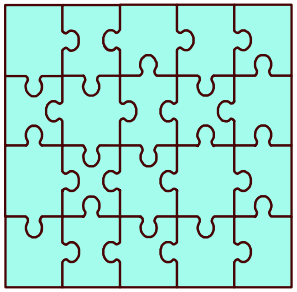
RACF and the Parallel Sysplex

New York RACF User's Group

April 4th, 2006
New York City



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Objectives:

- Understand the Sysplex Environment
- Implement RACF Sysplex Communication
- Implement RACF Sysplex Data Sharing
- Understand the Recovery Modes available
- Describe the steps to define the Coupling Facility Policy for RACF

RACF Sysplex Support Objectives

Performance

- Reduce Contention for RACF Database

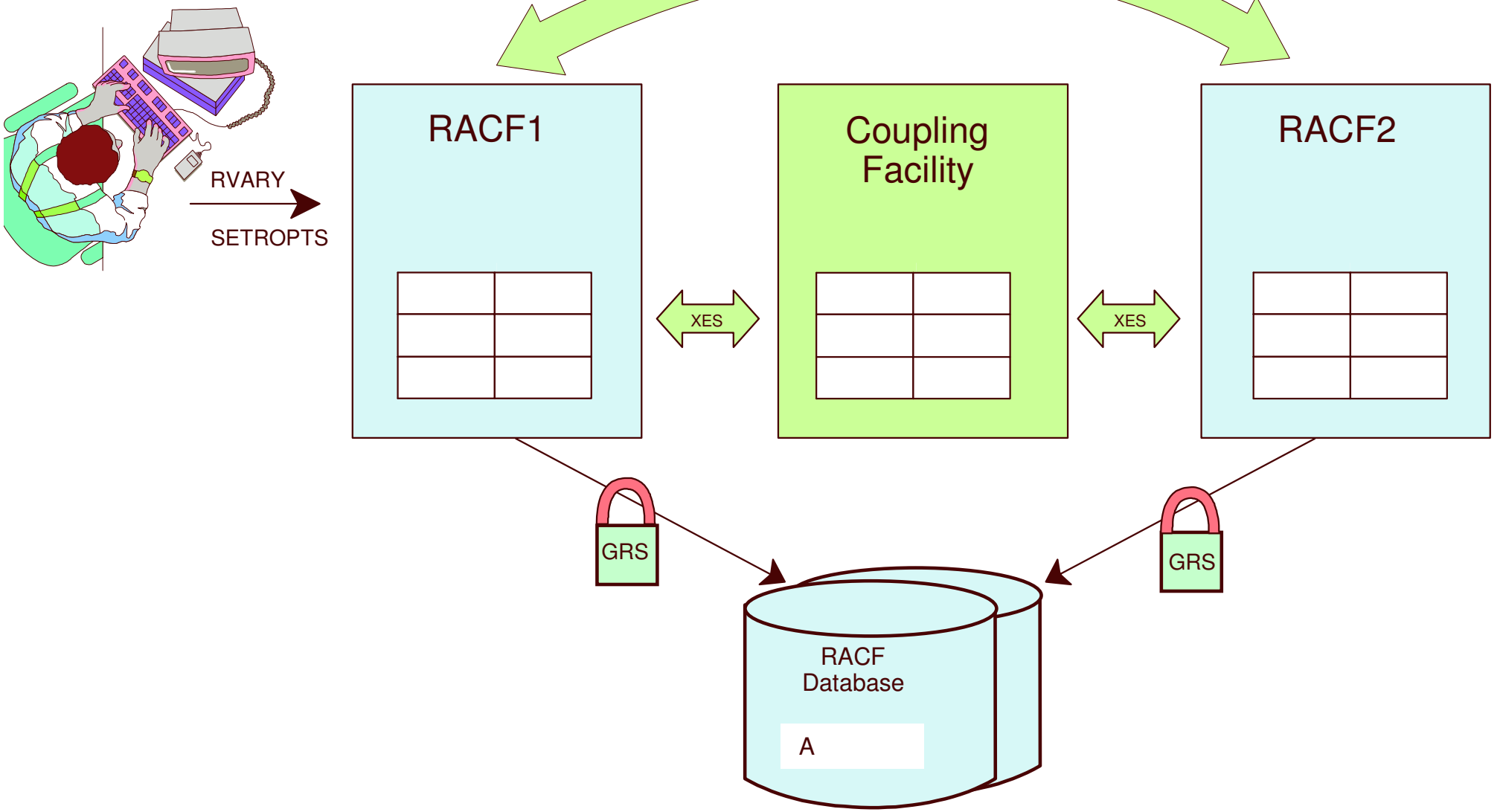
System Management

- Provide Single-System Image for Security Administration

Availability

- Propagate RVARY to ALL Systems that Share the RACF Database
- Minimize Sympathy Sickness

Overview - How It Works



Requirements

RACF Sysplex Communication

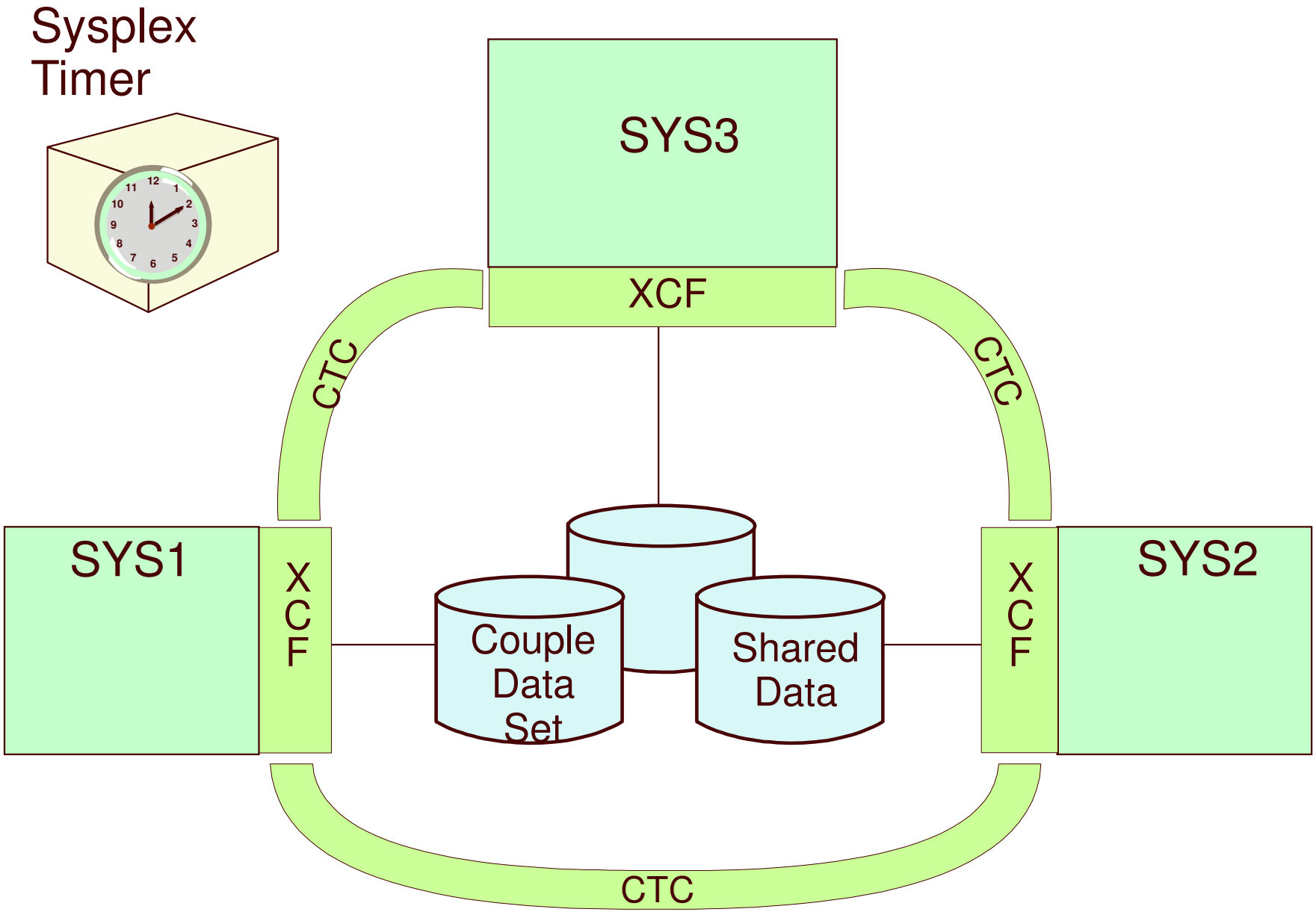
- Sysplex capable via CTC

  i.e NO CF required
- all software levels supported

RACF Sysplex Data Sharing

- Parallel Sysplex capable with CFs
- all software levels supported

What Is a Sysplex?



