

A z990 Performance Update

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z990 Performance Overview

- z990 much faster than z900s
 - ▶ 50% to 60% faster than turbo models
 - ▶ 80% to 90% faster than base models
 - ▶ (based on LSPR workload ratios at equal levels of multiprocessing)
- speed and size creates more workload variability
 - ▶ workload tuning issues
 - ▶ capacity sizing issues
 - ▶ last commonly seen: moving from G4 to G5
- it is important to do customized capacity sizings
 - ▶ do not use MIPS tables
 - ▶ do make customized use of LSPR, zPCR, or CP2000
 - ▶ especially for upgrades to processors with fewer engines
 - these are where workloads vary the most from average

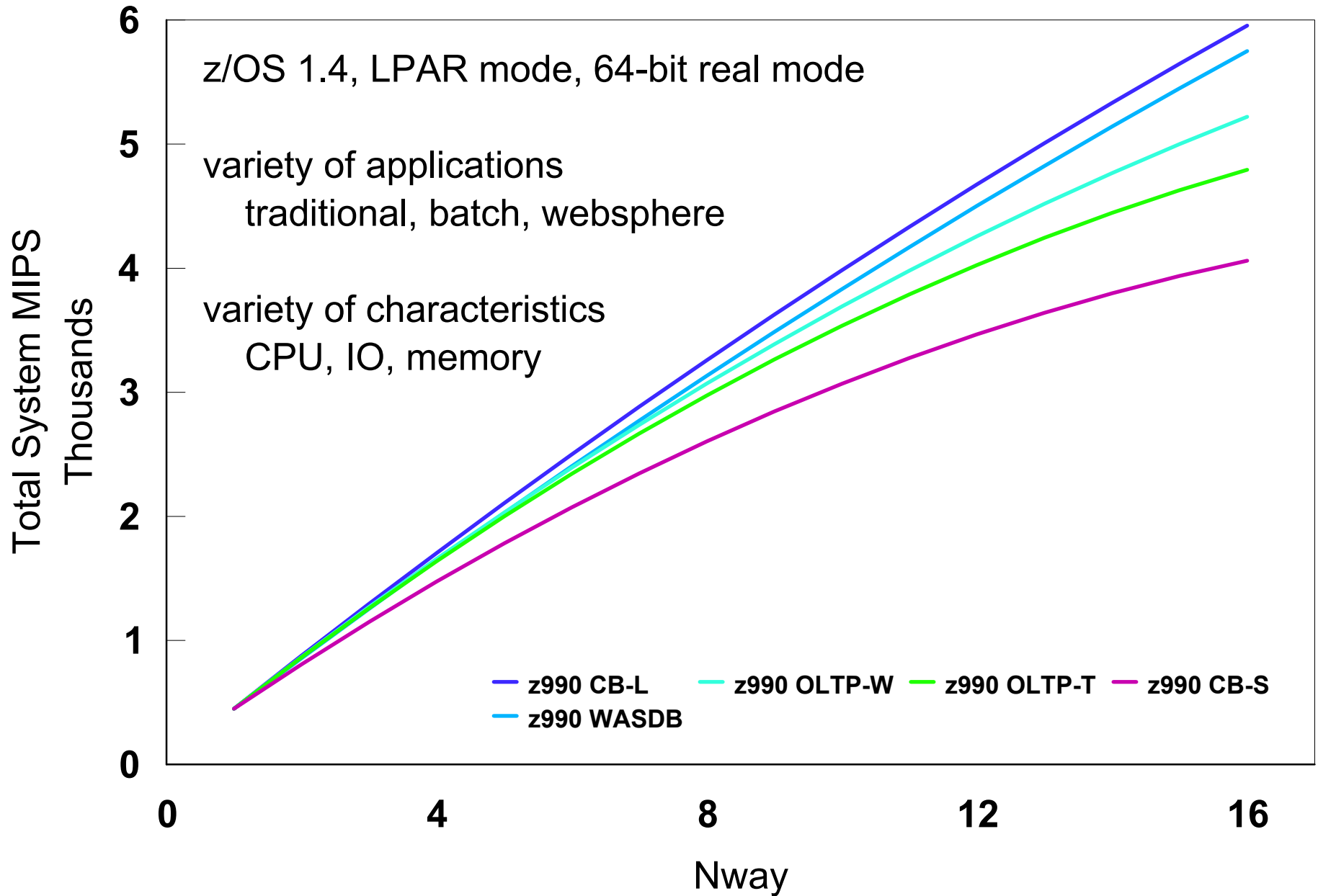
Workload tuning issues

- When moving workloads to significantly faster processors
 - ▶ Tune and configure for efficiency
 - LPAR weights and number of logical processors
 - coupling technology upgrade may be needed
 - ▶ Tune for importance
 - manage latent demand
 - work may have been constrained by engine speed
 - with faster z990 engines, it may significantly increase
 - WLM policy (or other tuning actions) may have to change

