NewEra Software

z/OS Integrity and Compliance

Building a Safer, more Secure z/OS Environment for your Business Applications

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z/OS Integrity and Compliance

Today's Agenda

- ❑ The zEnterprise Event Rain Storm
  - The Changing Large System Landscape
  - IBM Investments driving changes
- ❑ The Total Cost of Ownership (TCO)
  - TCO is down but
  - Complexity is up, way up!
- ❑ LPAR Availability - Absolute
  - Old approaches won't work
  - zEnterprise "Rain" sinks boat!
  - Getting ahead of system outages
  - Plan "B" as the alternative.
  - Free Vs. No Charge
- ❑ IBM Health Checker for z/OS
  - What they are
  - Who they are
  - How they work
- ❑ NewEra Change Detectors
  - What they are
  - Who they are
  - How they work
- ❑ Detector Code Snippets
  - Under TSO/ISPF Option 6
  - Under IFO/ISPF Option 6

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Certificate of Attendance

Awarded to

Your Name Here

Present at the following

Continuing Education Course

Stretch your z/OS Budget and Reduce Total Cost

Paul R. Robichaux, Presenter, November 2011

Eligible for Continuing Professional Education Credit of 1 Hour

_____

Sara Morales, Education Coordinator

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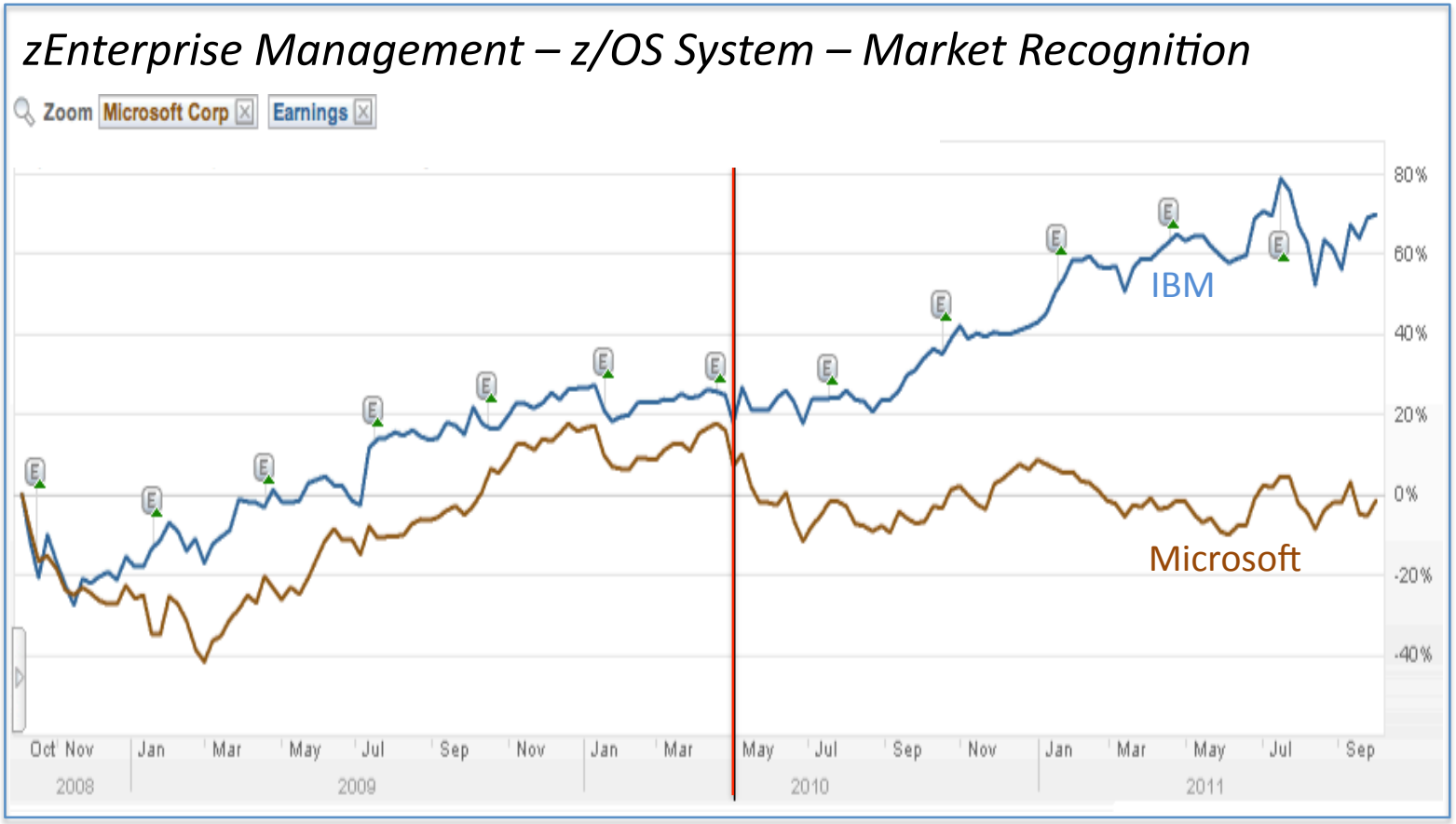
zEnterprise Management – z/OS System – Market Recognition



IBM System z servers are also making inroads in emerging markets like Africa. Governments and businesses in Cameroon, Senegal and Namibia have all recently purchased IBM mainframe servers.

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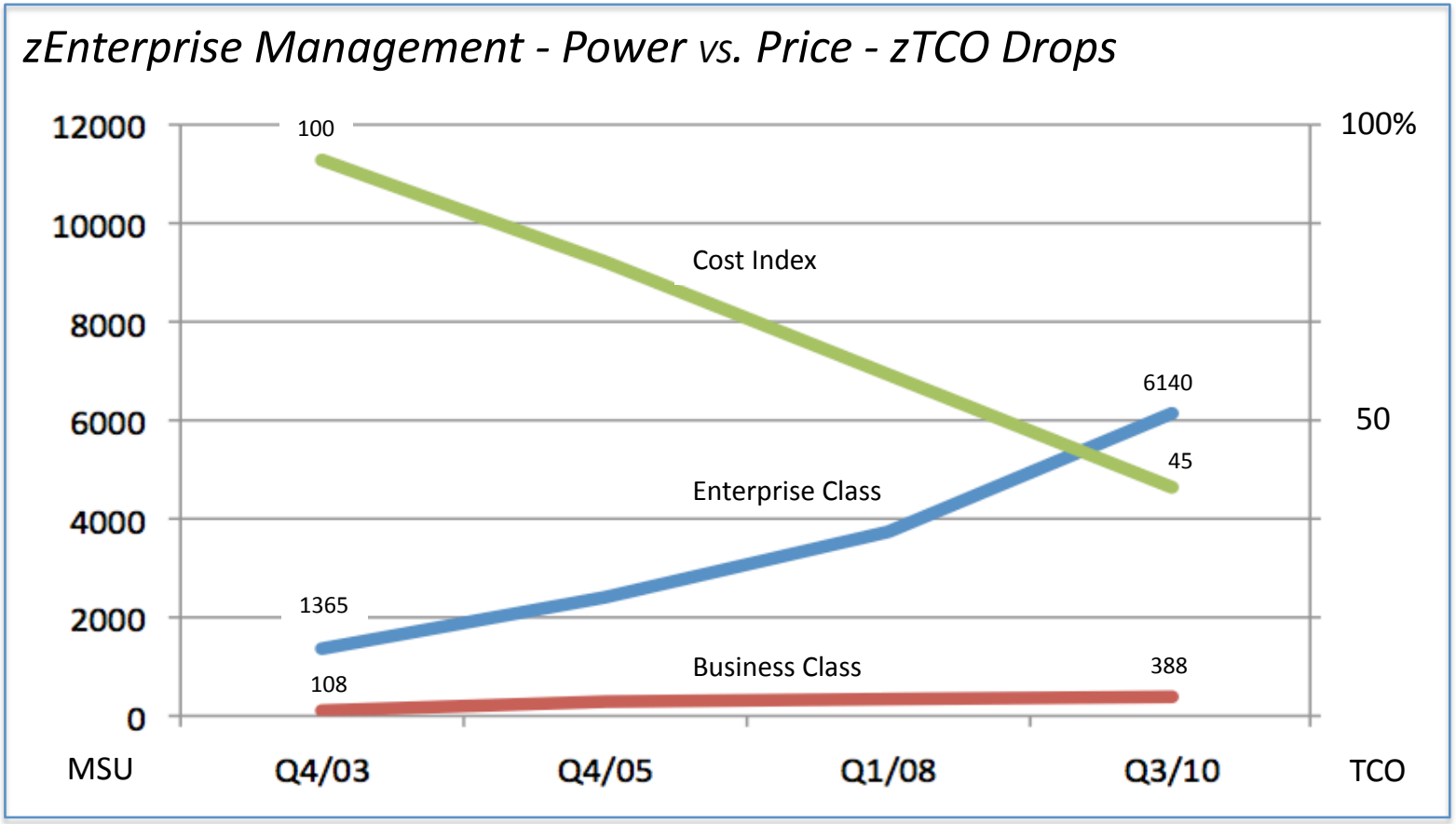

Source: http://www.tech-news.com/publib/pl2817.html

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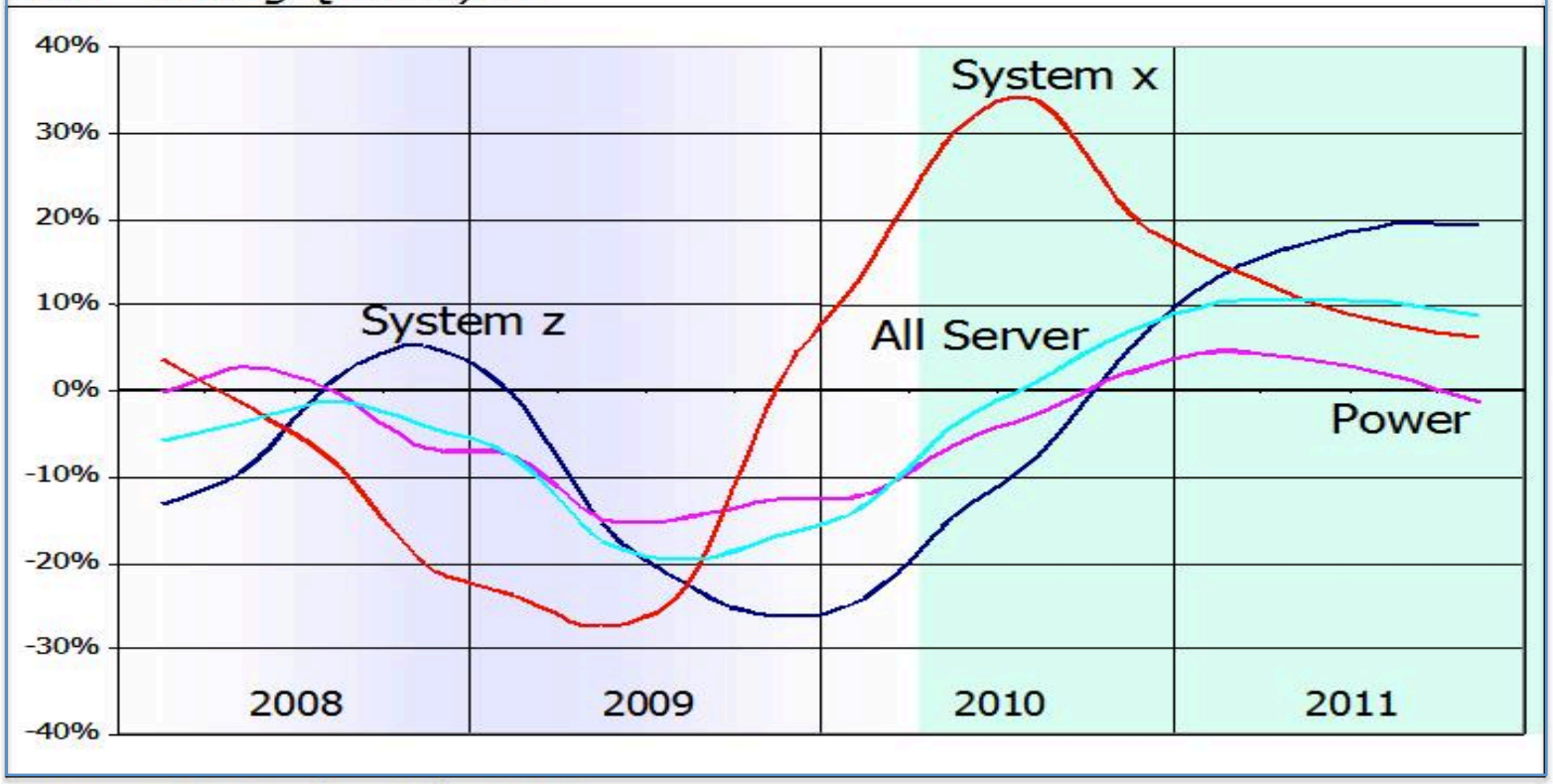
zEnterprise Management – z/OS System Platform Investments

