z/OS Audit Essentials

Using HCD/HCM as the foundation for z/OS System Compliance

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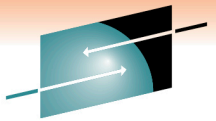
Anaheim Convention Center – Room 207-B
Session Number - 8405

Abstract and Speaker



• To verify actual integrity levels, all information systems, including those based on the z/OS operating system should be continuously monitored in an effort to validate their conformity with established standards. Such standards are often times derived from the following: Common Sense, Best Practices, Operational Policy, Industry and/or Governmental Regulation.

• Today's z/Series Mainframe is a highly adaptable general-purpose computer that can be "shaped" into many different forms, formats and configurations. The process of shaping these flexible platforms into unique computing configurations that meet organizational requirements is the role of the Hardware Planner. In doing this job, individuals are required to exploit the functions of IBM's HCD and/or HCM.

• In this session the presenter will suggest that HCD/HCM and other tools should be viewed as *The Central Control Point* of the zEnterprise Configuration. The role of each configuration element - IODF, IOCP, SWCP and OSCP – will be detailed as will operational Best Practices. Shortcomings in Configuration Monitoring for change is discussed. A plan for remediation is presented with accompanying sample CLISTs that can be used for unlocking IODF informational value, becoming the core of a Change Detection/Reporting System.

• Paul R. Robichaux, CEO, co-founder of NewEra Software, Inc. began his career in large systems computing as an operator and programmer of IBM 407s and 402s. He served as the Chief Financial Officer of Boole and Babbage for the ten years immediately preceding his founding of NewEra in 1990. He holds a BS in Accounting and a Masters in Business Administration from LSU and is a Certified Public Accountant.

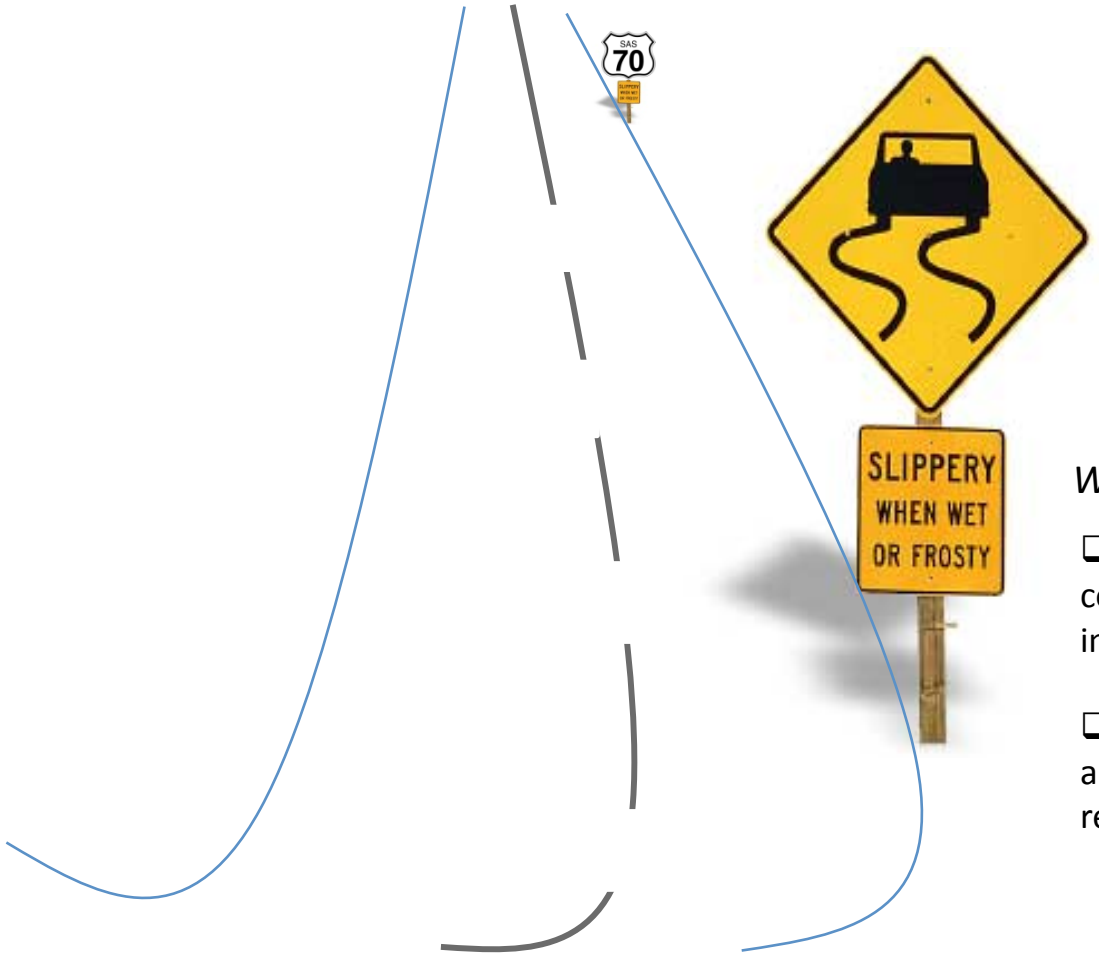
• The corporate mission of NewEra Software is to provide software solutions that help users avoid non-compliance, make corrections when needed and in doing so, continuously improve z/OS integrity.

Presentation Outline

1. Our Mission - (1/4)
   - ✓ What is Compliance?
   - ✓ The Need for Shared Values
   - ✓ Critical Success Factors
   - ✓ System Control Points
   - ✓ Organizational Acceptance
   - ✓ Cost of Implementation
2. Configuration Management HCD/HCM - (3/4)
   - ✓ Understanding the Configurable Elements of the zEnterprise
   - ✓ The role of the IODF, IOCP, OSCP, SWCP and LOADxx Member
   - ✓ The role of HCD/HCM, IODF Dataset Best Practices
   - ✓ Understanding the elements of the IODF – LPAR, CHPID, LCSS, CTLU, DEVICES
   - ✓ Establishing Configuration Management Best Practices
   - ✓ Identifying configuration exposures – Orphan Configurations, LOADxx Members
   - ✓ Dynamic configuration changes – ACTIVATE, VARY
   - ✓ Using CBDMGHCP to unlock the IODF – CLIST Sample Provided
   - ✓ Monitoring the IODF of Configuration Changes
3. Resources, References and Sessions

z/Auditing Essentials - Volume 1
zEnterprise Hardware - An Introduction for Auditors
Edited By Julie-Ann Williams - julie@sysprog.co.uk

Our Mission



Why is this important?

- "The road to complete and sustained z/OS compliance runs through verifiable system integrity."
- "System integrity failures can undermine all business and application controls, rendering them worthless."

Brian Cummings, TATA Consulting

Our Mission

System Compliance Model – What is Compliance?

✓ Compliance - the act of adhering to, and demonstrating adherence to, a standard or regulation.

✓ Compliance - describes the goal that corporations or public agencies aspire to in their efforts to ensure that personnel are aware of and take steps to comply with relevant laws and regulations.

✓ Compliance - operational transparency that results in organizations adopting the use of consolidated and harmonized sets of compliance controls in order to ensure that all necessary governance requirements can be met without the unnecessary duplication of effort and activity.

- Common Sense
- Best Practice
- Personal Preference
- Internal Policy
- Industrial
- Governmental

Our Mission

System Compliance Model – Shared Values:

✓ Accept that contemporary Information Systems and the technical professionals that build, maintain and support them must achieve and sustain the highest levels of system integrity.

✓ Recognize that all Information Systems, including those built upon the z/OS operating system must conform to established standards and are subject to independent review for the purpose of compliance verification.

✓ The adoption of a *System Compliance Model* is *The* critical success factor in understanding and improving the effectiveness of the system review process.

✓ Evangelize the *System Compliance Model to* all *System Stakeholders:* System Users, Management and Compliance Officers as a framework that can efficiently improve, document and demonstrate system compliance.

