IBM Education Assistance for z/OS V2R2

Item: IWM4OPTQ API to make OPT parameters available to monitoring products like RMF & Omegamon
Element/Component: WLM

Agenda

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Trademarks

- See url http://www.ibm.com/legal/copytrade.shtml for a list of trademarks.

Presentation Objectives

- In z/OS V2R2, WLM provides a new Workload Managemt Service IWM4OPTQ to make the IEAOPTxx parameters available to z/OS monitoring products like RMF & Omegamon.

Overview

- Problem Statement / Need Addressed

In releases prior to z/OS V2R2, z/OS RMF uses its own interface to externalize the IEAOPTxx parameters in the RMF interface.

- Solution

In z/OS V2R2, WLM does provide a new Workload Management Service IWM4OPTQ to make the IEAOPTxx parameters available to z/OS monitoring products like RMF & Omegamon.

- Benefit / Value

Reduced implementation and maintainance effort whenever WLM adds a new IEAOPTxx parmlib options or modifies an existing parmlib option behaviour with a future enhancement.

Usage & Invocation: IWM4OPTQ Query IEAOPTxx parameters

- The IWM4OPTQ service queries the current IEAOPTxx settings in the current system and returns a list of the IEAOPTxx parameters, including the actual value, unit, default value, and description.
- The caller of IWM4OPTQ must provide storage to contain all of the parameter information. This storage area must reside in the caller's primary address space. It is possible that the storage required by IWM4OPTQ can change such that multiple calls to IWM4OPTQ are required to obtain data. Users of IWM4OPTQ should take this into consideration when obtaining an amount of storage for the IWM4OPTQ service to use.
- If the caller does not provide enough storage to contain all of the parameter information, the IWM4OPTQ service returns a return code and reason code pair to indicate that the storage area specified by the OPTINFO_BLOCK input parameter is too small. The QUERYLEN output parameter will be set to the required size for the storage area specified by OPTINFO_BLOCK. No IEAOPTxx parameter information is returned.
- Applications that monitor the current system environment, such as RMF and OMEGAMON®, can use this service to display the current SRM and WLM parameter settings.
- The output of the IWM4OPTQ service is a data area mapped by the IWMWOPTI macro and provides a point-in-time snapshot of the parameter settings on the current system.

Usage & Invocation: Syntax of the IWM4OPTQ Macro

```
>>-+------+--IWM4OPTQ-------OPTINFO_BLOCK=optinfo_block--------->
   '-name-'


>---,ANSLEN=anslen----------QUERYLEN=querylen------------------->

>--+-----------------+--+-----------------+------------------->
   '-,RETCODE=retcode-'  '-,RSNCODE=rsncode-'

   .-,PLISTVER=IMPLIED_VERSION-.
>--+---------------------------+------------------------------->
   +-,PLISTVER=MAX-------------+
   '-,PLISTVER=0---------------'

   .-,MF=S-----------------------------.
>--+-----------------------------------+---------------------><
   |                   .-,0D---.       |
   +-,MF=(L-,list addr-+-------+-)-----+
   |                   '-,attr-'       |
   |                   .-,COMPLETE-.   |
   '-,MF=(E-,list addr-+-----------+-)-'
```

Usage & Invocation: Parameters of IWM4OPTQ Macro

OPTINFO_BLOCK=optinfo_block

A required input parameter that is to contain the address of an output area to contain information provided by IWM4OPTQ. The format of this area is mapped by IWMWOPTI and should be considered valid only upon a zero return code from this service.

ANSLEN=anslen

A required input parameter that contains the length of the OPTINFO_BLOCKstorage area, in bytes.

QUERYLEN=querylen

A required output parameter variable which contains the output area size that must be provided by the caller to contain all of the active system's IEAOPTxx parameter descriptions (that is, the amount of data returned by the IWM4OPTQ service).

Usage & Invocation: IWM4OPTQ Caller Requirements

1) The macro CVT must be included to use this macro. The macro IWMYCON must be included to use this macro.

2) The macro IWMPB must be in the library concatenation, since it is included by IWMYCON.

3) Note that the high-order halfword of register 0, and the reason code variable when specified, may be non-zero and represents diagnostic data which is NOT part of the external interface. The high-order halfword should thus be excluded from comparison with the reason code values described above. The constant, IWMRSNCODE_MASK_CONST defined in IWMYCON, may be used for this purpose.

