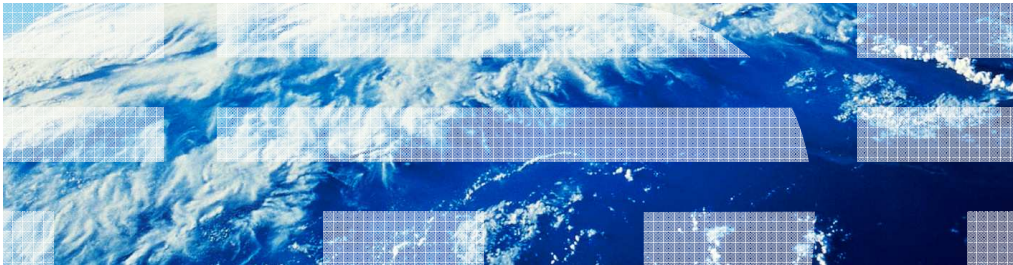


## z/OS V1R13

### BCP WLM: Response time distribution for execution velocity goals



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## Overview (1 of 9)

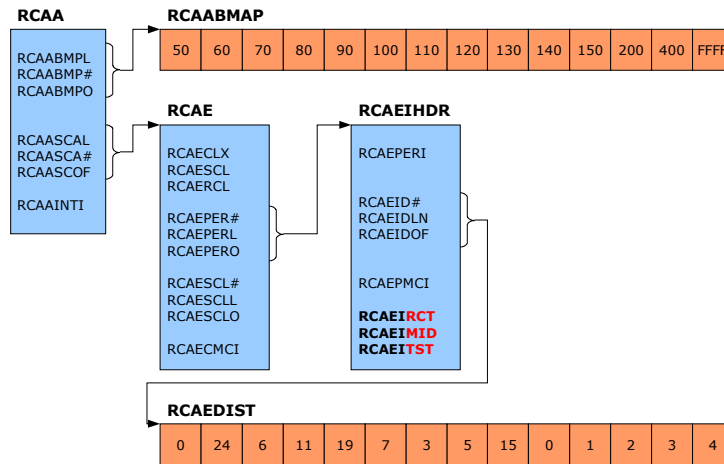
- Problem
  - For workloads with execution velocity goals, WLM reporting service IWMRCOLL does not provide a response time distribution (ended transactions)
  - But it is desirable to show a response time distribution if this is a transactional workload
  - Either directly with IWMRCOLL, or with RMF Workload Activity report (WLMGL – Service Class Period Report)
- Business value
  - More data to analyze workload behavior and to detect problems
  - Customers deploying new software products are now able to obtain better analysis data and to migrate their goal definitions to a meaningful response time goal

## Overview (2 of 9)

- Solution
  - IWMRCOLL answer area IWMWRCOA now provides a response time distribution for service periods with an execution velocity goal too
  - IRASMF99, subtype 2, is enhanced with a response time distribution for service periods with a response time or an execution velocity goal
- IWMWRCOA and IRASMF99 response time distributions are different
  - In IWMWRCOA: **14** buckets
  - In IRASMF99: **28** buckets
  - IWMWRCOA accumulates all transactions since last mid-point change (see IWMWRCOA/IWMRCOLL examples later)
  - IRASMF99 gives back the distribution of the transaction response times over a varying period of time which is intended to be used by WLM development

## Overview (3 of 9)

- New IWMWRCAA fields (RCAEDIST is filled random)



## Overview (4 of 9)

- IWMWRCAA enhancements

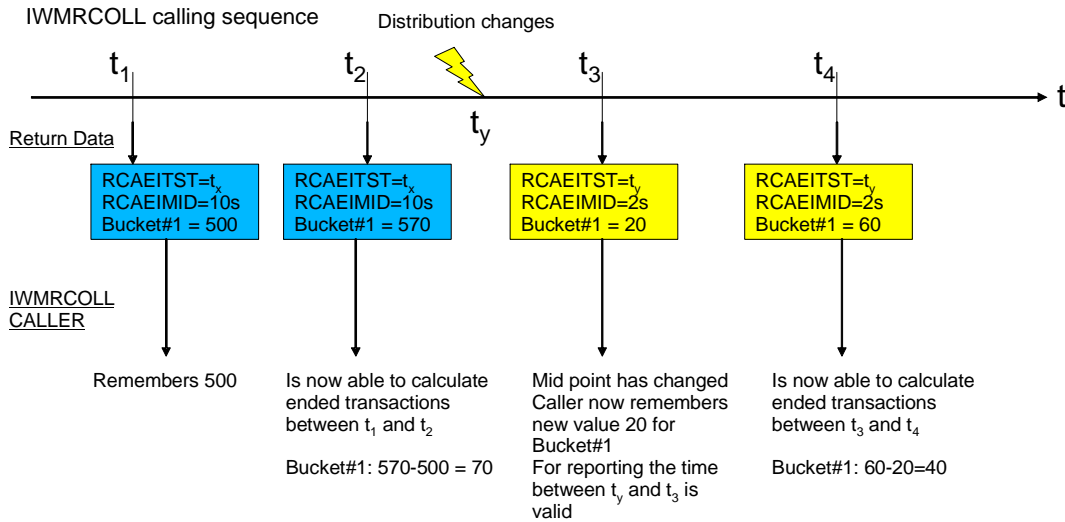
Section	Field	Response time goals	Execution velocity goals
RCAEIHDR (RCAE period header)	RCAEIMID (mid-point in milliseconds)	Same as goal value (milliseconds)	0 after policy activation/refresh/IPL  New value computed when WLM detects that current workload distribution deviates <b>too much</b> from RCAEIMID for a <b>too long</b> time
	RCAEIRCT (running count)	N/A (value always 0)	Total number of RCAEIMID changes since last policy activation
	RCAEITST (timestamp of last change)	Policy activation time	Time of last RCAEIMID change or time of last policy activation
RCAEDIST	RCAEDENT	No change Distribution centered around goal value	Centered around RCAEIMID Reset after each RCAEIMID change