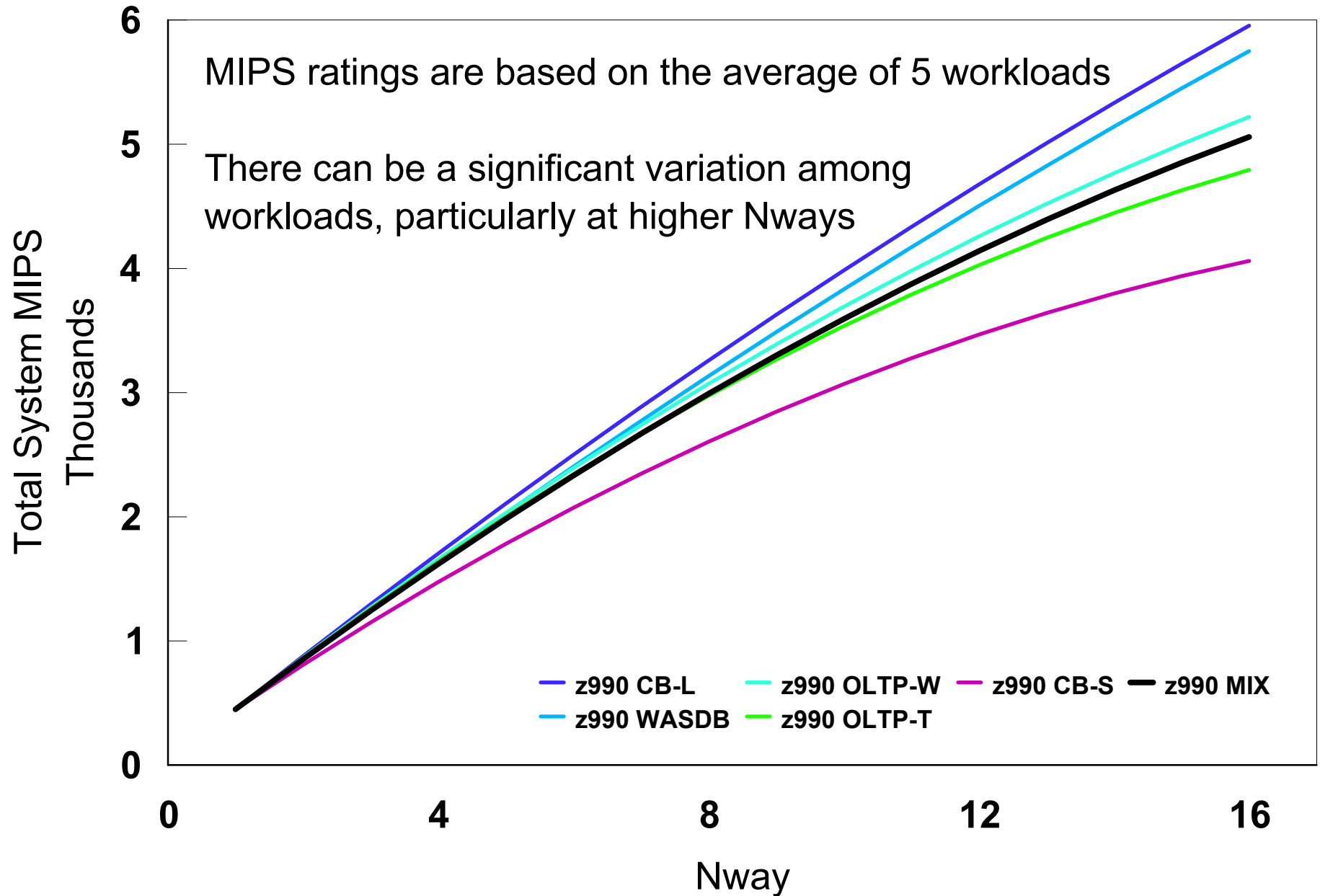
Capacity Sizing Issues

- Single number metrics - MIPS and MSUs - are based on averages and should not be used for sizing capacity
- Actual workload performance can vary significantly around the average
 - ▶ greatly affected by workload characteristics
 - particularly as pertains to Nway scalability
 - ▶ also affected by LPAR configuration and coupling technology
- Bigger processors have bigger variability
 - ▶ wider variety and changing mix of applications
 - ▶ unexpected latent demand can be "let loose" by significantly faster engines