Minimum authorization	Problem state, any PSW key.
Dispatchable unit mode	Task
Cross memory mode	Any PASN, any HASN, any SASN
AMODE	31- or 64-bit. If in 64-bit addressing mode, code SYSSTATE AMODE64=YES before invoking macro
ASC mode	Primary or access register (AR)
Interrupt status	Enabled for I/O and external interrupts
Locks	No locks may be held.
Control parameters	Control parameters must be in the primary address space

Usage & Invocation: IWM4OPTQ Return and Reason Codes I

Return code	Reason code	Equate symbol, meaning, and action
0	—	**Equate symbol**: IwmRetCodeOk **Meaning**: Successful completion. **Action**: None required.
4	—	**Equate symbol**: IwmRetCodeWarning **Meaning**: Successful completion, unusual conditions noted.
4	*xxxx*040A	**Equate symbol**: IwmRsnCodeOutputAreaTooSmall **Meaning**: The output area supplied is too small to receive all the available information. The variable specified by the **QUERYLEN** keyword will contain the size of the storage required to hold the returned data area. **Action**: None required. If necessary, invoke the service again with an output area of sufficient size to receive all information.
8	—	**Equate symbol**: IwmRetCodeInvocError **Meaning**: Invalid invocation environment or parameters.
8	*xxxx*0801	**Equate symbol**: IwmRsnCodeSrbMode **Meaning**: The caller is in SRB mode. **Action**: Avoid requesting this function while in SRB mode.
8	*xxxx*0803	**Equate symbol**: IwmRsnCodeDisabled **Meaning**: Caller is disabled. **Action**: Avoid requesting this function while disabled.
8	*xxxx*0804	**Equate symbol**: IwmRsnCodeLocked **Meaning**: The caller is locked. **Action**: Avoid requesting this function while locked.

Usage & Invocation: IWM4OPTQ Return and Reason Codes II

Return code	Reason code	Equate symbol, meaning, and action
8	xxxx0810	**Equate symbol**: IwmRsnCodeEutFrr **Meaning**: The caller has EUT FRR established. **Action**: Avoid requesting this function with an EUT FRR set.
8	xxxx0823	**Equate symbol**: IwmRsnCodeDatoff **Meaning**: The caller invoked the service while DATOFF **Action**: Avoid requesting this function in this environment.
8	xxxx0824	**Equate symbol**: IwmRsnCodeAmode24 **Meaning**: The caller invoked the service but was in 24-bit addressing mode. **Action**: Request this function only when you are in 31-bit addressing mode.
8	xxxx0827	**Equate symbol**: IwmRsnCodeRsvdNot0 **Meaning**: Reserved field in parameter list was non-zero. **Action**: Check for possible storage overlay of the parameter list.
8	xxxx0828	**Equate symbol**: IwmRsnCodeBadVersion **Meaning**: Version number in parameter list is not valid or the length specified is incorrect. **Action**: Check for possible storage overlay of the parameter list.

Usage & Invocation: IWMWOPTI Answer Area Mapping

- OPTI_Entry_Shortname
  The first 16 characters of the IEAOPTxx parameter name.
- OPTI_Entry_Default
  The default value(s) of the parameter. When more than one default exists, the values are separated by '|'.
- OPTI_Entry_Value
  The current value(s) of the parameter. This value may differ from the value originally specified. With two values displayed, separated by '/', the second value is provided by SRM.
  For information on how SRM handles the settings of OPT parameters, refer to the MVS Initialization and Tuning Reference. When a value for a parameter cannot be obtained, 'N/A' is returned.
- OPTI_Entry_Description
  For a description of the parameters refer to the MVS Initialization and Tuning Reference.
- OPTI_Entry_Unit
  The unit of the parameter value(s).