Topical Area	Total	V1R13			V1R12		
		Add	Del	Chg	Add	Del	Cng
IPL Unit Address	3	1	-	2	-	-	-
IPL Parms - LOADxx	1	-	-	-	1	-	-
ParmLib Members	5	2	-	-	2	1	-
ParmLib Keywords	45	22	1	-	21	1	-
TCP/IP Components	17	10	-	-	7	-	-
JES2	7	2	-	1	1	-	3
JES3	5	1	-	3	-	-	1
VTAM	14	-	-	1	12	-	1
CICS - SIT and CSDS	13	1	-	4	1	-	7
DB2	1	1	-	-	-	-	-
Health Checker	39	16	-	-	23	-	-
HCD/HCM	8	6	-	-	2	-	-

Source: NewEra White Paper - A Brief Look at What's New in V1R12 and/or V1R13 – 9/01/2011

Figure 1 – IBM Server Revenue Growth Rates ($US) And Forecasts – 2008-2011 – Rolling Q4 Analysis



Source: ITCandor, July 2010

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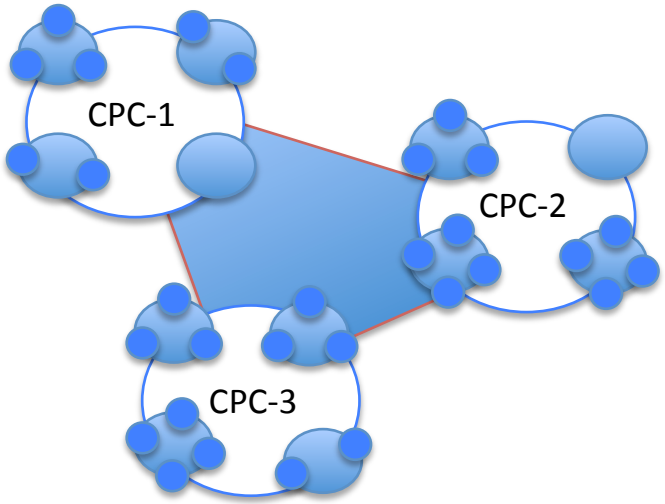
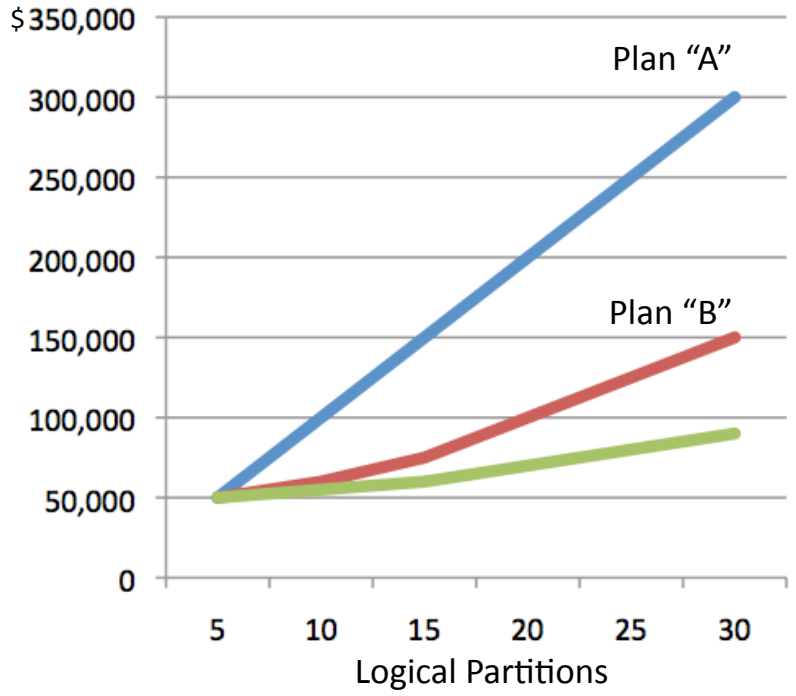
zEnterprise Management - LPARS – Can you really afford Plan "A"?





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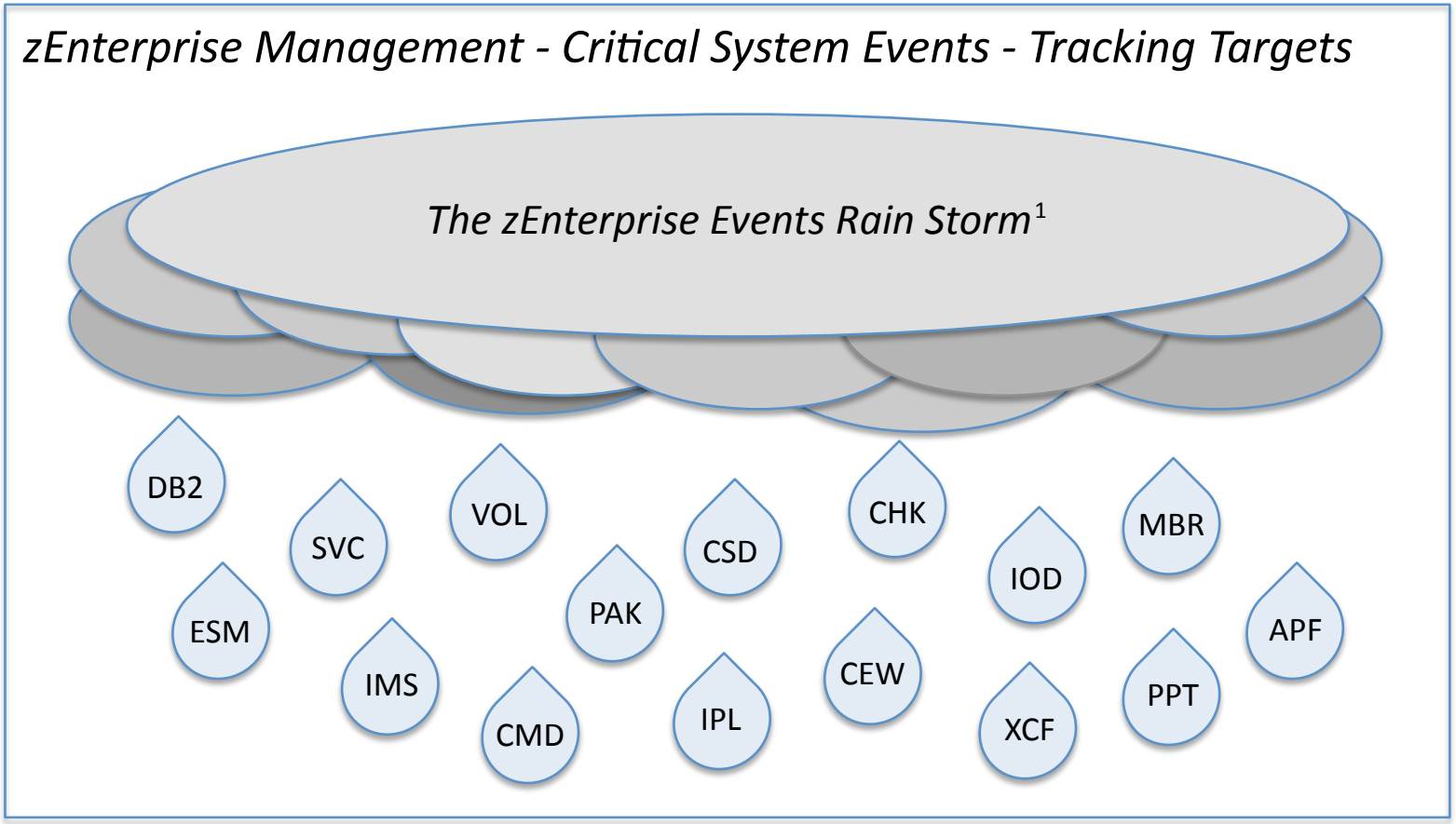
zEnterprise Management - Critical System Events - Tracking Targets



[1] Fivefold increase in zEnterprise system events between 2003 and 2011

zEnterprise Management - System Events - Problem Recognition

History	Real-time	Future
❑ Data Collection ❑ Event Filtering ❑ Post-Processing ❑ Reporting	❑ Data Collection ❑ Discrimination ❑ Recognition ❑ Notification	❑ Data Collection ❑ Predictive Analytics ❑ Recognition ❑ Notification
Passive	Reactive	Proactive

Times Arrow

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zEnterprise Management - The Total Cost of LPAR Deployment

The Mainframe Software Stack [1]

(MSS)

"As Is"	"Plan - A"	"Plan - B"
Execution: • Monitors • Operations 50%	*Execution:* • Monitors • Operations 30%	*Execution:* • Monitors • Operations 50%
Validation: • Auditors • Consultants 50%	*Validation:* • Auditors • Consultants 70%	*Validation:* • Auditors • Consultants 50%

[1] The Total Cost of Monitoring LPAR Availability and Integrity

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zEnterprise Management – System Checkers and Change Detectors

- ❑ A Checker reports deviations from established z/OS Best Practices.
- ❑ A Detector report changes from z/OS Configuration Baselines.
- ❑ Both operate autonomously and independently, executing at default or defined intervals, reporting their findings as directed to those with a need to know.