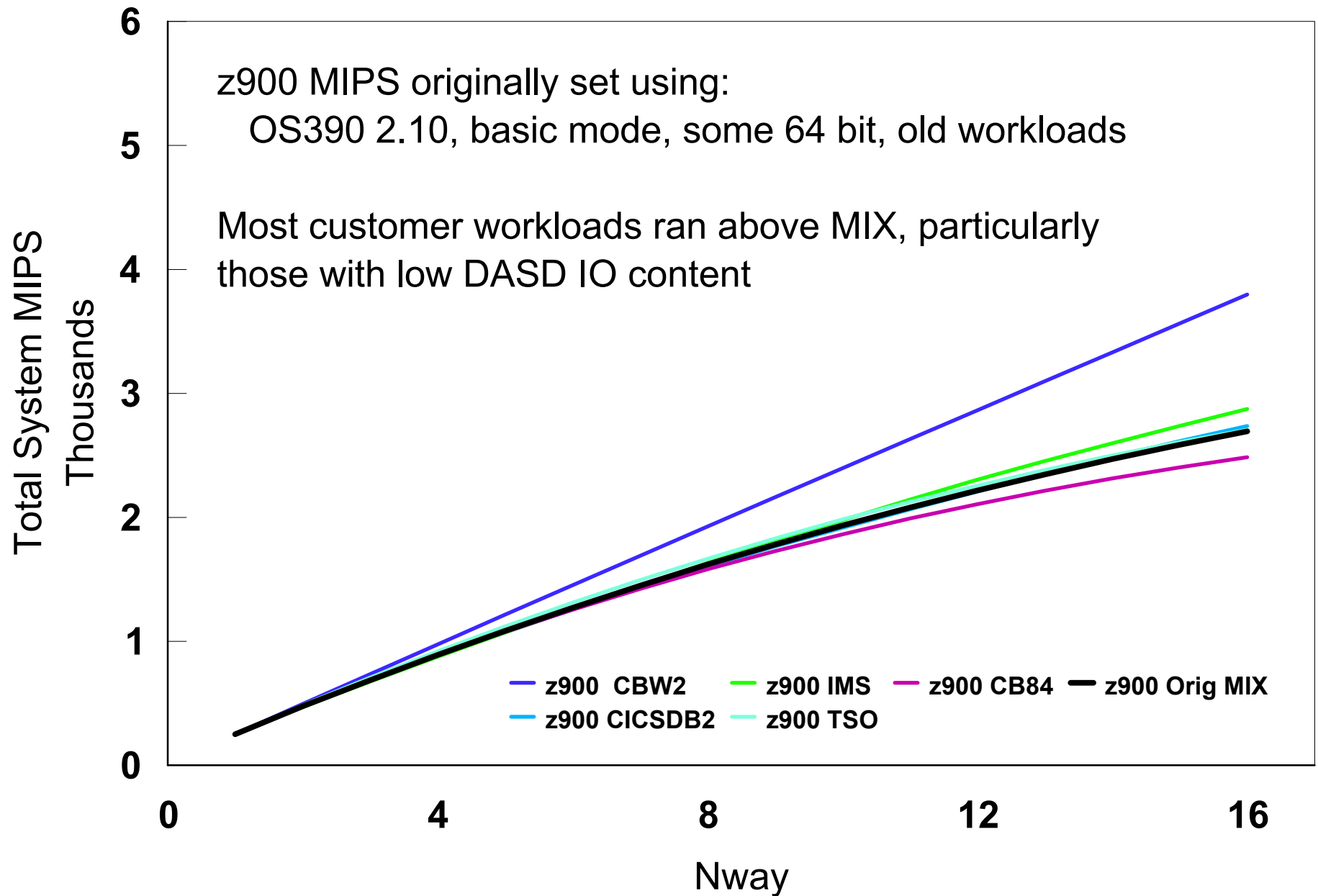
z990 LSPR Measurements for z/OS



