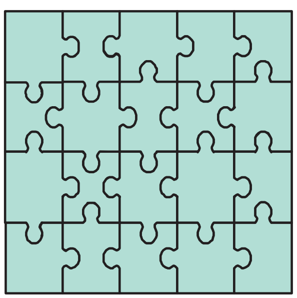
RACF and the Parallel Sysplex

Prnm

ne mn

Anahem Calmnrnan



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RACF menel mm eam eader
mmfsm m mm rsn Sm rtane Serm me
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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

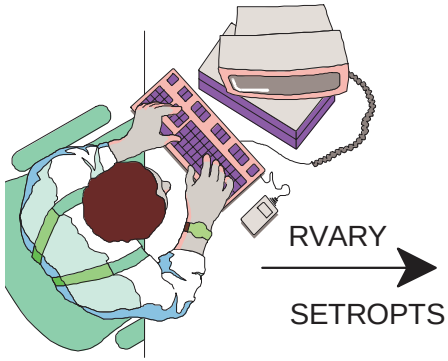
- Provide Single-System Image for Security Administration

Availability

- Propagate RVARY to ALL Systems that Share the RACF Database

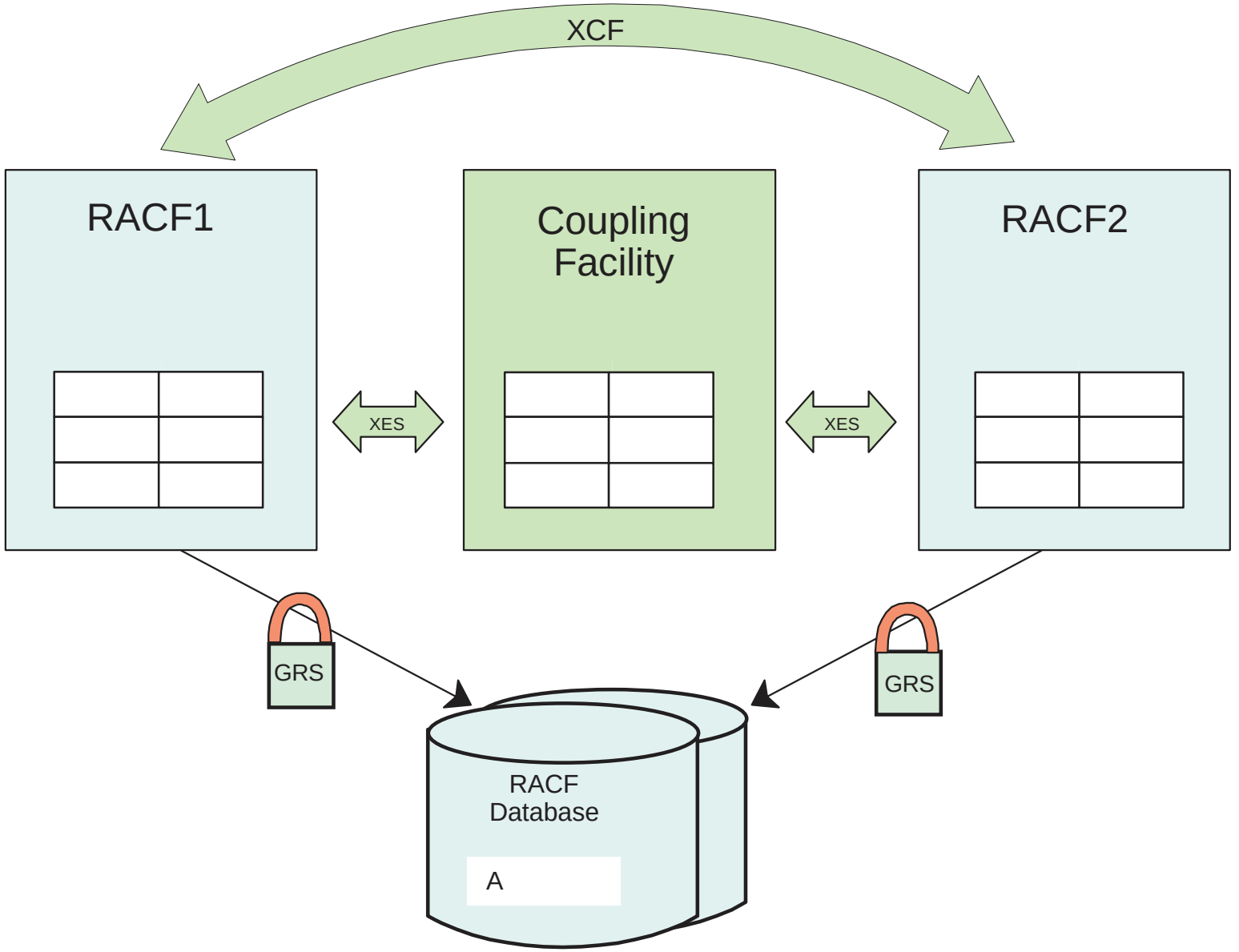
- Minimize Sympathy Sickness

Overview - How It Works



RVARY

SETROPTS



Requirements

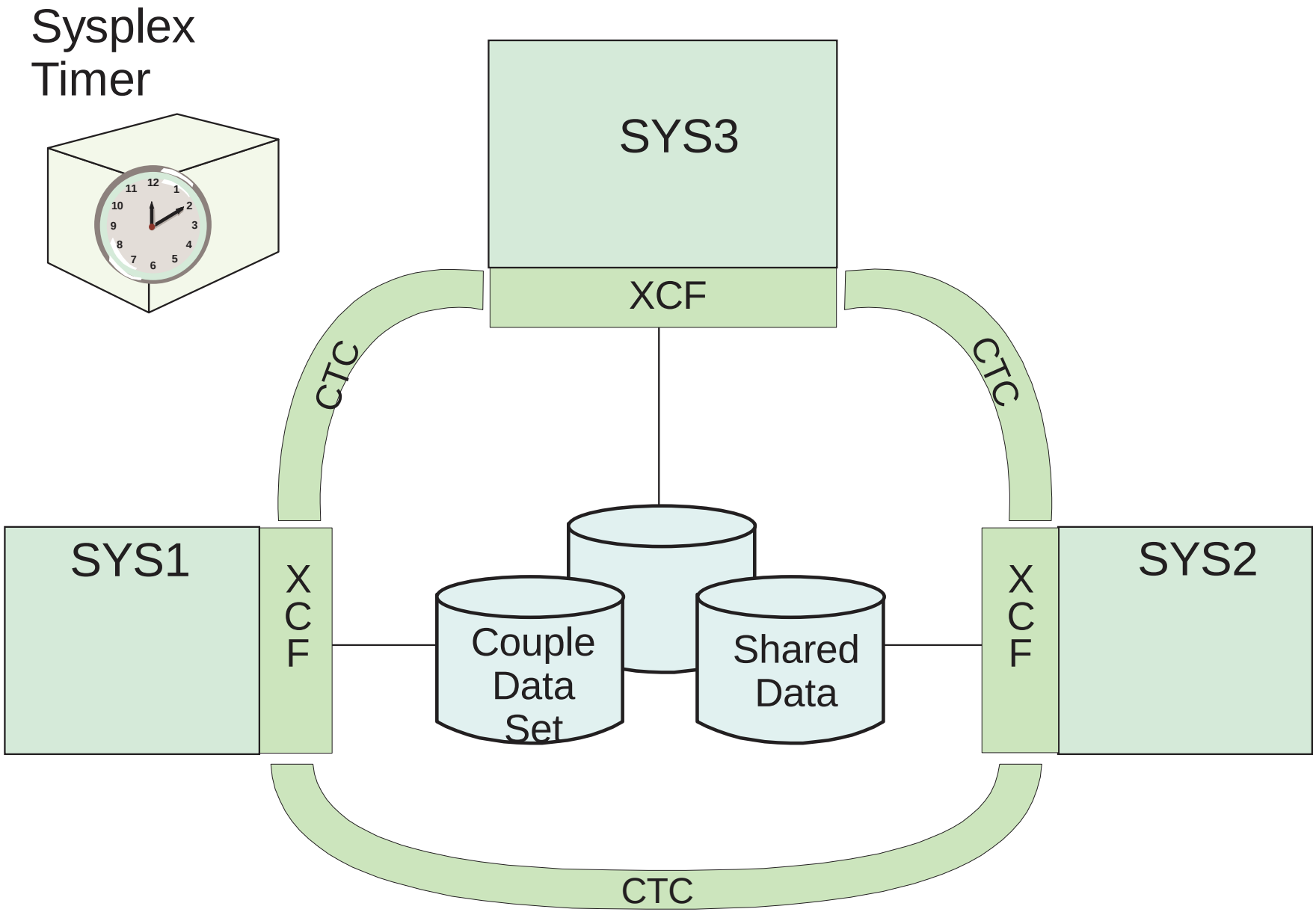
RACF Sysplex Communication

- RACF 2.1
- MVS/ESA 4.2
- Sysplex

RACF Sysplex Data Sharing

- RACF 2.1
- MVS/ESA 5.1
- Parallel Sysplex

What Is a Sysplex?



