% to 60% (**This is good**)
- ZIIP utilization increased (10% - 20%) (**This is a good**)
- Coupling Facility Utilization remained consistent
  - Requests to QSP0PTSQUEUES1 decreased by 87%

Before



# Summary of CICS Workload Migration

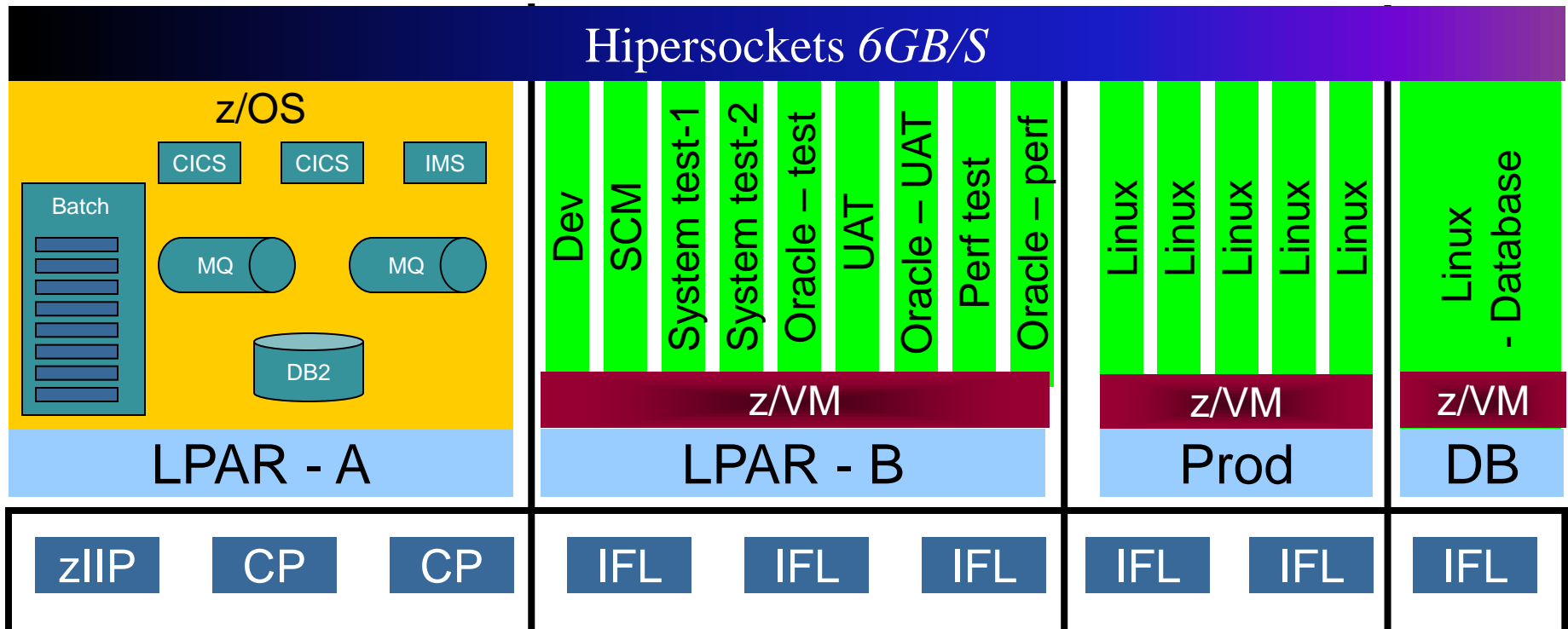
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# Summary