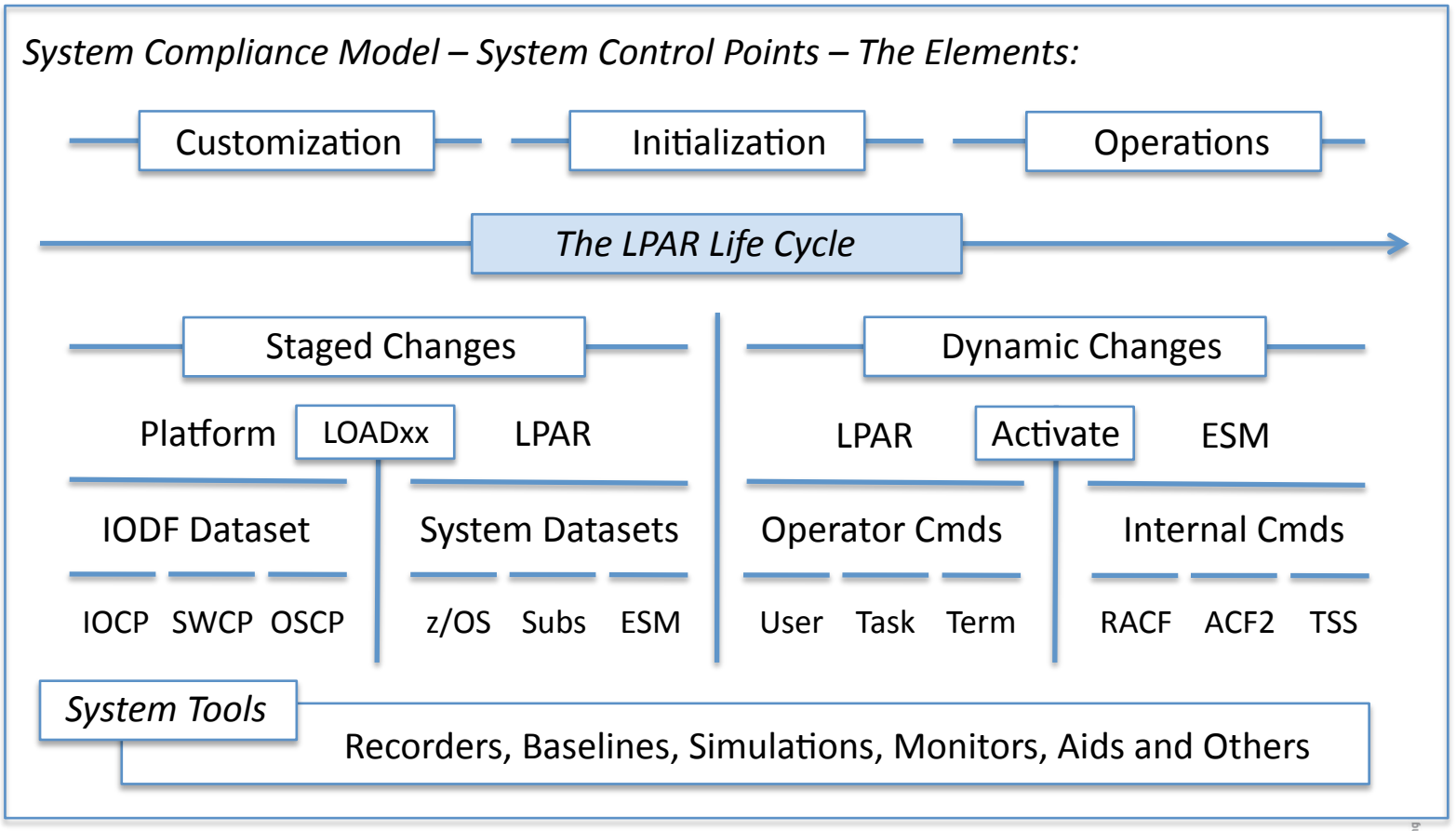
Our Mission

System Compliance Model – Critical Success Factors:

Operational	*Environmental*
✓ People and Training	✓ Care
✓ Separation of Duties	✓ Concern
✓ Control Over the System	✓ Conscience
✓ Process Documentation	✓ Commitment

The adoption of a *System Compliance Model* is *The* critical success factor in understanding and improving the effectiveness of the system review process.

Our Mission

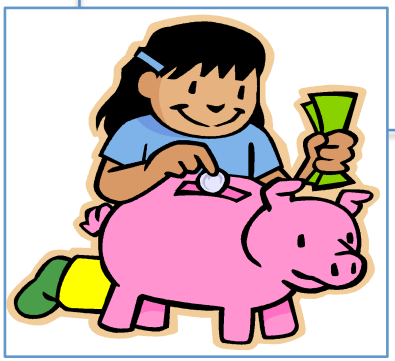

System Compliance Model – System Control Points – The Elements:
Customization
Initialization
Operations
The LPAR Life Cycle
Staged Changes
Dynamic Changes
Platform
LOADxx
LPAR
LPAR
Activate
ESM
IODF Dataset
System Datasets
Operator Cmds
Internal Cmds
IOCP
SWCP
OSCP
z/OS
Subs
ESM
User
Task
Term
RACF
ACF2
TSS
System Tools
Recorders, Baselines, Simulations, Monitors, Aids and Others

Our Mission

System Compliance Model – Cost of Implementation:

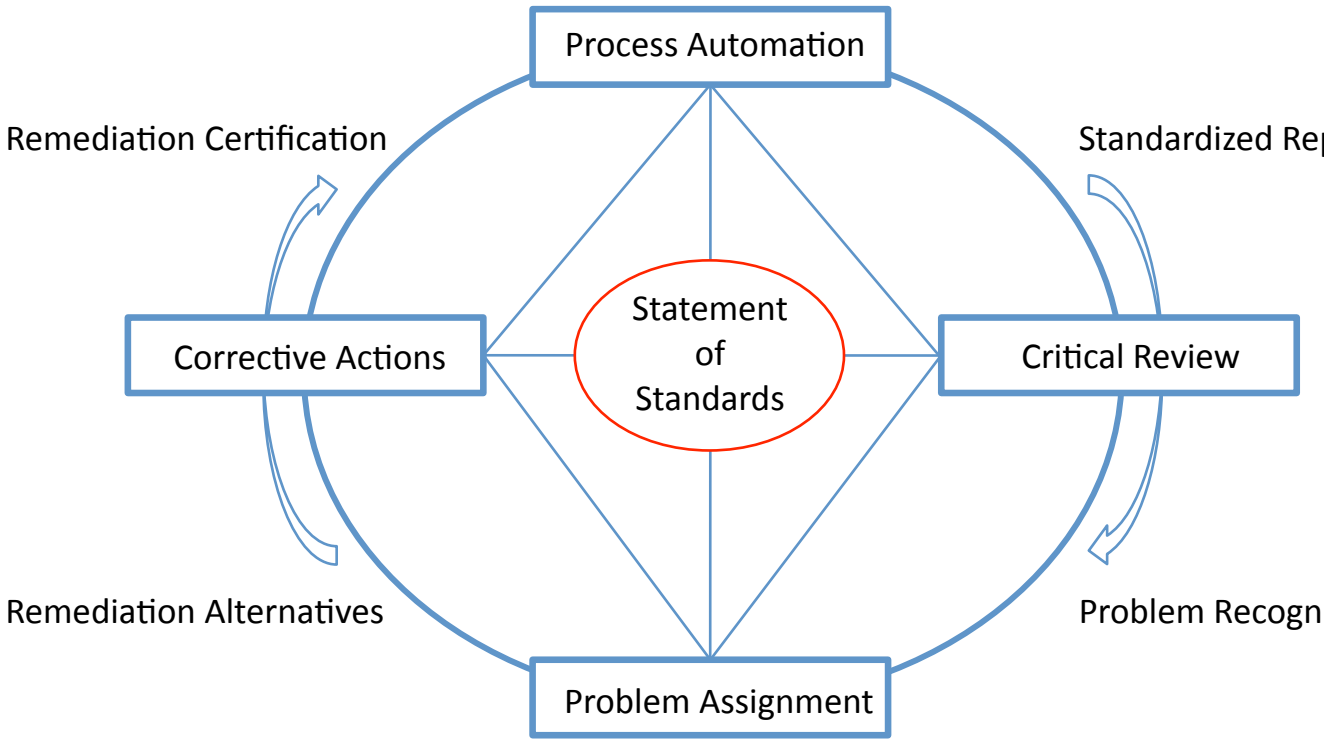
```
       ------ SYS2.IODF4C - 2011-01-31 16:16:27 - LPARS:115 ------

-------------Processors------------ -----------Logical Partitions----------
-Unit- -Modl- --Serial-- cm -ProcId- -Total- -LCSS0- -LCSS1- -LCSS2- -LCSS3-
------ ------ --Number-- -- -------- cm Numb cm Numb cm Numb cm Numb cm Numb
__2097 ___E26 02DBE22097 .. CDC1CFX_ .. ___7 .. ___4 .. ___0 .. ___3 .. ___0
__2097 ___E26 02DBD22097 .. CDC1CF2_ .. ___6 .. ___3 .. ___0 .. ___3 .. ___0
__2097 ___E56 015BD42097 .. CDC1CPL1 .. __16 .. ___3 .. ___0 .. ___0 .. __13
__2097 ___E56 0CDA512097 .. CDC1CPUA .. __18 .. ___2 .. ___0 .. ___6 .. __10
__2097 ___E56 0CDA412097 .. CDC1CPUX .. __13 .. ___1 .. ___0 .. ___0 .. __12
__2097 ___E26 0000002097 .. CF2A____ .. ___4 .. ___2 .. ___0 .. ___2 .. ___0
------ ------ ---------- -- -------- -- ---- -- ---- -- ---- -- ---- -- ----
__2097 ___E56 015BE42097 .. CPUDA___ .. ___8 .. ___7 .. ___0 .. ___1 .. ___0
__2097 ___E56 03D4222097 .. CPUE____ .. __14 .. __11 .. ___0 .. ___3 .. ___0
__2097 ___E56 03D4022097 .. CPUI____ .. __22 .. __14 .. ___8 .. ___0 .. ___0
__2097 ___E56 03D3E22097 .. CPUW____ .. ___7 .. ___2 .. ___5 .. ___0 .. ___0
                         .. _________ .. ____ .. ____ .. ____ .. ____ .. ____
                         .. _________ .. ____ .. ____ .. ____ .. ____ .. ____
```



Our Mission

System Compliance Model – System Control Points – LPAR Monitoring:



Our Mission

System Compliance Model – Acceptance:

Administration

- ❑ Cost Effective
- ❑ Always-On
- ❑ Repeatable
- ❑ Consistent
- ❑ Understandable

Technical

- ❑ Simple Set-up
- ❑ Highly Organized
- ❑ Adaptable Structure
- ❑ Enforces Standards
- ❑ Assures Compliance

Evangelize the *System Compliance Model to* all *System Stakeholders:* System Users, Management and Compliance Officers as a framework that can efficiently improve, document and demonstrate system compliance.

Our Mission

System Compliance Model – System Control Points – Survey:

Phase One Questionnaire:

- ✓ What Industry do you serve?_____
- ✓ What is the employment size of your organization?_____
- ✓ What percentage is z/Series of total IT Budget?_____
- ✓ How many z/Processors? _____How many LPARs?_____
- ✓ What Percentage is z/OS, VM and Linux LPARs?_____ / _____ / _____
- ✓ What is the average z/OS LPAR Life in days?_____
- ✓ Percentage of z/OS Staged to Dynamic Changes?_____ /_____
- ✓ Percentage of z/Platform to z/OS LPAR Changes? _____ /_____
- ✓ Percentage of z/OS LPAR to ESM Changes? _____ /_____
- ✓ Willing to share more about your compliance practices?_____

Get Survey Results:

- ✓ Send Email to – info@newera.com, Subject - Send Survey Results

Configuration Management – HCD/HCM

What's Next?

Considering IBM's HCD/HCM z/Configuration Definition Toolset as a viable component of Compliance Monitoring and a Focal Point for improving overall z/OS Integrity.