zEnterprise Management – About the IBM Health Checker for z/OS

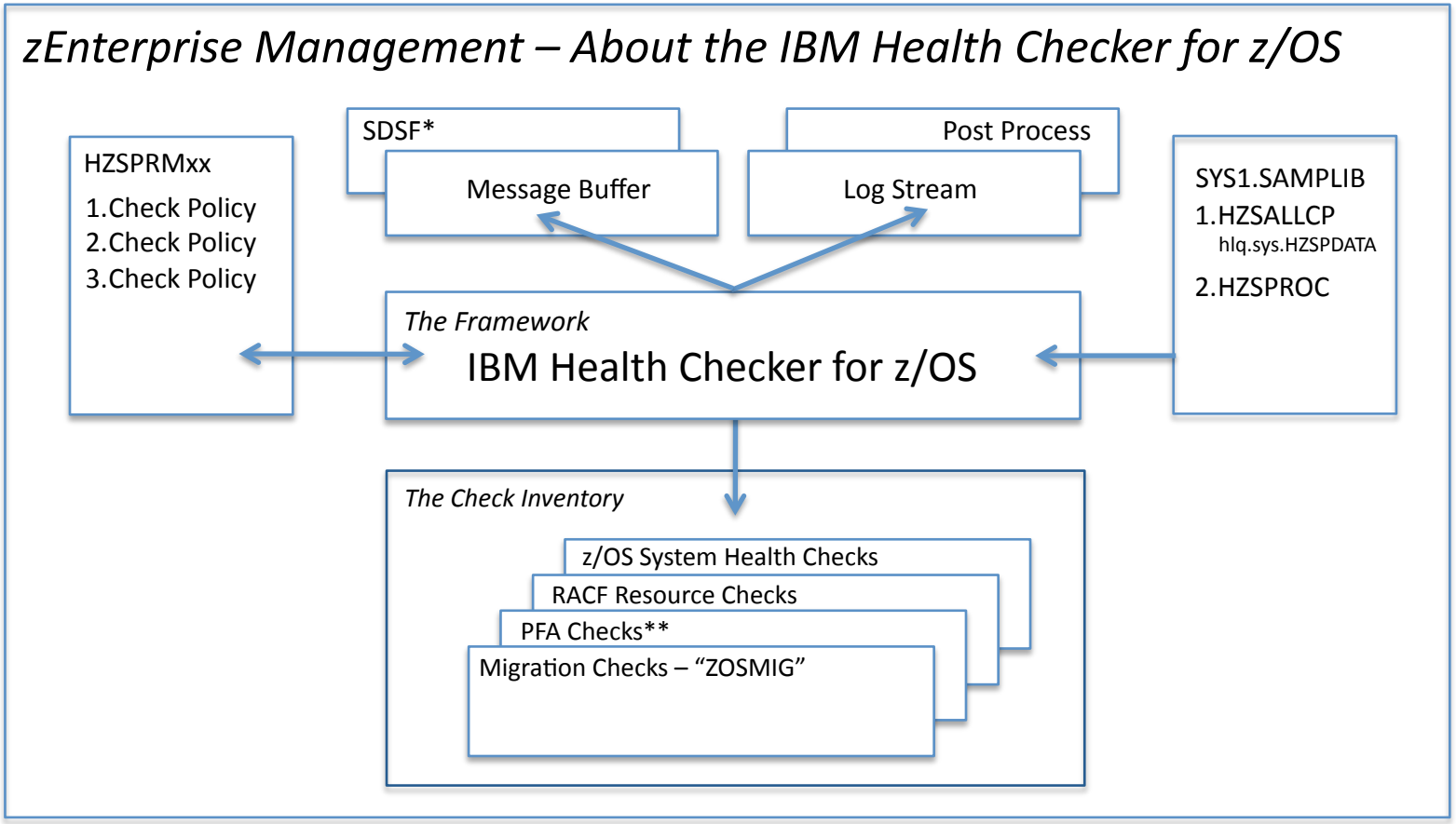
IBM Health Checker for z/OS provides a foundation to help simplify and automate the identification of potential configuration problems before they impact system availability. It compares active values and configuration settings to those suggested by IBM.

The IBM Health Checker for z/OS consists of:

- A framework to manage functions such as check registration, messaging, scheduling, command processing, logging, and reporting.
- An Inventory of Checks, which evaluate settings and definitions specific to products, elements, or components. Checks are provided separately and are independent of the framework. The framework supports checks written by IBM, independent software vendors, and users.

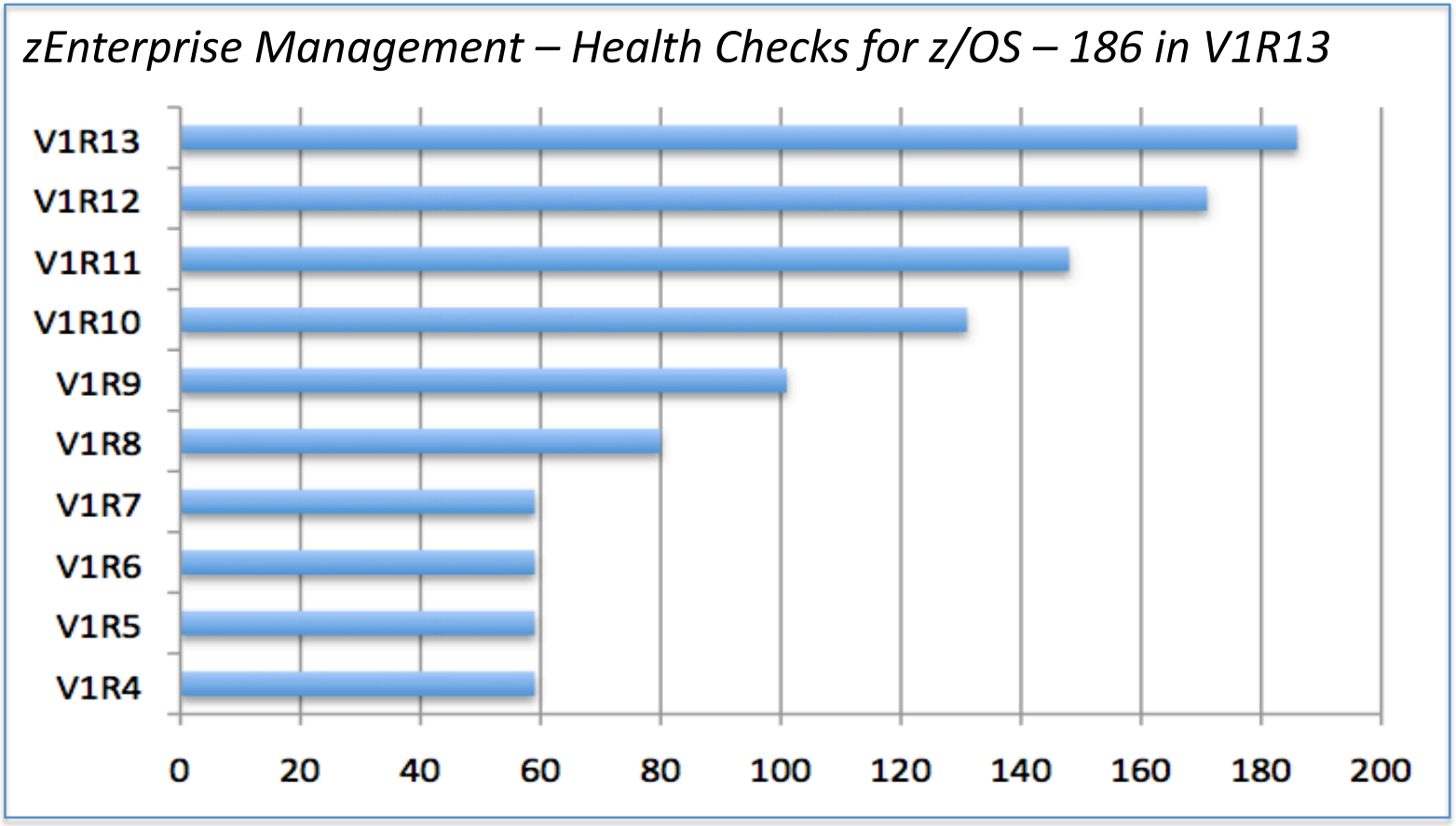
IBM Health Checker for z/OS V1R13 User's Guide - SA22-7994-12

zEnterprise Management – About the IBM Health Checker for z/OS

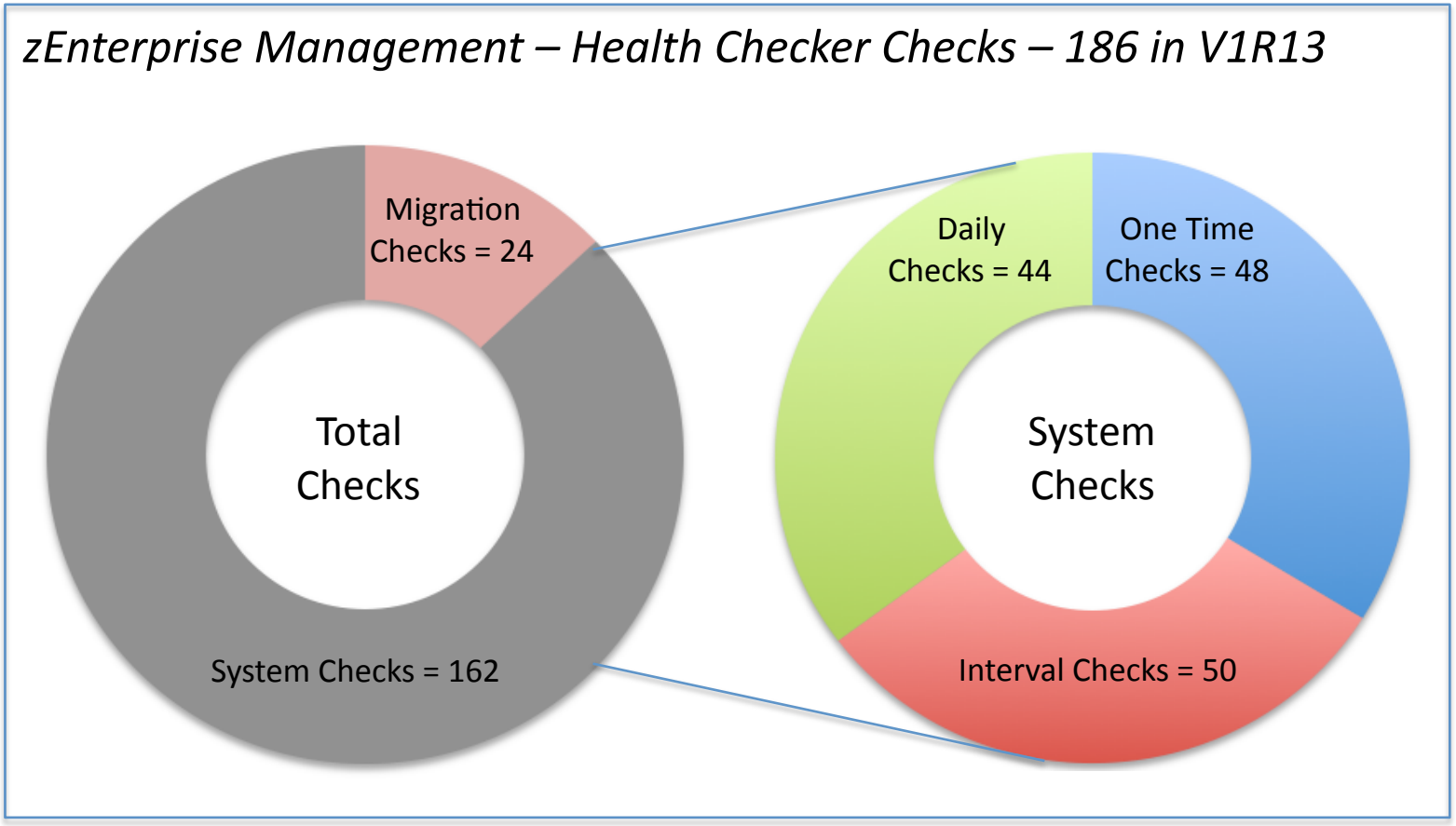


* Or an equivalent (CA SYSVIEW) or HC HZSPRINT Service or HC MODIFY DISPLAY Command

** PFA = Predictive Failure Analysis



Source: NewEra White Paper - A Brief Look at What's New in V1R12 and/or V1R13 – 9/01/2011


zEnterprise Management – Health Checker Checks – 186 in V1R13
Migration Checks = 24
Total Checks
System Checks = 162
Daily Checks = 44
One Time Checks = 48
System Checks
Interval Checks = 50