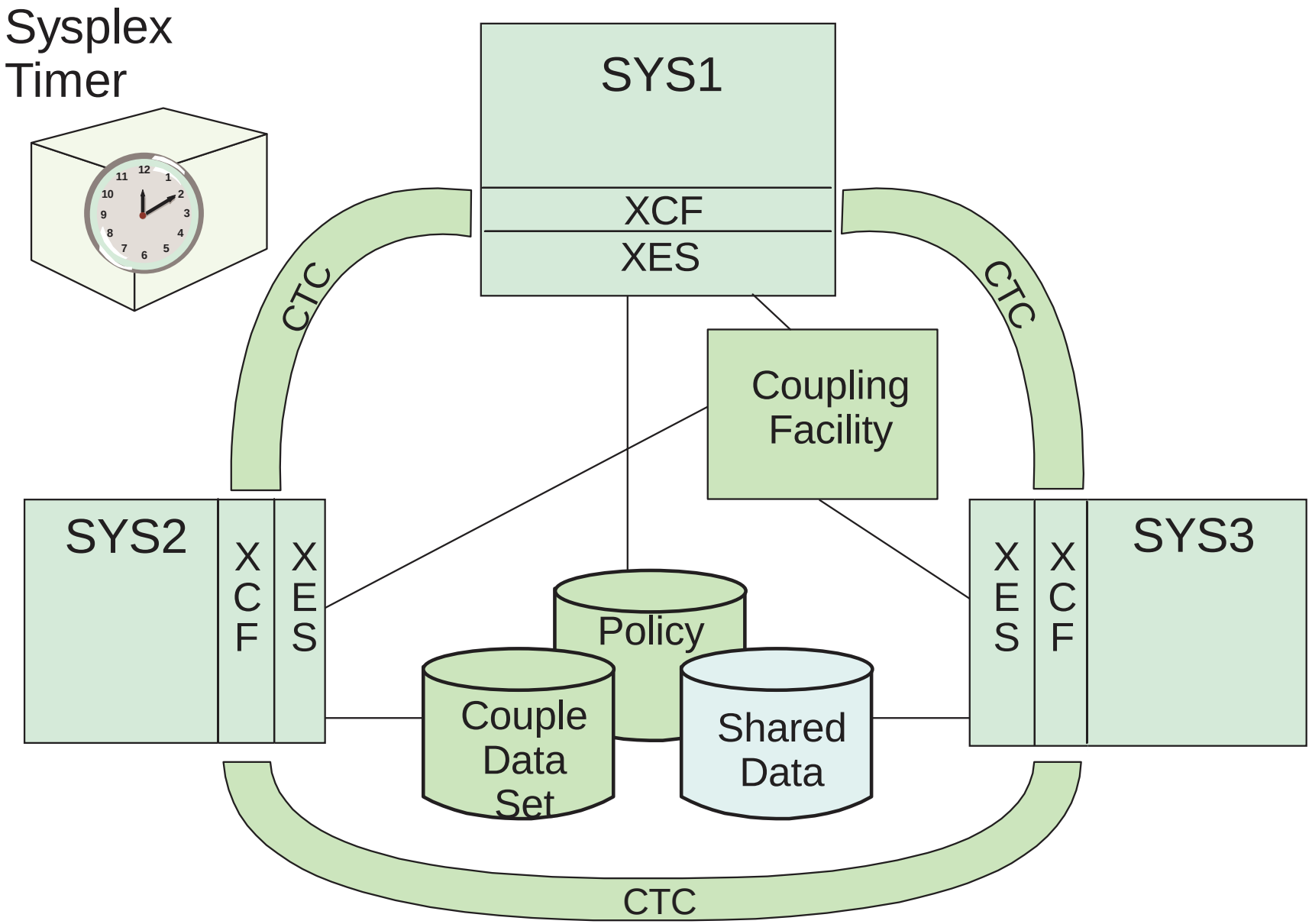
Sysplex Terminology

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