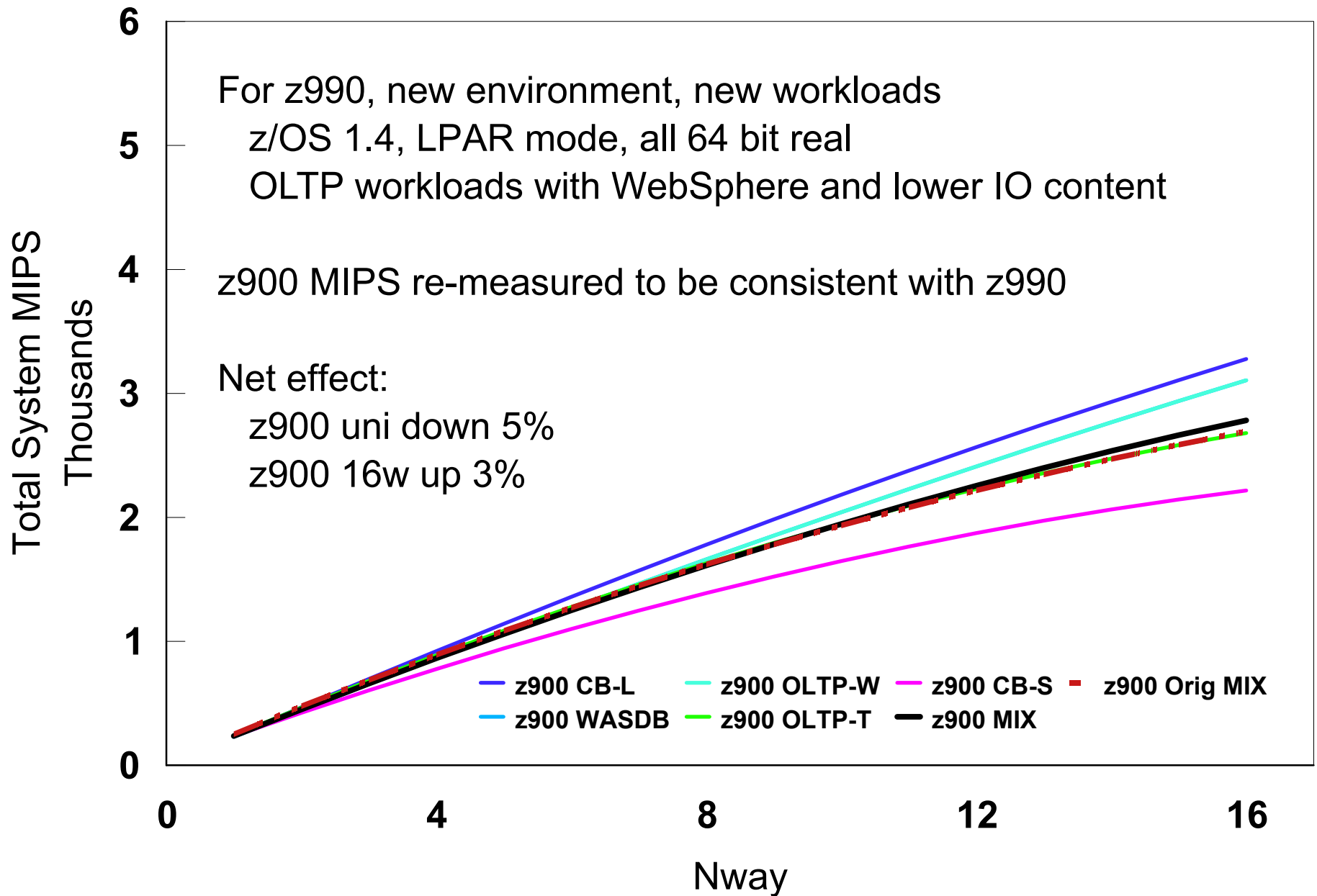
z990 MIPS ratings - based on average MIX



