Keeping Your SYSRES
and HFS Data sets in Synch

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Agenda

- This presentation will show the system programmer techniques to keep the SYSRES and HFS data sets in synch.

- We will walk through a few scenarios using a step by step approach using the common methods employed by system programmers today.

Given:

Assume that you have installed OS/390 on your test machine, including OS/390 UNIX System Services :
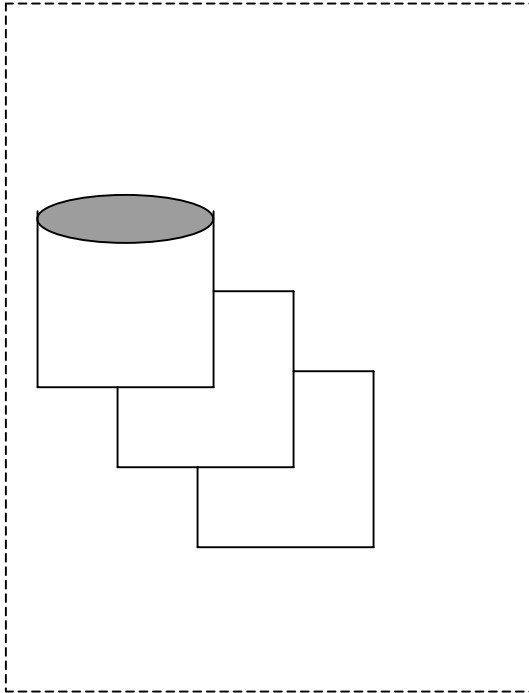
- ServerPac or

- CBPDO
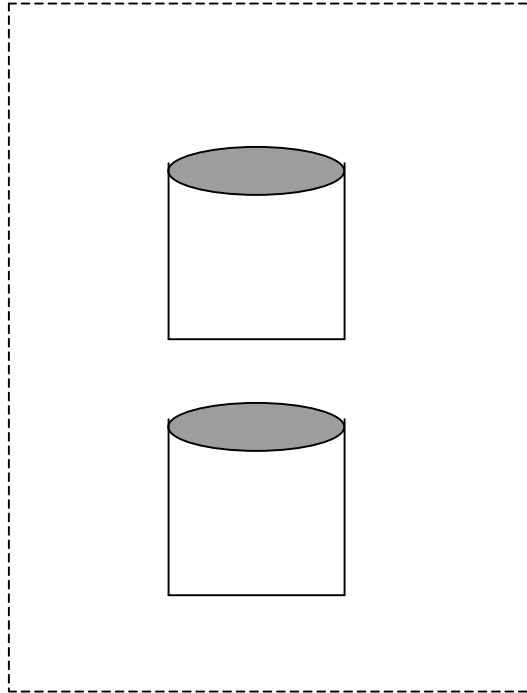
You have performed the minimal customization for:

- Security
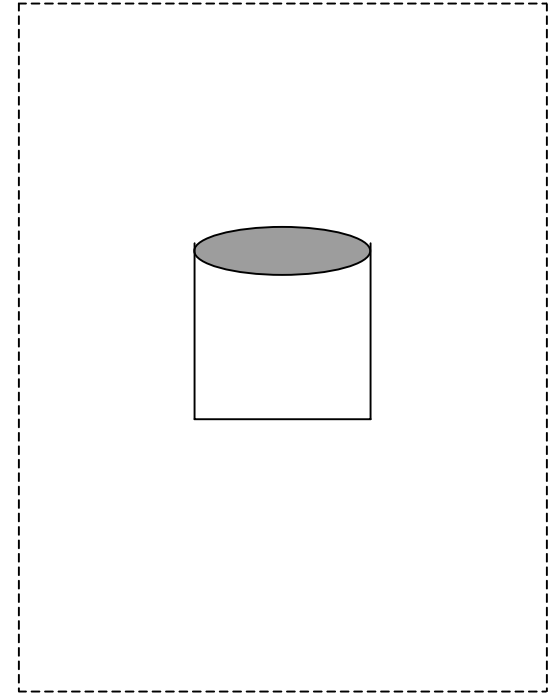
- APPC (if prior to OS/390 R3)

- SMS

System Layout

DLIBs	Target Libraries	SMS Managed

OS390.CSI

System Layout...

Your OS/390 system is now made up of:

- Target data sets residing on two or more SYSRES volumes.

- Distribution data sets residing on two or more volumes.

