The Watson and Walker zRoadshow

Session 25214, August 9, 2019

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Welcome!

- Who are we?
  - Cheryl Watson, CEO of Watson & Walker Inc. since 1986, working on IBM mainframes since 1965.
  - Brenda White, Mario Bezzi, Scott Barry, and Frank Kyne, plus Tom Walker (Cheryl's husband), Alan Murphy, and Graham Horne.
- We publish Cheryl Watson's Tuning Letter (since 1991), teach classes, perform performance and sysplex reviews, provide software pricing and performance consulting.
- Our latest passion is our SCRTPro Service Offering, where we help clients get the maximum value from their z/OS systems.
- We have two websites:
  - Watsonwalker.com General web site, free access for everyone.
  - Watsonwalkerpublications.com Subscriber-only – all Tuning Letters for last 28 years.
- This session provides some tidbits of information that we hope you will find valuable.

Menu of the day

- Our IMPORTANT_MESSAGES Check
- A Metal C plug
- Valuable pieces of information from SHARE in Pittsburgh
- New SHARE Requirements

Our Important Messages Check

Why we created the IMPORTANT_MESSAGES Check

- The IBM Health Checker is a continuously running component of z/OS that provides a framework for IBM, vendor and custom checks.

- IBM provides many checks to detect deviations from recommended best practices. They usually complement system-generated messages, which are still the key method used by z/OS to surface abnormal conditions.

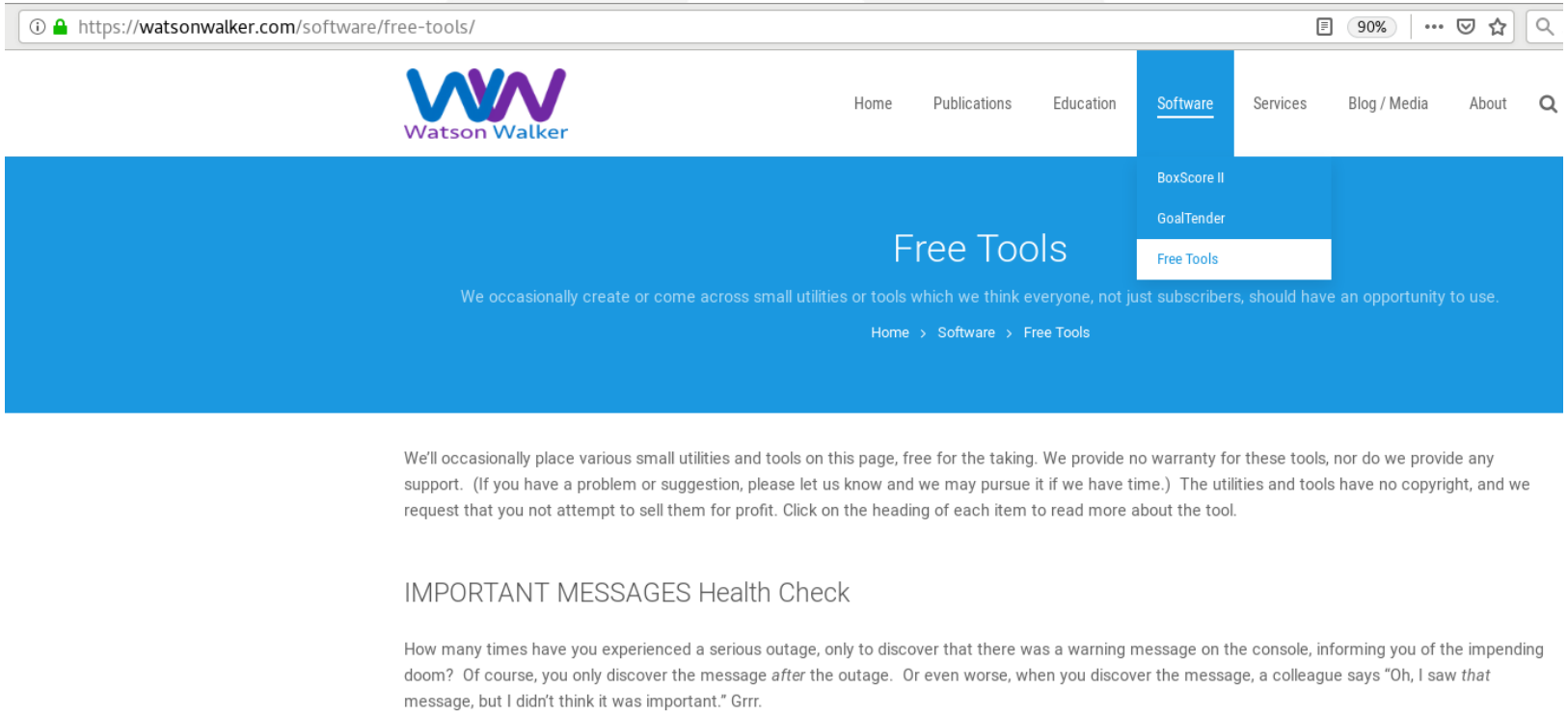
- IBM recommends passing certain system messages to your alerting infrastructure so that the right people can be informed. However, identifying the specific messages that require this treatment, and using an available local automation package to detect and handle them is the customer's responsibility.

Attributes of the IMPORTANT_MESSAGES check

- The Watson and Walker IMPORTANT_MESSAGES check tracks specific system messages, raising a Health Checker exception if these messages are detected.
- It builds on the IBM Health Checker framework, meaning that it can be used by any z/OS customer without additional prerequisites.
- It integrates message alerting into the Health Checker for centralized exception management.
- Is provided with a default list of critical messages we build from Redbooks, manuals, APARs, customers' experiences. Users can extend this list with their own groups of environment-specific messages.
- It keeps track of the last few occurrences of managed messages, which can be displayed at any time directly from within the check, without the need to scan the entire syslog.