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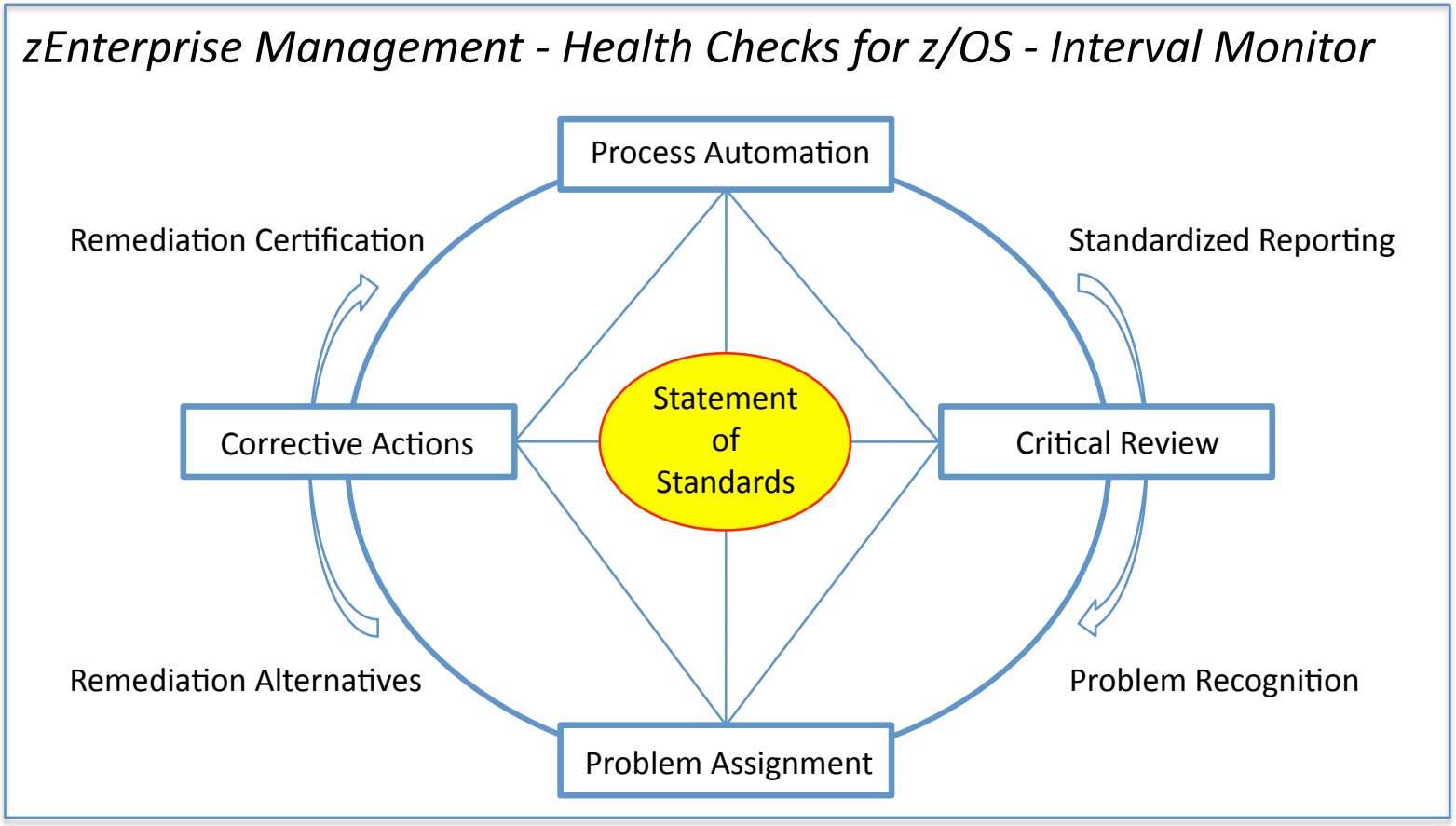
zEnterprise Management - Health Checks for z/OS - Interval Monitor



Each Health Check runs at its own default or uniquely defined interval defined in HZSPARMxx.

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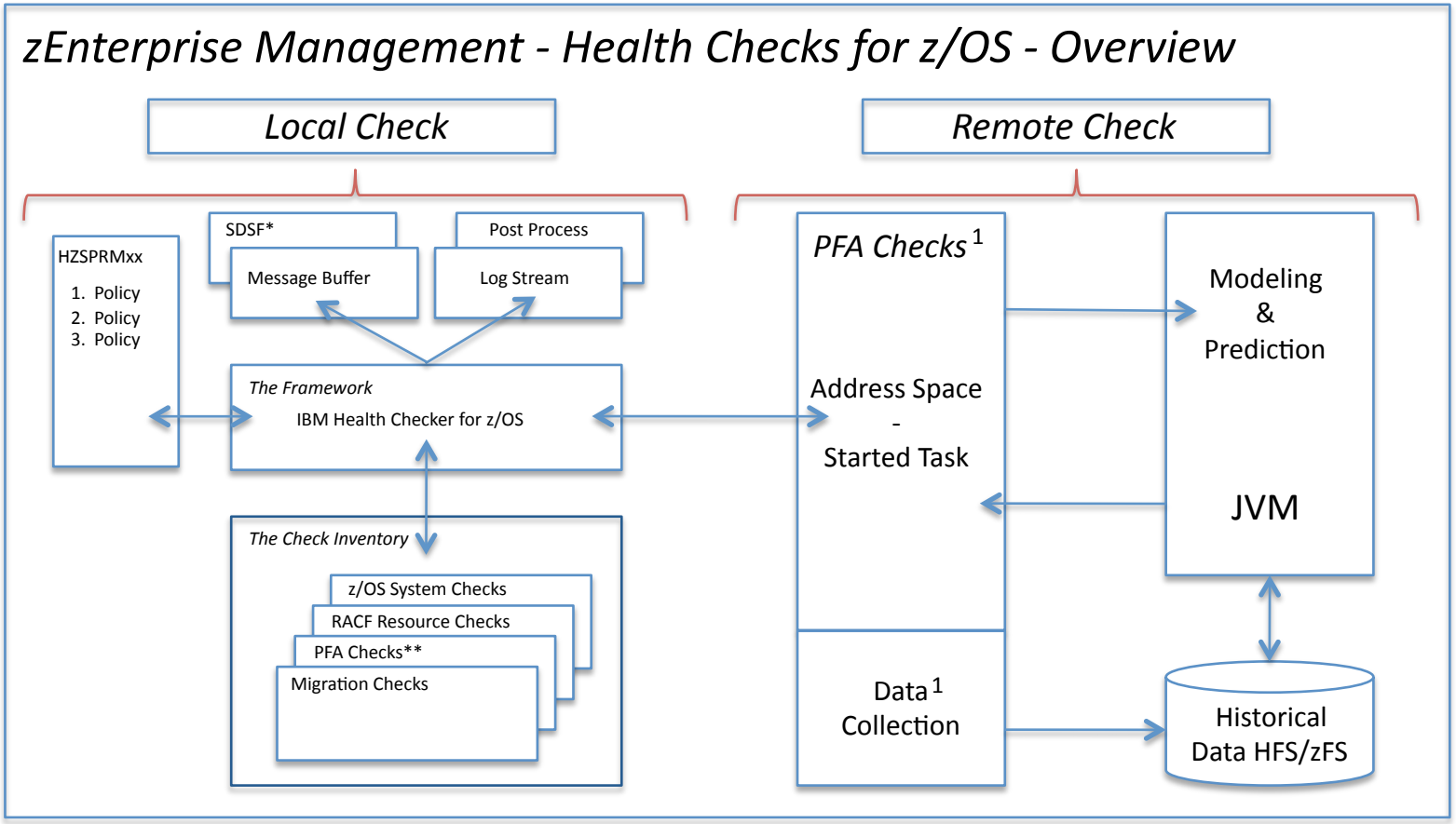
zEnterprise Management - Health Checks for z/OS - Overview



1 Do not delete PFA Checks

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zEnterprise Management - Health Checks for z/OS - Reporting

Results:

- No Exceptions
- Not Appropriate
- Exceptions

Messages:

- Informational
- Check Exceptions
- Reports

Header:

```
CHECK(IBMRACF,RACF_SENSITIVE_RESOURCES)
START TIME: 06/28/2010 07:38:40.873145
CHECK DATE: 20040703  CHECK SEVERITY: HIGH
```

Report:

- Explanation
- System Action
- Responses
- References

zEnterprise Management - Health Checks for z/OS - System Integrity

- RACF_IBMUSER_REVOKED - Medium - Every 24 hours

  Check looks to see if the IBMUSER user ID is still active.

  The IBMUSER user ID is intended for use only during the initial installation process. After installation, the IBMUSER user ID should be revoked so that it cannot be used by unauthorized users.

  The following shows keywords you can use to override RACF check values on either a POLICY statement in the HZSPRMxx parmlib member or on a MODIFY command:

```
UPDATE,
CHECK(IBMRACF,RACF_IBMUSER_REVOKED),
SEVERITY(MED),INTERVAL(24:00),DATE('date_of_the_change')
REASON('Your reason for making the update.')
```

zEnterprise Management - Health Checks for z/OS - System Response

- IOS_CMRTIME_MONITOR - Medium - 5 Minute Interval

  Detects control units in the system reporting inconsistent average initial command response (CMR) time for attached channel paths. The check issues an exception if at least one control unit has a path with an average CMR time that is the highest among the other paths to the control unit and meets the following conditions:

  - The average CMR time for this path is greater than the THRESHOLD check parameter value.
  - The average CMR time for this path is significantly higher (as defined by the RATIO check parameter) than the path with the lowest average CMR time for this control unit.

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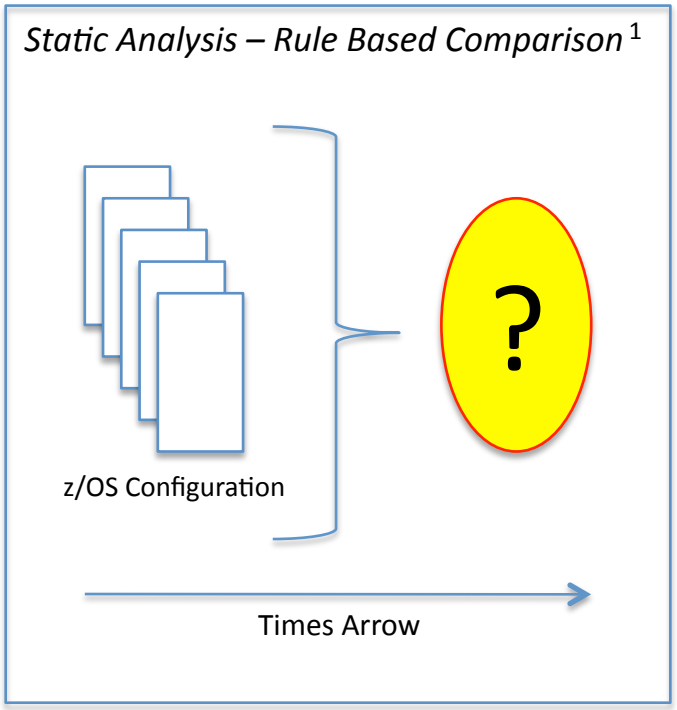
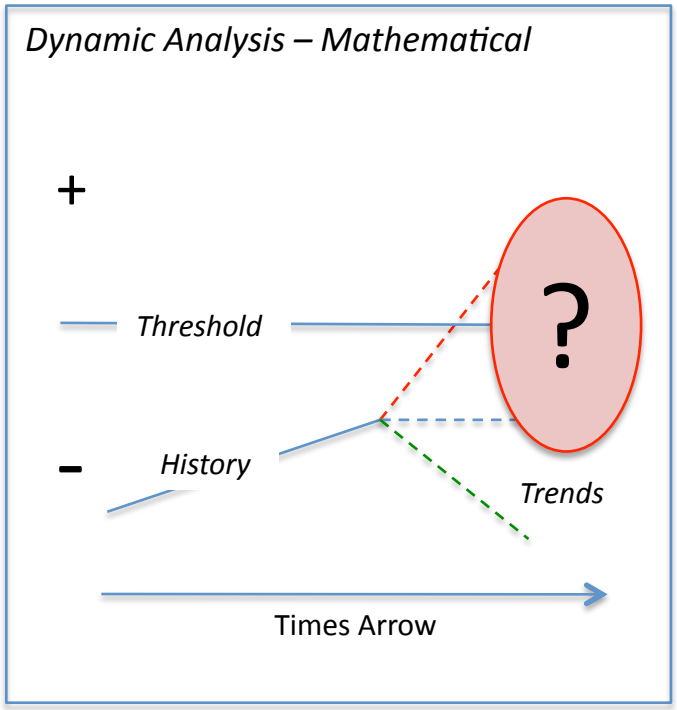
zEnterprise Management – Health Checker for z/OS





[1] IPLCheck – Core is a fully supported "No Charge" PFA Check download from www.newera.com.

zEnterprise Management - Health Checks for z/OS - Failure Prediction

- PFA_SMF_ARRIVAL_RATE - Medium - Collect/Model/Report - Interval

  The objective of this check is to determine if there is potential of damage to an LPAR by checking the arrival rate of SMF records per number of CPU seconds on a system.