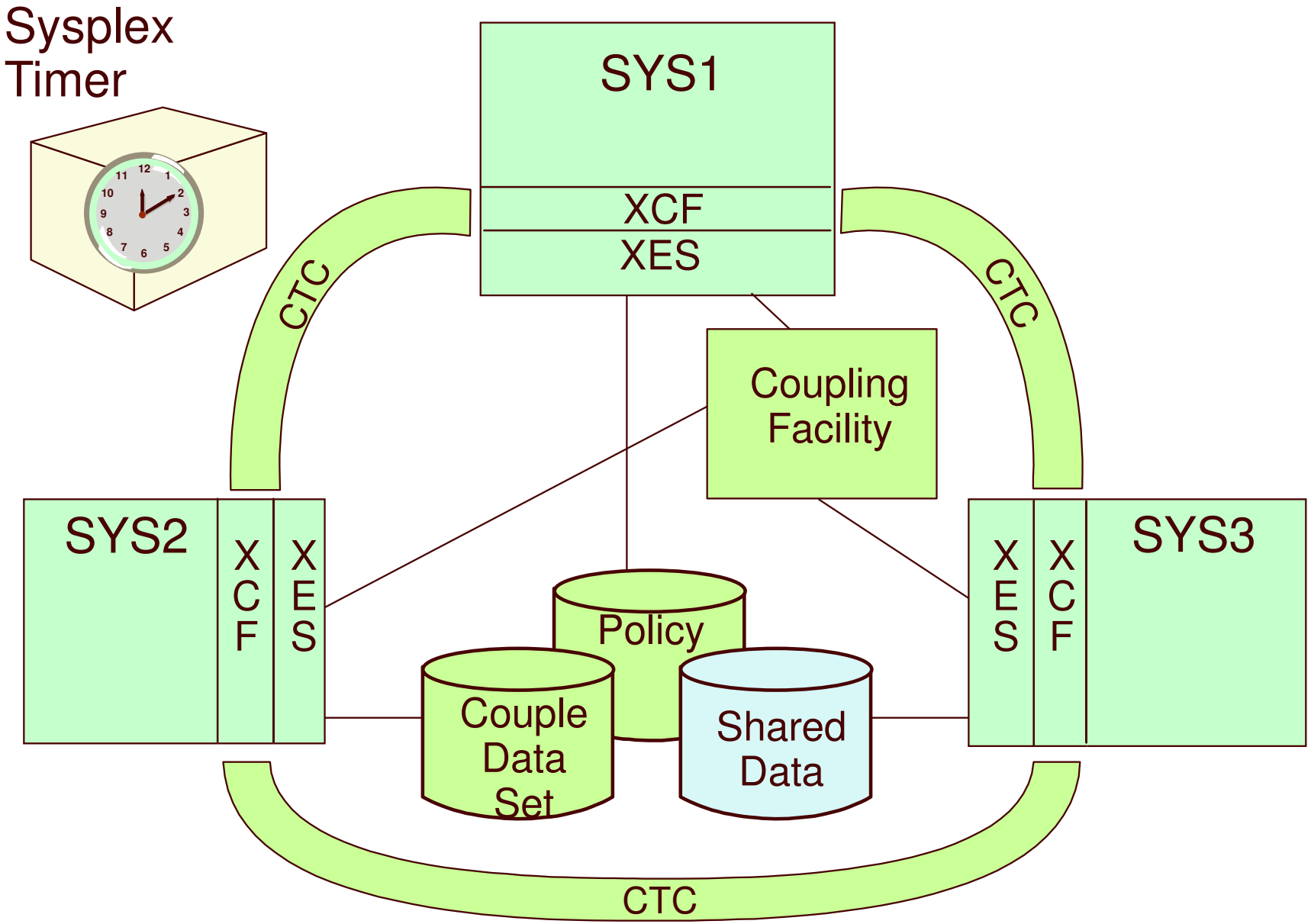
Sysplex Terminology

- Sysplex
- Multisystem Application
- Member
- Group
- Couple Data Set

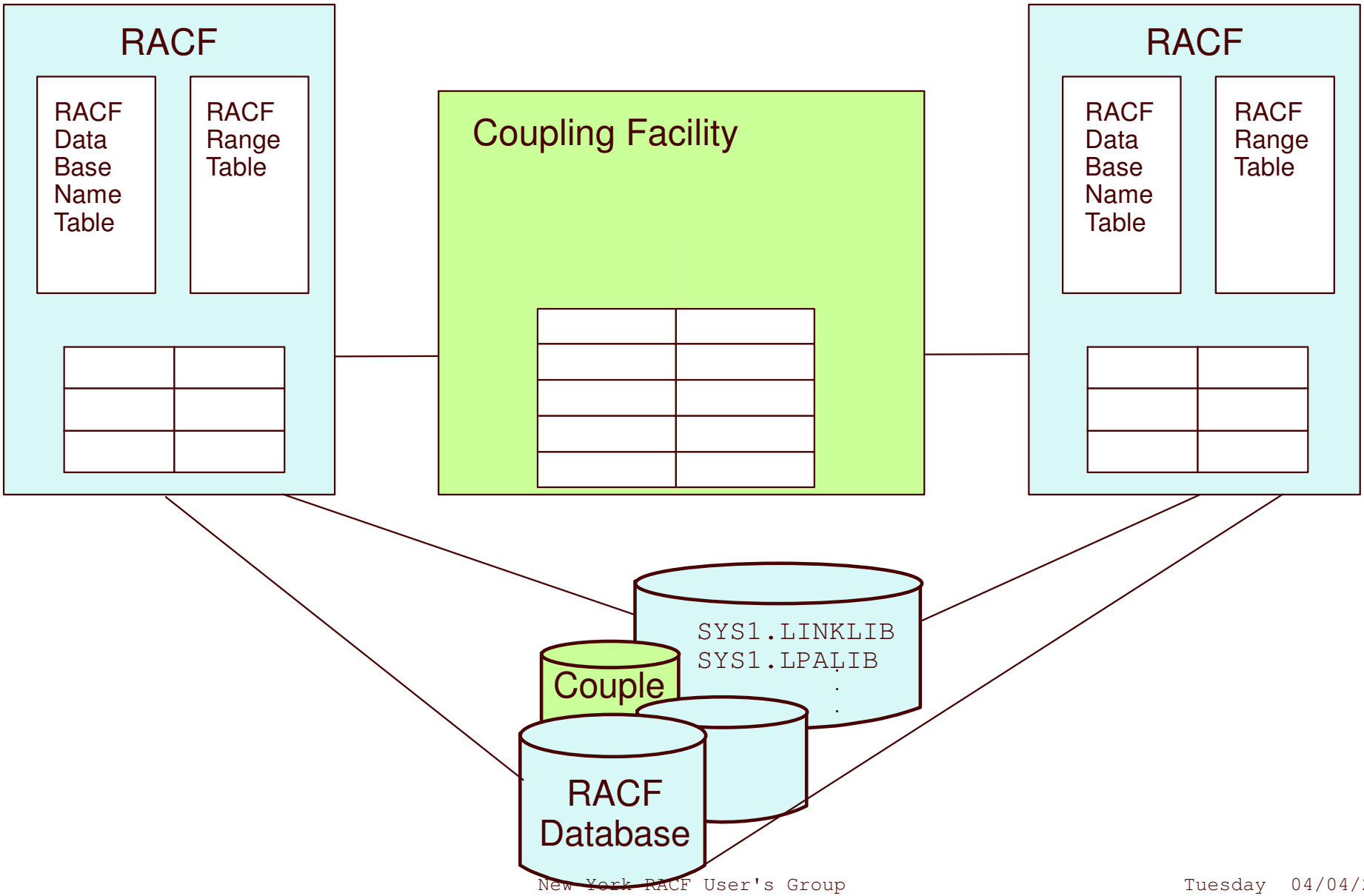
Cross-System Coupling Facility (XCF)

Group Services	- define groups and members
Signalling Services	- communication among members
Monitoring Services	- status of systems
Time Services	- synchronized time