z900 MIPS change with new workloads and environment

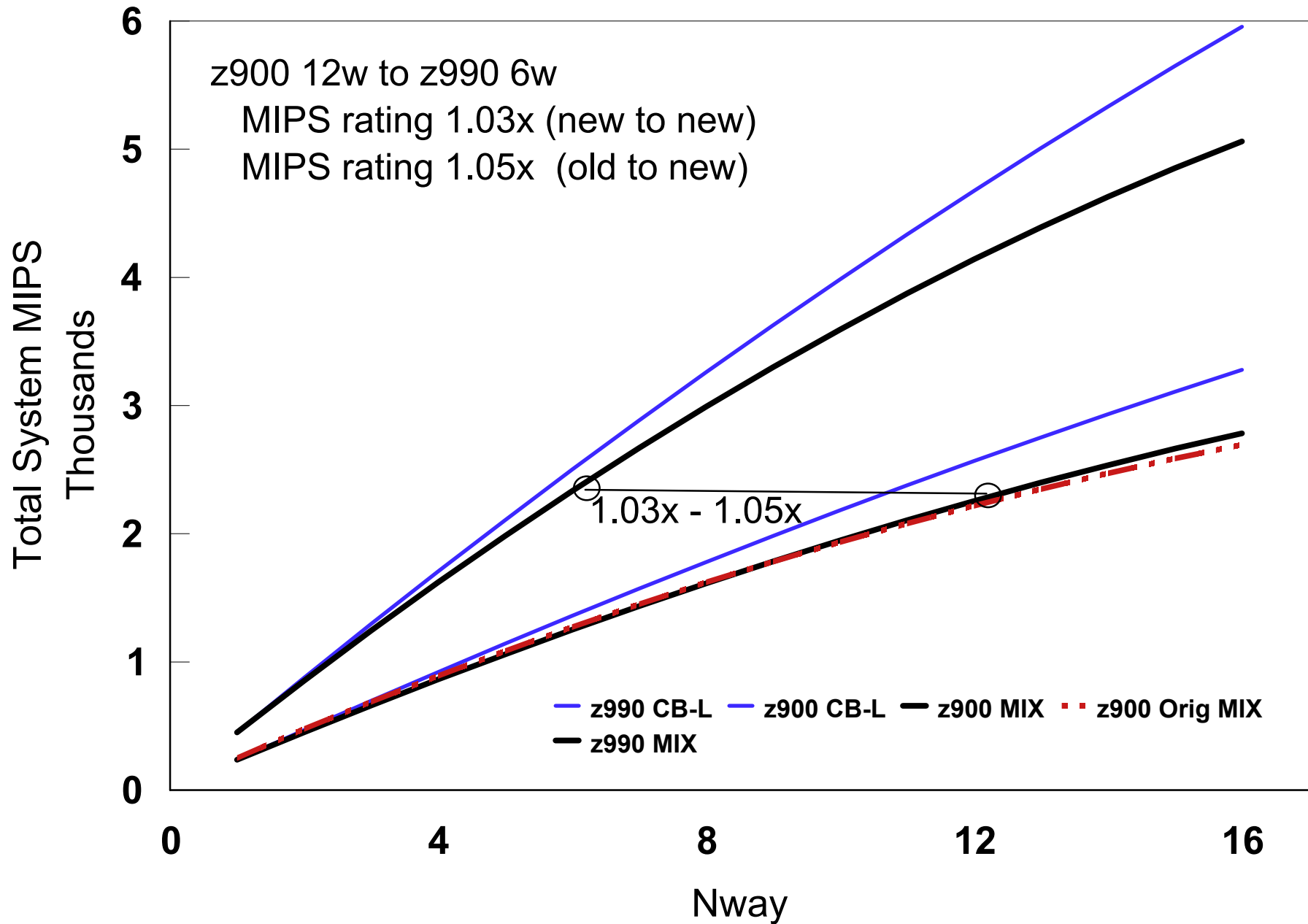


z900 MIPS change with new