- Your CSI

- Your system HFS data set(s) residing on an SMS managed pack.

System Layout...

Recommendation:

Define a new Storage Group just for your system HFS data sets.This way user SMS-Managed data sets do not populate the HFS pack.

- The HFS Pack will contain:
    - Root HFS
    - HFS for /etc directory
    - Other HFS data sets for other products

How Do I Clone This System?

1. Move the Target and Distribution data sets as usual:

  •Use DFDSS

    •Full volume dump OR

    •Dump by data set

2. Move over the CSI as usual:
    •Use IDCAMS, if not on target or DLIB packs.

3.Use DFDSS to DUMP the HFS data sets to sequential data sets.

4.Move over operational data sets (ie. PARMLIB, PROCLIB).

Sample DUMP JCL:

```
//******************************************************
//* INPUT HFS NAME: SYS1.OMVS.ROOT
//* OUTPUT SEQ NAME: SYS1.OMVS.ROOT.SEQ
//******************************************************
//DSSREST   EXEC PGM=ADRDSSU,TIME=60,REGION=4096K
//SYSPRINT DD    SYSOUT=*
//SYSABEND DD    SYSOUT=*
//DD1       DD    UNIT=3390,VOL=SER=SMS001,DISP=SHR
//OUT       DD    DSN=SYS1.OMVS.ROOT.SEQ,DISP=(NEW,CATLG,DELETE),
//                UNIT=3390,SPACE=(CYL,(20,10)),VOL=SER=DMP001
//SYSIN     DD    *
  DUMP  LOGINDDNAME(DD1) OUTDD(OUT) COMPRESS SHARE OPT(4) -
  DATASET(INCLUDE(SYS1.OMVS.ROOT)) -
  ALLEXCP ALLDATA(*) TOL(ENQF)
/*
```

Sample RESTORE JCL:

```
//**************************************************************
//* INPUT SEQ NAME: SYS1.OMVS.ROOT.SEQ
//* OUTPUT SEQ NAME: Will create SYS1.OMVS.ROOT, in
//*         STORCLAS=SMS1 and will rename it to SYS1.PRODA.ROOT
//**************************************************************
//DSSREST   EXEC PGM=ADRDSSU,TIME=60,REGION=4096K
//SYSPRINT DD    SYSOUT=*
//SYSABEND DD    SYSOUT=*
//DD1       DD    DSN=SYS1.OMVS.ROOT.SEQ,DISP=SHR,
//                UNIT=3390,VOL=SER=DMP001
//SYSIN     DD    *
  RESTORE DATASET(INCLUDE(SYS1.OMVS.ROOT))-    <== Name of original HFS
  INDD(DD1) -
  TOL(ENQF) -
  STORCLAS(SMS1) -
  RENAMEU(SYS1.OMVS.ROOT,SYS1.PRODA.ROOT) -
  REPLACE CATALOG
/*
```

Alternatives...

An alternative to Step 3 could be to dump the SMS managed pack. However, this assumes, the target system has the same SMS policy and ACS routines.

Other Hints and Tips:

- Some customers use the target zone name as one of the qualifiers of the HFS data set name(s)

- Some customers, use the system name as one of the qualifiers

- Maintain a separate HFS for /etc directory. The /etc directory contains customization information which could be site specific.

How to Maintain Multiple Systems

For target and distribution data sets, you would use the same process as today:

- Specify the UNIT and VOLSER on the allocation of target and distribution data sets

- Use SMP/E ZONEEDIT facility to change the UNIT and VOLSER of DDDEF statements

For HFS data set, you will need to:

- Create a new mountpoint (ie. /OS390R2). This is what we know and document as the /SERVICE process.

How to Maintain Multiple Systems...

- Create separate HFS data set(s) with different names, since HFS data sets are SMS managed and need to be cataloged.

- Change the $root variable in various MKDIR Exec's.

