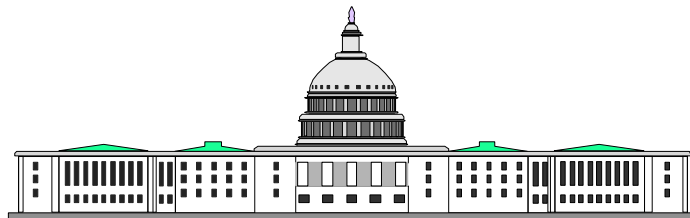


---

# WLM Operational Considerations

**WSC Performance Team  
IBM  
Washington Systems Center  
Advanced Technical Support**

---

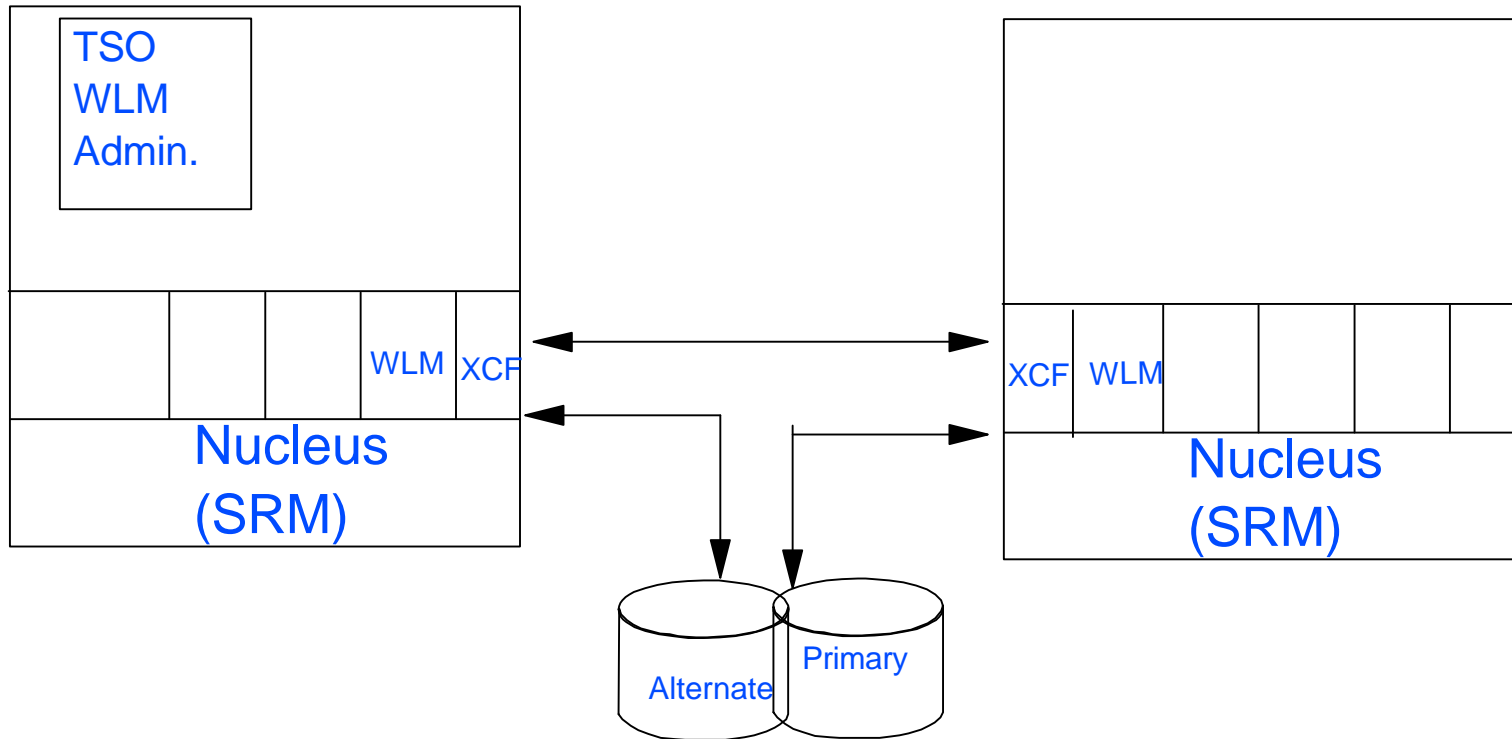


# TOPICS

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- WLM Structure
- Customization Requirements
  - Security
  - WLM
  - XCF
- Functionality Levels
- ISPF Administration Application
  - Initiation
  - Application Level
  - Navigation
  - Utilities
- Console Commands
- Policy Management
- Systems Management
- References

# WLM Structure



WLM Couple Data Sets

# Security Customization

- WLM ISPF Application Protected by SAF Call

**RDEFINE FACILITY MVSADMIN.WLM.POLICY UACC(NONE) NOTIFY(CAPRICE)**

**PERMIT MVSADMIN.WLM.POLICY CLASS(FACILITY) ID(user) ACCESS(READ)  
ACCESS(UPDATE)**

## **Access(READ)**

- Manipulate definition on PDS
- Extract definition from Couple DS
- Display service definition
- Print service definition

## **Access(UPDATE)**

- Same as Read plus
- Allocate WLM couple DS
- Install service definition to Couple DS
- Activate service policy

# WLM Customization

- WLM ISPF Application Allocates Required Data Sets
  - Default Libraries are SYS1.IPCS.SBLxxxx
  - IWMAREX1 Exit Allows User Data Set Names

```
/* REXX */  
queue 'REXXDS(SYS1.COMBINED.ISPFCLIB)'  
queue 'SKELDS(SYS1.COMBINED.ISPFSLIB)'  