workloads and environment



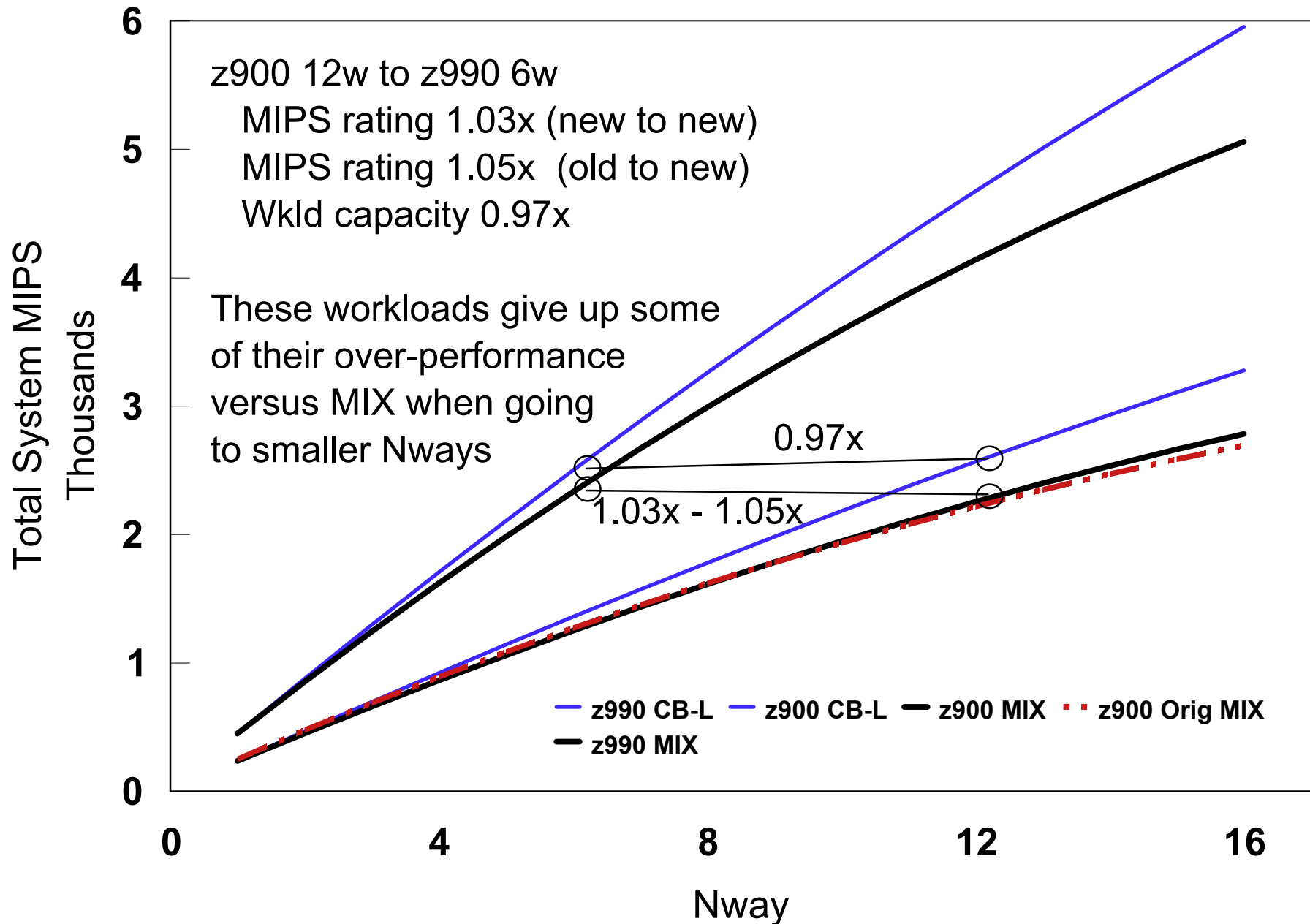
Example of workload sensitivity effect on capacity sizing