  When SMF is active on the system, this check determines if there is an abnormal SMF arrival rate per CPU second.

  PFA examines only the SMF record types; you set the SMFPRMxx parmlib member to generate its findings.

  Checking the number of SMF records written per CPU second can provide an early indication of a problem and potentially prevent damage to an LPAR.

z/OS Problem Management - G325-2564-04 - MODIFY PFA, UPDATE

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zEnterprise Management - Health Checks for z/OS - IPLCheck:Core

IPLCheck and its companions are a standalone set of system software tools designed to help users of the IBM z/OS Operating System manage and protect the integrity and security of their operating system environment and critical business applications.

Once started, IPLCheck works with and under the control of the IBM Health Checker for z/OS. On demand or at controlled intervals, IPLCheck performs a detailed inspection of an LPAR's IPL status, reporting discovered weaknesses and/or structural risk in IPL components or pathing to the Health Checker.

IPLCheck processes the IPL definitions and directives found in the Production PARMLIB concatenation of a target z/OS LPAR to ensure that future restart requests will be successful and will provide the facilities and functions required for full system operations following the restart.

http://www.newera.com/IPLCheck/product_description.pdf

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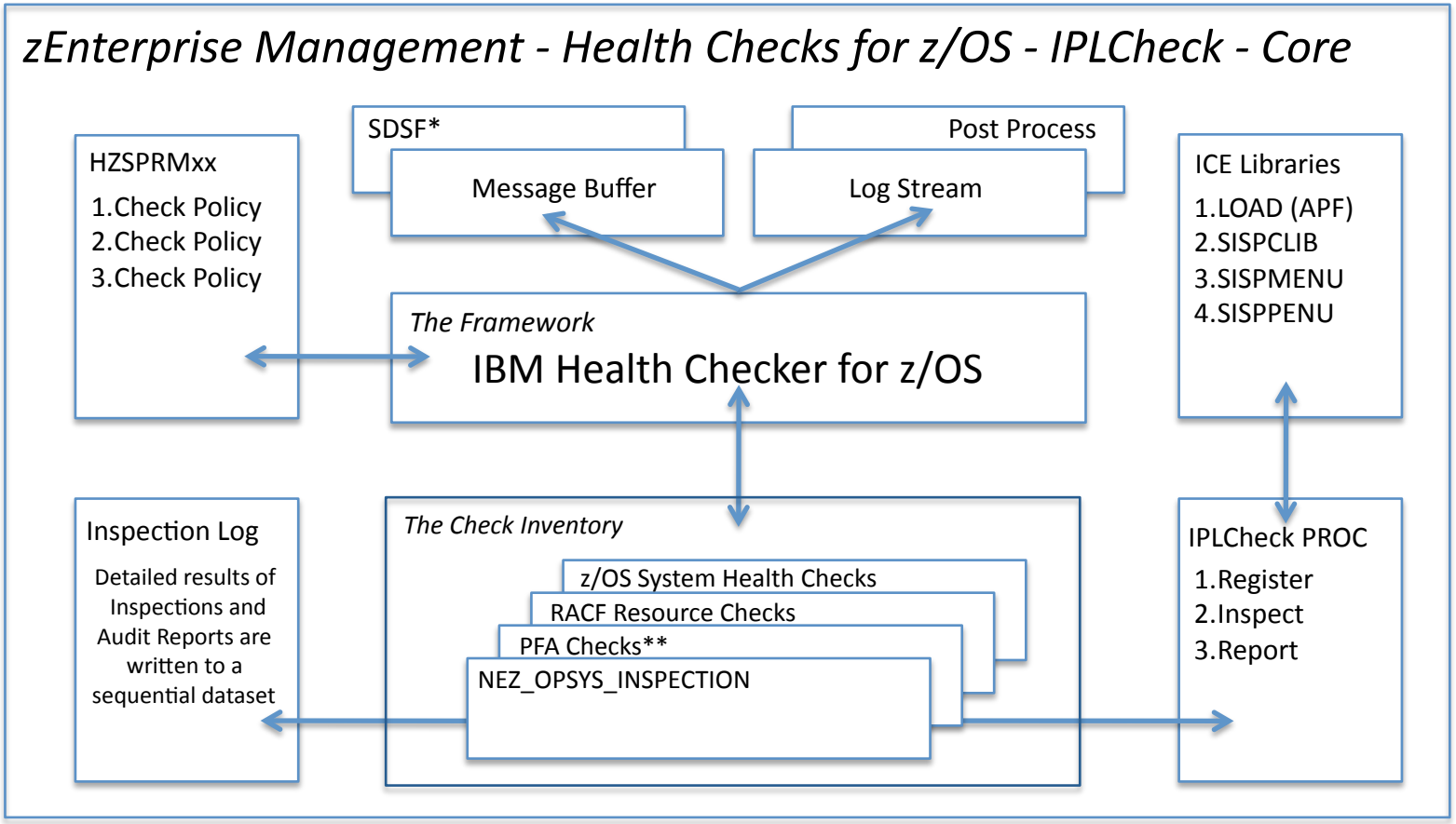

* Or an equivalent (CA SYSVIEW) or HC HZSPRINT Service or HC MODIFY DISPLAY Command

** PFA = Predictive Failure Analysis

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zEnterprise Management - Health Checks for z/OS - IPLCheck - Core

```
CHECK(NEWERA,NEZ_OPSYS_INSPECTION)
START TIME: 03/06/2010 16:10:43.424670
CHECK DATE: 20100302  CHECK SEVERITY: HIGH

INSPECTION SUMMARY Report

Message  Text
-------- ------------------------------------------------------------
IFO0795E  SYS1.NUCLEUS HAS INVALID ATTRIBUTES.
IFO0796E  SECONDARY ALLOCATION NOT ALLOWED.
IFO0725N  OBSOLETE PARAMETER APG IGNORED.
IFO0651N  CMB= VALUE WILL BE IGNORED ON A REAL IPL OF A Z990 OR NEWER P
IFO0964W  SMS - MULTIPLE PARAMETERS NOT ALLOWED.
IFO0769N  TCPIP.SEZAMIG NOT FOUND ON VOLUME VTMVSC.
IFO2100N  *INTEGRITY* APF DATASETS SHOULD NOT BE DEFINED IF THEY DO NOT
IFO0768N  MASTCAT.DSN410.SDSNLINK BYPASSED; VOLUME VTD41A NOT MOUNTED.
IFO0608W  SYSLBC IGNORED AS OF Z/OS V1R3; USE IKJTSOXX.

* High Severity Exception *

NEZH051E The NEZ_OPSYS_INSPECTION check has found one or
more potential errors in IPL integrity of this system.
```

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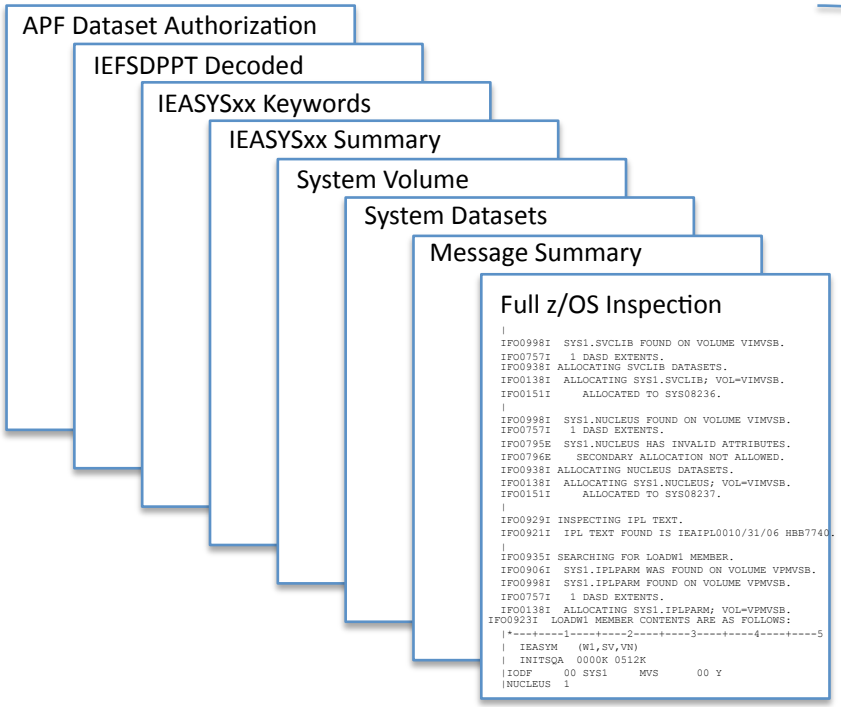
zEnterprise Management - Health Checks for z/OS - IPLCheck - Core



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zEnterprise Management - Health Checks for z/OS – Hands-on Lab

- Hands-on Lab - Abstract:

  Getting the IBM Health Checker up and running and customizing the Health Checks for your z/OS systems is easy to do. This self-directed lab will lead you through the process step by step. The lab is intended for those with little or no experience with the Health Checker. Attendees should have knowledge of TSO and JCL.