queue 'PANELDS(SYS1.COMBINED.ISPFPREP)'  
queue 'TABLEDS(SYS1.COMBINED.ISPFTLIB)'  
queue 'MESSAGEDS(SYS1.COMBINED.ISPFMLIB)'  
Exit 0
```

- Create a REXX Exec to Start WLM

```
/*REXX*/  
SAY 'WLM APPLICATION BEING INVOKED'  
"EXEC 'SYS1.COMBINED.ISPFCLIB(IWMARIN0)' 'EXIT(CAPRICE.WLM.EXIT)'"
```

# XCF Customization

- Allocate the **Initial** WLM XCF Couple Data Sets

- Use WLM Administration Application or

- Batch Job

```
//STEP1 EXEC PGM=IXCL1DSU
//STEPLIB DD DSN=SYS1.MIGLIB,DISP=SHR
//SYSPRINT DD SYSOUT=A
//SYSIN DD *
    DEFINEDS SYSPLEX(SYSPLEX1)
        DSN(SYS1.WLMCDS.PRI)
        MAXSYSTEM(8)
        CATALOG
        DATA TYPE(WLM)
            ITEM NAME(POLICY) NUMBER(10)
            ITEM NAME(WORKLOAD) NUMBER(50)
            ITEM NAME(SRVCLASS) NUMBER(70)
            ITEM NAME(APPLENV) NUMBER(50)
            ITEM NAME(SCHENV) NUMBER(200)
```

- Used to allocate space, not limit items

# XCF Customization

- Enter the following commands to make the Couple Data Sets immediately available to the Sysplex

```
SETXCF COUPLE,TYPE=WLM,PCOUPLE=(SYS1.WLMCDS.PRI)
```

```
SETXCF COUPLE,TYPE=WLM,ACOUPLE=(SYS1.WLMCDS.ALT)
```

- Enter the following statements in the COUPLExx member of Parmlib to make the Couple Data Sets available after an IPL

```
DATA TYPE(WLM)  
      PCOUPLE(SYS1.WLMCDS.PRI)
```

```
DATA TYPE(WLM)  
      ACOUPLE(SYS1.WLMCDS.ALT)
```