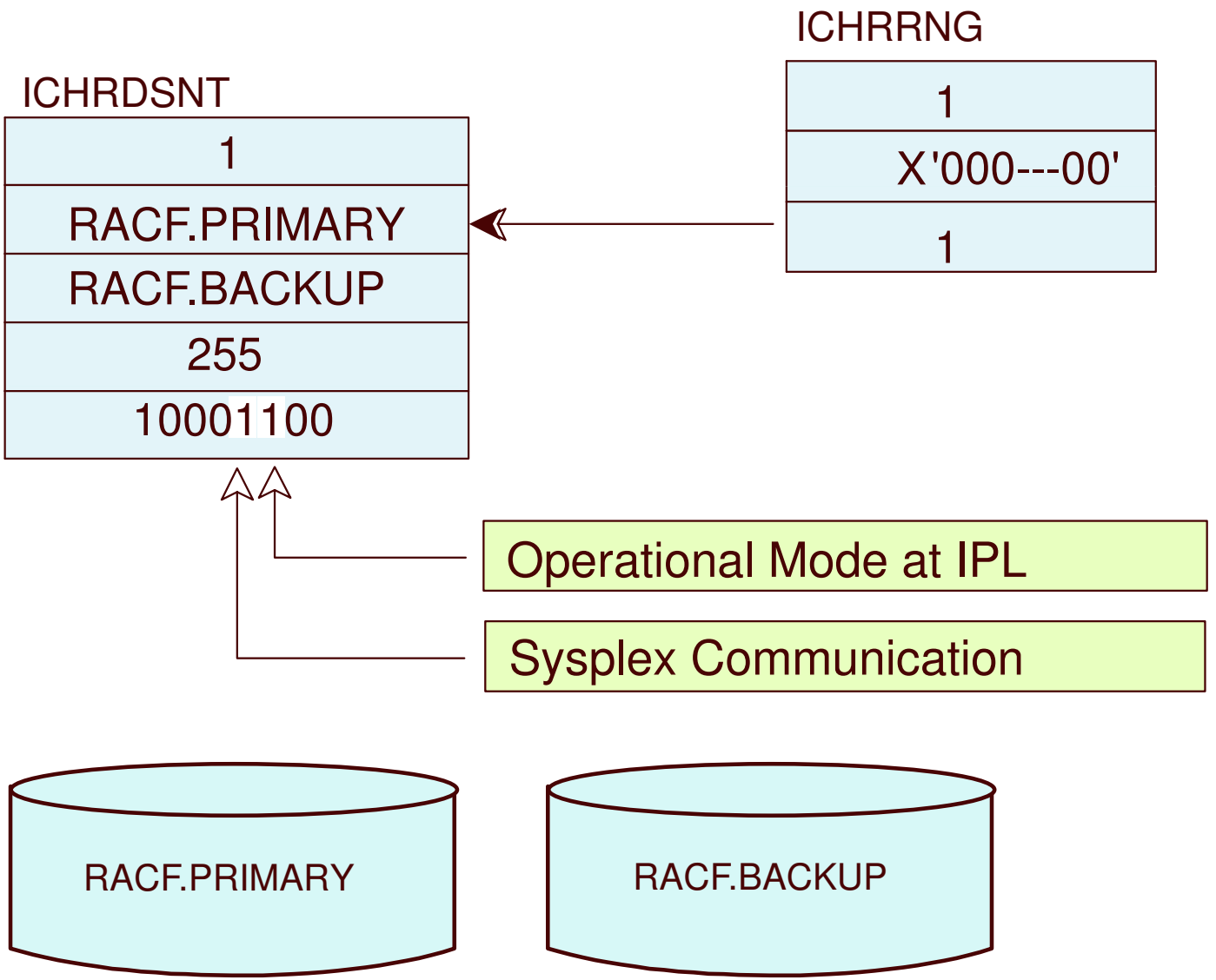
Sysplex with a Coupling Facility



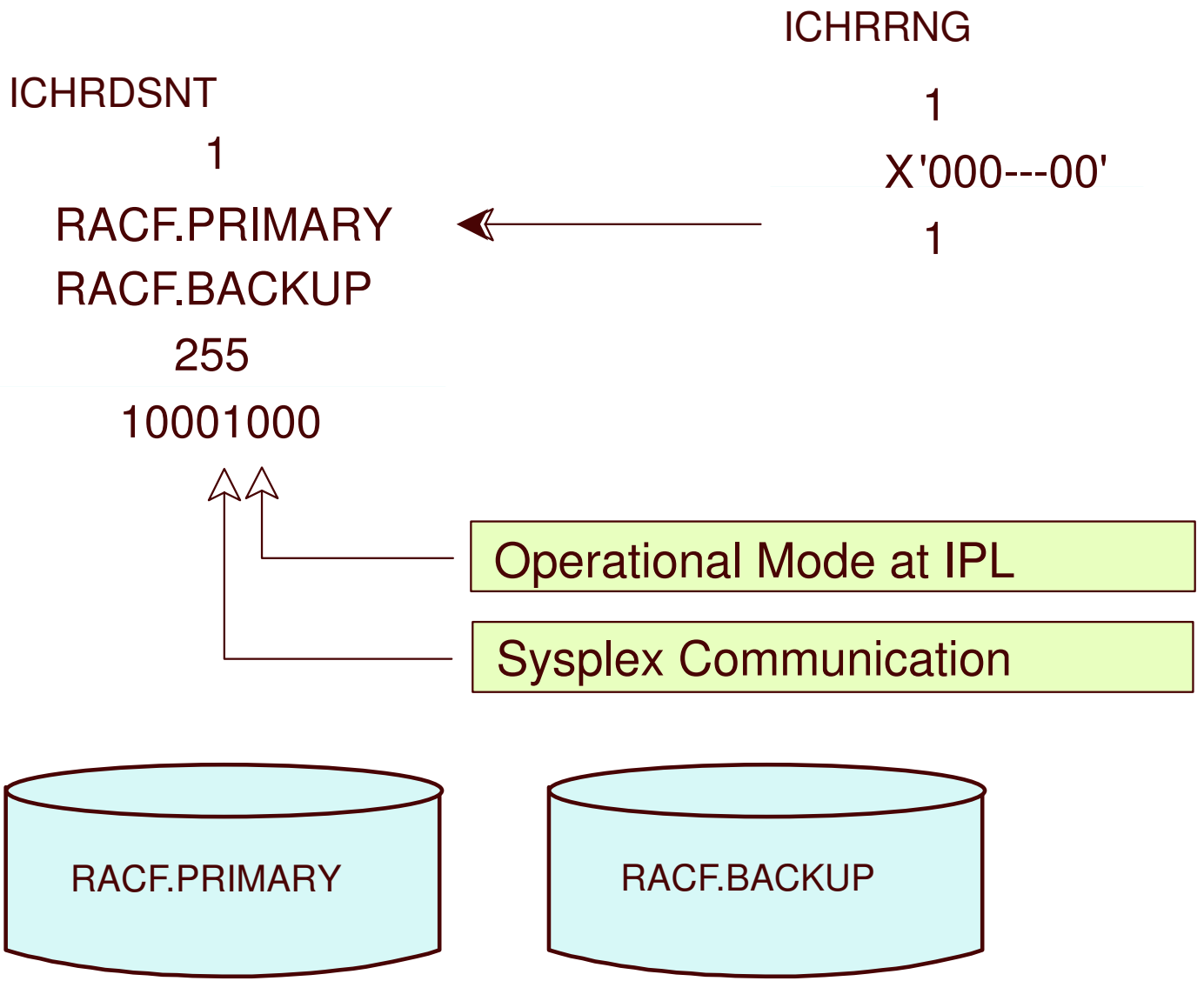
RACF Data Sharing Group



RACF Tables


ICHRRNG
1
X'000---00'
1
ICHRDSNT
1
RACF.PRIMARY
RACF.BACKUP
255
10001100
Operational Mode at IPL
Sysplex Communication
RACF.PRIMARY
RACF.BACKUP