- Your Instructor:

  Mr. Gordon Daniel, Director of Development
  NewEra Software, Inc.
  gordon@newera.com

- Requesting the Lab:

  Send Email to – support@newera.com
  Subject – Send HC Lab

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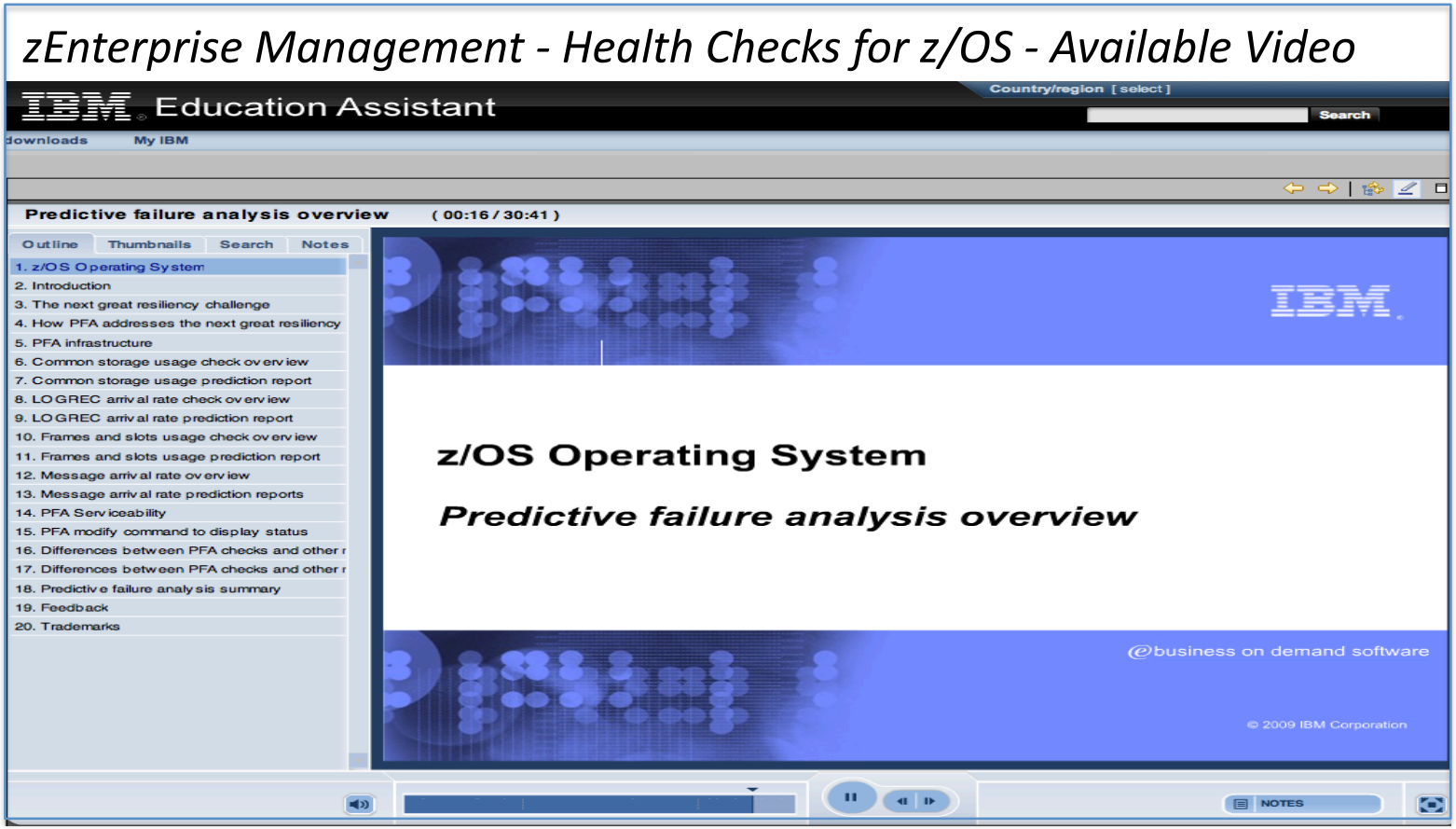
zEnterprise Management - Health Checks for z/OS - Available Video



z/OS Problem Management - G325-2564-04 - MODIFY PFA, UPDATE

About the NewEra Supplemental Detector for z/OS

The Image Control Environment for z/OS (ICE) provides the operational platform used by the ICE Supplemental Detector to create specific z/OS configuration baselines. Subsequently at user defined intervals, an existing baseline (Fixed, Moving or Named) is compared with newly discovered configuration settings. Changes, if any, may be optionally reported to named users via email and/or posted to the Control Journals maintained by ICE application, The Control Editor (TCE).

The Supplemental Detectors consist of:

- Policy Framework - ON|OFF, Execution Interval, Configuration Targets.
- Notification Options - Method (Email, Posting), Recipient List.
- An Inventory of Detectors - Each Detector is an independent application.

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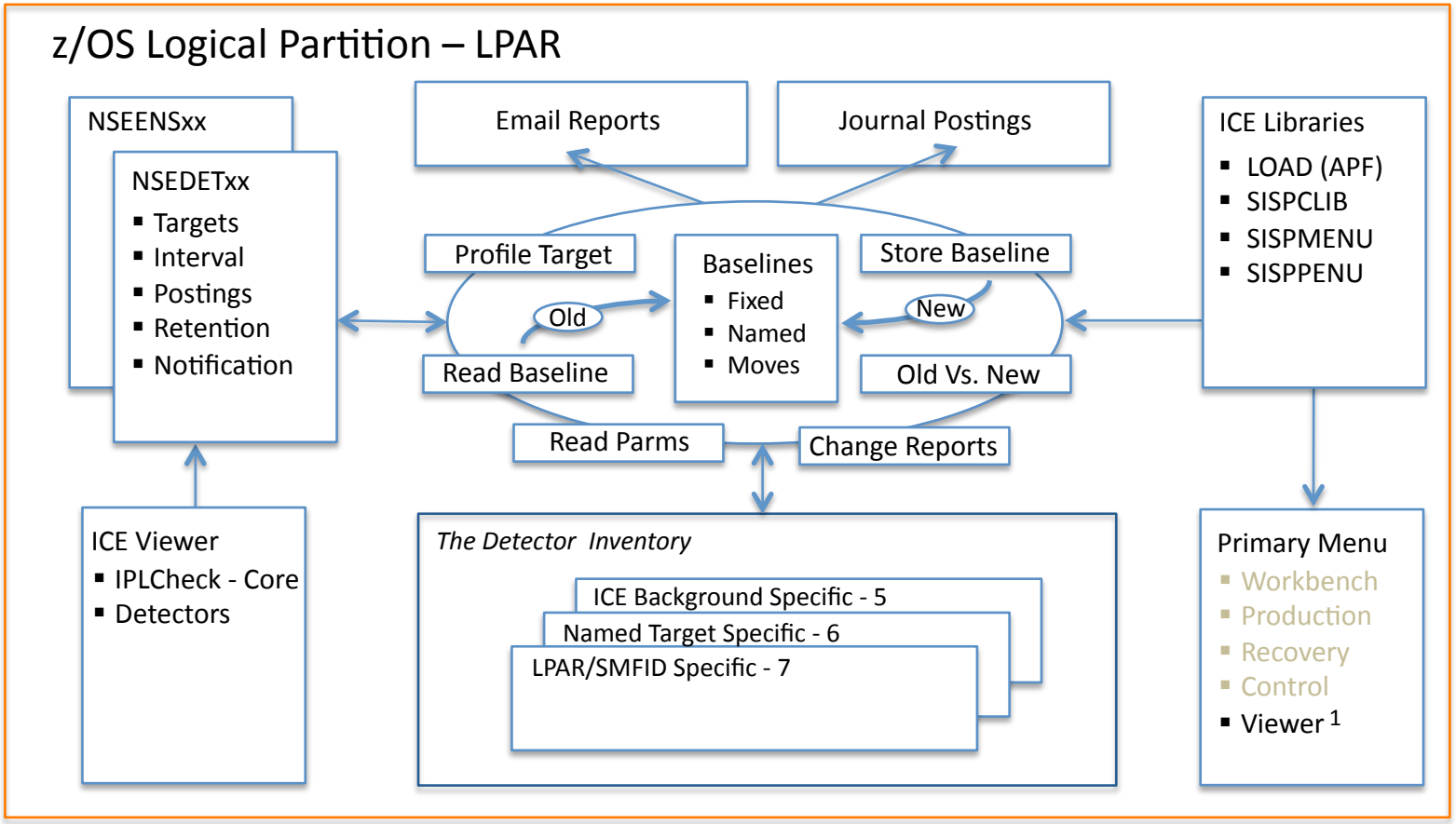

[1] The ICE Viewer is a fully supported, No Charge, feature of the Image Control Environment (ICE)

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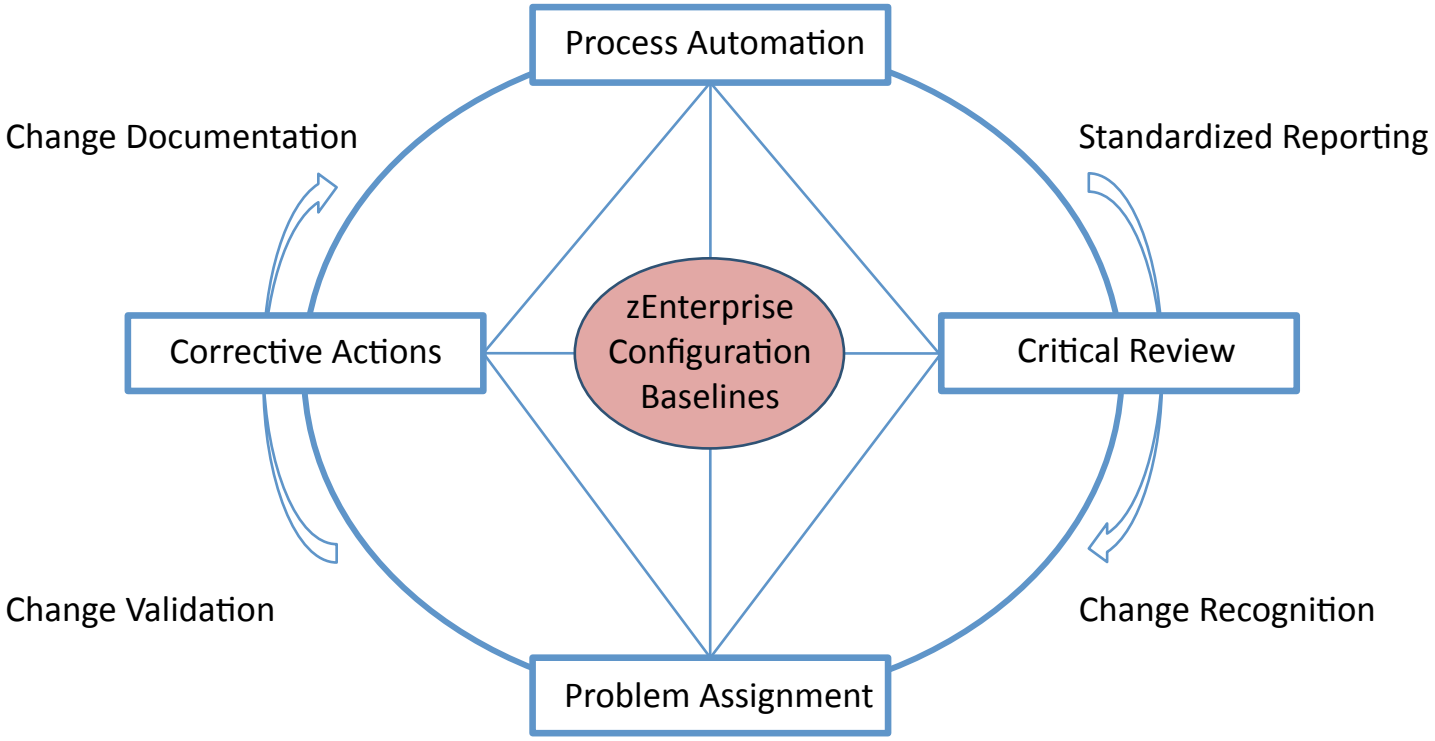
zEnterprise Management – Change Detectors for z/OS



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zEnterprise Management – Change Detectors for z/OS - Inventory

LPAR/SMFID Specific:

KEY	Detector Name
ACF	CA-ACF2
TSS	CA-Top Secret
DSM	RACF/DSMON
SVC	System SVCs
VOL	System Volumes
DB2	DB2 Sub-Systems
USR	IPL Date/Time

z/OS Target Specific:

KEY	Detector Name
MOD	Modules
MBR	Members
IOD	IODF Datasets
CSD	CSDS Datasets
HCK	Health Checker
IMS	IMS Parameters

ICE Application Specific:

KEY	Detector Name
MSS	IPL Messages
APF	DSN Authorization
PAK	IPL Packages
XCF	Coupling Facility
PPT	Program Properties
CEW	Controlled Events

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zEnterprise Management – Change Detectors for z/OS – Sample Email

```
TCE0000I APF AUTHORIZATION REPORT CHANGE SUMMARY:
TCE0000I +-------------------------------------------------------------------+
TCE0000I |              Recent Trends in APF Authorization Change            |
TCE0000I +--------------------+----------------------------------------------+
TCE0000I |   SYSPLEX:PROD0001 |        APF DATASET AUTHORIZATION CHANGES     |
TCE0000I +--------------------+-----+-----+-----+-----+-----+-----+-----+-----+
TCE0000I |        DATES       |11/10|11/10|11/10|11/10|11/10|11/10|11/10|--/--|
TCE0000I |        TIMES       |18:09|17:45|16:58|16:48|15:21|15:00|14:52|--:--|
TCE0000I +--------------------+-----+-----+-----+-----+-----+-----+-----+-----+
TCE0000I |        TOTAL       | 003 | 001 | 003 | 001 | 003 | 004 | 004 |-----|
TCE0000I +-----image_names-----+-----+-----+-----+-----+-----+-----+-----+-----+
TCE0000I |       IMAG0001     |  A  |  D  |  A  |  D  |  D  |  A  |  A  |  -  |
TCE0000I +--------------------+-----+-----+-----+-----+-----+-----+-----+-----+
TCE0000I APF AUTHORIZATION CHANGE DETAILS:
TCE0000I SYSPLEX:PROD0001 IMAGE:IMAG0001
|
TCE0000I Cng IFO0693I APF SUMMARY REPORT  (ULPMF: U-USER L-LNKLST P-PLPA M-MLPA
TCE0000I --- ---DATASET NAME --------------------------- -VOL-- NODSN DUP ULPMF
TCE0000I ADD CSQ700.SCSQAUTH                             VTMQ7A         Y  U
TCE0000I DEL CSQ700.SCSQLINN                             VTMQ7A         Y    P
```

About the NewEra Configuration Change Detector for z/OS

Results:

- No Changes
- Not Appropriate
- Changes

Messages:

- Informational
- Notification Email
- Journal Posting

Header:

```
TCE0000I APF DATASET COMPARE DATE:2011/11/10 TIME:18:09:02
TCE0000I NSIMAPF DETECTOR VERSION:7.5 - GA P1
|
TCE0000I APF AUTHORIZATION OLDBLINE DATE:2011/11/10 TIME:17:45:01
TCE0000I APF AUTHORIZATION NEWBLINE DATE:2011/11/10 TIME:18:09:02
```

Report:

- Target Baseline
- Change Trends
- Change Summary
- Change Detail

Configuration Change Detector for z/OS - LPAR/SMFID Specific Changes

LPAR/SMFID Specific:

KEY	Detector Name
ACF	CA-ACF2
TSS	CA-Top Secret
DSM	RACF/DSMON
SVC	System SVCs
VOL	System Volumes
DB2	DB2 Sub-Systems
USR	IPL Date/Time

- LPAR/SMFID Specific Detectors are designed to identify changes within the LPAR boundaries of the z/OS System executing/processing them.
- The ESMs baseline and subsequently identify configuration changes in the established policies that define the activities of the External Security Manager (ACF, Top Secret or RACF) within the SMFID of the executing LPAR.
- The DB2 Change Detector is unique in that it identifies changes in named DB2 Sub-Systems confined to the same LPAR.

Configuration Change Detector for z/OS - NSEDETxx Policy - RACF/DSMON

```
DSMONREPORT ON|OFF

*DSMONREPORT CYCLE(DAILY) TIME(01:15) INTERVAL(1|2|3|4|6|12)
*DSMONREPORT CYCLE(WEEKLY(MON,TUE,WED,SUN)) TIME(12:47)
 DSMONREPORT CYCLE(MONTHLY(EOM)) TIME(01:01)
*DSMONREPORT CYCLE(MONTHLY(DOM(2,20,30,15,22),EOM)) TIME(12:46)

*DSMON REPORT SELECTION USE REPORT(REPORT_NAME)

 DSM REPORT(SYSTEM&|RACSPT&|RACCDT&|RACGAC&|RACUSR&|RACGRP&|RACDST)
 DSM REPORT(RACEXT&|RACAUT&|SYSAPF&|SYSPPT&|SYSLNK&|SYSSDS&|SYSCAT)
 DSM REPORT(SETOPT)

 IFO BLINE(MOVING)   ; SET: FIXED|MOVES|NAMED
*IFO BNAME           ; FULLY QUALIFIED BASELINE DATASET

 DSM JPOST(YES)      ; POST RESULTS TO TCE CONTROL JOURNALS
 DSM CONLY(YES)      ; UPDATE AND REPORT ONLY ON CHANGES
 DSM SAVER(YES,10)   ; NUMBER OF DETAIL REPORTS TO SAVE
*DSM ALTDS           ; SET ALTERNATE WORK DATASET TO (NODE.NODE.NODE)
```

Configuration Change Detector for z/OS - z/OS Target Specific Changes

z/OS Target Specific:

KEY	Detector Name
MOD	Modules
MBR	Members
IOD	IODF Datasets
CSD	CSDS Datasets
HCK	Health Checker
IMS	IMS Parameters

- ❑ z/OS Target Specific Detectors are designed to identify changes within user defined z/OS configuration boundaries.
- ❑ They baseline and subsequently identify configuration changes within one or more defined boundary class (MOD, MBR, ETC.).
- ❑ All but the Health Checker Change Detector focus their activities on user defined Libraries or Datasets Classes. As directed HCK will Detect changes in the State of the Check Findings across the entire z/OS Enterprise.

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Configuration Change Detector for z/OS - NSEDETxx Policy - Library/Modules

```
LOADLIBRARY ON|OFF

 LOADLIBRARY CYCLE(DAILY) TIME(01:15) INTERVAL(1|2|3|4|6|12)
*LOADLIBRARY CYCLE(WEEKLY(MON,TUE,WED,SUN)) TIME(12:47)
*LOADLIBRARY CYCLE(MONTHLY(EOM)) TIME(01:01)
*LOADLIBRARY CYCLE(MONTHLY(DOM(2,20,30,15,22),EOM)) TIME(12:46)

* LIBRARIES WILL BE PROCESSED IN ORDER BY CATEGORY
* DUPLICATE ENTRIES ARE IGNORED

 CTL NIPS1.LOADLIBS  SYS1.SVCLIB                                  VIMVSB
 CTL NIPS1.LOADLIBS  SYS1.NUCLEUS                                 VIMVSB
 CTL LPA01.LOADLIBS  SYS1.LPALIB                                  VIMVSB
 CTL LPA01.LOADLIBS  SYS1.CSSLIB                                  VTMVSC

*BASELINE COMPARE OPTIONS - (ON|OFF)

 CMP ALIAS(ON) ; CMP MSIZE(ON) ; CMP MTTRS(ON)
 CMP MODAC(ON) ; CMP AMODE(ON) ; CMP RMODE(ON)
```

Configuration Change Detector for z/OS - ICE Application Specific Changes

ICE Application Specific:

KEY	Detector Name
MSS	IPL Messages
APF	DSN Authorization
PAK	IPL Packages
XCF	Coupling Facility
PPT	Program Properties
CEW	Controlled Events

- ICE Application Specific Detectors are designed to work in concert with the Sysplex Inspection Reports and Configuration Packages generated by the IFO Background (Production) processes.
- They baseline and subsequently identify configuration changes across one or more Production Sysplex by Image name.
- User controlled Detector Configuration Settings (NSEDETxx) are use to define the IFO background report high-level qualifiers.

Configuration Change Detector for z/OS - NSEDETxx Policy - IPL Messages

```
ZIMAGEFOCUS ON|OFF

 ZIMAGEFOCUS CYCLE(DAILY) TIME(01:15) INTERVAL(1|2|3|4|6|12)
*ZIMAGEFOCUS CYCLE(WEEKLY(MON,TUE,WED,SUN)) TIME(12:47)
*ZIMAGEFOCUS CYCLE(MONTHLY(EOM)) TIME(01:01)
*ZIMAGEFOCUS 1YCLE(MONTHLY(DOM(2,20,30,15,22),EOM)) TIME(12:46)

*TO DEFINE THE SOURCE INSPECTION REPORTS - SET IFODS TO REPORT PREFIX

 IFO IFODS(IFO.IFOBBG.REPORT)
 IFO BLINE(MOVING)   ; SET: FIXED|MOVES|NAMED
*IFO BNAME           ; FULLY QUALIFIED BASELINE DATASET

 IFO JPOST(YES)      ; POST RESULTS TO TCE CONTROL JOURNALS
 IFO CONLY(YES)      ; UPDATE AND REPORT ONLY ON CHANGES
 IFO SAVER(YES,10)   ; NUMBER OF DETAIL REPORTS TO SAVE
*IFO ALTDS           ; SET ALTERNATE WORK DATASET TO (NODE.NODE.NODE)
```

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Configuration Change Detector for z/OS - NSEDETxx Policy - IPL Messages

TCEWEBCYCLE ON|OFF

TCE 7.5 - The Control Editor Event Selection Menu
Report Date:2011/06/22 - 16:16:14
TCEJRL Prefix:IFO.IFOP

-Event Class Selection-		-New-	-Day-	-Week-	-Month-	-Quarter-	-Year-	-All-
Event Class	*Initial Backups*							
Backups	Control List Backups	0	0	0	0	0	233	1428
	Staged Events							
Staged	Controlled Member Changes	0	0	0	0	12	64	161
Detected	Automatically Detected Changes	0	0	10	56	123	332	4178
Submits	JCL Submission Events	0	0	0	0	1	3	10
	Monitored Events							
Dynamic	Operator Command Events	0	0	0	0	51	252	1615
ESM Policy	External Security Manager	0	0	0	0	0	3	31
TCE Parms	TCE Configuration Changes	0	0	0	0	2	5	16
	Exceptions and Notices							
Exeptions	Defined Exceptions	0	0	0	0	0	6	9
Inspections	Sysplex Inspection Postings	0	0	0	0	24	74	343
Notices	TCE Notification Log	0	0	0	0	121	505	1668
	All Events							
All Events	All Controlled Events	0	0	10	56	334	1244	8031

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MODULES - UNDER TSO OPTION 6

ICE Code Snippet

```
CTLDSN = 'SYS1.LPALST' ; MOD = ''

X = LISTDSI("'"CTLDSN"'" DIRECTORY')
IF SYSREASON = '0000' THEN ; CTLVOL = SYSVOLUME
ELSE ; EXIT

DSN_STRING = "'"||CTLDSN||"'" ; VOL_STRING = CTLVOL

ADDRESS TSO
"ALLOC DD(DDCAT) DSN("DSN_STRING") VOLUME("VOL_STRING") SHR"

ADDRESS ISPEXEC
"LMINIT DATAID(SOURCE) DDNAME("DDCAT")"
"LMOPEN DATAID(&SOURCE) OPTION(INPUT)"

DO FOREVER

  "LMMLIST DATAID(&SOURCE) OPTION(LIST) MODULE(MOD)
  STATS(YES)"

  IF MOD = SAVE_MOD THEN ; LEAVE ; SAVE_MOD = MOD

  ZLLIB  =STRIP(ZLLIB)  ;IF ZLLIB  ='' THEN ZLLIB  ='-'
  ZLSIZE =STRIP(ZLSIZE) ;IF ZLSIZE ='' THEN ZLSIZE ='--------'
  ZLTTR  =STRIP(ZLTTR)  ;IF ZLTTR  ='' THEN ZLTTR  ='------'
  ZLALIAS=STRIP(ZLALIAS);IF ZLALIAS='' THEN ZLALIAS='--------'
  ZLAC   =STRIP(ZLAC)   ;IF ZLAC   ='' THEN ZLAC   ='--'
  ZLAMODE=STRIP(ZLAMODE);IF ZLAMODE='' THEN ZLAMODE='---'
  ZLRMODE=STRIP(ZLRMODE);IF ZLRMODE='' THEN ZLRMODE='---'

END

"LMMLIST DATAID(&SOURCE) OPTION(FREE)"
"LMCLOSE DATAID(&SOURCE)" ; "LMFREE DATAID(&SOURCE)"
ADDRESS TSO ; "FREE DD(DDCAT)"
```