Configuration Management – HCD/HCM

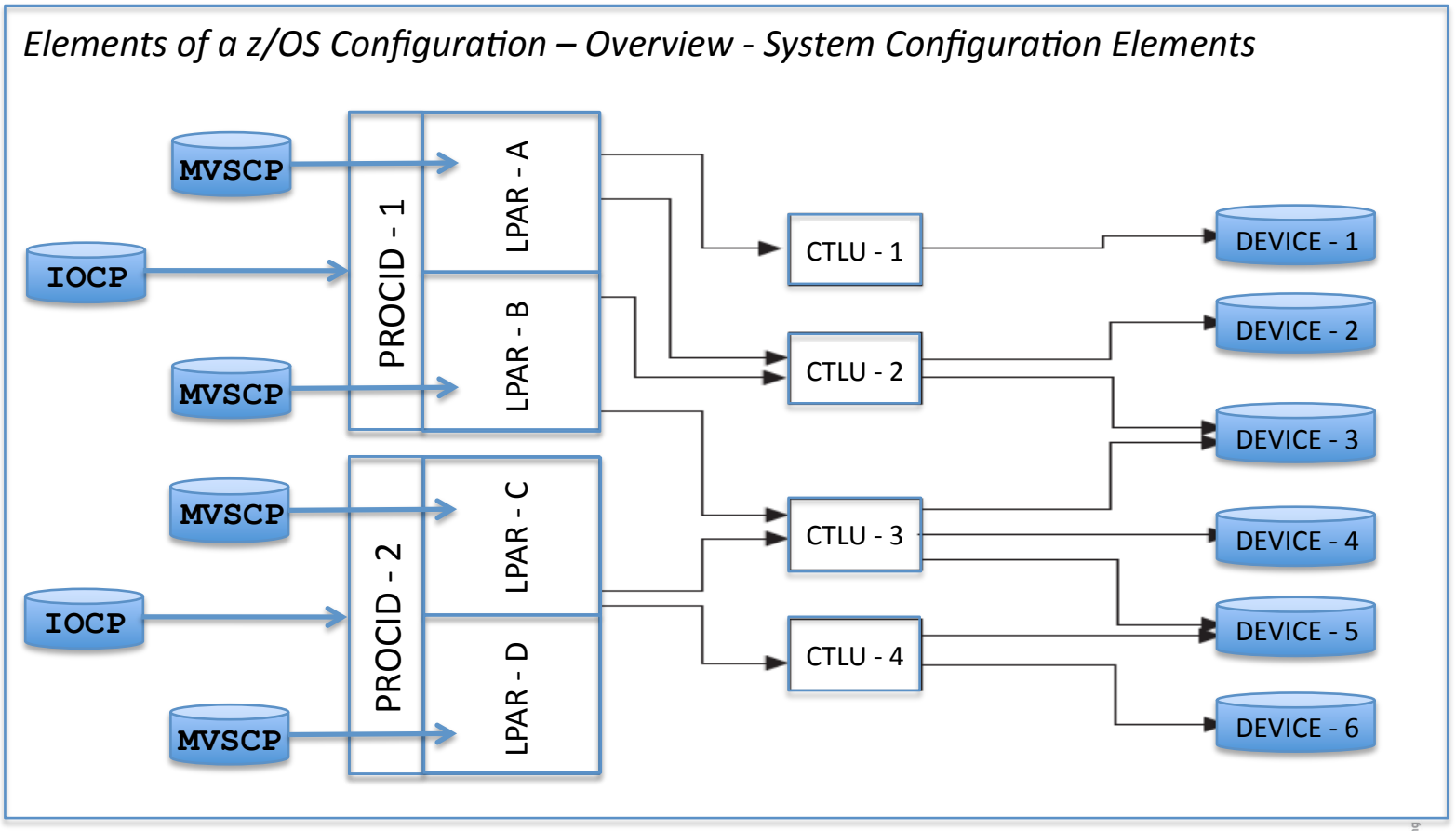
What is the HCD/HCM z/Configuration Toolset?

The z/Platform is a highly adaptable general-purpose computer that can be "shaped" into many different forms, formats and configurations to meet varying needs. Some will use the platform exclusively for the z/OS operating system. Others will split the platform between z/OS and z/VM or z/Linux (a form of UNIX). The process of shaping the z/Series platform into a unique computing configuration that will meet business requirements is the role of the z/Hardware Planner.

In doing their jobs, these skilled technicians use IBM's HCD and/or HCM to create and maintain one or more IODF Datasets, each containing one or more unique hardware and/or software configurations. While powerful and required for their intended purpose, HCD and HCM do not provide the content transparency demanded by the "*System Compliance Model*".

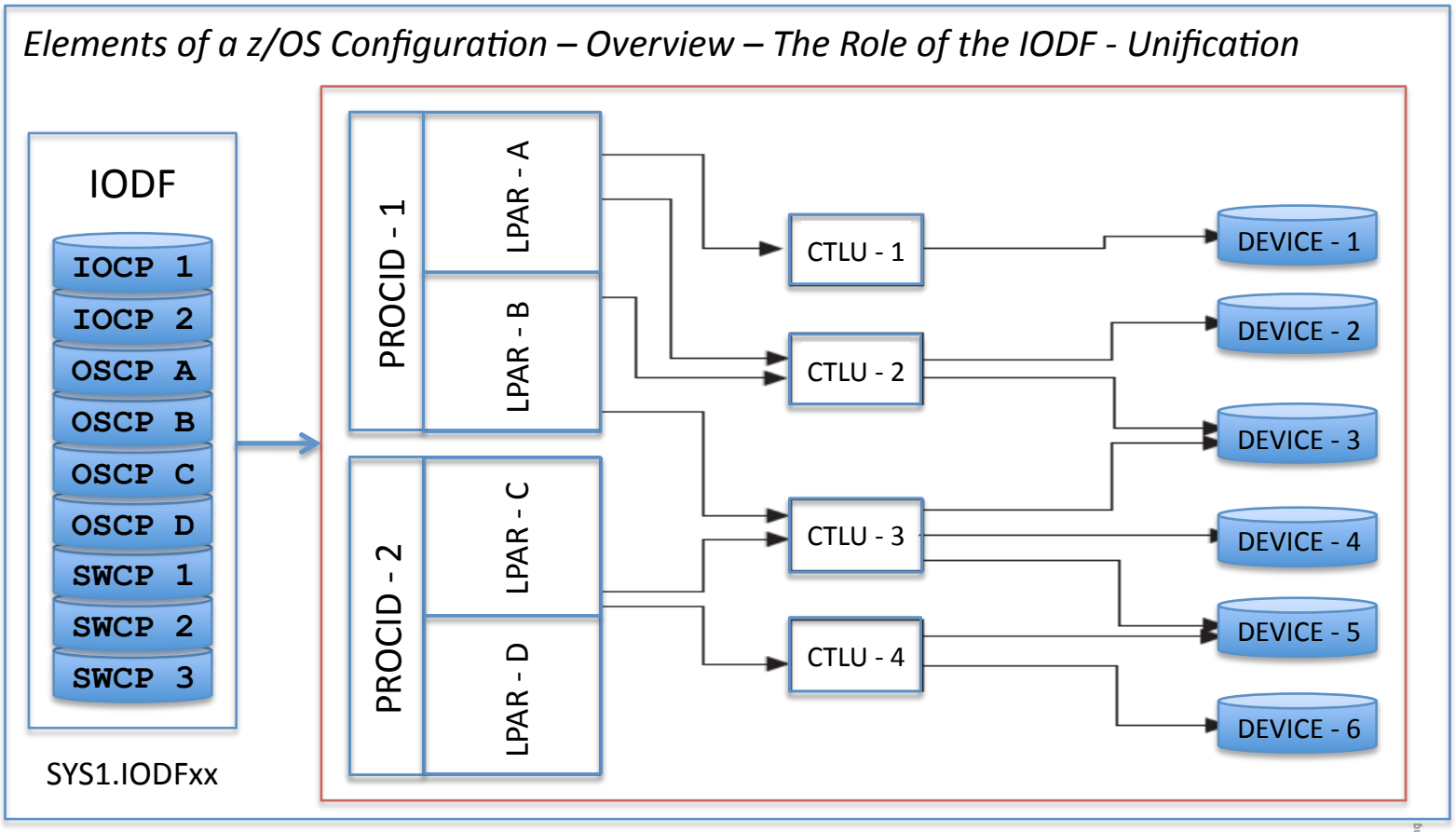
http://publibz.boulder.ibm.com/epubs/pdf/cbdzug80.pdf