RACF Tables


ICHRRNG
1
X'000---00'
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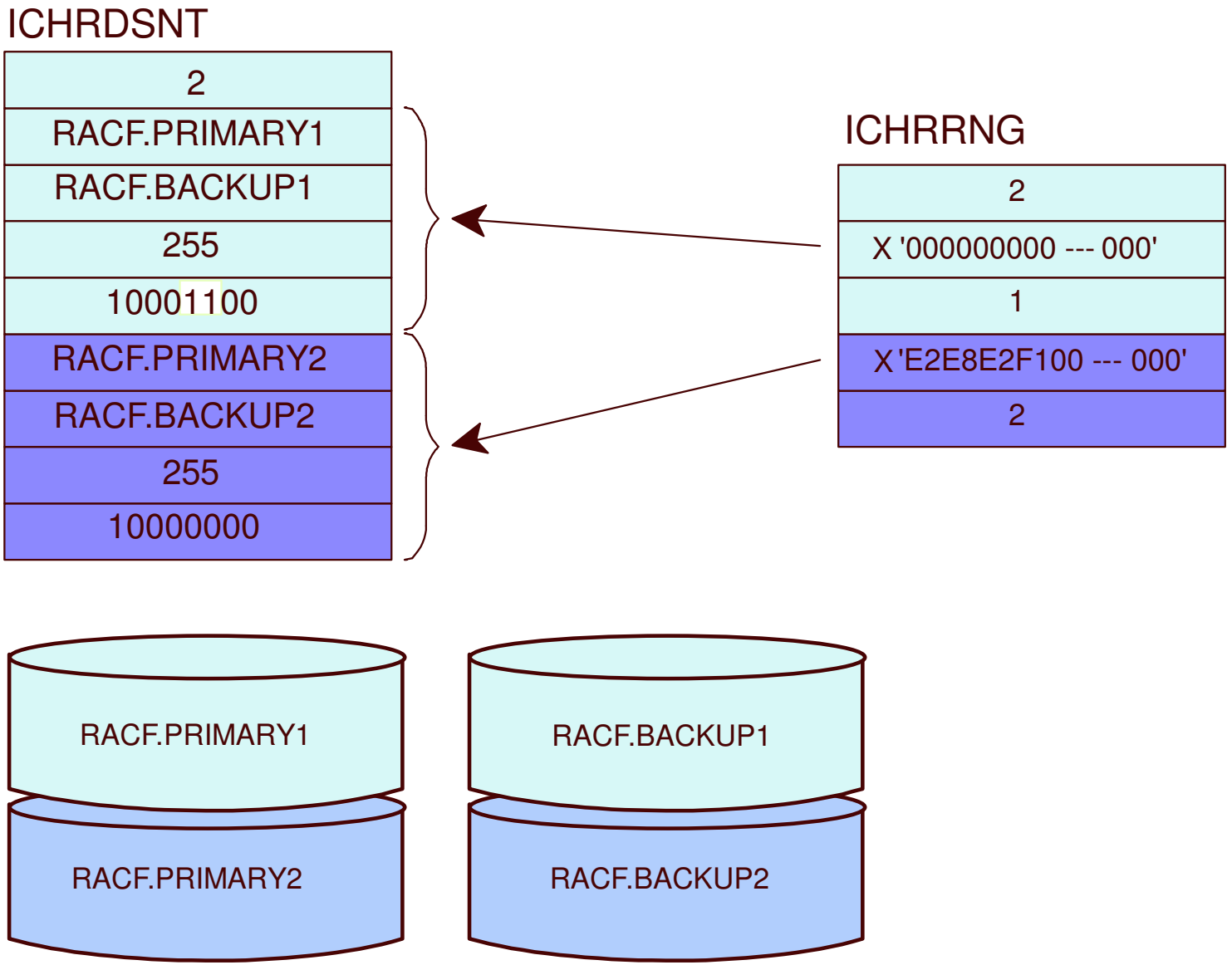
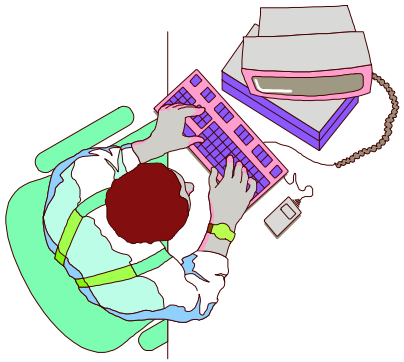
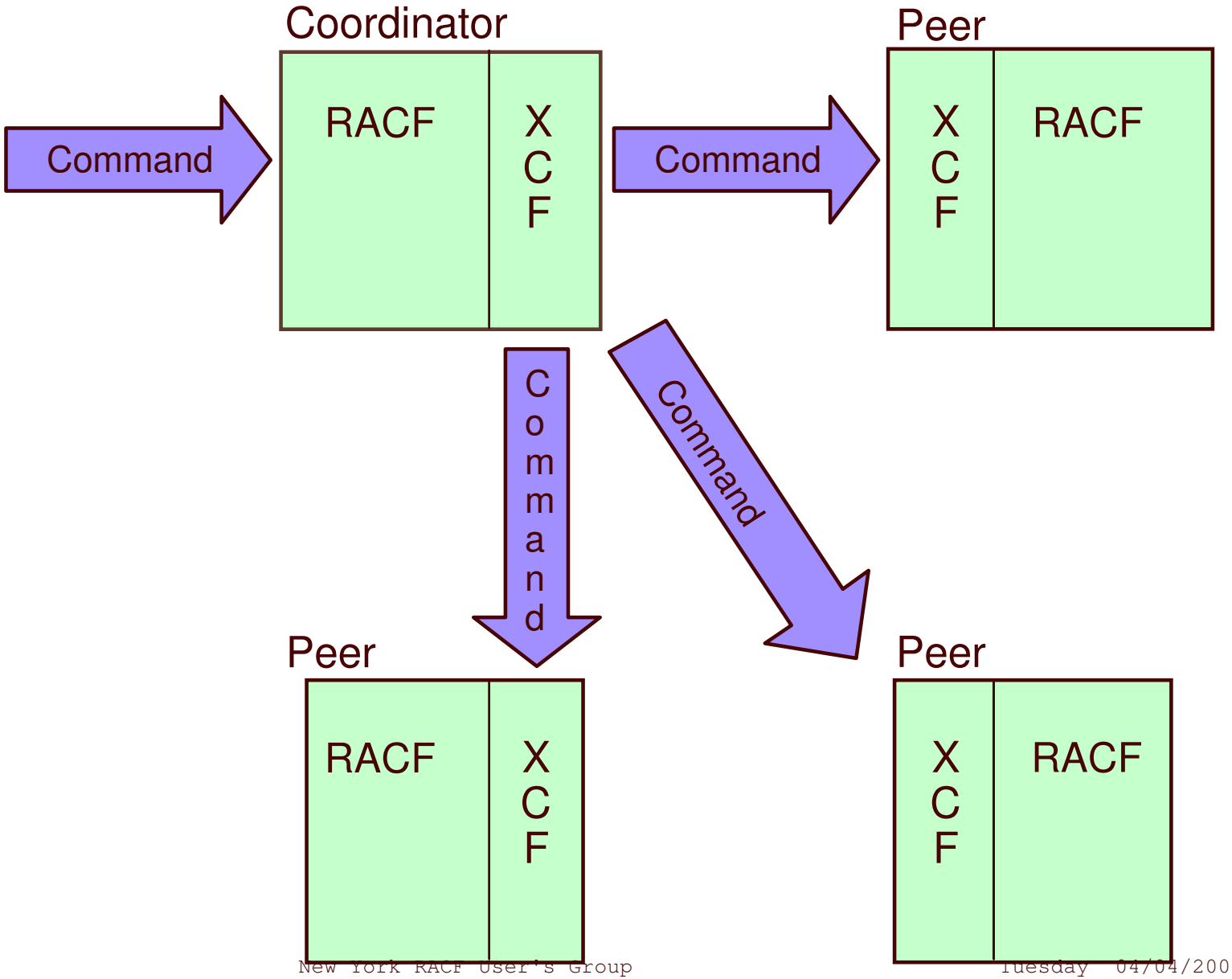
ICHRDSNT
1
RACF.PRIMARY
RACF.BACKUP
255
10001000
Operational Mode at IPL
Sysplex Communication
RACF.PRIMARY
RACF.BACKUP