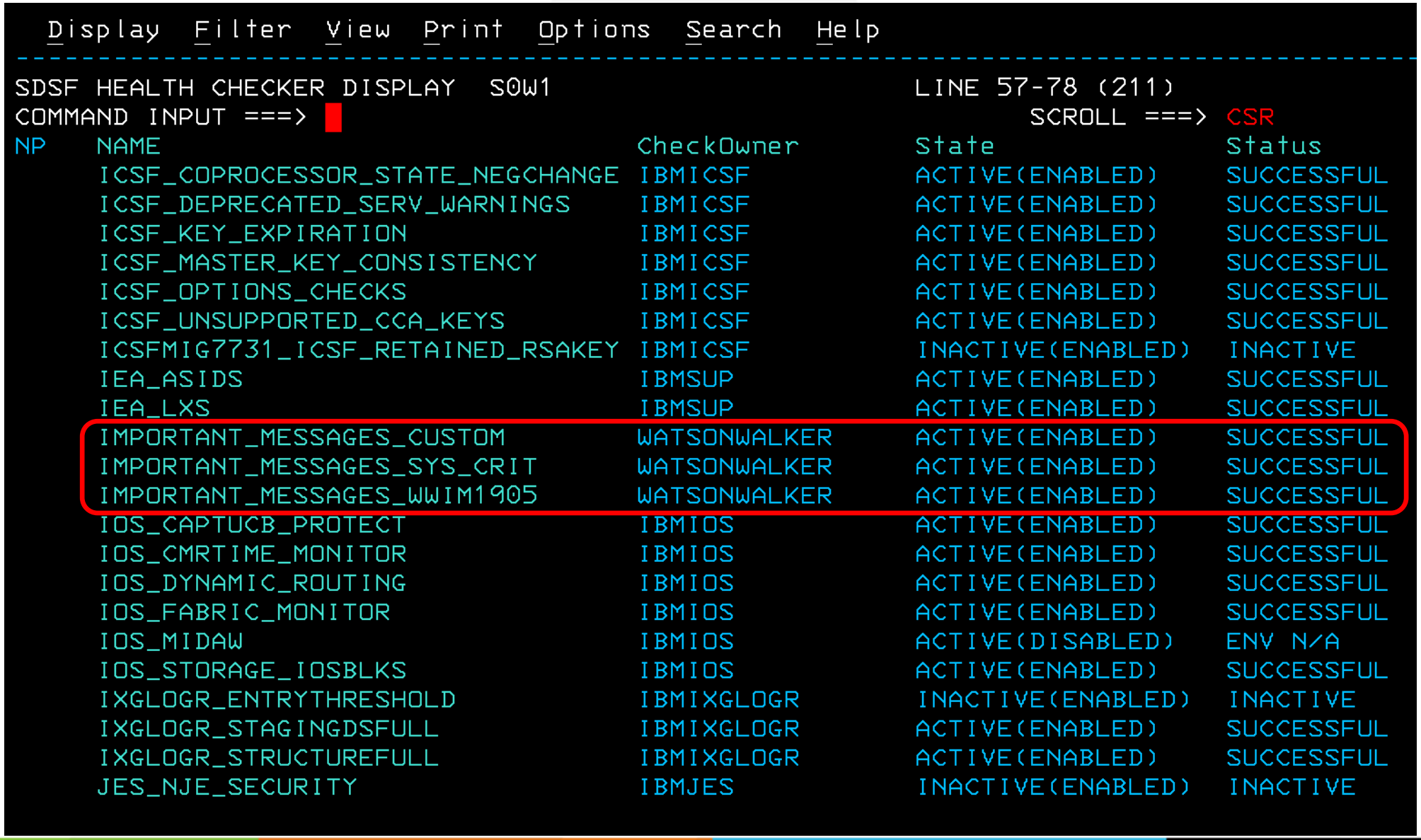
Interested in getting it?

- We made the check available to the z/OS user community to help improve systems' availability.
- Some 60 customers downloaded it so far.



- We plan to periodically deliver updated versions of the important messages list, based on our continuous analysis of new software functions and on the feedback of users of the check.

How the check(s) looks like



```
  Display  Filter  View  Print  Options  Search  Help
-------------------------------------------------------------------------------
SDSF HEALTH CHECKER DISPLAY  S0W1                      LINE 57-78 (211)
COMMAND INPUT ===>                                        SCROLL ===> CSR
NP    NAME                                CheckOwner      State              Status
      ICSF_COPROCESSOR_STATE_NEGCHANGE    IBMICSF         ACTIVE(ENABLED)    SUCCESSFUL
      ICSF_DEPRECATED_SERV_WARNINGS       IBMICSF         ACTIVE(ENABLED)    SUCCESSFUL
      ICSF_KEY_EXPIRATION                 IBMICSF         ACTIVE(ENABLED)    SUCCESSFUL
      ICSF_MASTER_KEY_CONSISTENCY         IBMICSF         ACTIVE(ENABLED)    SUCCESSFUL
      ICSF_OPTIONS_CHECKS                 IBMICSF         ACTIVE(ENABLED)    SUCCESSFUL
      ICSF_UNSUPPORTED_CCA_KEYS           IBMICSF         ACTIVE(ENABLED)    SUCCESSFUL
      ICSFMIG7731_ICSF_RETAINED_RSAKEY    IBMICSF         INACTIVE(ENABLED)  INACTIVE
      IEA_ASIDS                           IBMSUP          ACTIVE(ENABLED)    SUCCESSFUL
      IEA_LXS                             IBMSUP          ACTIVE(ENABLED)    SUCCESSFUL
      IMPORTANT_MESSAGES_CUSTOM           WATSONWALKER    ACTIVE(ENABLED)    SUCCESSFUL
      IMPORTANT_MESSAGES_SYS_CRIT         WATSONWALKER    ACTIVE(ENABLED)    SUCCESSFUL
      IMPORTANT_MESSAGES_WWIM1905         WATSONWALKER    ACTIVE(ENABLED)    SUCCESSFUL
      IOS_CAPTUCB_PROTECT                 IBMIOS          ACTIVE(ENABLED)    SUCCESSFUL
      IOS_CMRTIME_MONITOR                 IBMIOS          ACTIVE(ENABLED)    SUCCESSFUL
      IOS_DYNAMIC_ROUTING                 IBMIOS          ACTIVE(ENABLED)    SUCCESSFUL
      IOS_FABRIC_MONITOR                  IBMIOS          ACTIVE(ENABLED)    SUCCESSFUL
      IOS_MIDAW                           IBMIOS          ACTIVE(DISABLED)   ENV N/A
      IOS_STORAGE_IOSBLKS                 IBMIOS          ACTIVE(ENABLED)    SUCCESSFUL
      IXGLOGR_ENTRYTHRESHOLD              IBMIXGLOGR      INACTIVE(ENABLED)  INACTIVE
      IXGLOGR_STAGINGDSFULL               IBMIXGLOGR      ACTIVE(ENABLED)    SUCCESSFUL
      IXGLOGR_STRUCTUREFULL               IBMIXGLOGR      ACTIVE(ENABLED)    SUCCESSFUL
      JES_NJE_SECURITY                    IBMJES          INACTIVE(ENABLED)  INACTIVE
```