Configuration Management – HCD/HCM



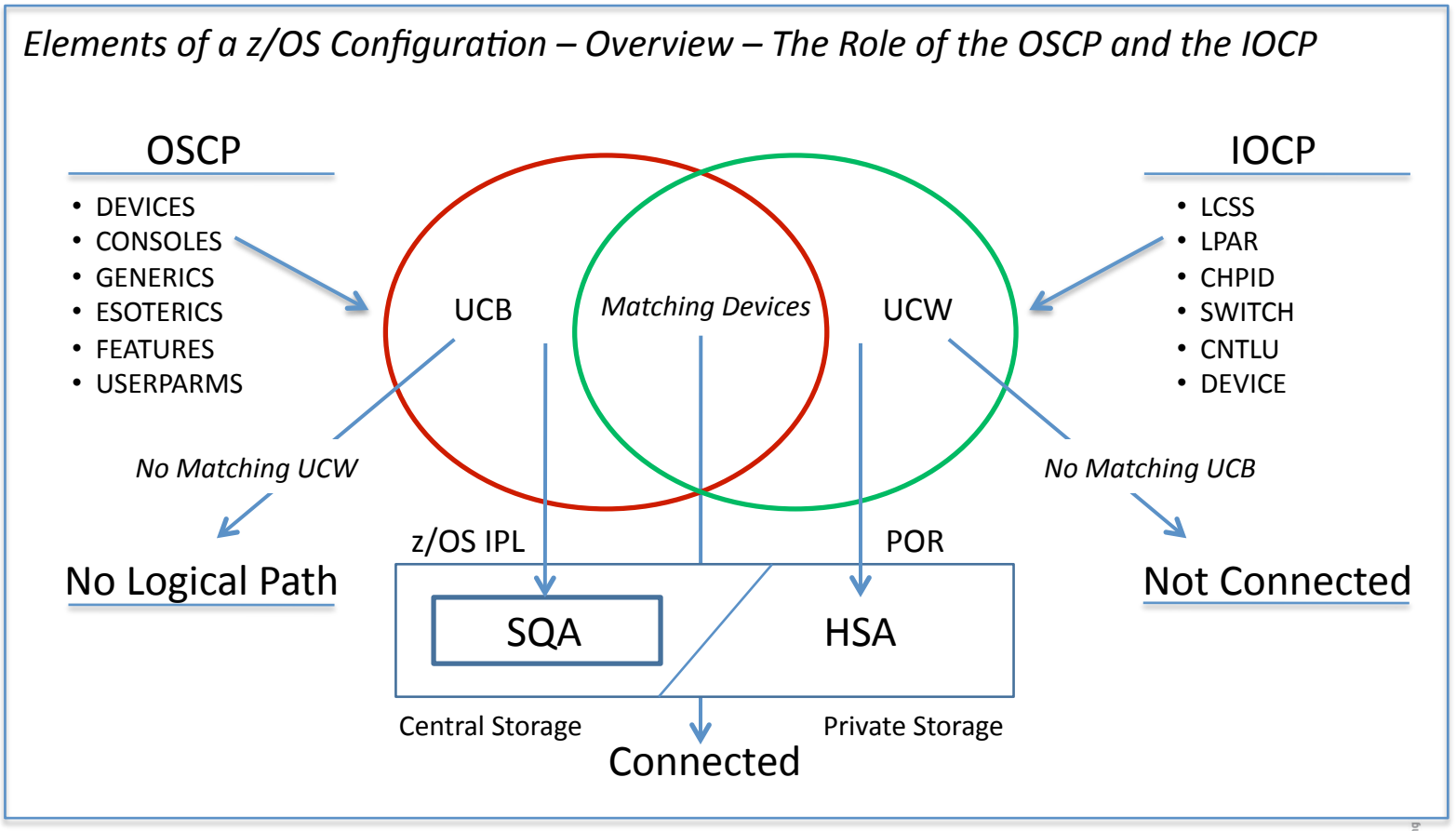
IOCP – Input/Output Control Program
IOCDS – Input/Output Control Dataset
MVSCP – MVS Control Program
PROCID – Processor Identification
LPAR – A Logical Partition
CTLU – Control Unit

Configuration Management – HCD/HCM



IODF – Input/Output Definition File
OSCP – Operating System/MVS Control Program

Configuration Management – HCD/HCM



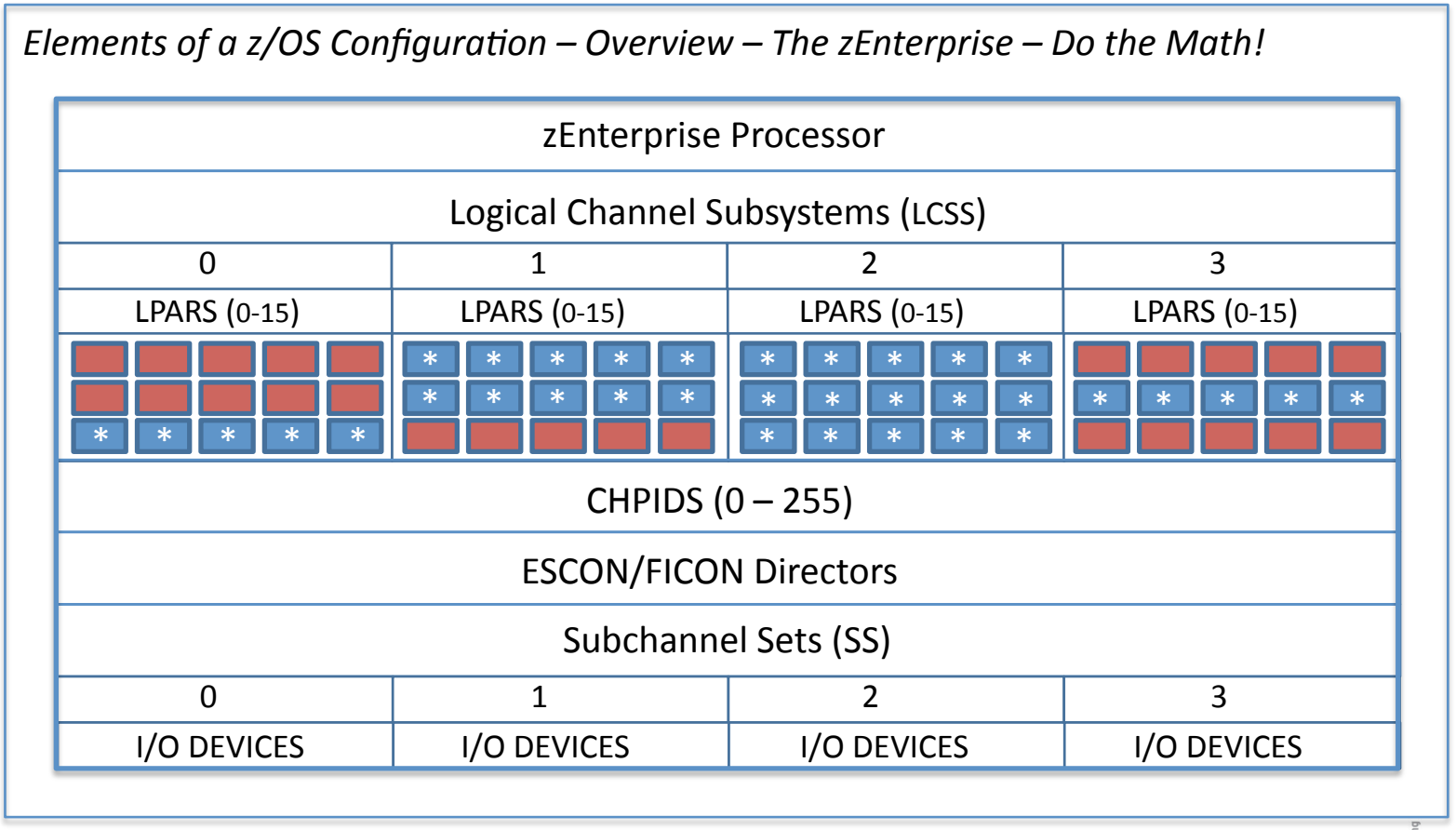
UCB – Unit Control Block
UCW – Unit Control Work
SQA – System Queue Area
HSA – Hardware Storage Area

Configuration Management – HCD/HCM

Elements of a z/OS Configuration – HCD Functional Overview – With Typical Path

Define, Modify, View	CPU	LCSS	LPAR	CHPID	SWID	CTLU	DEV
✓ Operating System (OSCP)			X				
▪ Eligible Device Table (EDT)							X
• Esoteric Devices							X
• Generic Devices – Default, Defined							X
▪ Consoles (NIPS)							X
✓ Switch (SWCP)					X		
▪ Switch Configuration					X		
▪ Ports and Port Matrix					X		
✓ Processor (IOCP)	X						
▪ Channel Subsystem (LCSS)		X					
• Partitions (LPAR)			X				
• Channel Paths (CHPID)				X	X		
✓ Control Unit (IOCP)					X	X	
✓ I/O Device (IOCP)							X
✓ Discovered New (z/2817)					X	X	X

Configuration Management – HCD/HCM



Represents IPLed Logical Partitions – 25 of a possible 60 active

* Indicates Logical Partition has not been Site defined

PAV - Parallel Access Volume

Configuration Management – HCD/HCM

Elements of a z/OS Configuration – HCD Functional – Auto Discovered

- ✓ HCD can invoke the Input/Output Subsystem (IOS) to discover I/O hardware in the current configuration that is accessible to the system. Controllers, Control Units and Devices which are currently not yet defined in either the active or currently accessed IODF can be automatically configured.
- ✓ HCD Auto Configuration presents the discovered Controllers, Control Units and Devices to the user and offers proposals how to configure them. The user can accept or change these definition proposals. On the user's confirmation, the configuration definitions are written to the specified target IODF.
- ✓ HCD Auto Configuration is available with zEnterprise 2817 processors.

Configuration Management – HCD/HCM

Elements of a z/OS Configuration – HCD Functional - Auto Configuration - New Terms

- ✓ Auto Configuration – *Policy*

  Auto Configuration Policies defined as a set of keyword values control the automatic discovery of control units and devices and how they will be attributed to defined Logical Partitions and OS Configuration Groups.