Multiple RACF Databases

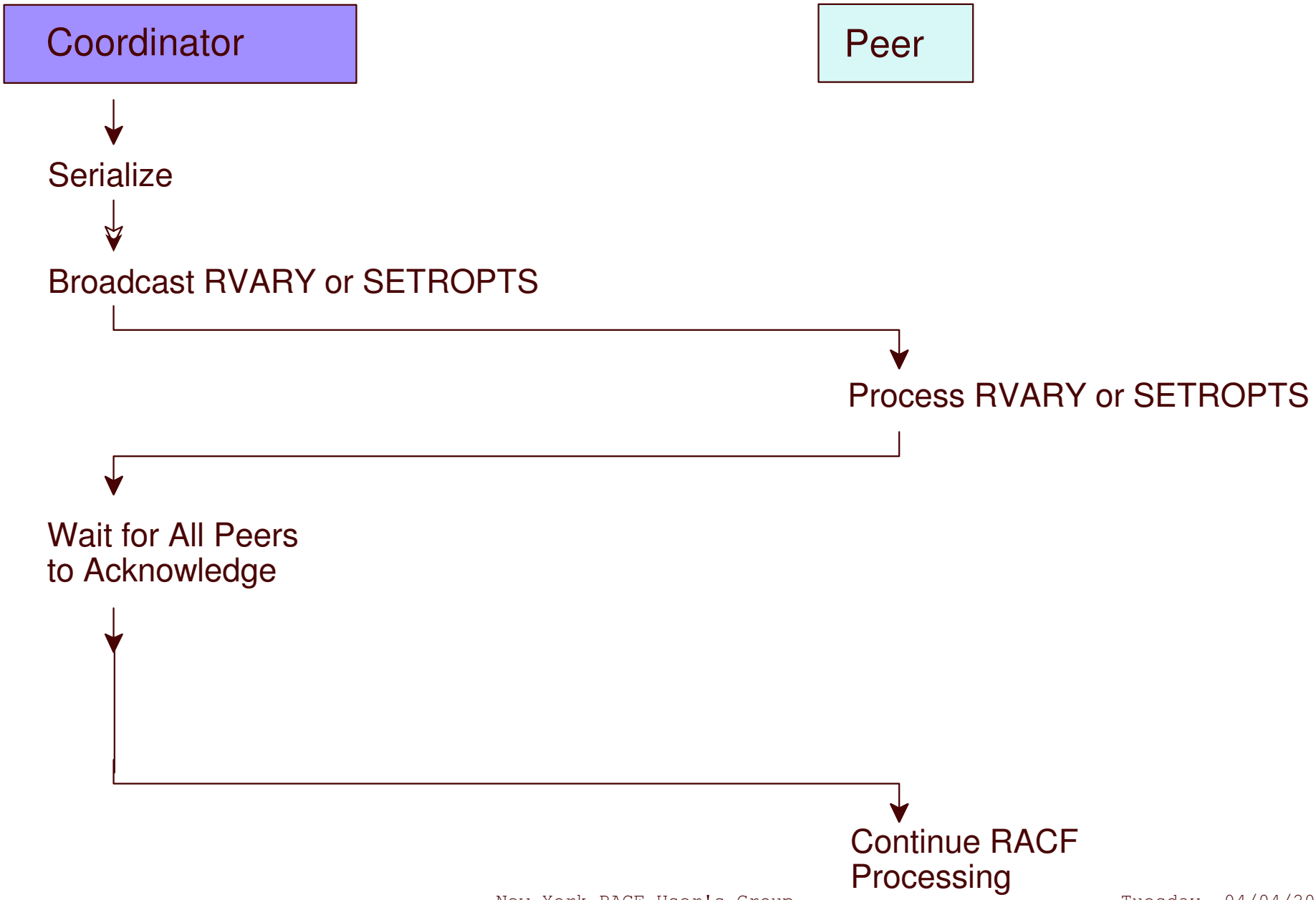


RVARY and SETROPTS Command Propagation

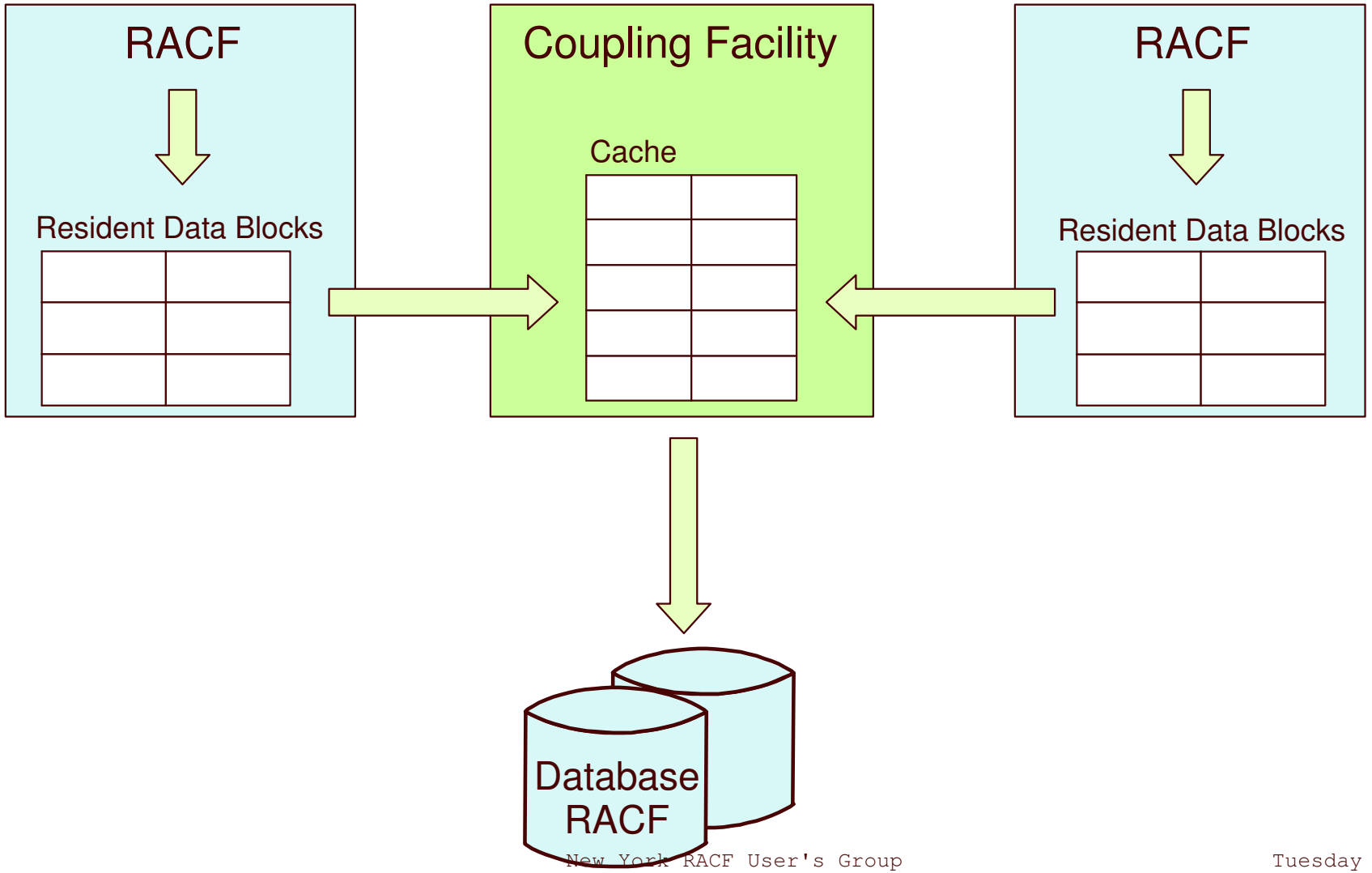




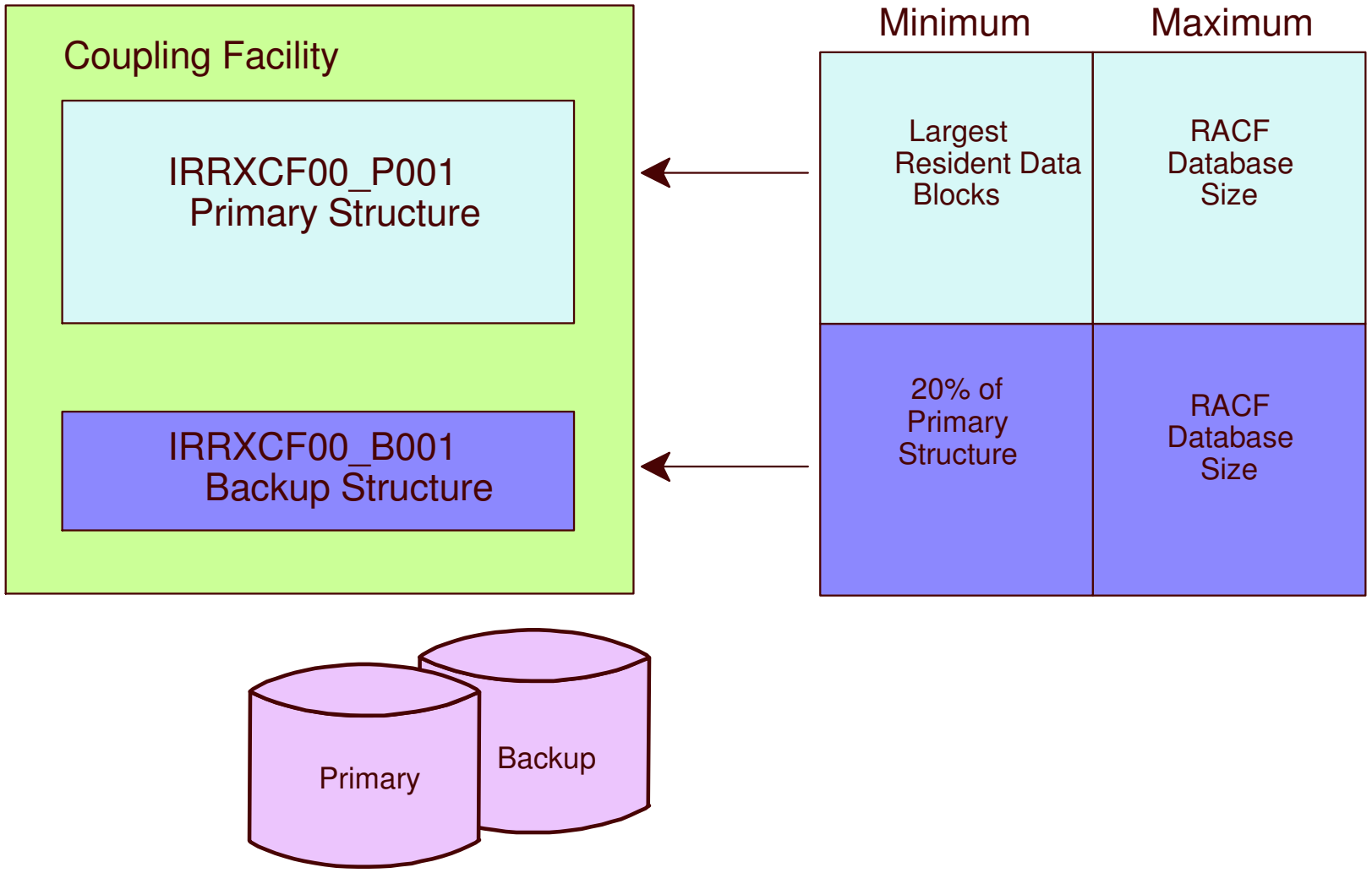
Command Propagation Processing



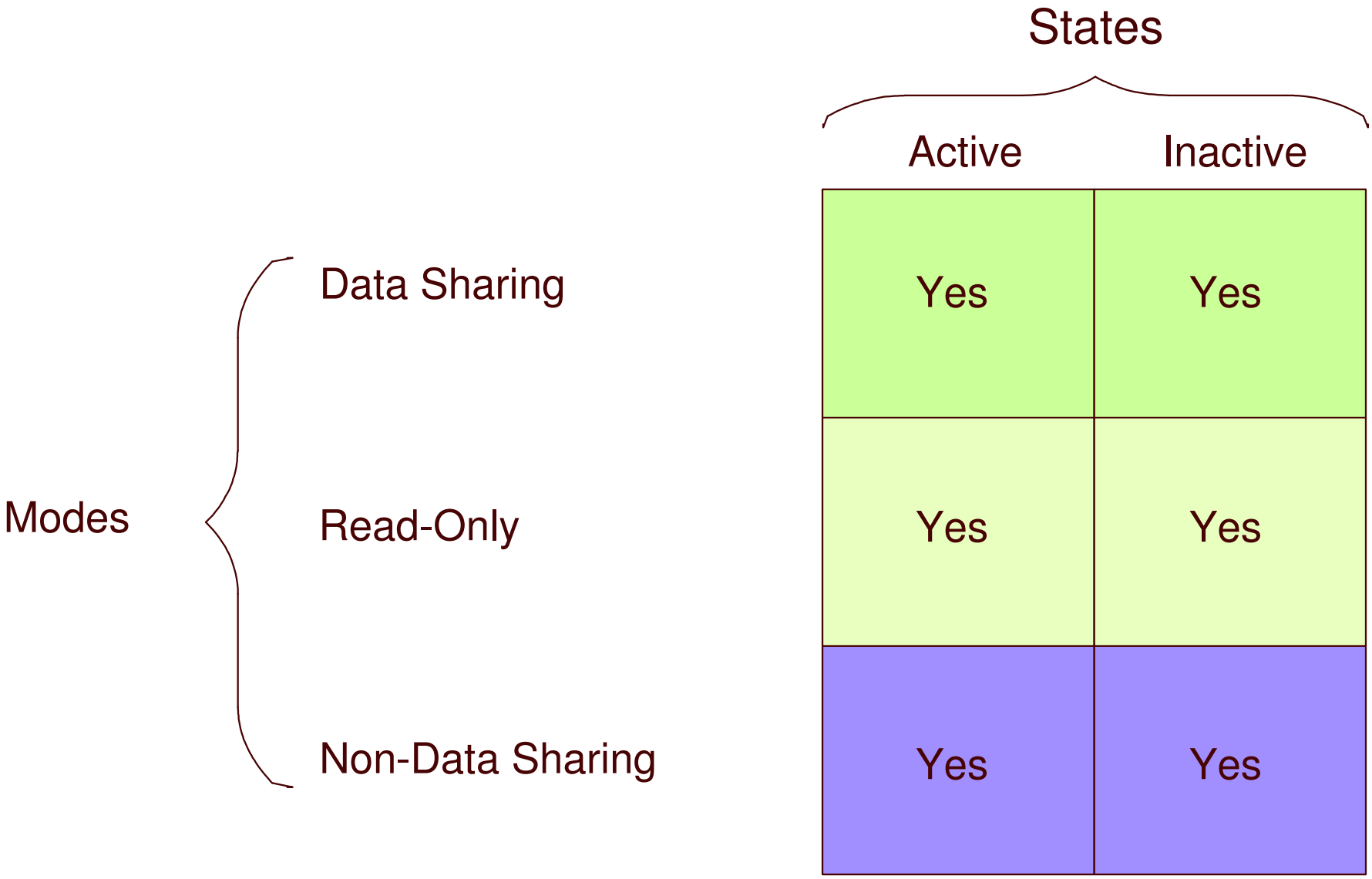
Conceptual View of Cache



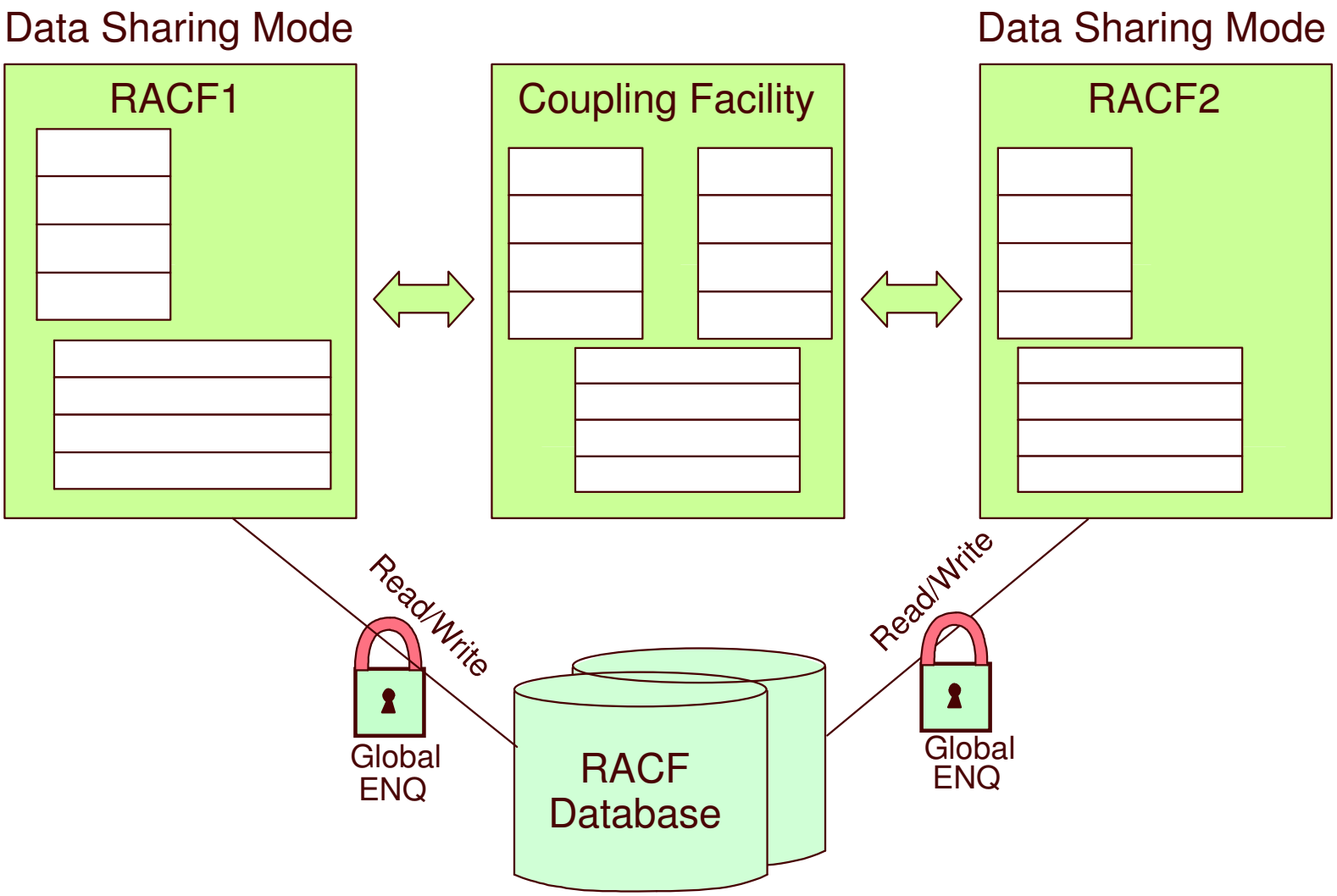
Size of Coupling Facility Cache



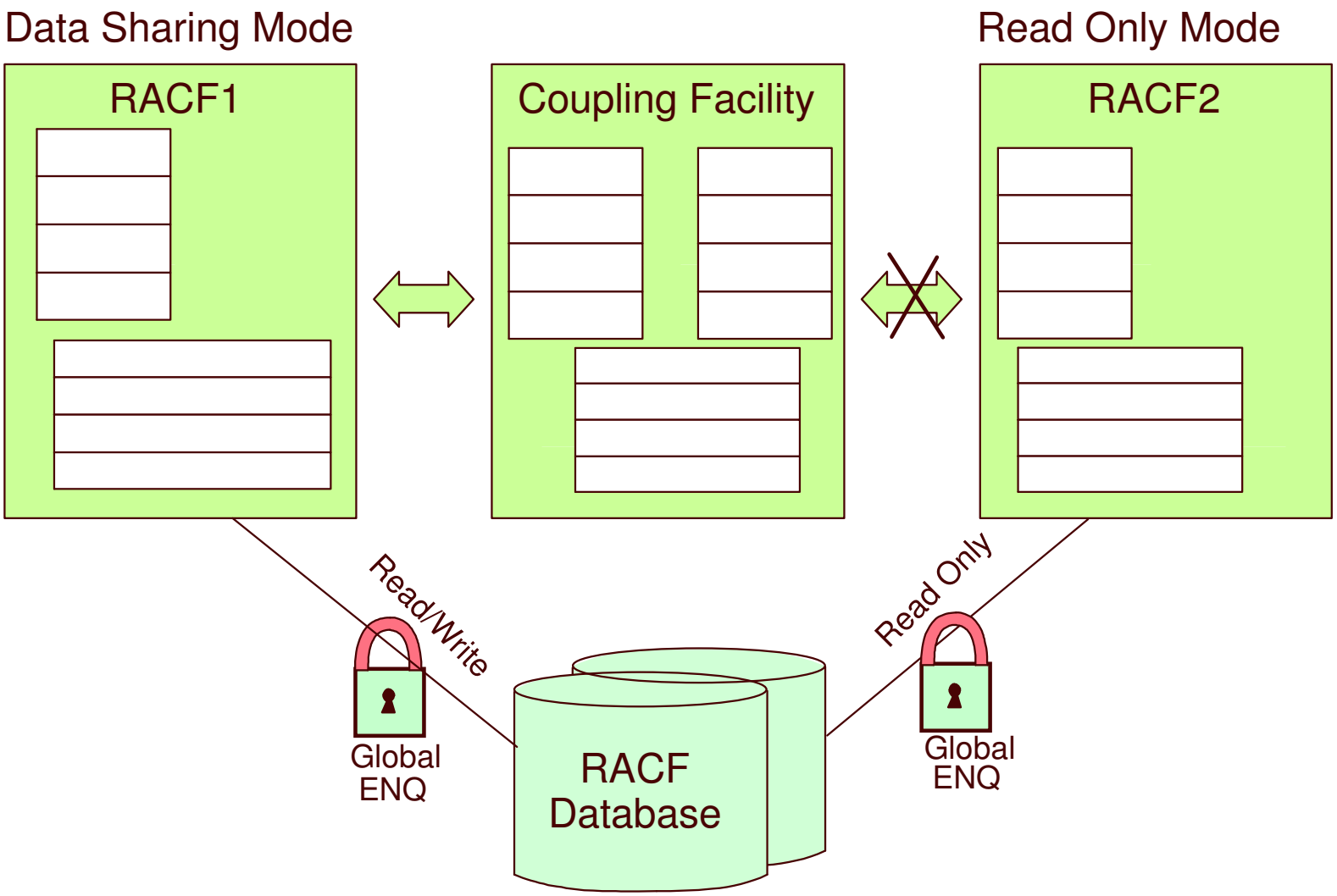
Operational States and Modes



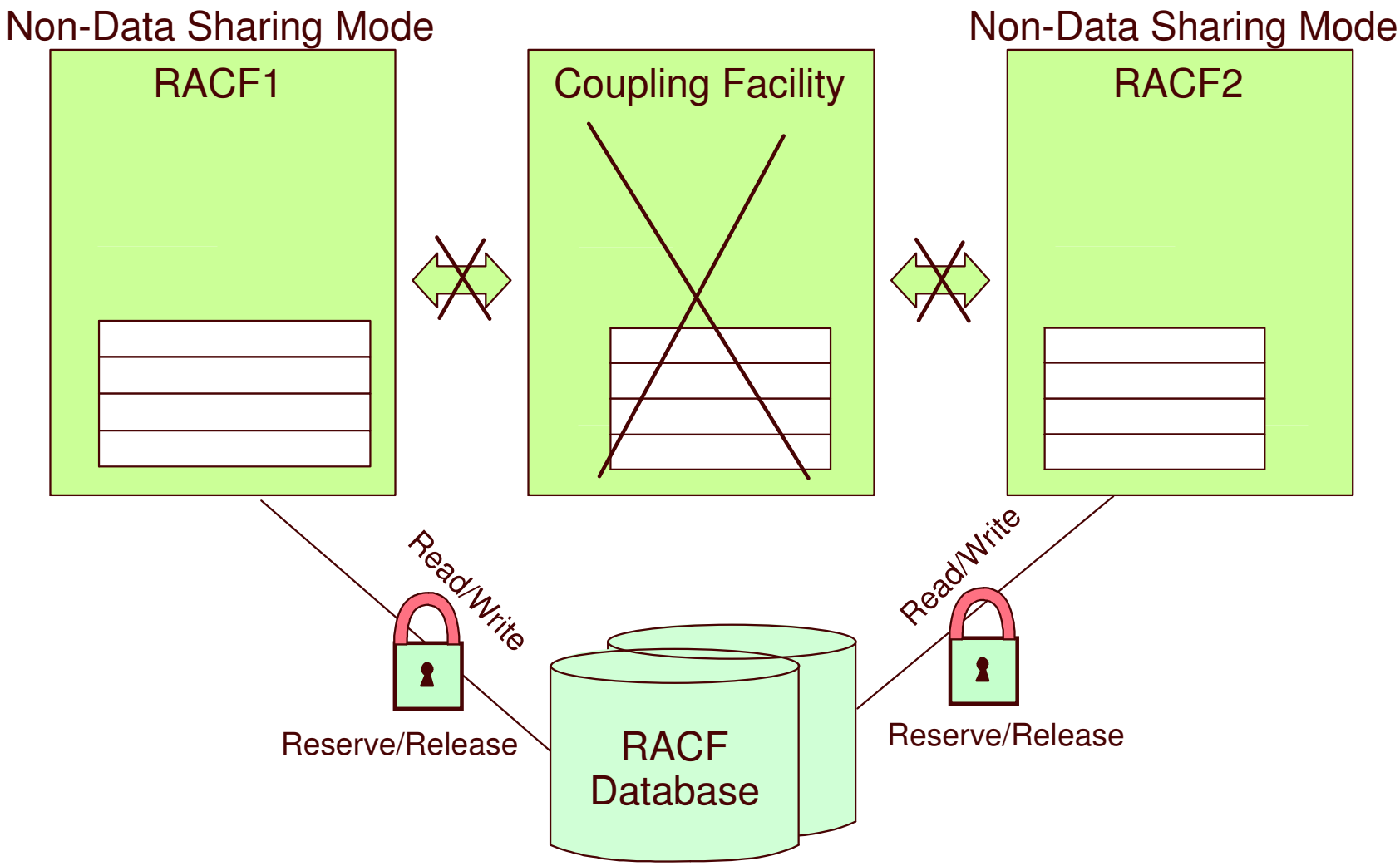
Data Sharing Mode



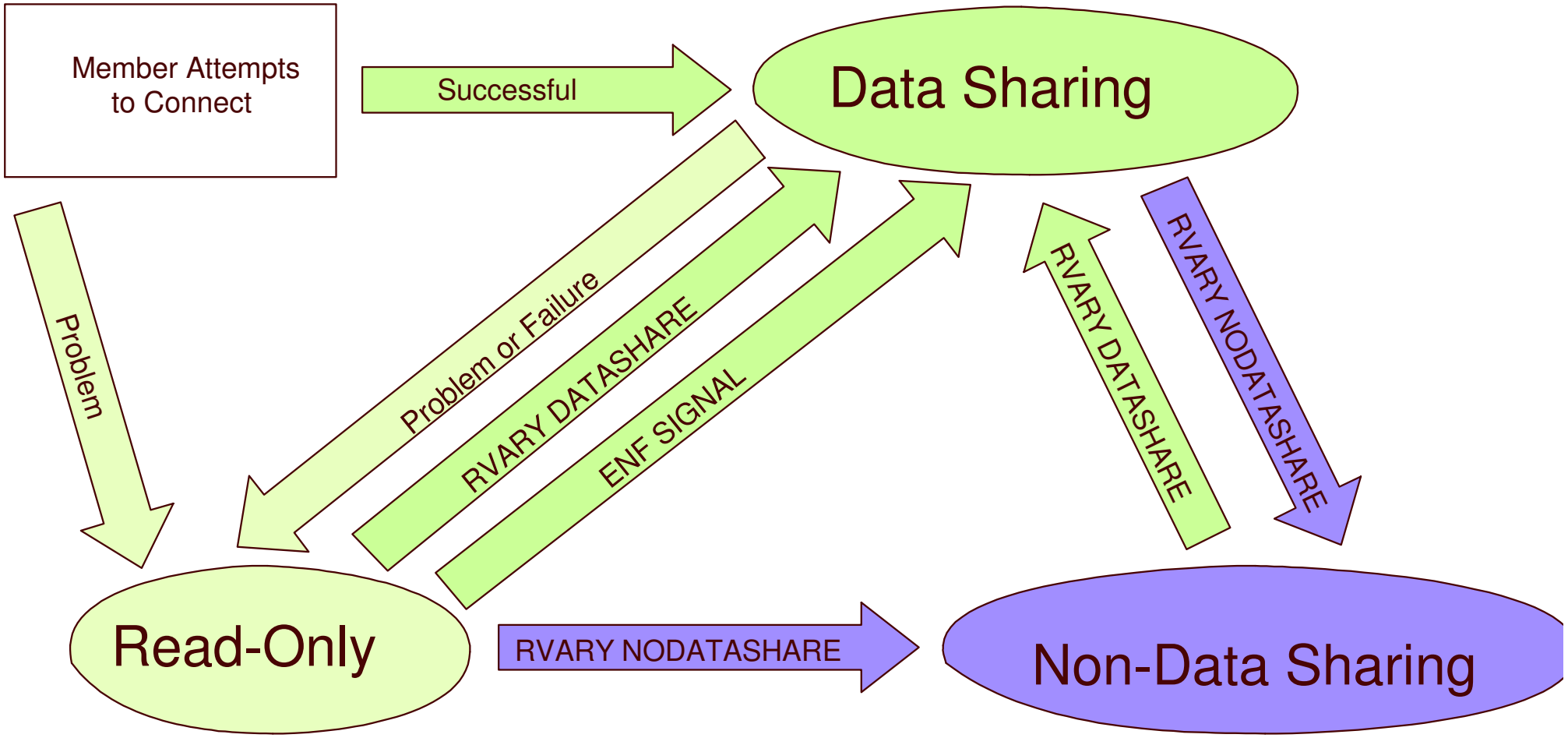
Data Sharing and Read-Only Modes



Non-Data Sharing Modes



How Do Modes Change?



APPENDIX - some information about building sysplex related datasets

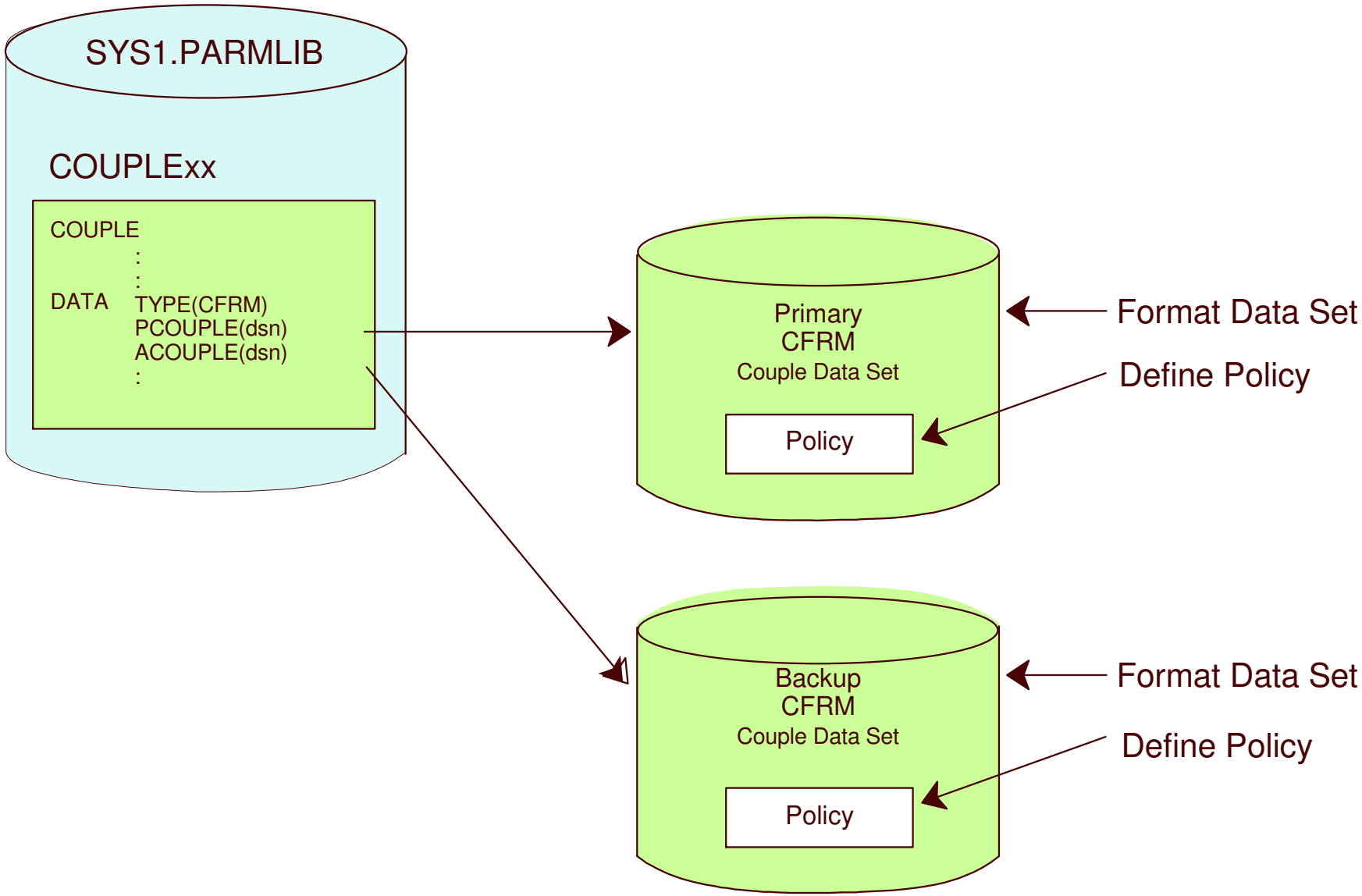