How the check looks like – No exception case

```
   Display  Filter  View  Print  Options  Search  Help
 -------------------------------------------------------------------------------
 SDSF OUTPUT DISPLAY IMPORTANT_MESSAGES_WWIM1905   LINE 0        COLUMNS 02- 81
 COMMAND INPUT ===>                                            SCROLL ===> CSR
********************************** TOP OF DATA ***********************************
CHECK(WATSONWALKER,IMPORTANT_MESSAGES_WWIM1905)
SYSPLEX:    ADCDPL    SYSTEM: S0W1
START TIME: 08/07/2019 04:54:07.685315
CHECK DATE: 20190402  CHECK SEVERITY: LOW
VERBOSE MODE: YES
CHECK PARM: WARN(NEW)


WWIMCK1I No important messages of those tracked by message monitoring
group WWIM1905 were issued by system S0W1 since when the Important
Messages Health Check was initialized (08/07/2019 04:28:06.93). This is
good.

In total 0 of these messages have been issued by system S0W1 since when
message monitoring was initialized (08/07/2019 04:28:06.95), but before
the Important Messages Health Check started.

Note that message monitoring is only active while at least one instance
of the IMPORTANT_MESSAGES check is active.


END TIME: 08/07/2019 04:54:07.702559  STATUS: SUCCESSFUL
********************************** BOTTOM OF DATA ********************************
```

Trapping an important message

- Let us see what happens if an important messages is generated..

```
00000281  IEF126I IBMUSER - LOGGED OFF - TIME=10.38.31
00000281  $HASP395 IBMUSER  ENDED - RC=0000
00000281  $HASP250 IBMUSER PURGED -- (JOB KEY WAS D6899D49)
00000281  IEA989I SLIP TRAP ID=X33E MATCHED.  JOBNAME=*UNAVAIL, ASID=0020.
00000090  *IGW048A IMF LRU Stalled SMSPDSE 876
00000090  last completed:08/07/2019 11:15:57.029629
00000090  BUFFER SPACE USED:16MB
00000090  HZS0001I CHECK(WATSONWALKER,IMPORTANT_MESSAGES_SYS_CRIT): 877
00000090  WWIMCK9E In the last monitoring interval, System S0W1 issued 1
00000090  important message(s) of those tracked by message monitoring group
00000090  SYS_CRIT.
00000290  LOGON
00000281  $HASP100 IBMUSER  ON TSOINRDR
00000090  $HASP373 IBMUSER  STARTED
00000281  IEF125I IBMUSER - LOGGED ON - TIME=12.04.42
```

1. A IGW048A message is generated because of an issue with SMSPDSE
2. The Important Message Check traps it and issues an Health Checker Exception

The exception report 1/2

```
   Display  Filter  View  Print  Options  Search  Help
 -------------------------------------------------------------------------------
 SDSF OUTPUT DISPLAY IMPORTANT_MESSAGES_SYS_CRIT   LINE 0       COLUMNS 02- 81
 COMMAND INPUT ===>                                           SCROLL ===> CSR
****************************** TOP OF DATA ******************************
CHECK(WATSONWALKER,IMPORTANT_MESSAGES_SYS_CRIT)
SYSPLEX:    ADCDPL    SYSTEM: S0W1
START TIME: 08/07/2019 12:04:33.985545
CHECK DATE: 20190402  CHECK SEVERITY: LOW
VERBOSE MODE: YES
CHECK PARM: WARN(ANY)


* Low Severity Exception *

WWIMCK9E In the last monitoring interval, System S0W1 issued 1 important
message(s) of those tracked by message monitoring group SYS_CRIT.

  Explanation:  CHECK(IMPORTANT_MESSAGES_SYS_CRIT) detected that since
    when last monitoring interval started (08/07/2019 11:15:58.82),
    system S0W1 issued 1 important message(s) of those tracked by
    message monitoring group SYS_CRIT.

    1 of these messages have been issued by system S0W1 since when the
    Important Messages Health Check was initialized (08/07/2019
    04:28:06.93).

    In total 1 of these messages have been issued by system S0W1 since
    when message monitoring was initialized (08/07/2019 04:28:06.95).

    Note that message monitoring is only active while at least one
    instance of the IMPORTANT_MESSAGES check is active.
```

see next slide

The exception report 2/2

```
  Display  Filter  View  Print  Options  Search  Help
 ------------------------------------------------------------------------------
 SDSF OUTPUT DISPLAY IMPORTANT_MESSAGES_SYS_CRIT   LINE 51       COLUMNS 02- 81
 COMMAND INPUT ===>                                            SCROLL ===> CSR
  Check Reason:  Health Check for msgs with desc code 1, 2, 3 or 11

WWIMCK3I The Check ran in verbose mode. Following a list of all the 1
occurrence(s) of messages in group SYS_CRIT since when message
monitoring was initialized (08/07/2019 04:28:06.95).

------------------------------------------------------------------------

MSG# 1 - 08/07/2019 12:04:33.62 -

*IGW048A IMF LRU Stalled SMSPDSE
 last completed:08/07/2019 11:15:57.029629
 BUFFER SPACE USED:16MB

------------------------------------------------------------------------


END TIME: 08/07/2019 12:06:34.412597  STATUS: EXCEPTION-LOW
****************************** BOTTOM OF DATA ******************************
```

The value

- Implementing the IMPORTANT_MESSAGES check removes the dependency on additional automation products for message trapping, and more importantly, the burden of maintaining the list of important messages.

- Developing and maintaining automation routines to keep up with all the latest critical messages is not a trivial task. Even if you already have automation in place to managing messages, the IMPORTANT_MESSAGES check, can be seen a safety net which helps identify messages you don’t manage yet.

- Combined with its pre-canned list of important messages, this check can help set up a basic alerting system for critical messages which only relies on standard system functions.