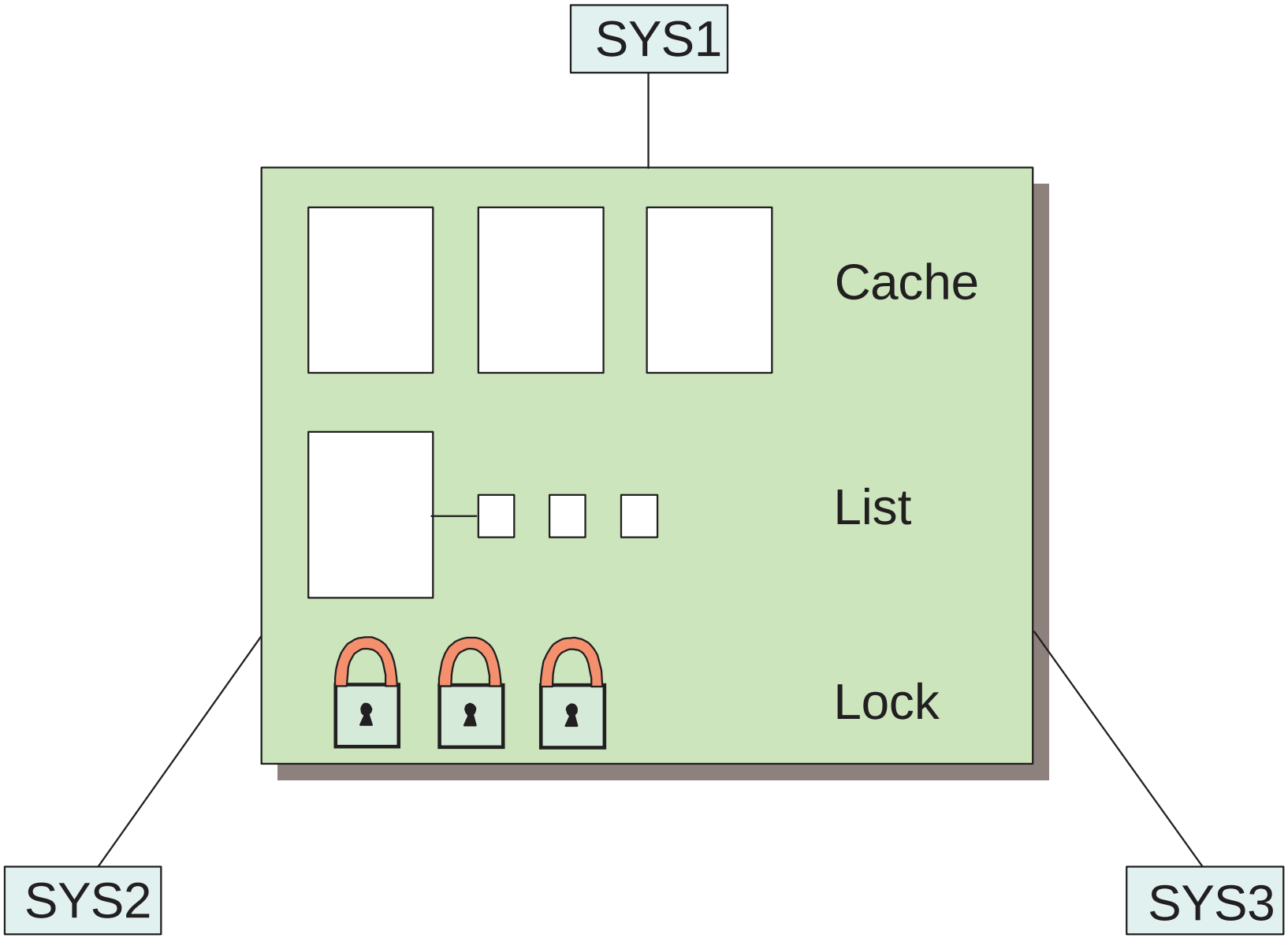
Cross-System Coupling Facility (XCF)