Upgrade from z900 to z990 for the highest Nway scaling wkld



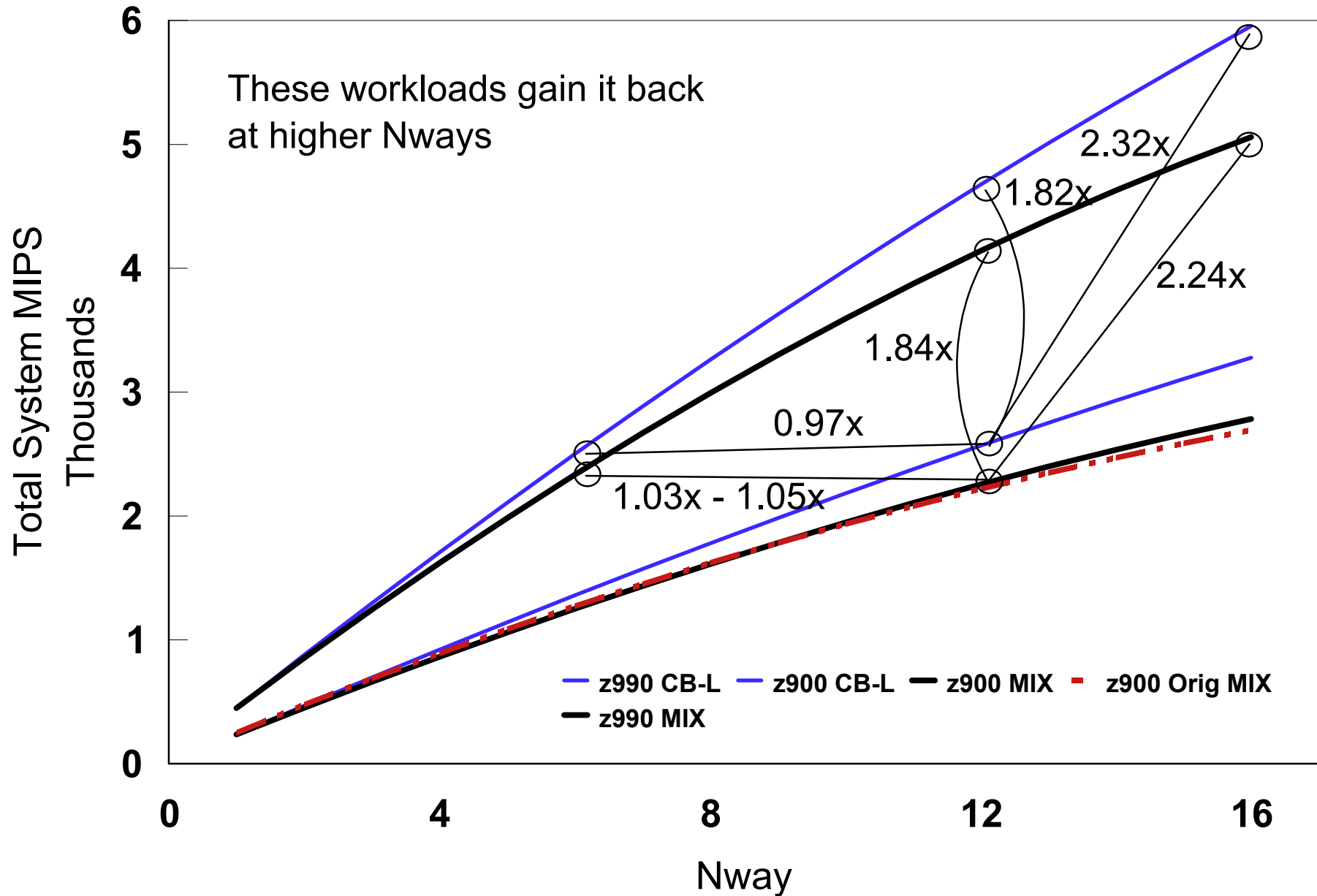
Example of workload sensitivity effect on capacity sizing