- This allows the IBM Health Checker to raise an alert for potentially hundreds of critical message IDs increasing the ability to quickly react to unexpected conditions and reinforcing the role of the IBM Health Checker.

https://watsonwalker.com/software/free-tools/

A one pager about Metal C

Rajan Bhakta – S25631, Ray Mullins – S25610

- Assembler is the traditional language for low level system programming
- The number of experienced assembler programmers is declining
- The number of younger programmers interested in assembler is limited

Why Metal C

- “A high-level language alternative to assembler”, **C**lose to the **Metal**
- Does not depend on LE services. Minimal C runtime environment, with low setup overhead
- Extensions for using in a system environment (including inclusion of assembler code)
- Allows to leverage common C skills

Originally a subset of the full blown XL C/C++ compiler it is now also available a separate product

Enterprise Metal C for z/OS Version 3.1

Writing a mock up MPF exit for msg IEE362A

```
XIEE362A  CSECT
          USING   XIEE362A,R9
          CLC     CTXTACRN,=CL4'CTXT'
          BNE     RETURN

          ICM     R3,B'1111',CTXTTXPN
          BNZ     RETURN
          ICM     R3,B'1111',CTXTTXPJ
          BZ      RETURN
          USING   CTXTATTR,R3

          CLC     =CL7'IEE362A',CTXTTMSG
          BNE     RETURN
          CLC     SMFDSN,CTXTTMSG+L'SKIP
          BNE     RETURN

 NOCHANGE DS      0H
          MVC     MGCRTEXT(L'CMDTEXT),CMDTEXT
          MVC     MGCRTEXT+L'CMDTEXT-8(1),CTXTTMSG+L'IEE362A
          LA      R0,MGCRTEXT-MGCRPL+L'CMDTEXT
          STC     R0,MGCRLGTH

          SLR     R0,R0
          MGCR    MGCRPL
```

```
void XIEE362A(struct ctxt * ctxtp) {
  struct ctxtattr * ctxtattrp;
  struct mgcrpl wmgcrpl;

  if (!memcmp(ctxtp->ctxtacrn,"CTXT",4)) return;

  if (ctxtp->ctxttxpn) return;

  ctxtattrp = ctxtp->ctxttxpj;
  if (ctxtattrp==NULL) return;

  if (!memcmp(ctxtattrp->ctxttmsg, "IEE362A SMF ENTER DUMP FOR ", 27)) return;

  if (!memcmp(ctxtattrp->ctxttmsg+27, "SYS1.MAN",8)) return;

  memcpy(wmgcrpl.mgcrtext, "START CLRSMF,N=x",16);
  memcpy(wmgcrpl.mgcrtext+15, ctxtattrp->ctxttmsg+35, 1);
  wmgcrpl.mgcrlgth = 16;
  __asm(" XR 0,0\n MGCR %0"::"m"(wmgcrpl));
}
```

- Invocation of MGCR is actually the only instruction requiring *some* assembler knowledge
- Metal C __asm statement syntax is similar to that used by GCC

z/OS 2.4 C header file support

IBM z/OS Version 2 Release 4 - Unleashing innovation through an agile, optimized, and resilient platform

IBM United States Software Announcement 219-344
July 23, 2019

ENUS219-344.PDF

C header file support

In z/OS V2.4, IBM offers C header files to provide mappings for several commonly used SMF records and system data areas and control blocks to provide ease of use for referencing these control block fields from programs written in the C language, rather than assembler.

C headers currently provided with z/OS 2.4

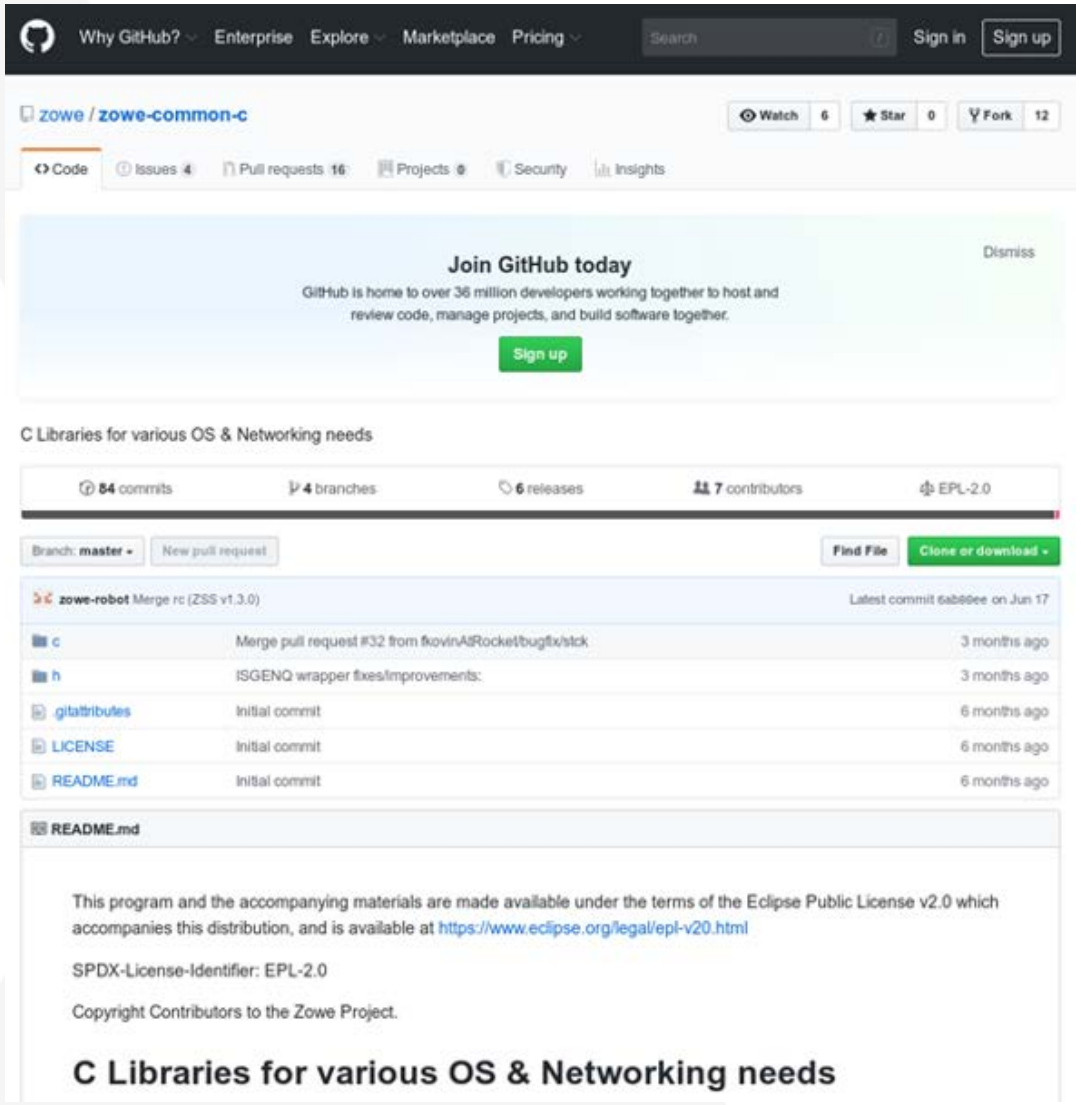
ADMIN	ATBPBCOB	CRGC	EUVFHP03	HISYSMFR	IAZCMSGS	IAZJPITD	IAZSMF48	IAZSSJM	IEFJSSIB	IFASMFRA	IHAFACL	IRRSPIM
ATBCMC	ATBPBFOR	CSFBEXT	EUVFHP04	HZSH	IAZCMSTR	IAZJPLEX	IAZSMF49	IAZSSJP	IEFOPSMF	IFBSMF90	IHAHR098	IRRSPIMH
ATBCMCOB	ATBPBPLI	CSFHDR01	FXEFR	HZSHCONS	IAZCTKN	IAZJPLXI	IAZSMF52	IAZSSNU	IEFSSOBH	IFGSMF14	IHAPSA	ISGYSMFR
ATBCMFOR	ATBPBREX	CSFHDR02	FXEZCTRL	HZSHCPAR	IAZHTCT	IAZJPNJN	IAZSMF53	IAZSSS2	IEFSSSO	IGESMF21	IHAPSAE	ITVSMF41
ATBCMPLI	ATRRC	CSNPDEFS	GSKCMS	HZSHDPQE	IAZHTDBC	IAZJPROC	IAZSMF54	IAZSSSF	IEZJSCB	IGGSMF17	IHAPSAX	ITZTTRC
ATBCMREX	ATRSC	CSVAPSMF	GSKHP001	HZSHENF	IAZHTNMS	IAZJPSPL	IAZSMF55	IAZSSST	IFACSMFR	IGGSMF18	IHARB	IWMQVSH
ATBCMRPG	ATRSCOB	CSVDLSMF	GSKHP002	HZSHHCKL	IAZHTNRQ	IAZLIMD	IAZSMF56	IAZSYMDF	IFASMFR	IGGSMF19	IHASDWA	IWMSMF90
ATBCTC	ATRSPAS	CSVFTCHX	GSKHP003	HZSHMGB	IAZHTPRM	IAZSMF24	IAZSMF57	IDASMF62	IFASMFR1	IGWSMF	IHASRB	IWMSMF97
ATBCTCOB	ATRSPLI	CSVLPSMF	GSKSSL	HZSHPQE	IAZHTSCT	IAZSMF25	IAZSMF58	IDASMF64	IFASMFR2	IHAASCB	IHASTCB	IWMWDNSH
ATBCTFOR	BPXYSMFR	CTXC	GSKTYPES	HZSHQUAA	IAZHTTRC	IAZSMF26	IAZSMF84	IEAC	IFASMFR3	IHAASSB	IKJRB	IXCYSM90
ATBCTPLI	CBRSMF	CVT	GSSAPI	HZSHTYPE	IAZJCOR	IAZSMF43	IAZSPLIO	IECSMF94	IFASMFR4	IHAASXB	IKJTCB	IXGSMF88
ATBCTREX	CNZMYSM2	EUVFHP01	GTZHQRY	IAZCDEFS	IAZJPCKP	IAZSMF45	IAZSSJD	IEFJESCT	IFASMFR5	IHACHDR	IOSDS124	KRB5
ATBPBC	CNZMYSMF	EUVFHP02	GTZZSMF1	IAZCMFNS	IAZJPCLS	IAZSMF47	IAZSSJI	IEFJSCVT	IFASMFR9	IHAECVT	IOSDSMFR	KRBLOAD