# Functionality Levels

---

- A Service Definition has a Functionality Level
- Displayed on Administrative Application **Definition Menu** Panel
- Level number increases if new functions used
- Administrative Application can process any Service Definition at a Functionality level Equal or Less than the WLM Application Level
- All members in the Sysplex must be able to support the functionality level in use



# Functionality Levels

Release	Functionality Level
MVS/ESA SP5.1	LEVEL001
MVS/ESA SP5.2	LEVEL002
OS/390 V1R3	LEVEL003
OS/390 V2R4/5	LEVEL004
OS/390 V2R6	LEVEL006
OS/390 V2R6 + APAR OW33509	LEVEL007

# Functionality Levels

- LEVEL002
  - Classification Rules Using
    - ▶ Collection Name
    - ▶ Correlation Information
    - ▶ Connection Type
    - ▶ Package Name
    - ▶ Plan Name
  - Classification Groups For
    - ▶ Connection Type
    - ▶ Package Name
    - ▶ Plan Name
  - Classification Rule Extensions
  - Service Definition Extensions
- LEVEL003
  - Application Environment
  - Use of Classification Qualifiers
    - ▶ Procedure Name
    - ▶ Perform
    - ▶ Perform Group
  - More than 255 Report Groups
- LEVEL004
  - Scheduling Environment
  - Scheduling Environment Resources
  - Use of Priority Classification
  - Use of SYSTEM & SYSSTC Service Classes in Classification Rules

# Functionality Levels

---

- LEVEL005
  - Reserved
- LEVEL006
  - Use description fields in classification rules or groups
- LEVEL007
  - Use of the PC (process name) classification qualifier

# Application Initiation

At TSO Option 6 Enter WLM

File Help

---

Command ===> \_\_\_\_\_

```
W   W   L       M   M
W   W   L       MM  MM
W W W   L       M M M
WW WW   L       M   M
W   W   LLLLL  M   M
```

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ENTER to continue

# Application Navigation

File Help

---

Command ==>

---

```
EsSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSN
e          Choose Service Definition          e
e
e Select one of the following options.        e
e 2  1.  Read saved definition                e
e      2.  Extract definition from WLM        e
e          couple data set                   e
e      3.  Create new definition              e
e
e F1=Help          F2=Split          F5=KeysHelp e
e F9=Swap          F12=Cancel         e
DSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSM
          ENTER to continue
```

# Application Navigation

File Utilities Notes Options Help

Functionality LEVEL001

Definition Menu

WLM Appl LEVEL004

Command ==>

Definition data set . . . : none

Definition name . . . . . demo (Required)

Description . . . . . WLM Demo Service Definitions

Select one of the

- following options. . . . . 1
1. Policies
  2. Workloads
  3. Resource Groups
  4. Service Classes
  5. Classification Groups
  6. Classification Rules
  7. Report Classes
  8. Service Coefficients/Options
  9. Application Environments

EsaaN  
e Service definition was extracted. (IWMAM036) e  
DsaaM

# Application Navigation

Service-Policy View Notes Options Help

-----  
Service Policy Selection List

Row 1 to 3 of 3

Command ==> \_\_\_\_\_

Action Codes: 1=Create, 2=Copy, 3=Modify, 4=Browse, 5=Print, 6=Delete,  
7=Override Service Classes, 8=Override Resource Groups,  
/=Menu Bar

		----Last Change----		
Action	Name	Description	User	Date
___	DEFAULT	Default Service Policy	CAPRICE	1995/05/10
___	TEMP2	ASKQ Question	CAPRICE	1997/12/03
___	TEMP3	Default Service Policy	CAPRICE	1997/12/03

\*\*\*\*\* Bottom of data \*\*\*\*\*

# Application Utilities

```
File Utilities Notes Options Help
E-----N
e 1. New e Definition Menu WLM Appl LEVEL004
e 2. Open e
e 3. Save e
e 4. Save as e . : none
e 5. Print e
e 6. Print as GML e . . demo (Required)
e 7. Cancel e . . WLM Demo Service Definitions
e 8. Exit e
D-----M
following options. . . . ____ 1. Policies
2. Workloads
3. Resource Groups
4. Service Classes
5. Classification Groups
6. Classification Rules
7. Report Classes
8. Service Coefficients/Options
9. Application Environments
10. Scheduling Environments
```