Upgrade from z900 to z990 for the highest Nway scaling wkld



Example of workload sensitivity effect on capacity sizing

Upgrade from z900 to z990 for the highest Nway scaling wkld



LPAR effect on Capacity Sizings

- LPAR configurations affect the efficiency of the HW and SW
 - ▶ key factors
 - workload characteristics
 - number of LPARs
 - number of logical processors and weight of each LPAR
 - overall ratio of logical to physical processors
 - ▶ example efficiency factors on a 16way processor
 - 1.00 for 1x16w (1x16way partition)
 - 0.97 for 2x16w average MIX workload
 - 0.97 for 2x16w high scaling workload
 - 1.04 for 2x8w average MIX workload
 - 1.02 for 2x8w high scaling workload
 - 1.00 for 4x8w average MIX workload
 - 0.98 for 4x8w high scaling workload

Coupling Technology effect on Capacity Sizings

- Sysplex configurations affect the efficiency of the HW and SW
 - ▶ key factors
 - workload characteristics - rate of operations to the coupling facility
 - speed of coupling technology (CPU and links) versus speed of host technology
 - ▶ example efficiency factors
 - 0.98 for light coupling workload
 - 0.95 for medium coupling workload with speed-matched CF and host
 - 0.92 for medium coupling workload with "slow" CF versus host speed
 - 0.90 for heavy coupling workload with speed-matched CF and host

Capacity Planning for Success

- Perform a customized capacity sizing using zPCR or CP2000
 - ▶ customize for workload (check for low DASD IO)
 - ▶ customize for LPAR configuration
- Consider need for tuning changes for LPAR and subsystems
- Consider upgrading coupling technology
 - ▶ understand capacity impacts of not changing
- Closely monitor need to adjust WLM tuning controls
 - ▶ watch out for latent demand

Capacity Sizing Tool Summary

- CPS Tools
- zPCR
 - ▶ easy to load and use on laptop
 - ▶ most effective when customized to the workload characteristics and LPAR configuration
- CP2000
 - ▶ automated data input from SMF/RMF
 - ▶ smart text output including graphs and charts
- Provide customized capacity sizings
 - ▶ workload mix (for example, low IO content)
 - ▶ LPAR configuration
 - should run "before" and "after" configurations, not just "after"
 - ▶ much more accurate than using "MIPS tables"
 - ▶ particularly important when upgrade involves going backward in Nway

Questions

What About.....