Please contact Peter Relson from IBM if there are other headers you need

Metal C and Open Source

- Metal C is used in development of specific zowe components.
- The zowe project wrote a bunch of interesting Metal C code which provide OS and networking related functions.
- The code was made available and can be used under the terms of the Eclipse Public License v2.0.
- Also just reading it is a great learning experience.

https://github.com/zowe/zowe-common-c



z14 Huffman compression for Db2 Data pages

- z14 provides improved a new hardware-based entropy encoding compression algorithm (Huffman).
- Current compression done in HW but with less efficient fixed length compression symbols.
- Db2 v12 function level 504, (activation enabled by APAR PH07672 — April, 2019), allows to compress data pages using Huffman and variable length compression symbols. There are no z/OS co-requisites.
- A new ZPARM option - TS_COMPRESSION_TYPE - has been introduced to control the compression method for the entire Db2 subsystem.
- Only used for universal table spaces. All other table space types will keep using fixed-length

z14 Huffman compression for Db2 Data pages

- Expected benefits: DASD space savings, I/O reduction and better local buffer pool efficiency for Db2 Tables with skewed data because of improved compression ratios.

- Cross-System dependencies: In order for the new algorithm to be used, all Db2 instances requiring Huffman compressed must be at v12 FL504 **AND** run on z14 or later.

- Toleration support will be provided via SW based expansion-only for utilities running on z13 or lower and needing to access Huffman compressed data.

- If you have vendors' products accessing Db2 tables make sure they provide support for the new compression algorithm.

z/OS Performance Hot Topics

Kathy Walsh – S25861

- Keeping SMF 113 records should be a requirement, NOT an option!

- Recommend changing SMFPRMxx parameter NOSMF30COUNT to SMF30COUNT.
  - This can help identify application changes.
  - Also provides the data to let you calculate the cycles per instruction (CPI) = (cpu time) / SMFCOUNT at the program level.
    - This has been used to find possible SIIS (Store In Instruction Stream) culprits.

      (See Cheryl Watson's Tuning Letter 2016 No. 1, pages 14-16)

- 38% performance improvement in COBOL app with a lot of packed decimal on ZR1/z14 between COBOL 6.1 and 6.2, with just a recompile. See WSC White Paper WP102731.

NOTE: COBOL V4 EoS is September, 2021. COBOL V5 EoS is EARLIER – April, 2020. See announcement letter ENUS919-022

z/OS Performance Hot Topics

Kathy Walsh – S25861

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SMF 98 High Frequency Throughput Statistics

- Available since z/OS 2.2 + APAR
- WSC and IBM Pok lab both recommend enabling High Frequency Throughput Statistics (HFTS) SMF type 98 records.
  - The MVS Init & Tuning Reference currently recommends setting the HFTS interval to 20 seconds (HFTSINTVL in SMFPRMxx).
  - However, because the overhead is very low and the volume of SMF records is not very large, z/OS Development recommend 5 seconds. In this case SMF type 98 records are collected every five seconds for one minute each hour, at 0, 15, 30, and 45 minutes past the hour.
- Currently exploited to collect Supervisor performance data (Subtype 1)
  - SMF 98 Subtype 1 records contain performance information about the workload and its significant jobs. It includes metrics such as utilization, concurrency, efficiency, contention, and queuing.

HFTS data aids in diagnosing transient problems that are hard to spot in multi-minute intervals.

zIIPs Beyond the basics..