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

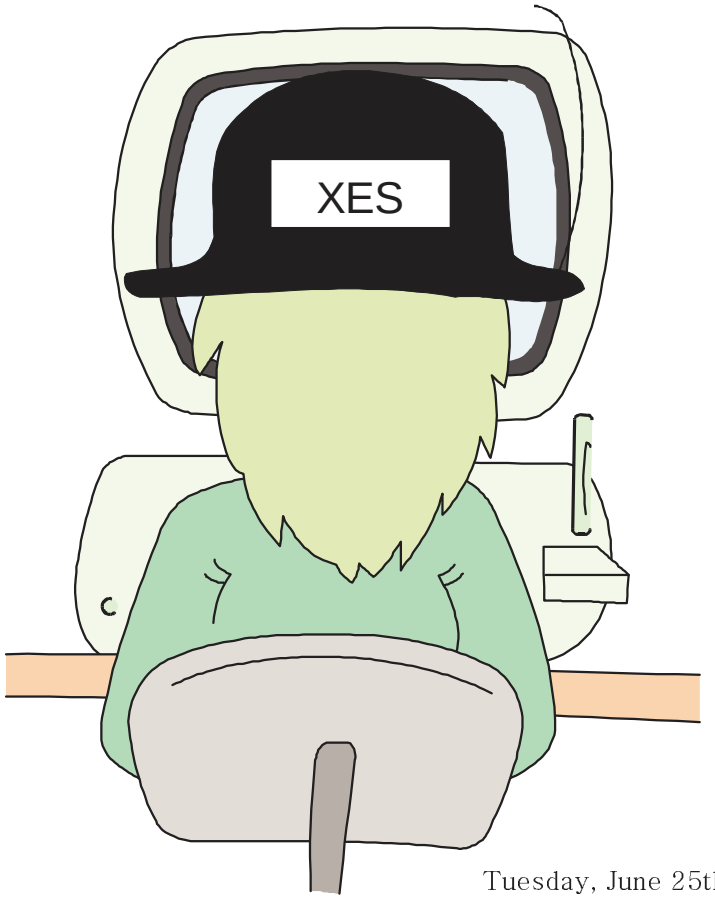


Coupling Facility

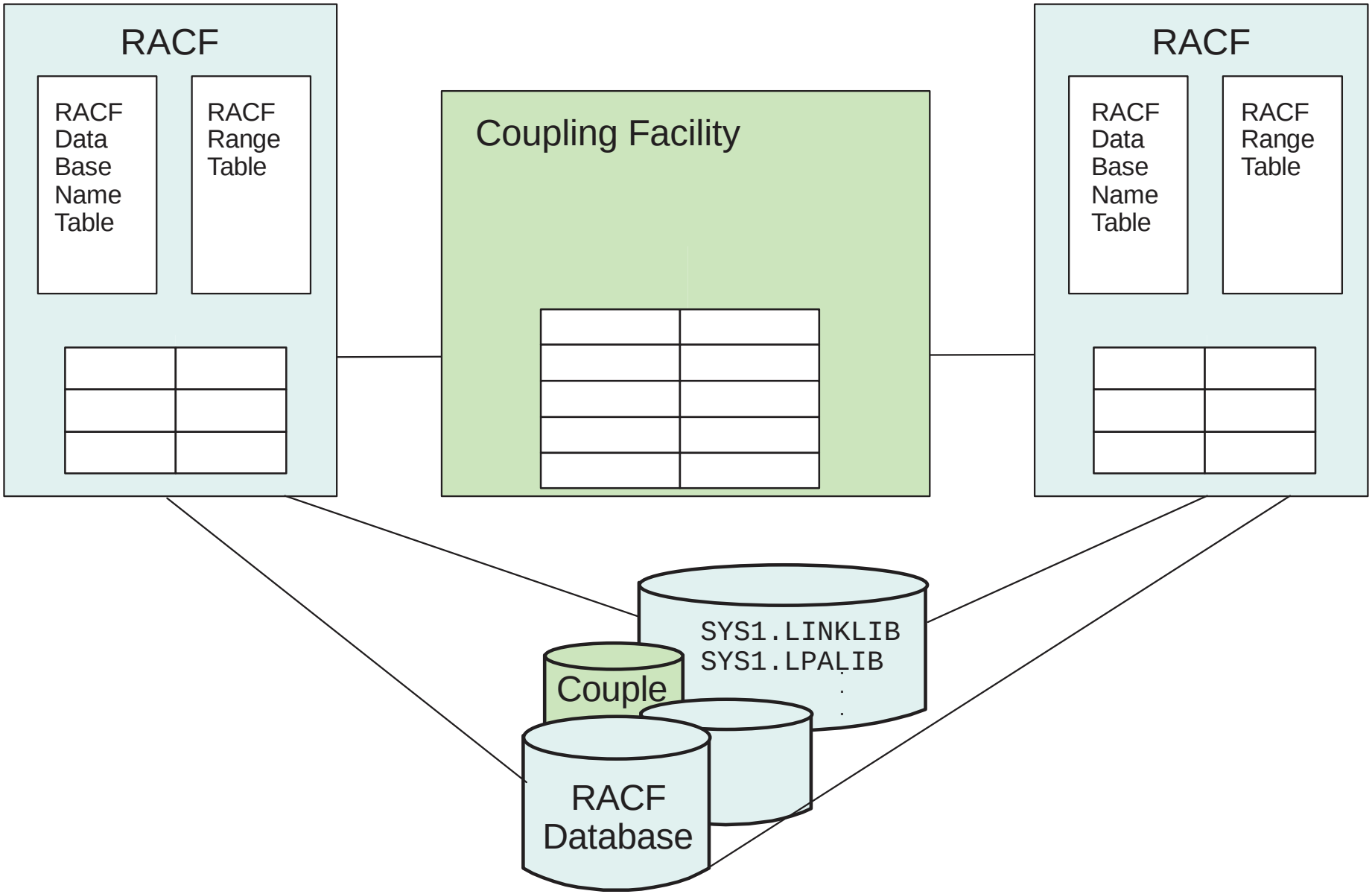


Cross-System Extended Services (XES)