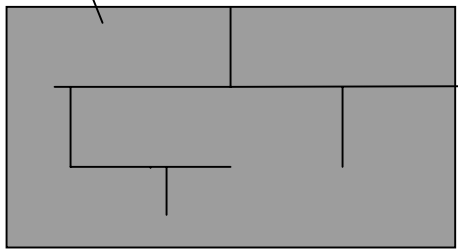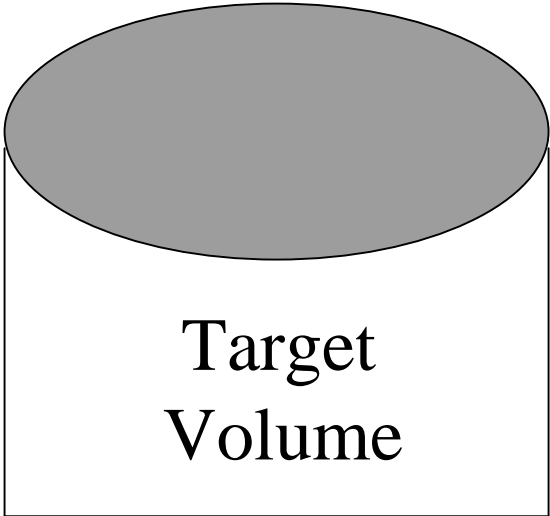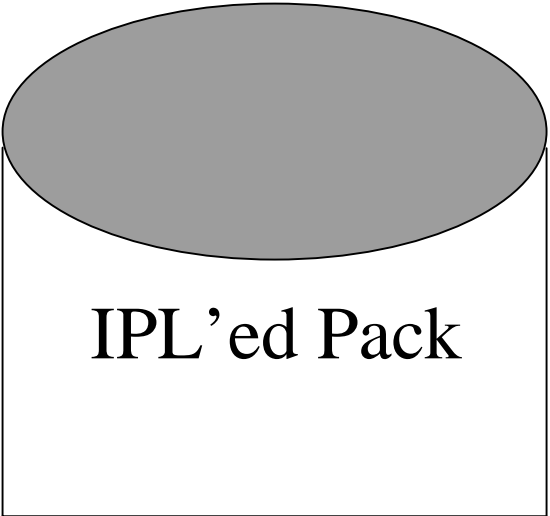- Use SMP/E ZONEEDIT facility to change the 'PathPrefix' of all the DDDEFs to match that of your mountpoint.

Sample ZONEEDIT:

```
//* Change the two occurances of the string -PathPrefix- to the
//* appropriate high level directory name. Please note the
//* replacement string for -PathPrefix- is case sensitive and
//* should end in a slash  (/).
//*
//* The first ZONEEDIT will change all DDDEF PATH= back to the
//* root. The second will change them back.
//*
    SET BDY(tzone).
    ZONEEDIT DDDEF.
    CHANGE PATH('-PathPrefix-'*,
              '/'*).
    ENDZONEEDIT.

    SET BDY(tzone).
    ZONEEDIT DDDEF.
    CHANGE PATH('/'*,
              '-PathPrefix-'*).
    ENDZONEEDIT.
```
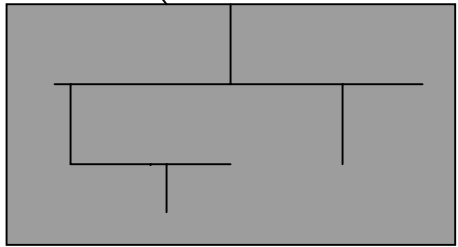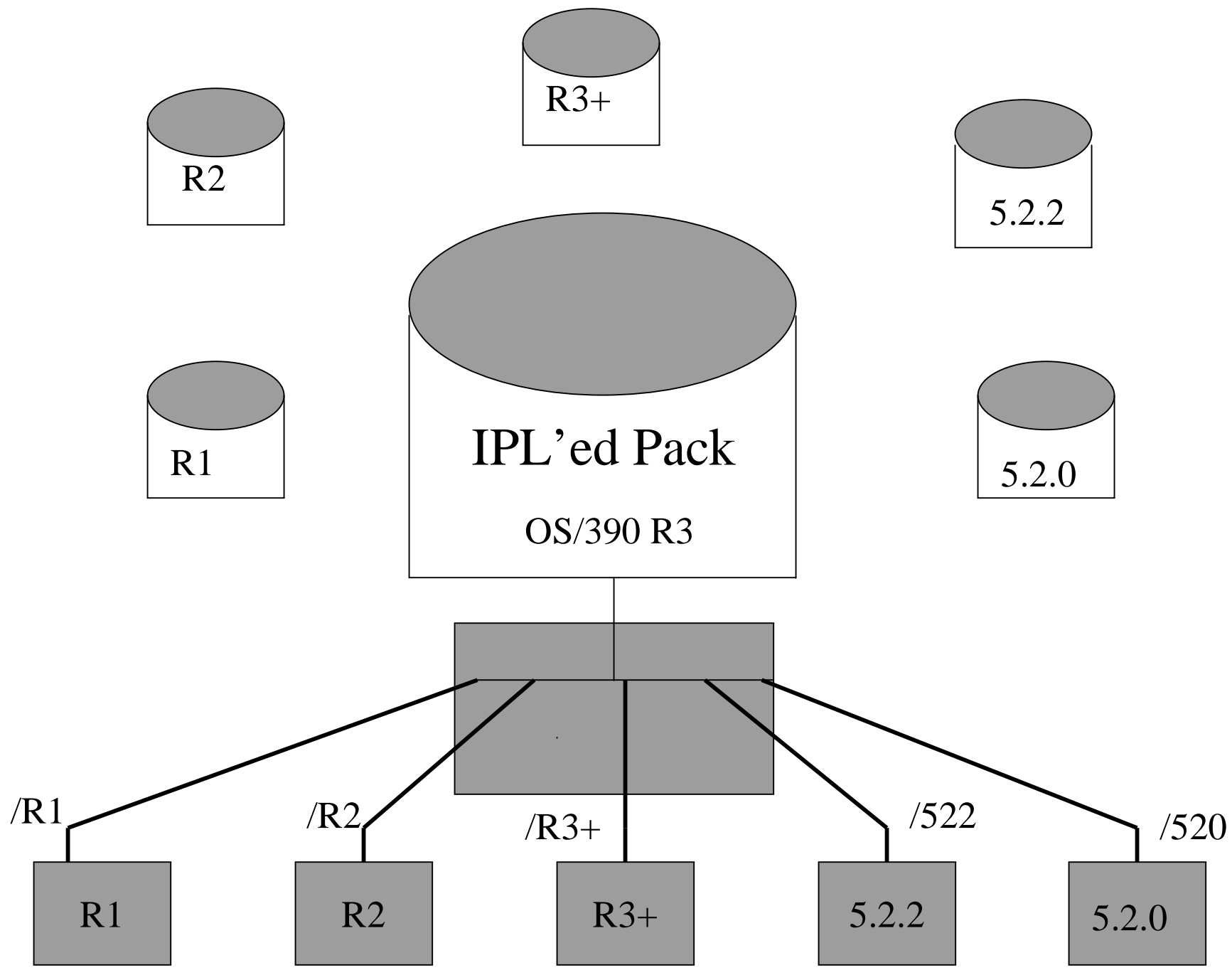
R2