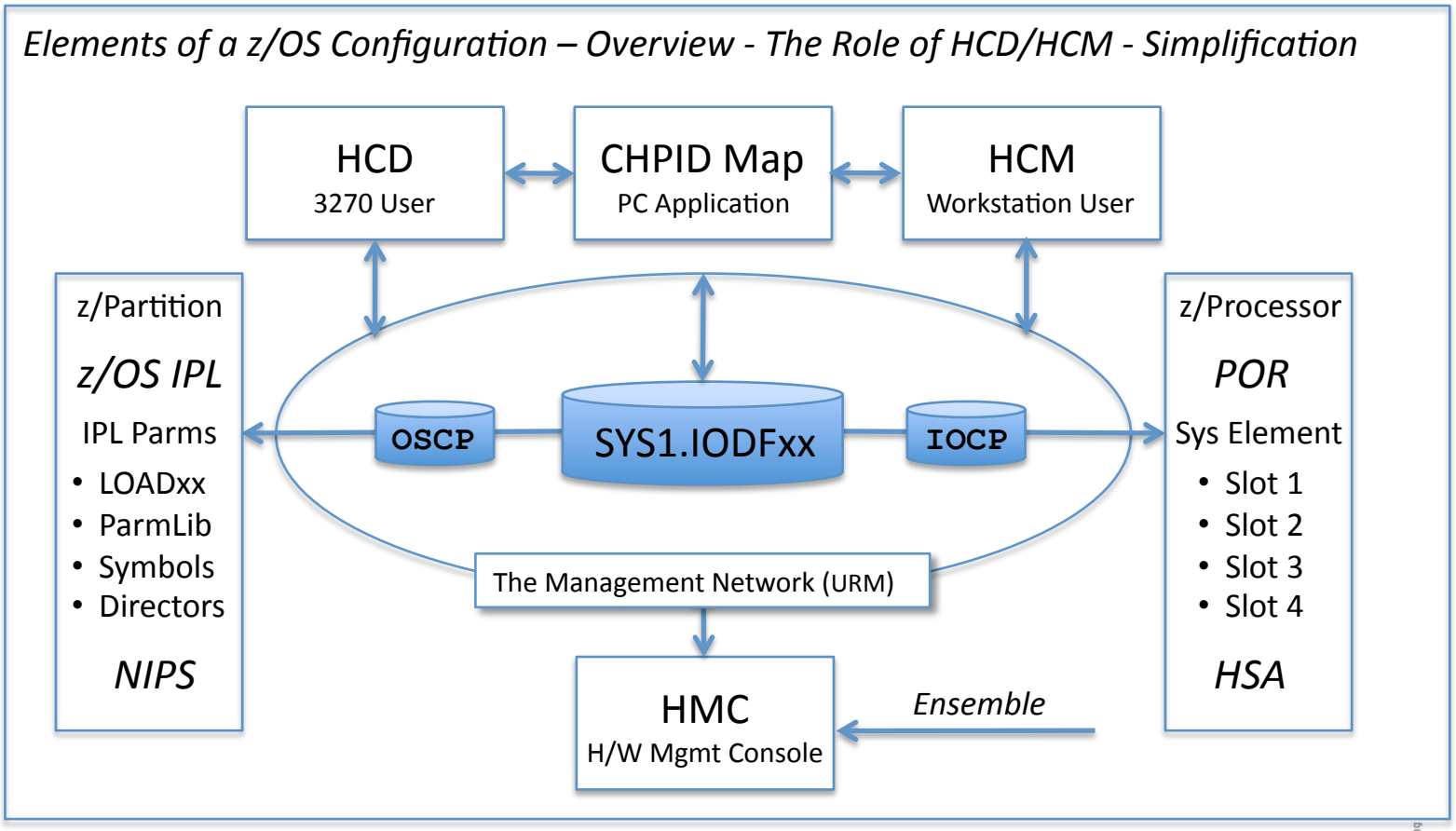
- ✓ Auto Configuration - *Groupings*

  - Logical Partition Groups – LP Group is a set of LPARs in the same sysplex used by Auto Configuration to determine which discovered devices will be assigned to which LPARs.
  - OS Configuration Groups – OS group is a set of OS configurations used by Auto Configuration to determine which discovered devices will be assigned to which MVS.

- ✓ Auto Configuration - *Proposals*

  - Proposed Control Units - A listing of all discovered Control Units which are either not yet defined, or whose definition is different from discovered specifications.
  - Proposed Devices - A listing of proposed Device definition details for existing or new devices accessible by the currently processed discovered control units.

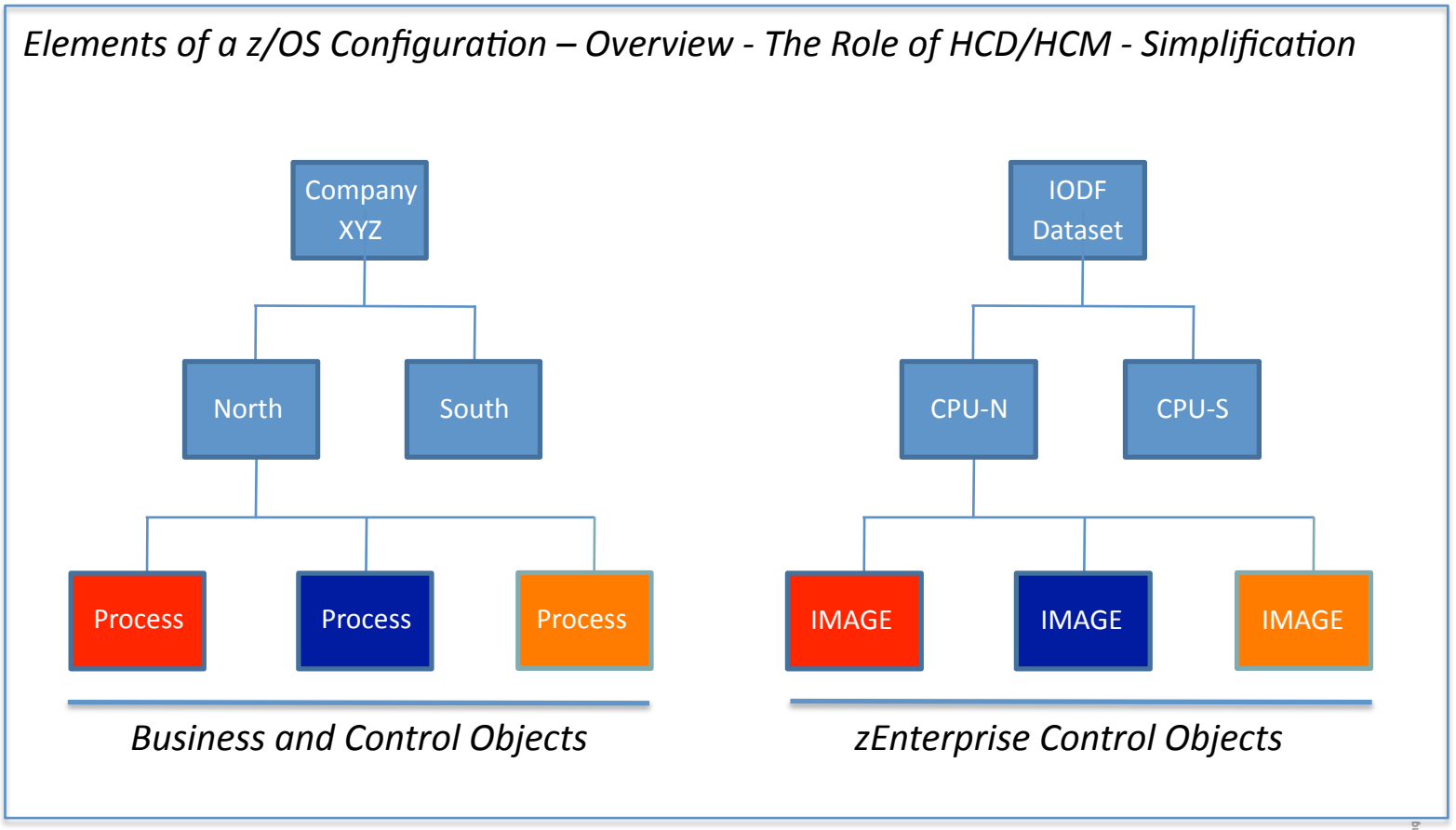
Configuration Management – HCD/HCM



POR – Power On Reset
HSA – Hardware Storage Area
URM – Unified Resource Manager

z/OS IPL – Initial Program Load of z/OS
NIPS – Nucleus Initialization Process

Configuration Management – HCD/HCM



Configuration Management – HCD/HCM

Elements of a z/OS Configuration – Overview – Best Practices

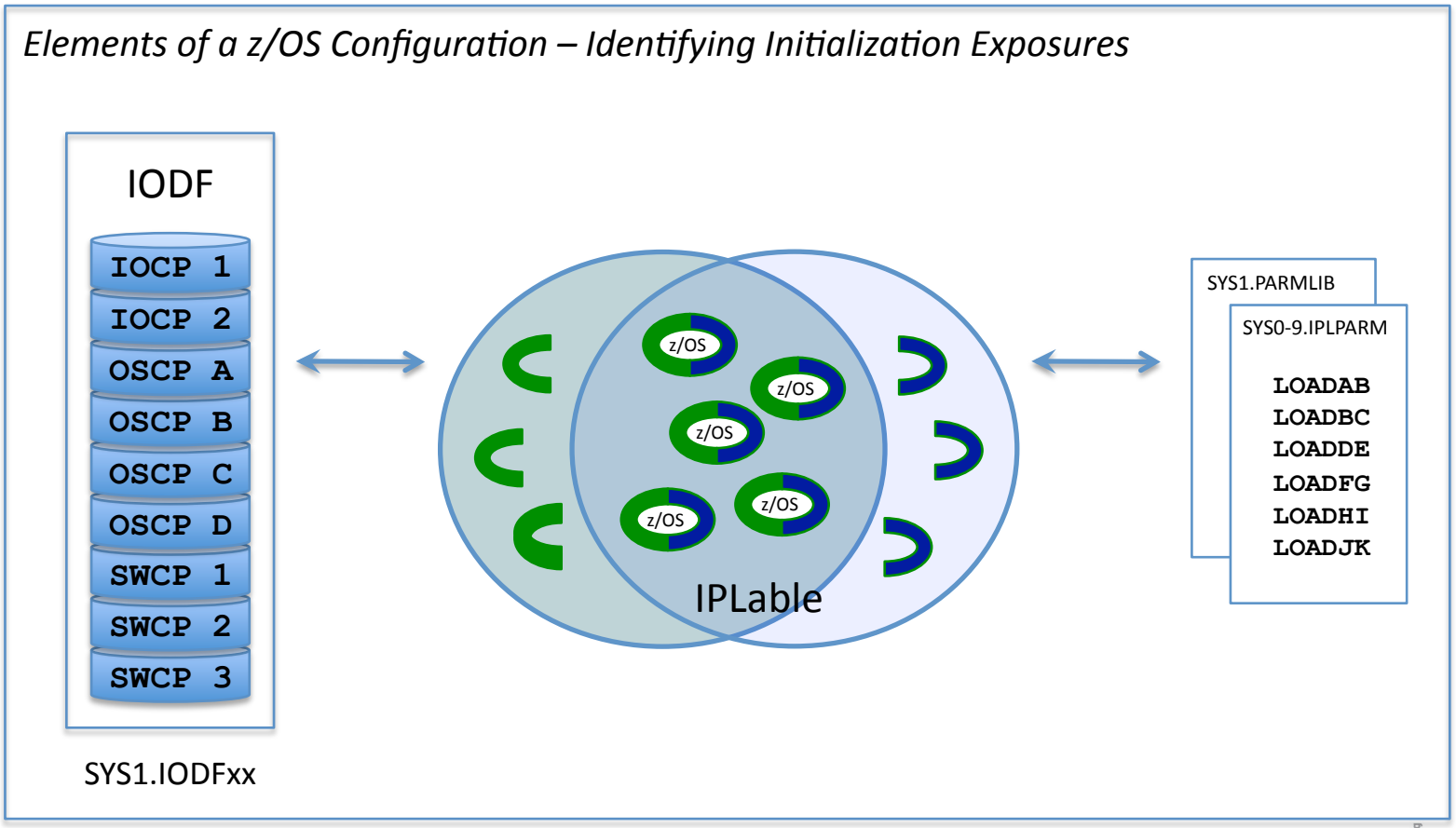
✓ Establish Limits:

- Access to HCD/HCM
- NONE/READ/UPDATE Authority to SYS1.IODFxx
- Access to the Hardware Management Console (HCM)
- Access to the System Element (SE)
- Access to the Management Network (URM)
- Access to LOADxx Members – SYSn.IPLPARM
- Access to System Parameters – SYS1.PARMLIB
- Access to NIPS and System Consoles

✓ Document and Periodically Review Initialization Process:

- Power On Reset (POR)
- Initial z/OS Program Load (IPL)
- Disaster Recovery/Business Concinnity

Configuration Management – HCD/HCM



z/OS - IPLable – OSCP CONFIGID matching those defined in LOADxx Member

- Orphaned OSCP CONFIGID - Orphaned LOADxx Members

Configuration Management – HCD/HCM

Elements of a z/OS Configuration – The Role of the LOADxx Member

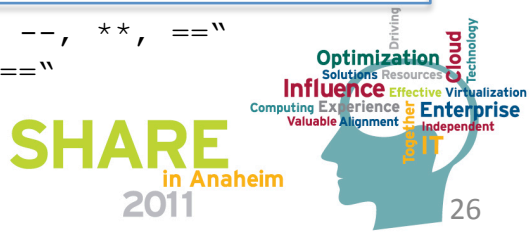
LOADxx supplies base z/OS definitions early on during System Initialization.

```
*---+----1----+----2----+----3----+----4----+----5----+----6----+----7
ARCHLVL  a
DYNCPAAD {ENABLE | DISABLE}
IEASYM   [xx]
         [(xx,yy,zz,...,L)]
INITSQA  xxxxK yyyyK
         xxxxM yyyyM
IODF     xx higualif configid id y
NUCLEUS  n
NUCLST   nn  y
PARMLIB  dsn                                          [volid]
                                                      [******]
                                                      [*MCAT*]

SCHSET   n
SYSCAT   volserxycsdsname                                    hlqtvc
SYSPARM  [xx]
         [(xx,yy,zz,...,L)]
SYSPLEX  plexname
```

01-04 - IODF Keyword
10-11 - IODF Dataset Suffix, if "01" then Dataset name would be IODF01
13-21 - IODF Dataset High Level Qualifier, if "SYS!" then fully qualified name would be SYS1.IODF01
22-29 - OS configuration identifier used to select a named OSCP configuration from the IODF Dataset
31-32 - The Eligible Device Table associated with a named OSCP configuration
34-34 - "Y" to load all IODF defined devices and any other dynamically available devices

```
Special rules apply when: IODF Suffix is specified as "++, --, **, =="
                          IODF HLQ is specified as "========"
If the OS ConfigId not found system enters a wait state
```



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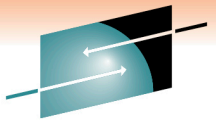
Configuration Management – HCD/HCM



Elements of a z/OS Configuration – Overview – The Role of HCD/HCM

Single Point of Configuration Control and Integrity:

This means that hardware and software definitions as well as Switch definitions can all be done from HCD and can be activated with the data stored in the IODF. In addition, HCD checks configuration data when it is entered, reducing the chance of system outages due to inconsistency in configuration definitions.

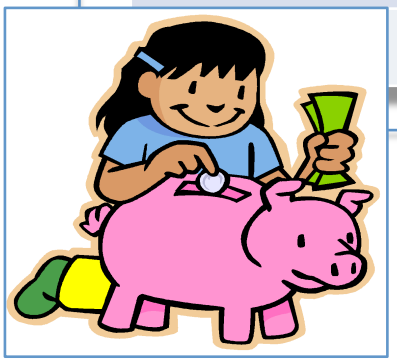
Changing Hardware Definitions Dynamically:

This means that you are allowed to change your hardware and software definitions on the fly - adding devices, or changing devices, channel paths, and control units - without performing a POR or an IPL. You may also perform software-only changes, even if the hardware is not installed.

Configuration Management – HCD/HCM

LPAR Compliance Monitor - Evaluation Criteria

Attribute	Characteristics	HCD/HCM
✓ Automatic	System Controlled Automated Process	N/A
✓ Standards	Site, Industry and Regulatory	Excellent
✓ Actionable	Findings Lead to Actions	N/A
✓ Flexible	Site Customization	Excellent
✓ Extensible	Local and 3rd Party Support	N/A
✓ Transparent	Multiple Methods for Sharing Findings	N/A
✓ Robust	Multi-System, Multi-LPAR Support	Excellent
	Demonstrable ROI	Excellent



Configuration Management – HCD/HCM

Elements of a z/OS Configuration – Overview – Dynamic I/O Reconfiguration

ACTIVATE:

- Use the ACTIVATE command to activate or test a new I/O configuration definition dynamically.
- To ACTIVATE the configuration PROD01, contained in an IODF Dataset with suffix 03, enter the following on the command line and press enter.

```
ACTIVATE IODF=03,CFID=PROD01
```

VARY:

- Use the VARY command to change the ONLINE|OFFLINE status of a Device, Path, Switch and/or Console.

CONFIG:

- Use the CONFIG command to change the ONLINE|OFFLINE status of processors, channel paths and central storage.

Configuration Management – HCD/HCM

Elements of a z/OS Configuration – Overview – Dynamic I/O Reconfiguration

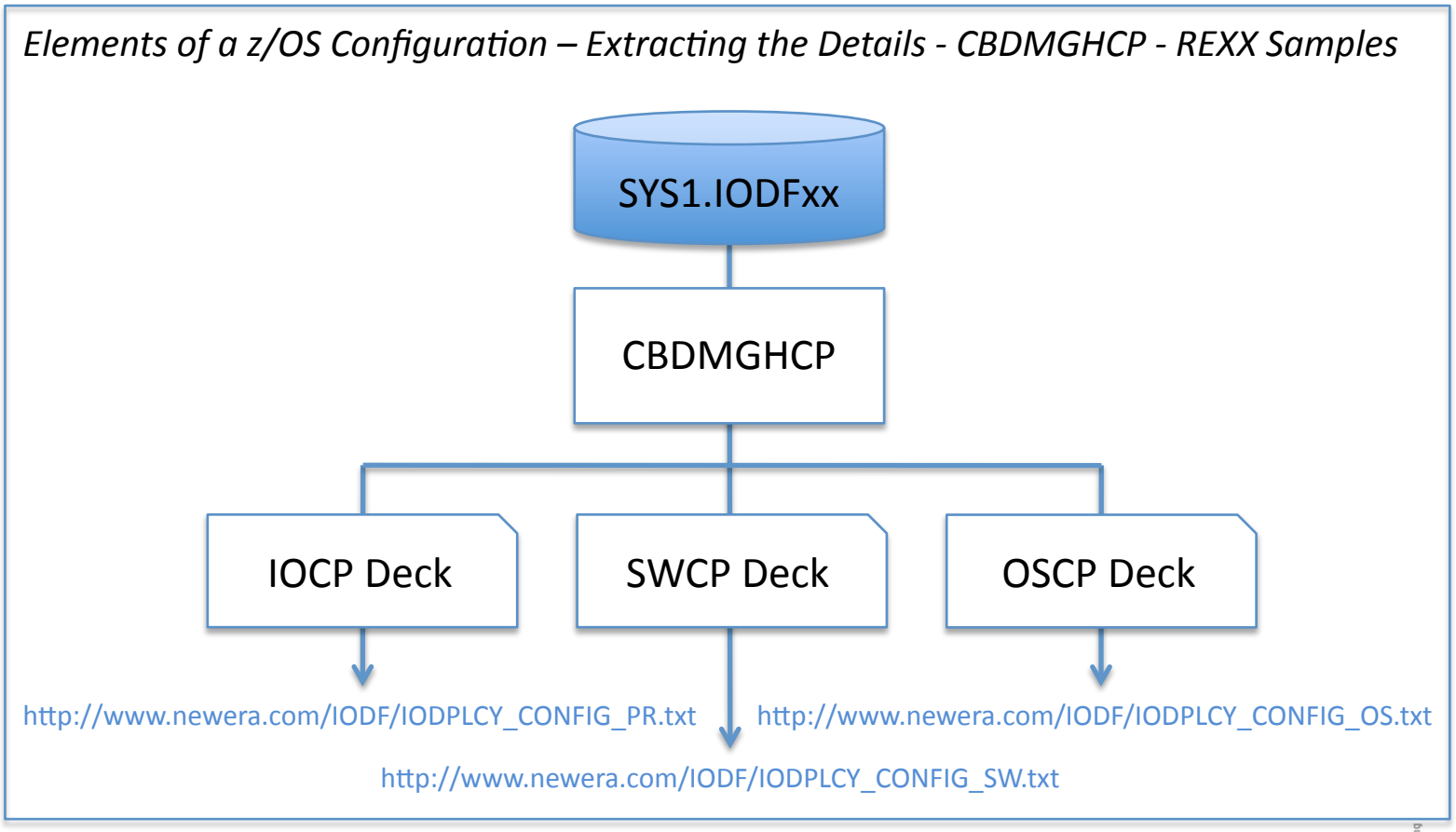
CONFIGxx Member:

✓ Contains a list of control statements that an installation can use to define a standard configuration of system elements. The system elements include:

- Processors
- Vector Facilities
- Storage
- CHPIDs
- Devices
- Volumes

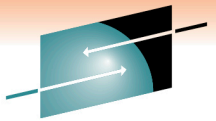
✓ System Operators can use the configuration defined in CONFIGxx to compare the differences between the current configuration and the standard configuration as defined in a CONFIGxx member.