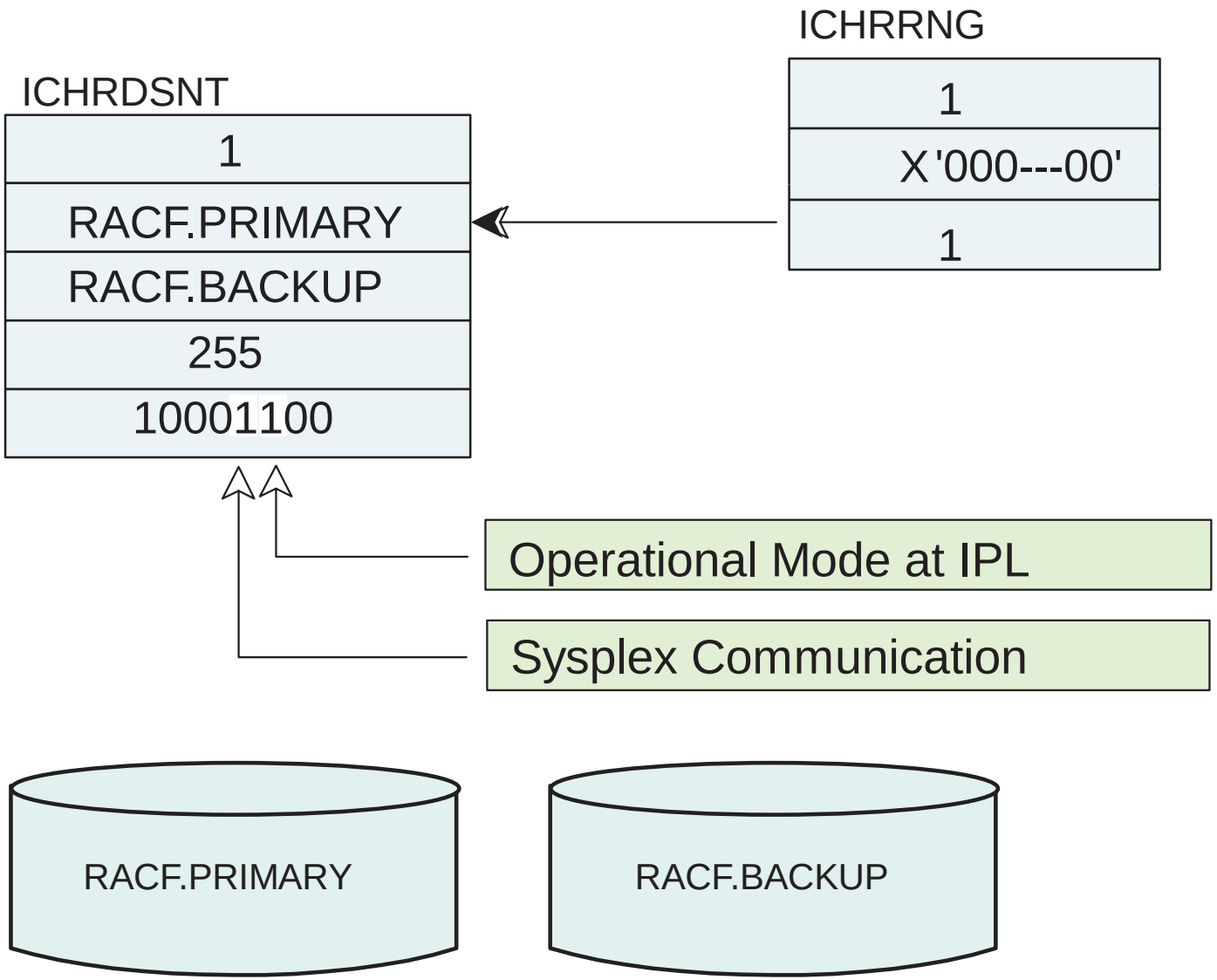
- Connection Services
- Connection Recovery Services
- Application Mainline Services
- Measurement Services
- Dumping Services