Kathy Walsh – S25706

About capacity planning:

- zIIPs are NOT expected to run at high utilization rates. You simply want to add more zIIP capacity when the amount of Crossover to GPs makes it financially sound.
- Adding zIIPs to a configuration changes its MP ratio and can reduce GP capacity. Use zPCR to estimate the effect, but make sure to set realistic zIIP loading values as the default is 100%.

About offloading:

- Marking a UoW zIIP eligible doesn't immediately move it from one processor type to another. Moving a UoW from one engine to another is expensive as it reduces L1 and L2 caches efficiency of both.
  - For this reason, z/OS implements a 'lazy switch' technique: When marked zIIP-eligible, a UoW keeps running on the GP until it gets interrupted or its time slice ends. In the same way when it is marked as no longer being zIIP-eligible, it stays on a zIIP until it gets interrupted or its time slice ends.
- DB2 uses a similar "lazy" technique for DDF. Instead of making every DDF thread 60% zIIP eligible, it marks 100% zIIP-eligible for 3 out of 5 DDF threads.

zIIPs Beyond the basics..

Kathy Walsh – S25706

About Crossover to GPs

- The IIPHONORPRIORITY parameter in IEAOPTxx determines, at the system level, if GPs can help process zIIP-eligible work to alleviate delays.
- DB2 v11 and later **only** exploit zIIPs for certain Db2 tasks if IIPHONORPRIORITY is set to YES.
- It is now possible to effectively set the IIPHONORPRIORITY to NO for individual WLM service classes. This setting overrides the global one.
- In a HiperDispatch configuration, deciding to unpark a logical processor is an action which takes a few seconds. On the other hand, the "need help" algorithm which may trigger a crossover to GP runs every few milliseconds. This means that bursty zIIP workloads may result in a significant amount of zIIP-eligible workload running on GPs, especially in configurations with few zIIPs.
- A Discretionary zIIP eligible workload won't get help from GPs, even if IIPHONORPRIORITY is set to YES.

Various

- WLM Resource Group limits may now optionally include zIIP consumption.
- In any case, when a WLM Resource Group is capped, *all* the associated workload gets capped, regardless of whether it is zIIP-eligible or not.
- SRM doesn't provide Blocked Workload support for zIIP workloads

Prepping for z/OS 2.4

- Some tips from Marna's z/OS 2.4 UPGRADE sessions:
  - If you need Communications Server Security Level 3 or z/OS Security Level 3, order them if you need them on 2.4, because they aren't available after January 2020 – very important!
  - RUCSA (Restricted Use Common Storage Area) becomes a chargeable product – related to removal of support for User Key Common Storage.
  - Last date for ordering z/OS 2.3 is January 2020.
    - If you are on 2.2 and plan to go directly to 2.4, we *still* recommend ordering up a 2.3 ServerPac and archiving it away, just in case.
  - Make sure you check Marna's list of features and functions that are going away in z/OS 2.4 or subsequent releases.
    - Perhaps the most important is HFS - z/OS 2.4 is the last release to support HFS.
- Some of the actions required to be able to run z/OS 2.4 might take quite a while to implement, so start NOW, not the week before you order the ServerPac.

Prepping for z/OS 2.4

- There were many sessions about z/OS 2.4 this week. This is just a selection – search the SHARE website for V2R4 to see the full list:
  - Session 25754, *What's New in z/OS V2R4: Three Rivers Edition*, by **Gary Puchkoff**
    - Make sure you check Gary's handouts – he indicates the functions that are rolled back to earlier releases, so you can start to get some of the benefits now, even if you have no immediate plans to ~~migrate~~ – er, *upgrade*, to z/OS 2.4
  - Session 25295, *Upgrade to z/OS 2.4 Part 1: Planning* , by **Marna Walle**
  - Session 25296, *Upgrade to z/OS V2R4 Part 2: Technical Actions*, by **Marna Walle**
  - Session 25313, *z/OS V2R4 Parallel Sysplex Update*, by **Mark Brooks**
  - Session 24996, *What's New in DFSMS and MVSS Project Opening*, by **Barb McDonald**
  - Session 25308, *System Display and Search Facility - SDSF Product Update for z/OS V2R4*, by **Rob Scott**
  - Session 25309, *What's New in z/OSMF V2R4?*, by **Joey Zhu**

Prepping for z/OS 2.4

- More 2.4-related sessions:
  - Session 25312, *z/OS V2R4 JES2 Product Update and Latest Status*, by **Tom Wasik**
  - Session 25510, *RACF Update: V2.4 Preview & MFA*, by **Ross Cooper**
  - Session 25742, *z/OS V2R4 XCF Transport Class Simplification*, by **Mark Brooks**
  - Session 25639, *What's New in DFSMSrmm*, by **Louis Hanna**
  - Session 25013, *What's New with DFSMS ICF Catalog and IDCAMS*, by **Stephen Branch**
  - Session 25067, *z/OS Communications Server: Technical Update, Part 1 of 2*, by **Gus Kassimis**
  - Session 25068, *z/OS Communications Server: Technical Update, Part 2 of 2*, by **Sam Reynolds**
  - Session 25047, *z/OS V2R4 User Experience*, by **Ed Jaffe**

Prepping for z/OS 2.4

- z/OS 2.3 was the last release to support User Key Common Storage and Common Area Data Spaces.
- There is a *lot* more to this than was previously discussed, but to summarize:
  - Read this section in the z/OS Migration book: https://www.ibm.com/support/knowledgecenter/en/SSLTBW_2.3.0/com.ibm.zos.v2r3.e0zm100/BCP_vsm-rsm_userkeyCA_v2r3.htm
  - Read APARs OA53355 (Dec 2017) and OA56180 and PDF (Mar 2019) and apply the PTFs.
  - See Migration health check ZOSMIGV2R3_NEXT_VSM_USERKEYCOMM.
  - Check THREE parms in DIAGXX
    - VSM ALLOWUSERKEYCSA – Default is to NOT allow user key CSA
    - ALLOWUSERKEYCADS – Default is to ALLOW Common Area Data Spaces NEW
    - NUCLABEL ENABLE(IARXLUK2) – Controls CHANGKEY – default is CHANGKEY is allowed. NEW
  - See new SMF30_UserKey* fields in SMF type 30 records to identify programs that obtain user key CSA or CADS.
  - For a little background reading, see Session 25903, *System-Impacting Virtual Storage Issues*, by **John Shebey** and **Patty Little**.
  - See short (20-page!) article *Bye Bye User Key Common Storage* in *Tuning Letter 2019 No. 1*.
  - CICS *must* be 5.2 (EoS 12/31/2020) or later.