# Application Utilities

```
File Utilities Notes Options Help
----- E-----N -----
Funct e 1. Install definition e Appl LEVEL004
Comma e 2. Extract definition e
      e 3. Activate service policy e
Defin e 4. Allocate couple data set e
      e 5. Allocate couple data set using CDS values e
Defin D-----M
Description . . . . . WLM Demo Service Definitions
```

Select one of the following options. . . . .  1. Policies  
2. Workloads  
3. Resource Groups  
4. Service Classes  
5. Classification Groups  
6. Classification Rules  
7. Report Classes  
8. Service Coefficients/Options  
9. Application Environments  
10. Scheduling Environments

# Console Commands

```
D WLM[ ,SYSTEM=sysname | ,SYSTEMS ]  
    [ ,APPLENV=applenvname | * ]  
    [ ,SCHENV=schenvname [ ,SYSTEM=sysname | ,SYSTEMS ] ]  
    [ ,RESOURCE=resourcenam [ ,SYSTEM=sysname | ,SYSTEMS ] ]  
    [ ,L={a | cc | cca | name | name-a} ]
```

D WLM

IWM025I 16.33.43 WLM DISPLAY 089

ACTIVE WORKLOAD MANAGEMENT SERVICE POLICY NAME: POLYSAMP

ACTIVATED: 1997/03/12 AT: 09:08:39 BY: MCDON FROM: SYSA

DESCRIPTION: POLYJES Sample

RELATED SERVICE DEFINITION NAME: KMWJEST

INSTALLED: 1997/02/19 AT: 16:01:11 BY: WALSH FROM: SYSA

WLM VERSION LEVEL: LEVEL004

\*\*\*\*\* BOTTOM OF DATA \*\*\*\*\*

# Console Commands

---

```
F WLM, [MODE={GOAL | COMPAT} ]  
      , [RESOURCE=resourcename, {ON | OFF | RESET} ]
```

```
F WLM,MODE=GOAL
```

```
IWM007I SYSTEM SYSA NOW IN WORKLOAD MANAGEMENT GOAL MODE
```

# Console Commands

---

```
E jobname[,A=asid],  
    {SRVCLASS=classname}  
    {QUIESCE|Q           }  
    {RESUME              }
```

```
E CAPRICEL,QUIESCE  
IEE304I CAPRICEL JOB RESET
```