Usage & Invocation: IWMWOPTI Answer Area Mapping

```
Descriptive Name:    IWM4OPTQ answer area (WOPTI)

EXTERNAL             CLASSIFICATION: PI

Function:            Holds parmlib option information, returned
                     by the IWM4OPTQ service.

Component:           Workload Manager (SCWLM)

Method of Access:    ASM:   Specify:     IWMWOPTI
                     PL/X:  %INCLUDE SYSLIB(IWMWWOPTI)

Size:                OPTI_ENTRY --  X'004C' bytes
                     OPTI       --  X'0020' bytes
                     Total OPTI size =
                       32 bytes OPTI header +
                       N (maximum number of parmlibs) *
                       76 (OPTI_Parmlib_Entry_Size)

Storage Attributes:  Subpool:    User assigned
                     Key:        0-15
                     Residency:  Anywhere

Created by:          Caller of IWM4OPTQ
Pointed to by:       Pointed to by the OPTINFO_BLOCK field in the IWM4OPTQ parameter list
```

Usage & Invocation: OPTI Answer Area Mapping

OFFSET DECIMAL	OFFSET HEX	TYPE	LENGTH	NAME (DIM)	DESCRIPTION
0	(0)	STRUCTURE	32	OPTI	Parmlib information area
0	(0)	CHARACTER	32	OPTI_HEADER	OPTI header section
0	(0)	CHARACTER	4	OPTI_ID	Acronym
4	(4)	UNSIGNED	1	OPTI_VERSION	Version
5	(5)	CHARACTER	3	OPTI_RSV1	Reserved
8	(8)	BIT(32)	4	OPTI_FLAGS	Flags
8	(8)	BIT(8)	1	OPTI_FLAG1	Flag byte 1
		1...		OPTI_TIMENOTISSUED	'1'B SET OPT not issued yet, OPTI_Las not set
		.111 1111		*	Reserved
9	(9)	BIT(24)	3	*	Reserved
12	(C)	UNSIGNED	2	OPTI_HEADER_SIZE	Size in bytes of hea section
14	(E)	UNSIGNED	2	OPTI_PARMLIB_ENTRY_SIZE	Size in bytes of a parmlib information (OPTI_Entry)
16	(10)	UNSIGNED	2	OPTI_#ENTRIES	Number of parmlib op entries returned
18	(12)	CHARACTER	4	OPTI_RSV2	Reserved
22	(16)	CHARACTER	2	OPTI_SUFFIX	IEAOPTxx suffix
24	(18)	CHARACTER	8	OPTI_LASTSETTIME	Last SET OPT TOD bit
32	(20)	CHARACTER	0	OPTI_ENTRIES	Beginning of parmlib entries

Usage & Invocation: OPTI_ENTRY Answer Area Mapping

OFFSET DECIMAL	OFFSET HEX	TYPE	LENGTH	NAME (DIM)	DESCRIPTION
0	(0)	STRUCTURE	76	OPTI_ENTRY	
0	(0)	CHARACTER	16	OPTI_ENTRY_SHORTNAME	
16	(10)	CHARACTER	11	OPTI_ENTRY_DEFAULT	
27	(1B)	CHARACTER	11	OPTI_ENTRY_VALUE	
38	(26)	CHARACTER	33	OPTI_ENTRY_DESCRIPTION	
71	(47)	CHARACTER	4	OPTI_ENTRY_UNIT	
75	(4B)	CHARACTER	1	OPTI_ENTRY_RSV1	

OFFSET DECIMAL	OFFSET HEX	TYPE	LENGTH	NAME (DIM)	DESCRIPTION
32	(20)	STRUCTURE	76	OPTI_ARRAY(*)	
32	(20)	CHARACTER	16	OPTI_ENTRY_SHORTNAME	
48	(30)	CHARACTER	11	OPTI_ENTRY_DEFAULT	
59	(3B)	CHARACTER	11	OPTI_ENTRY_VALUE	
70	(46)	CHARACTER	33	OPTI_ENTRY_DESCRIPTION	
103	(67)	CHARACTER	4	OPTI_ENTRY_UNIT	
107	(6B)	CHARACTER	1	OPTI_ENTRY_RSV1	

Usage & Invocation: Example

To query the IEAOPTxx settings for the current system, specify:

```
IWM4OPTQ   OPTINFO_BLOCK=OPTINFO,
           ANSLEN=ALEN,
           QUERYLEN=QLEN,
           RETCODE=RC,RSNCODE=RSN
**
Storage areas
*
OPTINFO    DS F       Pointer to output area
ALEN       DS F       Length of output area
QLEN       DS F       Length of returned data
RC         DS F       Return code
RSN        DS F       Reason code
```

Presentation Summary

- WLM provides a new Workload Management Service IWM4OPTQ to obtain the current IEAOPTxx parmlib option settings

Appendix

- Publication references

1) *z/OS V2R2 MVS Programming: Workload Management Services,* SC34-2663

2) *z/OS MVS Data Areas, Volume 5,* GA32-0939