## Overview (5 of 9)

- IWMWRCAA: Report Class Periods
  - **RCAEIRCT** is reset to 0 after each policy activation/refresh/IPL
  - RCAEIRCT is reset to 0 each time the report class period becomes heterogeneous (when RCAEPLSC and RCAEPMCI are updated)
  - RCAEIRCT is incremented each time a transaction is reported with a new mid-point/timestamp
  - The 14 buckets of the report class period's response time distribution are all reset to 0 when RCAEIRCT is incremented
  - **RCAEIMID** is copied from the current service class period's RCAEIMID each time the report class period's RCAEIRCT is updated
  - **RCAEITST** is set to the current time each time the report class period's RCAEIRCT is updated

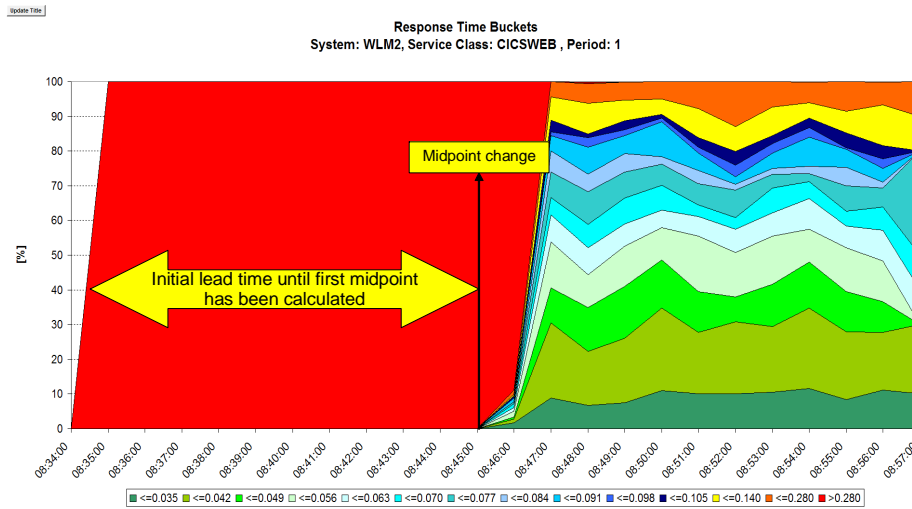
## Overview (6 of 9)

- Example:



## Overview (7 of 9)

- Example: Response time distribution chart built from IWMRCOLL data



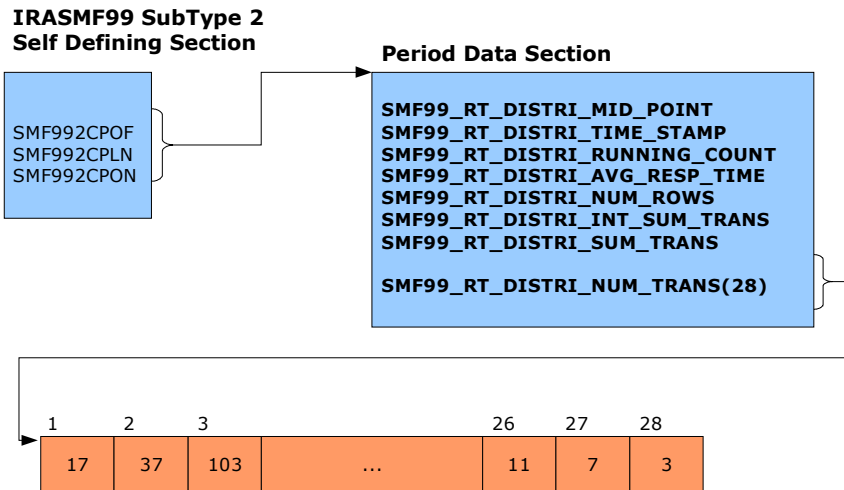


## Overview (8 of 9)

- SMF enhancements
  - New fields in SMF type 99, subtype 2, period data section:
    - Response time distribution with 28 buckets, built around the current mid-point / response time goal
    - Mid-point, timestamp, number of transactions and rows needed to build this distribution, current average response time, etc...
  - This data is intended to help z/OS WLM support correct problems

## Overview (9 of 9)

- New SMF fields (response time distribution filled random)



## Other considerations

- Usage and invocation
  - No changes in WLM service IWMRCOLL invocation
  - The IWMRCOLL output data area (IWMWRCAA) size has increased
- Interactions and dependencies
  - Software Dependencies
    - N/A
  - Hardware Dependencies
    - N/A
  - Exploiters
    - RMF
- Migration and coexistence considerations
  - None
- Installation
  - N/A

## Session summary

- Velocity goals now provide a response time distribution too, in IWMWRCAA (service IWMRCOLL) & in SMF records, type 99, subtype 2
- These response time distributions are centered around a “mid-point”, which WLM algorithms compute and modify when workload conditions substantially change
- The response time distribution from IWMWRCAA is displayed in RMF Workload Activity report (WLMGL – Service Class Period Report)

## Appendix - References

- Following books will be updated:
  - “MVS Data Areas Volume 4 (ISGYNQXP-MCSCSA)” Chapter: “IWMWRCAA”
  - “MVS Programming: Workload Management Services” SA22-7619 Chapter 47: “IWMRCOLL”
  - “MVS System Management Facilities (SMF)” SA22-7630 Chapter 13, record type 99, subtype 2



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