R3+

5.2.2

R1

IPL'ed Pack

OS/390 R3

5.2.0

/R1

/R2

/R3+

/522

/520

R1

R2

R3+

5.2.2

5.2.0

Things to do on Production System

1. Make machine specific changes in the customization files under /etc.

- Remember you have a separate HFS for /etc

2. The next time you bring over the HFS data sets:

- Replace the root HFS with the new one.
- Continue to use the same HFS for /etc. The only new things in the new ETC HFS could some new directories.

3. Mount the new ETC HFS on a new mount point and _merge_ the new ETC HFS into the old using 'cp -R' or 'pax' utilities.

Improvements IBM is Making

1. Packaging Standards:

   • Consistent sample jobs (ie. the MKDIR job to create directories)

   • Support of the /SERVICE directory for all products.

   • Common place to put customized files (ie. in /etc) to allow carrying over of customization data from release to release.

Improvements IBM is Making

2. In OS/390 R6, ServerPac ship only into the root HFS for OS/390 elements.

- ServerPac will also ship an HFS for /etc directory.

CBPDO will provide an document a job to allocate the root and /etc HFS data sets.

3. Shipment standards

- No files or directories will be created in /var or /tmp directories. In addition, /etc will only have directories and no SMP/E installed files.

Future Improvements…

4. Eliminate the need to perform installation, customization, and maintenance from UID=0 user ID.

5. Provide symbolic link support
   • Symbolic links should be managed by SMP/E just as hardlinks are today.

6. Remove other post-install jobs (ie. the TCP/IP archive job).

7. Improvements in Program Directory and Server Pack Install Guide, by providing more samples, better examples etc ...

Conclusion

• Keeping your SYSRES and HFS data sets can be relatively simple or quite complex, but can be managed by existing utilites and processes.

•There are many improvements IBM will be making to help out systems programmers in future releases.

• If you have any ideas regarding system programmer activity and installation, please contact:
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