



# Can You Teach a New Capacity & Performance Specialist Old Tricks? Hindsight and Insight

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home of **Cheryl Watson's TUNING Letter, CPU Chart, BoxScore, and GoalTender**

# Agenda

- What does a traditional capacity planner do?
- What does a traditional performance analyst do?
- What do they have in common?
- How do they differ?
- What has changed lately?
- How to keep learning?

# What does a traditional capacity planner do?

- Primary objective – plan for changes in capacity (i.e. determine when to get new hardware and how much to get)
  - This is often done only once a year, prior to the budget process
  - Product – a Capacity Plan that states the amount of hardware needed, when it's needed, and how the additional resources will be used
  - Hardware – processors, memory, storage, links, etc.
- Additional responsibilities (i.e. how he/she spends the rest of the year!):
  - Interface with CIO to determine his/her needs and timeframes
  - Interface with CEO to understand the company directions and needs
  - Interface with the business departments to determine how business plans might impact IT plans (e.g. new marketing plan goes into effect, big retail sale coming up, large development project on the books)
  - Interface with performance analyst to see if last plan actually worked (i.e. is the last hardware upgrade working as planned?)

# What does a traditional capacity planner do?

- Daily
  - Produce & review reports showing resource usage in order to compare estimated usage with actual usage
  - Review performance with performance analyst
  - If discrepancies, determine the reason
- As Needed
  - Learn about new technologies that might change the next plans (e.g. learn about Linux on System z, learn about zIIPs & zAAPs)
  - Coordinate with business departments to see if their plans have changed
  - Produce reports and information to management when requested
- Yearly
  - Produce Capacity Plan for management
  - Help performance analyst set service level objectives
  - Avoid vacations prior to budget planning

# What does a traditional performance analyst do?

- Primary objective – Maintain service levels to meet the objectives
  - Define Service Level Objectives (SLOs) (e.g. 5 minute batch turnaround, 1 second CICS response, etc.)
  - Reports or exception tools can identify when objectives aren't being met
  - Performance analyst determines reason for objectives not being met, and attempts to correct them
- Additional responsibilities
  - Interface with capacity planner as needed
  - Interface with business departments to set SLOs
  - Interface with operators to identify problems that they are having
  - Manage Workload Manager Policies with sysprog
  - Wear armor and carry a shield as needed

# What does a traditional performance analyst do?

- Daily
  - Produce & review reports showing SLOs and key indicators
  - If discrepancies, determine the reason, and resolve
  - Be available to address performance problems as they arise during the day
  - Review performance with capacity planner
- As Needed
  - Learn about new technologies that might affect performance (e.g. learn about Linux on System z, learn about zIIPs & zAAPs)
  - Produce reports and information to management when requested
  - Learn to use all the monitors
- Yearly
  - Schedule a vacation when there won't be any performance problems
  - Work with capacity planner to set SLOs



# What do they have in common?

- Data
  - SLOs (response & turnaround times)
    - The Capacity Plan is based on a certain level of SLOs; the performance analyst tunes the system to produce agreed upon SLOs
  - Hardware resource usage (volume and response):
    - CPU – CPU utilization, CPU total
    - DASD – Total terabytes, space by application, CU service times
    - XCF Links – activity (peak and average), response times
    - Coupling Facility – amount used by application, response time by application, peak and average activity by application
    - Page data sets – activity rates, % of usage
  - Application resource usage (volume and response):
    - Number of transactions per day, peak rate of transactions/second
    - Peak and average response times for applications (CICS, IMS, DDF, batch, TSO, MQ, etc.)
    - Amount of CPU usage per application or transaction
- Business Priorities
- Interface with charge back staff

# How do they differ?

- Time Periods
  - Performance analyst (PA) looks at data by interval (15 – 30 minutes), by hour, by day, by week
  - PA needs to understand whether key indicators are changing, so he/she also needs to look at key indicators over multiple weeks and months
  - PA primarily looks at response times, but needs volumes to understand the response times
  - Capacity planner (CP) looks at data over longer period of time, such as weekly, monthly, and yearly
  - CP needs to understand if there are daily variations, so he/she can react quickly if something starts to go wrong
  - CP primarily looks at volumes of transactions, CPU usage, DASD usage



# What has changed lately?

- Last decade:
  - SMS managed storage
  - Increased DASD caching
  - zIIPs & zAAPs
  - z/VM & IFLs for Linux
  - GDPS
  - IRD & changing number of CPUs (e.g. stopped using average CPU busy, started using total CPU busy)
  - WebSphere applications
  - MQ applications
  - DDF
  - Workload Manager
  - Coupling Facilities
  - Hardware links up the kazoo
  - XCF
  - Storage enhancements
  - zFS
  - Multiple platforms in same reports
  - TCP/IP
  - Automatic schedulers
  - Online monitors
  - RMF/CMF major enhancements
  - PAVs
  - Console management
  - HiperDispatch
  - JES2/JES3 enhancements
  - SDSF enhancements
  - DFSMS products & enhancements
  - DASD hardware enhancements
  - Tape hardware enhancements
  - Lots of new SMF data
  - PDSE
  - VSAM enhancements
  - Request for reports on Internet

## How to keep learning?

- Attend SHARE to learn about new and enhanced facilities
- Attend EWCP sessions at SHARE (Enterprise Wide Capacity & Performance) – primarily tuning sessions
- Look at CMG presentations – primarily capacity planning (see [www.cmg.org](http://www.cmg.org) and look at older proceedings)
- Use IBM Redbooks (search on ‘capacity planning’, performance, and tuning)
- Look for classes on capacity planning and performance
- PAs – really get to understand what your monitors are telling you