IBM Education Assistance for z/OS V2R3

Line Item Name: Routing Enhancements for Soft Capping
Element/Component: WLM/SRM

Agenda

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Trademarks

- See url http://www.ibm.com/legal/copytrade.shtml for a list of trademarks.
- Additional Trademarks: None

Session Objectives

- WLM Sysplex Routing has been enhanced to take upcoming but not yet active soft capping into account for routing decisions.
- This session explains how the enhanced function works, how it can be activated and which interfaces have been changed.

Overview

- Problem Statement / Need Addressed
  - Currently WLM Sysplex Routing services like IWMSRSRS and IWM4SRSC base their recommendation on the free and displaceable capacity of the systems in the sysplex (3 minutes rolling average of actual capacities). This might result in routing work to a system which will be capped shortly thereafter due to Defined Capacity Limit or Group Capacity Limit.
- Solution
  - WLM is enhanced to take the capping limits of the system into account when the free/displaceable capacity is determined. WLM will calculate the estimated time to capping for a system. The closer the system is to capping the more the available capacity will be reduced by the specified limit and influence the routing recommendations to send less work to the system.
- Benefit / Value
  - The new function allows customers to optimize the 4 hour rolling average for VWLC.

Usage & Invocation

The new function can be activated via the new IEAOPTxx parameter RTCapLeadTime:

RTCapLeadTime=n

Specifies how long in advance an upcoming soft capping should influence WLM's sysplex routing recommendations. When the estimated time to capping is less than n minutes WLM will consider the upcoming soft capping in it's routing recommendations.

Value range: 0-60 minutes

Default: 0 minutes

The default behavior is as today: capping of this system will not be considered in advance.

Usage & Invocation

The externals of routing services IWM4SRSC and IWMSRSRS have not been changed.

The algorithms have been updated to consider reduced capacity in their routing recommendation when a system comes closer to capping.

Usage & Invocation

IWM4OPTQ changes:

IWM4OPTQ service queries the current IEAOPTxx settings.

It has been extended to return an additional entry for the new RTCapLeadTime parameter in the output area mapped by IWMWOPTI.

Usage & Invocation

Macro changes: IRARMCTZ

New fields have been added to return the estimated remaining time before capping for defined capacity limit and group capacity limit and the setting of the new IEAOPTxx parameter RTCapLeadTime:

Offsets	Name	Length	Format	Description
1280 500	RMCTZ_ RTCapLeadTime	4	Binary	IEAOPTxx parameter RTCapLeadTime: specifies how long in advance an upcoming cap should influence routing recommendations (in minutes)
1284 504	RMCTZ_ Time_To_Cap	2	Binary	Estimated remaining time (in seconds) before the image will be capped
1286 506	RMCTZ_Time_ To_Cap_Group	2	Binary	Estimated remaining time (in seconds) before the group will be capped

Both time to cap values will be calculated even if RTCapLeadTime is 0.

Usage & Invocation

Macro Changes: IWMWSYSI

IWMWSYSI maps the output area of IWMWSYSQ (Query System Information Service).

Two new fields have been added to return the estimated remaining time before capping for defined capacity limit and group capacity limit for all systems in the sysplex.

Offsets	Name	Length	Format	Description
140 8C	SYSI_ TIME_TO_CAP	2	Binary	Estimated remaining time (in seconds) before the image will be capped
142 8E	SYSI_TIME_TO_ CAP_GROUP	2	Binary	Estimated remaining time (in seconds) before the group will be capped

Both time to cap values will be calculated even if RTCapLeadTime is 0.

Usage & Invocation

SMF record type 99 changes:

The following fields have been added to SMF 99 subtype 1 records, section Software Licensing Information:

Offsets		Name	Length	Format	Description
104	68	SMF99_ RTCapLeadTime	2	Binary	Current value of IEAOPTxx parameter RTCapLeadTime (in minutes).
106	6A	SMF99_ Time_To_Cap	2	Binary	Estimated remaining time (in seconds) before the image will be capped
108	6C	SMF99_Time_To_ Cap_Group	2	Binary	Estimated remaining time (in seconds) before the group will be capped

Interactions & Dependencies

- Software Dependencies
  - None
- Hardware Dependencies
  - None
- Exploiters
  - z/OS Resource Measurement Facility (RMF) V2R3 exploits the time to capping fields provided in IRARMCTZ.

Migration & Coexistence Considerations

This support is provided for z/OS V2R3.

If there are systems in the sysplex which do not have this support installed they will be treated like default systems with IEAOPTxx parameter RTCapLeadTime=0, i.e. soft capping of this system will not influence routing recommendations in advance.

	SYS1	SYS2	SYS3	SYS4
level	z/OS V2R3	z/OS V2R3	z/OS V2R3	Pre z/OS V2R3
RTCapLeadTime in IEAOPTxx	20 min	30 min	0 (i.e. OFF)	n/a
Estimated time to capping	2400 sec (40 min)	1200 sec (20 min)	n/a	n/a
Capacity used for routing decisions	**Available capacity** RTCapLeadTime is not yet reached	**Reduced capacity** estimated time to capping is less than RTCapLeadTime	**Available capacity** the support is not activated	**Available capacity** the support is not available on this system

Installation

- None

Session Summary

With z/OS V2R3, WLM Sysplex Routing services are sensitive to upcoming but not yet active soft capping.

Appendix

- Publication references
  - z/OS MVS Programming: Workload Management Services
  - z/OS MVS Systems Management Facilities (SMF)
  - z/OS MVS Data Areas