CFRM - need to DEFINE only if not already existing.

<< pointed to by COUPLExx parmlib member. >>

Need to ADD RACF policy info, regardless.

Size the RACF structures (info to place in the CF policy.

The CFRM Couple Data Set



Formatting The CFRM Couple Data Set

```
//FORMAT      JOB     MSGCLASS=H,NOTIFY=JJONES,MSGLEVEL=(1,1)
//STEP        EXEC    PGM=IXCL1DSU
//STEPLIB     DD      DSN=SYS1.MIGLIB,DISP=SHR
//SYSPRINT    DD      SYSOUT= *
//SYSIN       DD *
//
//


  DEFINEDS     SYSPLEX(PLEX1)
               DSN(CFRM_couple_dsn)  VOLSER(vvvvvv)
               CATALOG

  DATA TYPE(CFRM)

         ITEM  NAME(POLICY)  NUMBER(3)
         ITEM  NAME(CF)  NUMBER(2)
         ITEM  NAME(STR)  NUMBER(6)
         ITEM  NAME(CONNECT)  NUMBER(6)


/*
```

Coupling Facility Storage Calculation

Suggested Minimum Starting Point:

Primary Structure Size = (RDB x 4K) + (.1 x RDB x N x 4K)

Backup Structure Size = (.2 x Primary Structure Size)

Where: RDB = Largest Number of Resident Data Blocks
N = Number of Systems in Sysplex

Example For 16-Way Sysplex

Primary Structure Size = (255 x 4K) + (26 x 16 x 4K)

= 2684K

Backup Structure Size = (.2 x Primary Structure Size)

= 537K

CFSIZER for RACF structures:
http://www-03.ibm.com/servers/eserver/zseries/cfsizer/racf.html

Defining The CFRM Couple Data Set

```
//DEFPOL        JOB         MSGCLASS=H=JJONES,MSGLEVEL(1,1)
//              EXEC        PGM=IXCMIAPU
//SYSPRINT      DD          SYSOUT=*
//SYSIN         DD           *
DATA  TYPE(CFRM) REPORT(YES)
DEFINE  POLICY  NAME(POL1)  REPLACE(YES)
   CF  NAME(FACIL01)    TYPE(009674))      MFG(IBM)     PLANT(PK)
                        SEQUENCE(0000040021)       PARTITION(1)
                        CPCID(00)     SIDE(1)   DUMPSPACE(2000)
   CF  NAME(FACIL02)    TYPE(009674))      MFG(IBM)     PLANT(PK)
                        SEQUENCE(0000040022)         PARTITION(1)
                        CPCID(00)  SIDE(1)  DUMPSPACE(2000)
   STRUCTURE  NAME(IRRXCF00_P001)
              SIZE(2688)  PREFLIST(FACIL01,FACIL02)
   STRUCTURE  NAME(IRRXCF00_B001)
              SIZE(538)  PREFLIST(FACIL01,FACIL02)
   /*
```

Unit Summary

- The Sysplex Environment
- RACF Sysplex Communication
- RACF Sysplex Data Sharing
- Recovery Modes
- Defining the Coupling Facility Policy for RACF