# Console Commands

---

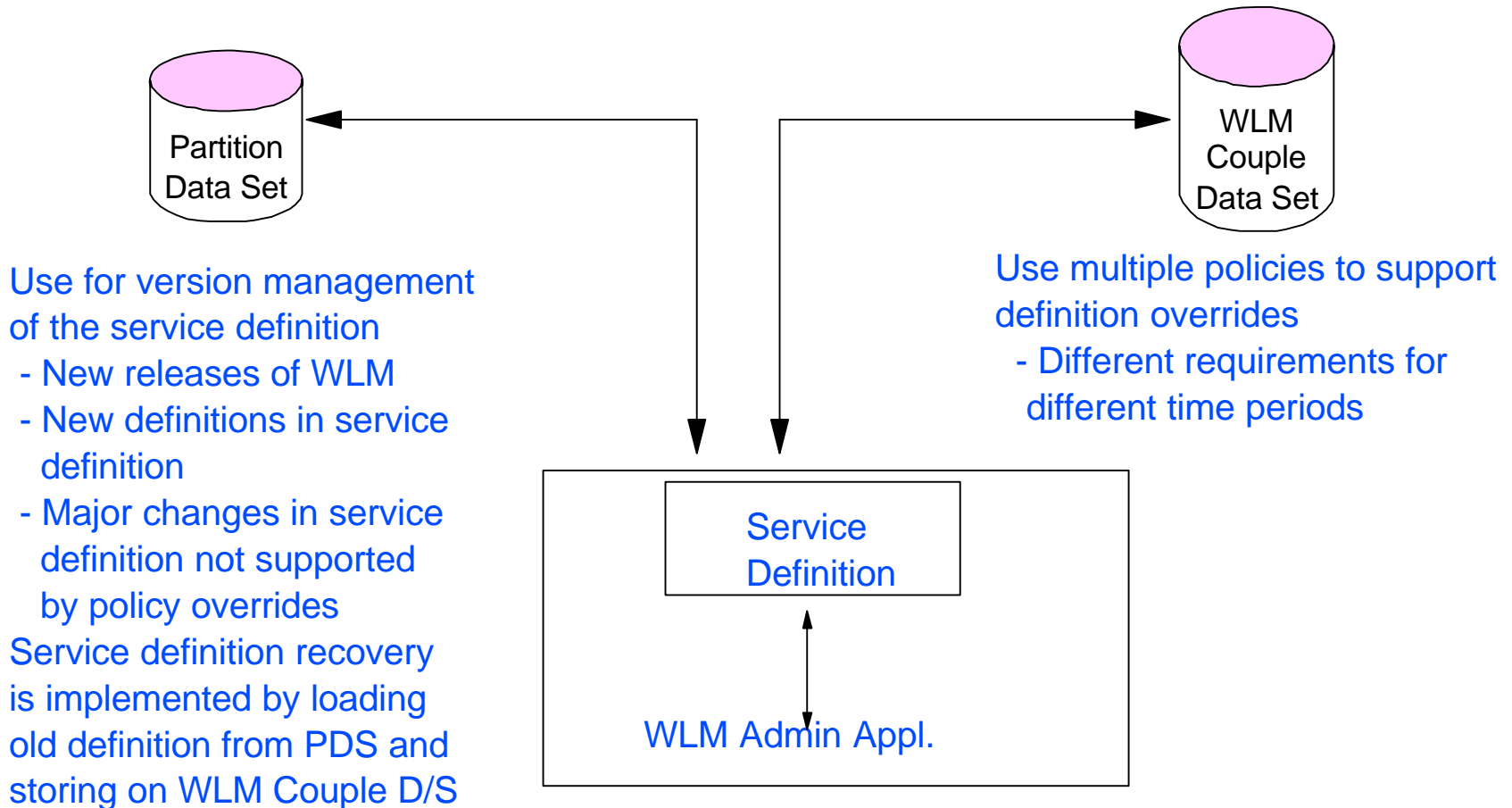
```
V WLM,POLICY=policyname
```

```
V WLM,POLICY=DEFAULT
```

```
IWM001I WORKLOAD MANAGEMENT POLICY DEFAULT NOW IN EFFECT
```

```
V WLM,APPLENV=applenvname, {REFRESH}  
                               {QUIESCE | Q}  
                               {RESUME}
```

# Policy Management



# Systems Management

---

- WLM creates type 99 SMF records to document its decisions. Multiple subtypes:
  - 1 Trace of SRM actions
  - 2 Service class data
  - 3 Service class period plot data
  - 4 Device cluster data
  - 5 Monitored address space data
  - 6 Summary data
- Subtype 1-5 used for defect support
- Subtype 6 intended for user analysis

# Systems Management

---

- SMF 99 records written every 10 seconds
  - Default SMFPRMxx member should **not** record SMF 99 records

`SYS (NOTYPE ( 99 ) )`

- User Analysis SMFPRMxx member should record SMF 99 subtype 6 records

`SYS (TYPE ( 99 ( 6 ) )`



# References

---

- MVS Planning: Workload Management GC28-1761-04
- MVS Programming: Workload Management Services GC28-1773
- MVS System Commands GC28-1781-04
- [HTTP://WWW.S390.IBM.COM/WLM](http://www.s390.ibm.com/wlm)