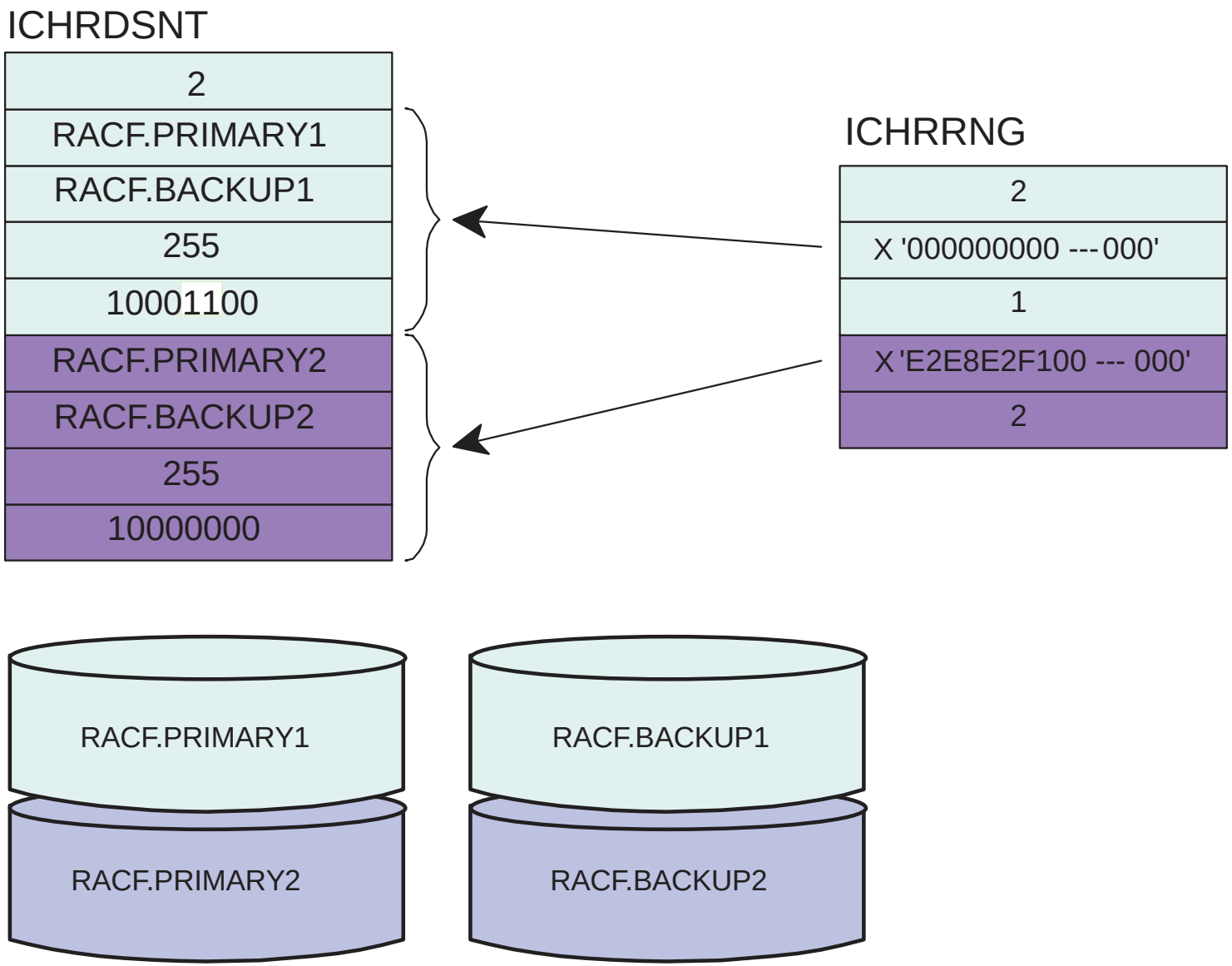
RACF Data Sharing Group



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

Multiple RACF Databases

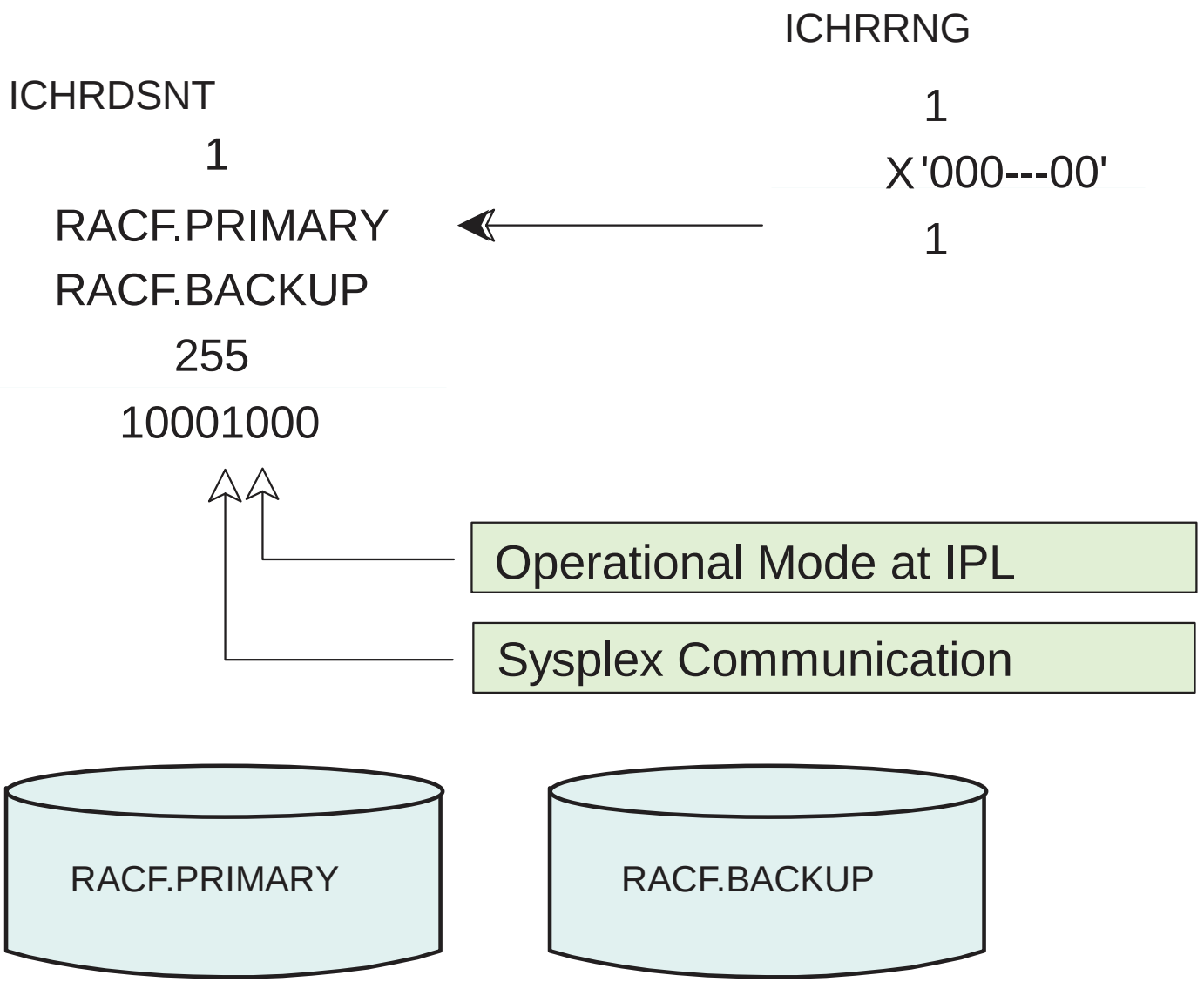


Command Propagation

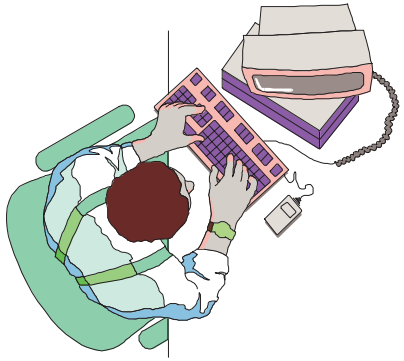