Prepping for z/OS 2.4+1

- z/OS 2.4 announcement includes a Statement of Direction that the z/OS release *after* z/OS 2.4 will no longer provide the ability to alter the WLM Service Definition Coefficients (IOC, MSO, CPU, SRB).
- *Current* default values are IOC=5, MSO=0,CPU=10,SRB=10.
- New values will be IOC=0, MSO=0, CPU=1, SRB=1.
- If you are using anything *other* than the NEW values, you will need to review and revise your WLM policy, particularly any multi-period service classes. Also need to think about anywhere else that *weighted* service units are used, like chargeback or SMF type 30 records.
- For Tuning Letter readers, there was an article that discussed changing SDCs in the September/October 1994 issue!

- There will also be a migration health check for this – name not available yet.
- For more information, see Session 25713, *Workload Management (WLM) Update for Pricing, z14, and z/OS*, by **Andreas Henicke** and Session 25977 by **Scott Chapman**.
- Hope to have a guide to altering SDCs in the 2019 No. 3 Tuning Letter issue.

z/OSMF Performance

- Somewhere between z/OS 2.3 and 2.4, IBM added an ‘Application Monitoring’ function to z/OSMF.
- Also somewhere between z/OS 2.3 and 2.4, we noticed that z/OSMF was constantly using between .3 and 1.3 engines in our little zPDT system, *when no one was using it*.
- Thanks to some great detective work by the z/OSMF performance person in the lab, the culprit was tracked down to that Application Monitoring function.
  - Even more interesting was to discover that it doesn’t actually monitor any applications at the moment!
- IBM opened APAR PH12643 to turn this function OFF by default. APAR is closed, AND it describes a Local Fix until you can apply the PTF.

Gotta trim those MSUs..

- One of my favorite sessions of the week was Session 24998, *Minimizing HSM CPU and Elapsed Times*, by **Shannon Gallaher**.
  - *Every* slide had valuable information for any HSM customer, especially (but not only) those that have IBM disk subsystems.
- We had a Tuning Letter article on this topic in Tuning Letter 2018 No. 4. However, **Glenn Wilcock** and Shannon have found *yet more* CPU-saving tips since that article.
- Following on from that article, Glenn kindly agreed to enhance the HSM SMF record to include information about compressed data sets. Hope to have more news soon – watch this space.
- **SURVEY QUESTIONS**:
  - Do people still do DFDSS Dumps or Backups?
  - Does anyone use the DS8K TCT function to do *Server-less* DSS Dumps/Backups?

Wipe that SMIC off your face..

- Is everyone familiar with the SMIC? (System Message and Interface Changes manual)
  - This is the coolest book – it provides information about new commands, new or changed Parmlib members or keywords, new messages, new samples…
  - Everything that is in this book *should* be documented elsewhere, but isn't always. This is a great backup source of information.
- Sadly, in z/OS 2.4, the SMIC had a near-death experience.

- However, thanks to **Marna Walle** and **Sue Shumway**, the SMIC has been resurrected with a *much* more meaningful name – say hello to the RURS (z/OS Release Upgrade Reference Summary)!

RMF Survey..

- <subliminal message> Wildcard support in RMF Overview reports </subliminal message>
- At his *RMF Latest and Greatest* session (25710), **Peter Muench** pointed us at a survey on the RMF FTP site, asking customers what new functions you would like to see added to RMF.
- <subliminal message> Wildcard support in RMF Overview reports </subliminal message>
- Please fill out the survey with any new functions for RMF that you think are long overdue, but that would make your life *far* easier, and free up more time for you to spend buying new IBM products. Just as an example, one such function might be the ability to use Wildcards in the RMF Overview report control statements.
- <subliminal message> Wildcard support in RMF Overview reports </subliminal message>

SDSF Enhancements in z/OS 2.4

- If you are an SDSF customer and you did not attend **Rob Scott's** Session 25308, *System Display and Search Facility - SDSF Product Update for z/OS V2R4*, you *have* to check out the session handouts.
  - I can't remember the last time I saw so many enhancements in a new release of a product as IBM/Rocket included in SDSF in z/OS 2.4.

- The z/OS 2.4 announcement letter doesn't come close to describing all the additions and improvements in the new release.
  - I missed the beginning of the session, but I heard that much of the function from the much-loved MXI tool is now included in SDSF.
  - There is also stuff about WLM, XCF, USS, ENQs, Consoles, JES2 resource monitor – there's even an enhancement in there for JES3??!!

Now I know why zIIP utilization is often so low

- While doing a performance review for a customer earlier this year, they asked us to verify that they are getting the maximum value from their zIIP. A simple request, one might think…..
- 2.5 bleary-eyed days later.. we *still* were not 100% happy that we had all the information for all of their products.
- Client had many CA products, so we spoke to **Nicole Fagen** in CA, about what a challenge it is to find out which of their products use zIIPs, and what you need to do to enable that support. Nicole kindly volunteered **Mike Patriarco** to go off and gather all this info for us.
  - We worked with Mike to turn that into a Tuning Letter article (due out next week).
  - And CA/Broadcom took all that information and placed it on a single website.
- We feel that this is a huge time saver for anyone trying to understand the zIIP support in their CA products.
- As a result of this effort, we are now working with *two more* large vendors on similar projects.
- And in **Kathy Walsh's** *zIIPs: Beyond the Basics* session that Mario mentioned, she includes a list of IBM products that exploit zIIPs.

New SHARE requirements

- In **John Burg's** excellent Session 25709, *CPU MF for Efficiency*, he pointed out some new fields in the z14 CPU MF data that are intended to help you determine if you would get much value from the new Vector Packed Decimal Facility support on z14:
  - The helpfully-named Extended Counters E224, E225, E226.
- IBM has been very up-front in letting customers know that if they want to get the maximum performance from the latest processors, they need to recompile their programs to exploit functions such as SIMD. For more info, see *COBOL Applications: Techniques to Make Them Efficient*.
- These counters give you an idea of the scale of the potential benefit that you might get. HOWEVER, they are at the SYSTEM level – there is no way to tie that info back to a particular job or set of jobs.
- So we opened a SHARE requirement asking that IBM extend the SMF30COUNT function and the Counter section in the SMF type 30 records to include the E224/225/226 data for that job step. This should make it easier to identify the programs that would be good candidates for recompilation.
- Please cast your vote about whether you think this would be a worthwhile enhancement.