ICE Code Snippet

MEMBERS – UNDER TSO OPTION 6

```
CTLDSN = 'SYS1.PARMLIB' ; MBR = ''

X = LISTDSI("'"CTLDSN"'" DIRECTORY')
IF SYSREASON = '0000' THEN ; CTLVOL = SYSVOLUME
ELSE ; EXIT

DSN_STRING = "'"||CTLDSN||"'" ; VOL_STRING = CTLVOL

ADDRESS TSO
"ALLOC DD(DDCAT) DSN("DSN_STRING") VOLUME("VOL_STRING") SHR"

ADDRESS ISPEXEC
"LMINIT DATAID(SOURCE) DDNAME("DDCAT")"
"LMOPEN DATAID(&SOURCE) OPTION(INPUT)"

DO FOREVER

  "LMMLIST DATAID(&SOURCE) OPTION(LIST) MEMBER(MBR)
  STATS(YES)"

  IF MBR = SAVE_MBR THEN ; LEAVE ; SAVE_MBR = MBR

  ZLLIB  = STRIP(ZLLIB)  ;IF ZLLIB  ='' THEN ZLLIB   = '--'
  ZLMOD  = STRIP(ZLMOD)  ;IF ZLMOD  ='' THEN ZLMOD   = '--'
  ZLCDATE= STRIP(ZLCDATE);IF ZLCDATE='' THEN ZLCDATE ='--/--/--'
  ZLMDATE= STRIP(ZLMDATE);IF ZLMDATE='' THEN ZLMDATE ='--/--/--'
  ZLMTIME= STRIP(ZLMTIME);IF ZLMTIME='' THEN ZLMTIME ='--:--'
  ZLCNORC= STRIP(ZLCNORC);IF ZLCNORC='' THEN ZLCNORC ='--'
  ZLMNORC= STRIP(ZLMNORC);IF ZLMNORC='' THEN ZLMNORC ='--'
  ZLUSER = STRIP(ZLUSER) ;IF ZLUSER ='' THEN ZLUSER  = '--------'

END

"LMMLIST DATAID(&SOURCE) OPTION(FREE)"
"LMCLOSE DATAID(&SOURCE)" ; "LMFREE DATAID(&SOURCE)"
ADDRESS TSO ; "FREE DD(DDCAT)"
```

DB2 – UNDER TSO OPTION 6

ICE Code Snippet

```
DB2HLQ = ZPHLQ ; DB2PRM = ZASID' UPDATE_ALL'
TESTDSN = DB2HLQ'.SDSNLOAD(DSNTXAZP)' /* EXTRACT PROGRAM */

X=MSG("OFF") ; ADDRESS TSO; DS=SYSDSN("'"TESTDSN"'") ; X=MSG("ON")
IF DS /= 'OK' THEN ; DO
   SAY '...UNABLE TO LOCATE DB2 EXTRACTION PROGRAM.' ; EXIT ; END

DB2FILE = ZPMBR     /* DB2 SOURCE DSN(MBR) */
ADDRESS TSO
"ALLOC DD(XAINPUT) DS('"DB2FILE"') SHR REUSE"

DB2OUT = IFODSN'.$TCEDB2X.'THSNAME'.DB2WORKS' /* OUTPUT DSN */
ADDRESS TSO
X = MSG("OFF") ; "DELETE '"DB2OUT"'" ; X = MSG("ON")
"ALLOC DD(XAOUTPUT) DA('"DB2OUT"') RECFM(F B) LRECL(80),
BLKSIZE(0) CYL SPACE(2,2) DSORG(PO) DIR(32) NEW REUSE"

DB2OUT = DB2OUT'('DSNTIDXA')'          /* DB2 OUTPUT DSN(MBR) */
"ALLOC DD(XAOUTPUT) DS('"DB2OUT"') SHR REUSE"

DB2PNT = IFODSN'.$TCEDB2X.'THSNAME'.DB2PRINT'
ADDRESS TSO
X = MSG("OFF") ; "DELETE '"DB2PNT"'" ; X = MSG("ON")
"ALLOC DD(SYSPRINT) DA('"DB2PNT"') RECFM(V B) LRECL(256),
BLKSIZE(0) CYL SPACE(2,2) DSORG(PS) NEW REUSE"

ADDRESS TSO ; "IKJEFG00  '"TESTDSN"' '"DB2PRM"'"

IF RC > 0 THEN ; DO
  SAY "DSNTXAZP Extract has failed with Return Code:"RC
  "FREE DD(XAINPUT XAOUTPUT SYSPRINT)" ; X = MSG("ON")
  EXIT ; END

X=MSG("OFF") ; "FREE DD(XAINPUT XAOUTPUT SYSPRINT)" ; X=MSG("ON")
```

SVC – UNDER IFO OPTION 6

ICE Code Snippet

```
LOADNAME = IFODSN".LOAD" ; VACOUNT = 0

SNAP = IFODSN||'.$TCESCVX.SNAP' ; SVCDSN = SNAP

X = MSG("OFF") ; ADDRESS TSO ; DS= SYSDSN("'"SNAP"'") ; X = MSG("ON")
IF DS = 'OK' THEN
  DO ; X=MSG("OFF") ; ADDRESS TSO ; "DELETE '"SNAP"'" ; X=MSG("ON") ; END

"ALLOC DD(SNAP) DA('"SNAP"'),RECFM(V B A),LRECL(125),
BLKSIZE(882),TRACK SPACE(5,2) DSORG(PS) NEW REUSE"

ADDRESS ISPEXEC
"LMINIT DATAID(LOAD) DATASET('"LOADNAME"')  ENQ(SHR)"
IF RC \= 0 THEN
  DO ; SAY '...SVCLOOK FAIL RC:1a...' ;  RETURN ; END

"LIBDEF ISPLLIB DATASET ID('"LOADNAME"') STACK"
IF RC \= 0 THEN
  DO ; SAY '...SVCLOOK FAIL RC:2a...' ; RETURN ; END

PRGM = 'SVCLOOK' ; "SELECT PGM("PRGM")"

"ISPEXEC BROWSE DATASET('&SNAP')”

ADDRESS ISPEXEC ; "LIBDEF ISPLLIB"
ADDRESS ISPEXEC ; "LMFREE DATAID(&LOAD)" ; ADDRESS TSO ; "FREE DD(SNAP)"
```

ICE Code Snippet

```
VOLUME - UNDER IFO OPTION 6

               LOADNAME = IFODSN".LOAD" ; VACOUNT = 0

               OUTLIST = IFODSN||'.$TCEVOLX.UCBLST' ; VOLDSN = OUTLIST

               X = MSG("OFF") ; ADDRESS TSO ; DS= SYSDSN("'"OUTLIST"'") ; X = MSG("ON")
               IF DS = 'OK' THEN
                 DO ; X=MSG("OFF");ADDRESS TSO;"DELETE '"OUTLIST"'";X =MSG("ON") ; END

               "ALLOC DD(VOLPRINT) DA('"OUTLIST"'),RECFM(F B A),LRECL(133),
               TRACK SPACE(30,10) DSORG(PS) NEW REUSE"

               ADDRESS ISPEXEC
               "LMINIT DATAID(LOAD) DATASET('"LOADNAME"')  ENQ(SHR)"
               IF RC \= 0 THEN
                 DO ; SAY '...UCB Chain FAIL RC:2a...' ;  RETURN ; END

               "LIBDEF ISPLLIB DATASET ID('"LOADNAME"') STACK"
               IF RC \= 0 THEN
                 DO ; SAY '...UCB Chain FAIL RC:2b...' ;  RETURN ; END

               PRGM = 'VOLLIST'  ;  "SELECT PGM("PRGM")"

               "ISPEXEC BROWSE DATASET('&OUTLIST')”

               ADDRESS ISPEXEC ; "LIBDEF ISPLLIB"
               ADDRESS ISPEXEC ; "LMFREE DATAID(&LOAD)" ; ADDRESS TSO ; "FREE DD(VOLPRINT)"
```

SETROPTS – UNDER IFO OPTION 6

ICE Code Snippet

```
INDD  = '$$IN' ; OUTDD = '$$OUT' ; ADDRESS TSO

DSNINP = IFODSN'.$TCEDSMX.EXTRACT' ; DSNOUT = IFODSN'.$TCEDSMX.TEMPOUT'

ADDRESS TSO ; X = MSG("OFF") ; "DELETE '"DSNINP"'" ; X = MSG("ON")
ADDRESS TSO ; X = MSG("OFF") ; "DELETE '"DSNOUT"'" ; X = MSG("ON")

"ALLOC DD("INDD")  DSN('"DSNINP"') SPA(1 1) TRA REUSE"
"ALLOC DD("OUTDD") DSN('"DSNOUT"') SPA(1 1) CYL REUSE"

SECPROD = NSIRSEC()

"EXECIO  0  DISKW "INDD"  (OPEN"  ; "EXECIO  0  DISKW "INDD"  (FINIS"
"EXECIO  0  DISKW "OUTDD" (OPEN"  ; "EXECIO  0  DISKW "OUTDD" (FINIS"

X = MSG("OFF") ; ADDRESS TSO ; "NEZSSPI " INDD OUTDD ; X = MSG("ON")

IF RC > 0 THEN
  DO ; SAY 'NEZSSPI Module Returned RACF Extract Error Code - 'RC
    RC = 0 ; RETURN ; END

"FREE DD("INDD")" ; "FREE DD("OUTDD")" ; ADDRESS TSO ; X = MSG("ON")

"ISPEXEC BROWSE DATASET('"DSNOUT"')”

X = MSG("OFF") ; ADDRESS TSO ; "DELETE '"DSNINP"'" ; X = MSG("ON")
X = MSG("OFF") ; ADDRESS TSO ; "DELETE '"DSNOUT"'" ; X = MSG("ON")
```

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z/OS Integrity and Compliance

Today's Agenda

- ❑ The zEnterprise Event Rain Storm
  - The Changing Large System Landscape
  - IBM Investments driving changes
- ❑ The Total Cost of Ownership (TCO)
  - TCO is down but
  - Complexity is up, way up!
- ❑ LPAR Availability - Absolute
  - Old approaches won't work
  - zEnterprise "Rain" sinks boat!
  - Getting ahead of system outages
  - Plan "B" as the alternative.
  - Free Vs. No Charge
- ❑ IBM Health Checker for z/OS
  - What they are
  - Who they are
  - How they work
- ❑ NewEra Change Detectors
  - What they are
  - Who they are
  - How they work
- ❑ Detector Code Snippets
  - Under TSO/ISPF Option 6
  - Under IFO/ISPF Option 6

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Sara Morales, Education Coordinator

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z/OS Integrity and Compliance

zEnterprise Management – That's it folks, all done!

Paul R. Robichaux
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Topic of Interest	EMail Subject
What's New in V1R12/13	Send What's New
IPLCheck - Core	Send IPLCheck
New Release Analysis	Send NRA
Continuing Education Credit	Send CEC

Send Email to – support@newera.com