## - Uber - Virtualization on a Small Footprint

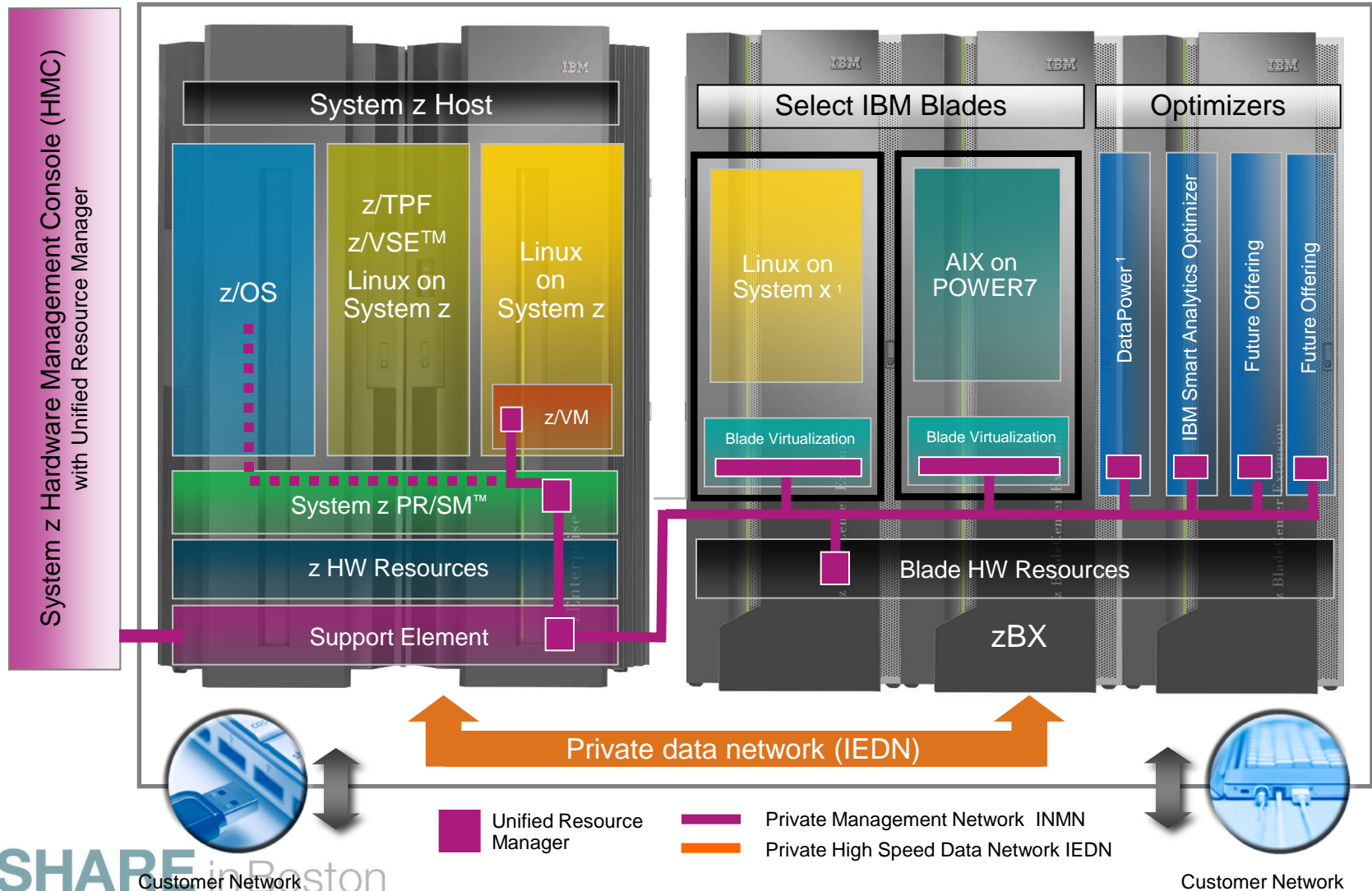
- Leverage existing floor space
- Dynamic load balancing
- Development and test can share the same hardware
- No physical network equipment required to connect internal servers
- Internal servers can remain on separate virtual LANS
- Simplified and reduce cost for DR



# Things to watch out for

- Having just senior leadership sponsorship is not good enough
- Agree on what the objectives are
  - Reduce COST vs GP MIPS vs TOTAL MIPS vs etc...
- Pick something simple to pilot first
- Understand the current production workload and don't get roped into supporting things that don't happen today
- Other things to consider
  - Change the code on z/OS and validate the same code works in both places
  - Start setting up the operations early
  - Don't be surprised during testing that you find things that really don't work in production today

# Uber-virtualization everything that works together under one umbrella



# Contact Information

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