New SHARE requirements

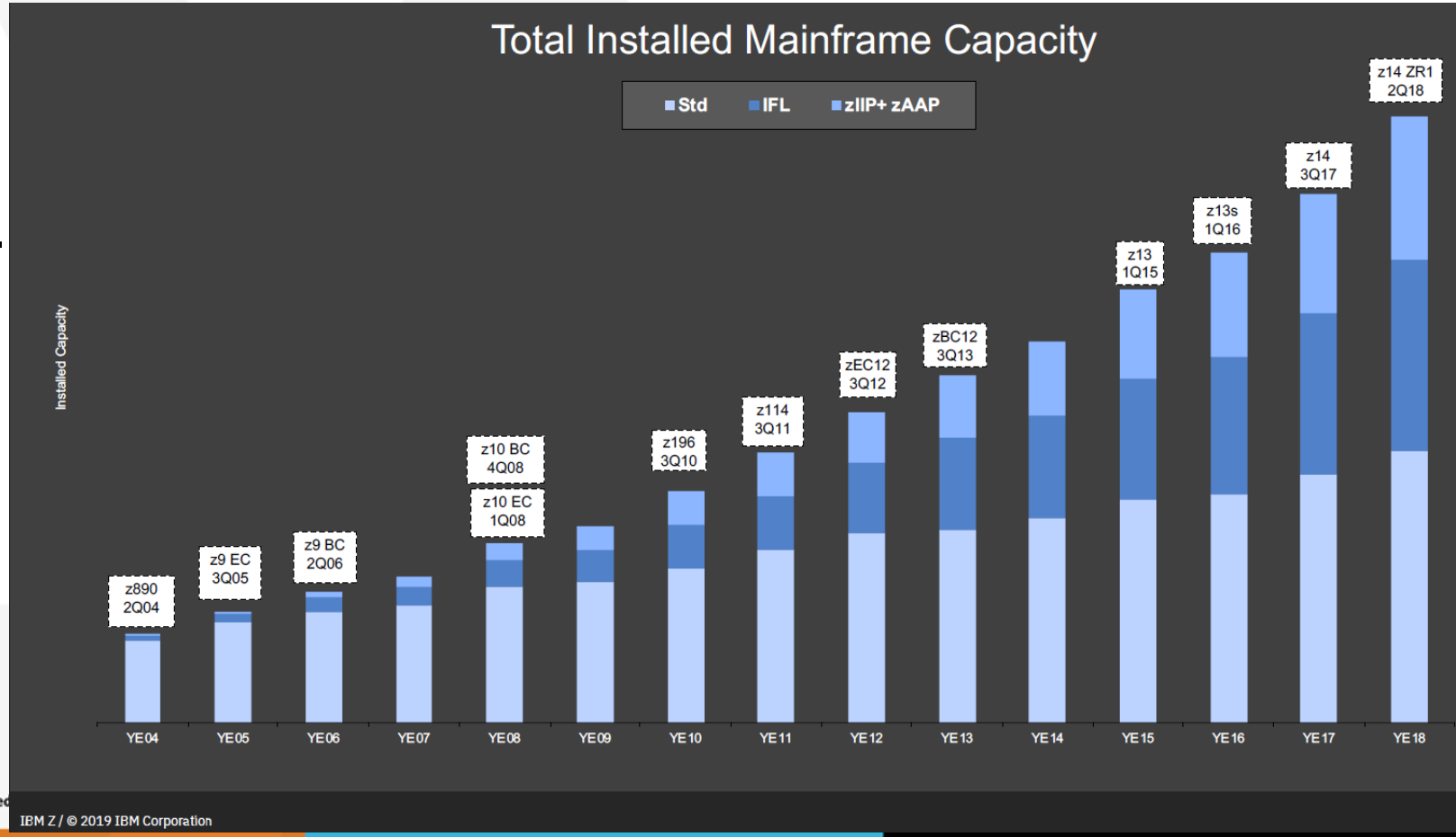
- We are hearing from more and more techies that are starting to line up for the exit ramp to the local golf course/country club.
- A common concern is how to do a ‘brain dump’, to pass on 40+ years of experiences and tools and jobs and procedures to the next generation.
- At the same time, IBM and multiple ISVs are ‘upgrading’ to using z/OSMF, and z/OSMF Workflows, as part of their install process.
- We worked with **Marna Walle** to create an introductory article about Workflows – generally, we found them to be powerful, and they are actively being enhanced, but there were a few small changes that we would like to improve their usability. So we opened 3 SHARE requirements:
  - Display Workflow Definition name in z/OSMF Workflow instances
  - Prompt user if they try to start a second z/OSMF Workflow instance from the same Workflow Definition
  - Provide ability to list all z/OSMF Workflow Definitions
- Please vote to indicate if you think these would be valuable to you.

New SHARE requirements

- With the increasing number of IBM pricing/container/TFP options, it can become a challenge for those monitoring the systems to know what ‘type’ of system it is. And also for those that own the SCRT process, to make sure that they assign the correct Solution IDs to the correct LPARs in the SCRT jobs.
- It would be helpful if there was some mechanism to let you specify the Solution ID and an indication of the pricing option in use, and have that stored in SMF type 70 records, so that performance monitors AND SCRT could see it.
  - There is already a mechanism in place to tag systems with SW Pricing-related information (LICENSE=NALC in IEASYSxx) and have that information saved in SMF records (type 89 in this case) – maybe that could be extended to add this capability?
- We opened a SHARE requirement for this one too – please have a look and vote to say if this would be valuable to your company.

The 50-year-old Comeback Kid?

- Over 20% of the attendees at this SHARE are first time attendees! Thank you! We hope that you enjoyed it and will come back many more times.
- Despite what you might hear, Z is alive and kicking, and rumored new CPC should continue this growth.
- Three of the largest ISVs were telling us this week that they have large numbers of new young developers working on Z products, including some brand new products.



z/OS Academy: October 21-25, 2019

Multi-customer briefing

- On-site event in Poughkeepsie, NY with lectures, demos, and hands-on instruction
- Designed for z/OS System Programmers with 2 - 5 years experience
- Networking opportunities with z/OS developers
- Eligible for z/OS System Programmer - Advanced digital badge
- Prerequisite: TechU "z/OS for Rookies" track or equivalent

FREE!

You need to just cover travel expenses

Topics include:

Pervasive Encryption	BlockChain
z/OSMF	Analytics
z/OS Upgrade	zEscape Room
Cloud Provisioning	Troubleshooting
SMP/E	Tours

And more selected topics!

Please register before October 11, 2019.

To Register, please email

Ryan Rawlins at RRawlins@us.ibm.com

David Raften at Raften@us.ibm.com

Gary Littlefield at GLittlef@us.ibm.com

Thank you!

- If you have any questions, suggestions, comments, or general abuse, please email us at technical@watsonwalker.com
- Have a safe trip home, thank you for coming, and we hope to see you in Fort Worth next February. Happy holidays!

Thanks!!!

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