Configuration Management – HCD/HCM



Deck - Named set of Configuration Control Statements in Card Image format

Configuration Management – HCD/HCM



Elements of a z/OS Configuration – CBDMGHCP Extracted IOCP Card Images - Resources

```
                TITLE 'SYS1.IODFxx - 2013-01-01 00:00:00'
*
     ID NAME=CDC1CFx,UNIT=2097,MODEL=E26,                              *
           DESC='Coupling Facility 1 CDC1',SERIAL=02DBE22097,          *
           MODE=LPAR,LEVEL=H080131,LSYSTEM=ONE9330D,                   *
           SNAADDR=(IBM390PS,ONECF1),                                  *
           SCR='CDC1CF1   . .M..p........        09-05-0113:30:05SYS*
           2    IODF4C   '
     RESOURCE PARTITION=((CSS(0),(SYS1,4),(SYS2,F),(SYS3,6),(SYS4,2*
           ),(*,1),(*,3),(*,5),(*,7),(*,8),(*,9),(*,A),(*,B),(*,C),*
           (*,D),(*,E))),MAXDEV=((CSS(0),65280,65535)),                *
           CSSDESCL=('CFB1 CFCP1 CFNZ1'),                              *
           DESCL=('SBPLEX PRODUCTION CF LPAR','Test LPAR CFB1B','TS*
           YS PRODUCTION CF LPAR','CMCY PRODUCTION CF LPAR'),          *
           USAGE=(CF,CF,CF,CF,CF/OS,CF/OS,CF/OS,CF/OS,CF/OS,CF/OS,C*
           F/OS,CF/OS,CF/OS,CF/OS,CF/OS)
     RESOURCE PARTITION=((CSS(1),(*,1),(*,2),(*,3),(*,4),(*,5),(*,6*
           ),(*,7),(*,8),(*,9),(*,A),(*,B),(*,C),(*,D),(*,E),(*,F))*
           ),MAXDEV=((CSS(1),65280,65535)),                            *
```

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Configuration Management – HCD/HCM

Elements of a z/OS Configuration – CBDMGHCP Extracted IOCP Card Images - CHPIDs

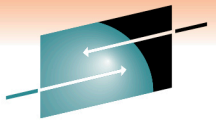
```
CHPID PATH=(CSS(3),FF),                                          *
      PARTITION=((SYSA),(=)), DESC='S3RT',TYPE=ICP               *

CHPID PATH=(CSS(2),05),SHARED,                                   *
      PARTITION=((SYSA,SYSB,SYSC,SYSD),(=)),SWITCH=12,           *
      SWPORT=((12,24)),DESC='DMX3 2500#1 s/n 0330',PCHID=322,    *
      TYPE=FC

CHPID PATH=(CSS(0,3),08),SHARED,                                 *
      PARTITION=((CSS(0),(SYS1,SYS2,SYS3,SYS4,SYS5,SYS6,SYS7     *
      ,TCNB),(=)),                                               *
      NOTPART=((CSS(3),(SYSA,SYSB,SYSC,SYSD,SYSE,SYSF,SYSG      *
      ,TCNB),(=)),                                               *
      SWITCH=83,SWPORT=((83,1F)),DESC='FI',PCHID=322,TYPE=FC     *

CHPID PATH=(CSS(2),56),                                          *
      PARTITION=((SYSA),(SYS1,SYS2,SYS3,SYS4,SYS5),REC),         *
      SWITCH=30,SWPORT=((30,41)),PCHID=3E2,TYPE=FC
```

CHPID - Channel Path Identifier PCHPID - Physical Path Identifier

An ACCESS/CANDIDATE LIST Blocks or Allows LPAR access to a CHPID

A CHIPD may be Dedicated, Shared, Spanned, Reconfigurable

Configuration Management – HCD/HCM



Elements of a z/OS Configuration – CBDMGHCP Extracted IOCP Card Images - Devices

```
CNTLUNIT CUNUMBR=0A70,PATH=((CSS(0),58,59)),UNITADD=((70,16)),*
      LINK=((CSS(3),3011,3111)),CUADD=29,                      *
      DESC='MVS Consoles(AXX,AYY)',UNIT=NOCHECK,               *
      SWPORT=((30,11),(31,11))

IODEVICE ADDRESS=(0A70,6),UNITADD=70,MODEL=X,CUNUMBR=(0A70),   *
      STADET=Y,PARTITION=((CSS(0),SYS1)),UNIT=3270
IODEVICE ADDRESS=(0A76,2),UNITADD=76,MODEL=2,CUNUMBR=(0A70),   *
      STADET=Y,NOTPART=((CSS(0),SYS1)),UNIT=3286
IODEVICE ADDRESS=(0A78,6),UNITADD=78,MODEL=X,CUNUMBR=(0A70),   *
      STADET=Y,PARTITION=((CSS(0),SYS2)),UNIT=3270
IODEVICE ADDRESS=(0A7E,2),UNITADD=7E,MODEL=2,CUNUMBR=(0A70),   *
      STADET=Y,NOTPART=((CSS(0),SYS2)),UNIT=3286

CNTLUNIT CUNUMBR=0F60,PATH=((CSS(0),C6),(CSS(3),C6)),SHARED=N,*
DESC='OSA',UNIT=OSA

IODEVICE ADDRESS=(0F60,15),UNITADD=60,CUNUMBR=(0F60),UNIT=OSA
IODEVICE ADDRESS=(0F6F,1),UNITADD=FE,CUNUMBR=(0F60),UNIT=OSAD
```

The DEVICE CANDIDATE LIST Blocks or Allows LPAR access to a Named DEVICE

Configuration Management – HCD/HCM

Elements of a z/OS Configuration – CBDMGHCP Extracted OSCP Card Images - Devices

```
            TITLE 'SYS1.IODFxx - 2013-01-01 00:00:00

      IOCONFIG ID=00,NAME=PROD01,TYPE=MVS,DESC='PROD01_NEWPLEX'

      IODEVICE ADDRESS=(0A70,6),UNIT=3270,MODEL=X,FEATURE=DOCHAR,    *
            OFFLINE=NO,DYNAMIC=YES,LOCANY=NO,CUNUMBR=0A70
      IODEVICE ADDRESS=(0A76,2),UNIT=3286,MODEL=2,FEATURE=DOCHAR,    *
            OFFLINE=NO,CUNUMBR=0A70
      IODEVICE ADDRESS=(0A78,6),UNIT=3270,MODEL=X,FEATURE=DOCHAR,    *
            OFFLINE=NO,DYNAMIC=YES,LOCANY=NO,CUNUMBR=0A70
      IODEVICE ADDRESS=(0A7E,2),UNIT=3286,MODEL=2,FEATURE=DOCHAR,    *
            OFFLINE=NO,CUNUMBR=0A70

      IODEVICE ADDRESS=(0600,16),UNIT=3480,                          *
            FEATURE=(SHARABLE,COMPACT),OFFLINE=YES,DYNAMIC=YES,      *
            LOCANY=YES,                                              *
            USERPRM=((LIBRARY,NO),(AUTOSWITCH,NO),(MTL,NO)),         *
            CUNUMBR=0603
```

DYNAMIC - Specifies if the device is eligible for dynamic I/O configuration

USERPRM - Specifies DEVICE specific OS private parameters

OFFLINE - Specifies that a DEVICE ON|OFF line at IPL time

Configuration Management – HCD/HCM

Elements of a z/OS Configuration – CBDMGHCP Extracted OSCP Card Images - EDT

```
EDT ID=86
```

Esoterics:

```
UNITNAME NAME=CART,                                              *
      UNIT=((1C00,16),(1C10,16),(1C20,16),(1C30,16),(1C40,16),*
      (1C50,16),(1C60,16),(1C70,16),(1C80,16),(1C90,16),(1CA0,*
      16),(1CB0,16),(1CC0,16),(1CD0,16),(1CE0,16),(1CF0,16))
UNITNAME NAME=VIO,VIO=YES,UNIT=((4000,3),(7000,16))
UNITNAME NAME=ELTAPE,TOKEN=2,                                    *
      UNIT=((1290,16),(12A0,16),(12B0,16),(12C0,16),(12D0,16),*
      (12E0,16),(1390,16),(13A0,16),(13B0,16),(13C0,16),(13D0,*
      16),(13E0,16))
```

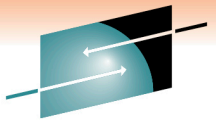
Generics:

```
UNITNAME NAME=3390,VIO=YES,DEVPREF=150                           *
```

Consoles:

```
NIPCON DEVNUM=(0160,0170,0110,0171,0111,0100,0101)
```

Configuration Management – HCD/HCM



Elements of a z/OS Configuration – CBDMGHCP Extracted SWCP Card Images - SWITCH

```
                TITLE 'SYS1.IODFxx - 2013-01-01 00:00:00  '
*
     SWITCH SWID=01,ADDRESS=21,DESC='ABC Director ATM Remote',      *
           PORT=((00,7F),(FE,FE)),UNIT=2032
     PORT ID=02,OCC
     PORT ID=03,OCC
     PORT ID=12,OCC
     PORT ID=13,OCC
     PORT ID=22,OCC
     PORT ID=23,OCC
     PORT ID=31,OCC
     PORT ID=32,OCC
*
     SWITCH SWID=02,ADDRESS=22,DESC='ABC Director ATM Remote',      *
           PORT=((00,7F),(FE,FE)),UNIT=2032
     PORT ID=02,OCC
     PORT ID=03,OCC
     PORT ID=12,OCC
     PORT ID=13,OCC
```

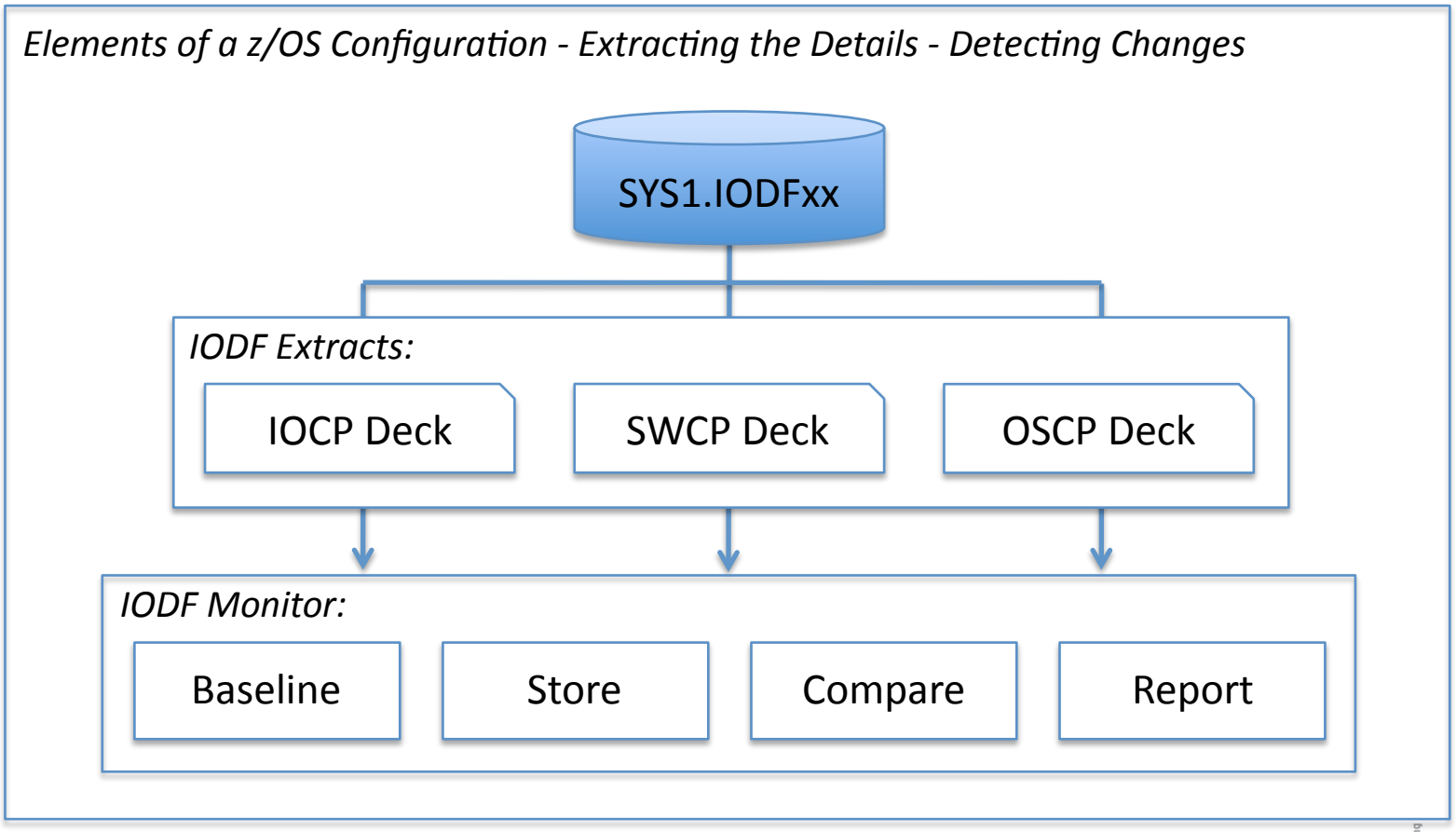
Port Matrix

The SWCP Configuration for a Named PROCID is also embedded in its IOCP

OCC - Indicates that a port has an external connection

SHARE in Anaheim 2011

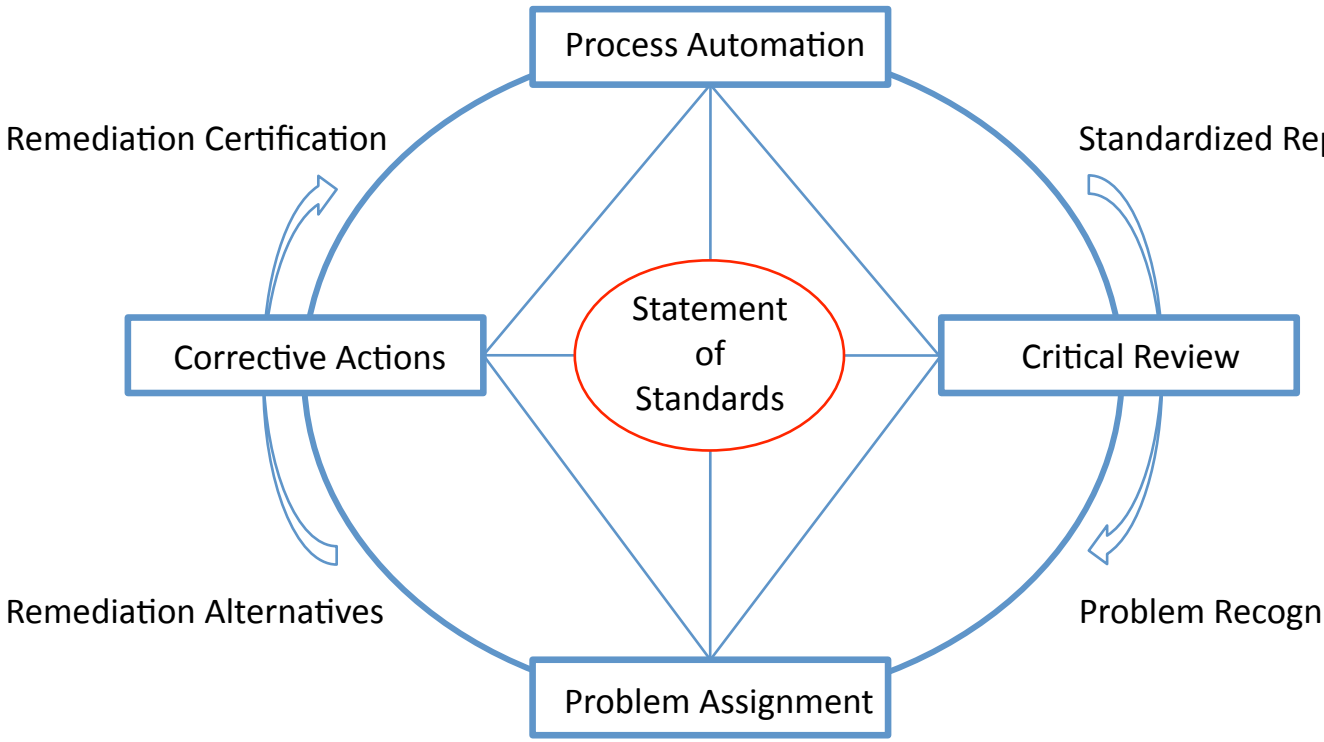
Configuration Management – HCD/HCM



Monitor will detect/report changes from one IODF Baseline to the next

Our Mission

System Compliance Model – System Control Points – LPAR Monitoring:



Presentation Wrap-Up

1. Our Mission - (1/4)
   - ✓ What is Compliance?
   - ✓ The Need for Shared Values
   - ✓ Critical Success Factors
   - ✓ System Control Points
   - ✓ Organizational Acceptance
   - ✓ Cost of Implementation
2. Configuration Management HCD/HCM - (3/4)
   - ✓ Understanding the Configurable Elements of the zEnterprise
   - ✓ The role of the IODF, IOCP, OSCP, SWCP and LOADxx Member
   - ✓ The role of HCD/HCM, IODF Dataset Best Practices
   - ✓ Understanding the elements of the IODF – LPAR, CHPID, LCSS, CTLU, DEVICES
   - ✓ Establishing Configuration Management Best Practices
   - ✓ Identifying configuration exposures – Orphan Configurations, LOADxx Members
   - ✓ Dynamic configuration changes – ACTIVATE, VARY
   - ✓ Using CBDMGHCP to unlock the IODF – CLIST Sample Provided
   - ✓ Monitoring the IODF of Configuration Changes
3. Resources, References and Sessions

z/Auditing Essentials - Volume 1
zEnterprise Hardware - An Introduction for Auditors
Edited By Julie-Ann Williams - julie@sysprog.co.uk

Compliance Resources

Players:

- Brian Cummings - Tata Consultancy Services - brian.cummings@tcs.com
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- David Hayes - U.S. Government Accountability Office - hayesd@gao.gov
- Mark Wilson - RSM Partners - markw@rsmpartners.com

Compliance References

Publications:

- Hardware Configuration Definition User's Guide: V1R12 – SC33-7988-09
- HCD Reference Summary: V1R12 – SX33-9032-05
- MVS Initialization and Tuning Reference – SA22-7592-21
- MVS System Command Reference – SA22-7627-24
- CICS Audit Essentials – Julie-Ann Williams, Mike Cairns, Craig Warren and Martin Underwood
- CICS Best Practices – Julie-Ann Williams, Craig Warren and Martin Underwood
- Mainframe Audit News – Stu Henderson, The Henderson Group
- Information Security – NIST Publication 800-53 – February 2009
- NAIC Model Audit Rules & Implementation – Deloitte
- AUDIT.NET

Compliance References

Join the Peer Review Team:

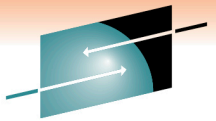
Get Involved – Have Fun!

z/Auditing Essentials - Volume 1
zEnterprise Hardware - An Introduction for Auditors
Edited By Julie-Ann Williams - julie@sysprog.co.uk

Authors:

- Julie-Ann Williams
- Craig Warren
- Martin Underwood
- Steve Tresadern

That's it folks, all done!



Sessions Evaluations - Session Number - 8405

Thank You!

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