RVARY
- ACTIVE
- INACTIVE
- SWITCH
- DATASHARE
- NODATASHARE

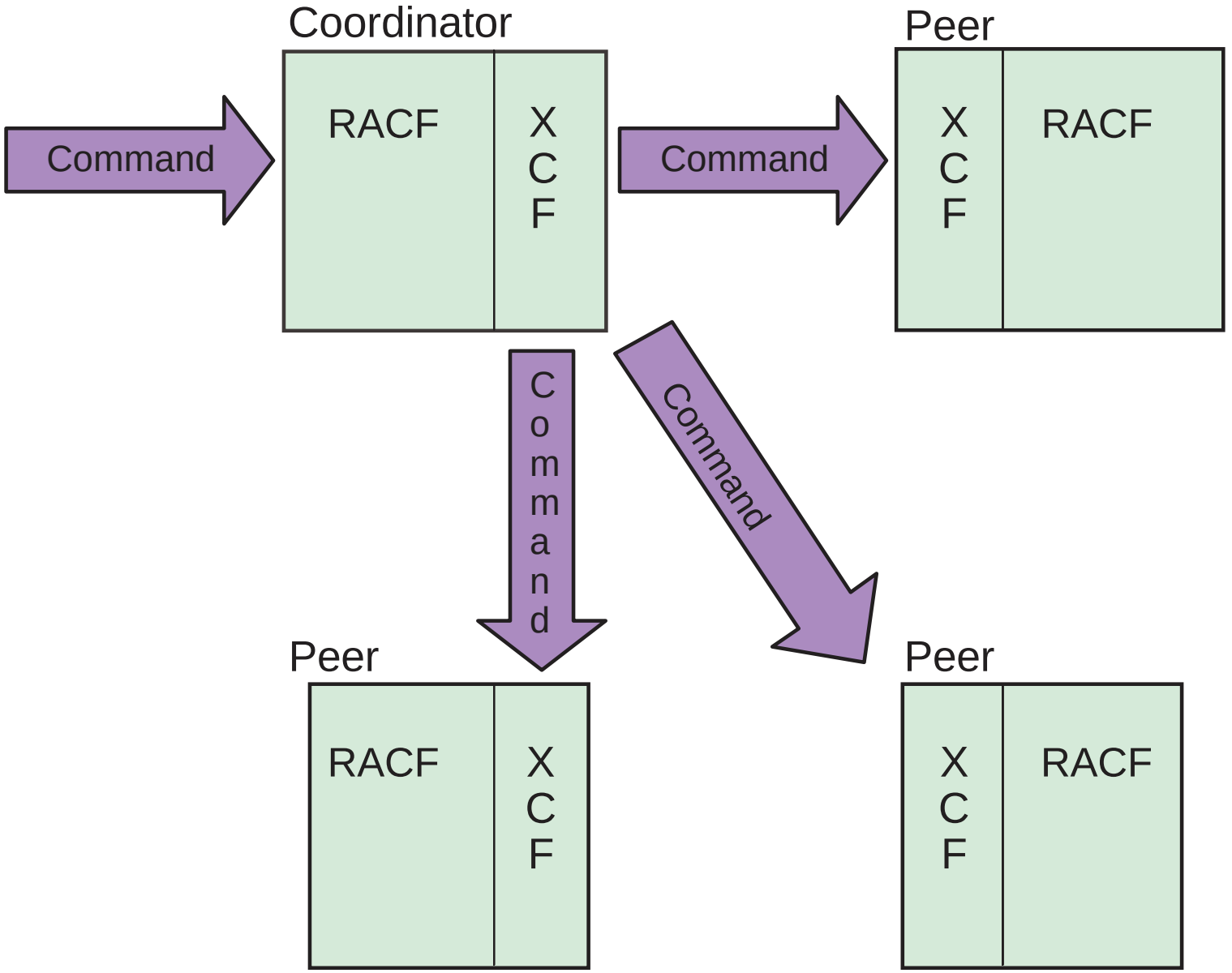
SETROPTS
- RACLIST
- RACLIST REFRESH
- NORACLIST
- GLOBAL
  - GLOBAL REFRESH
- GENERIC REFRESH
- WHEN(PROGRAM)
- WHEN(PROGRAM) REFRESH

RACF Tables

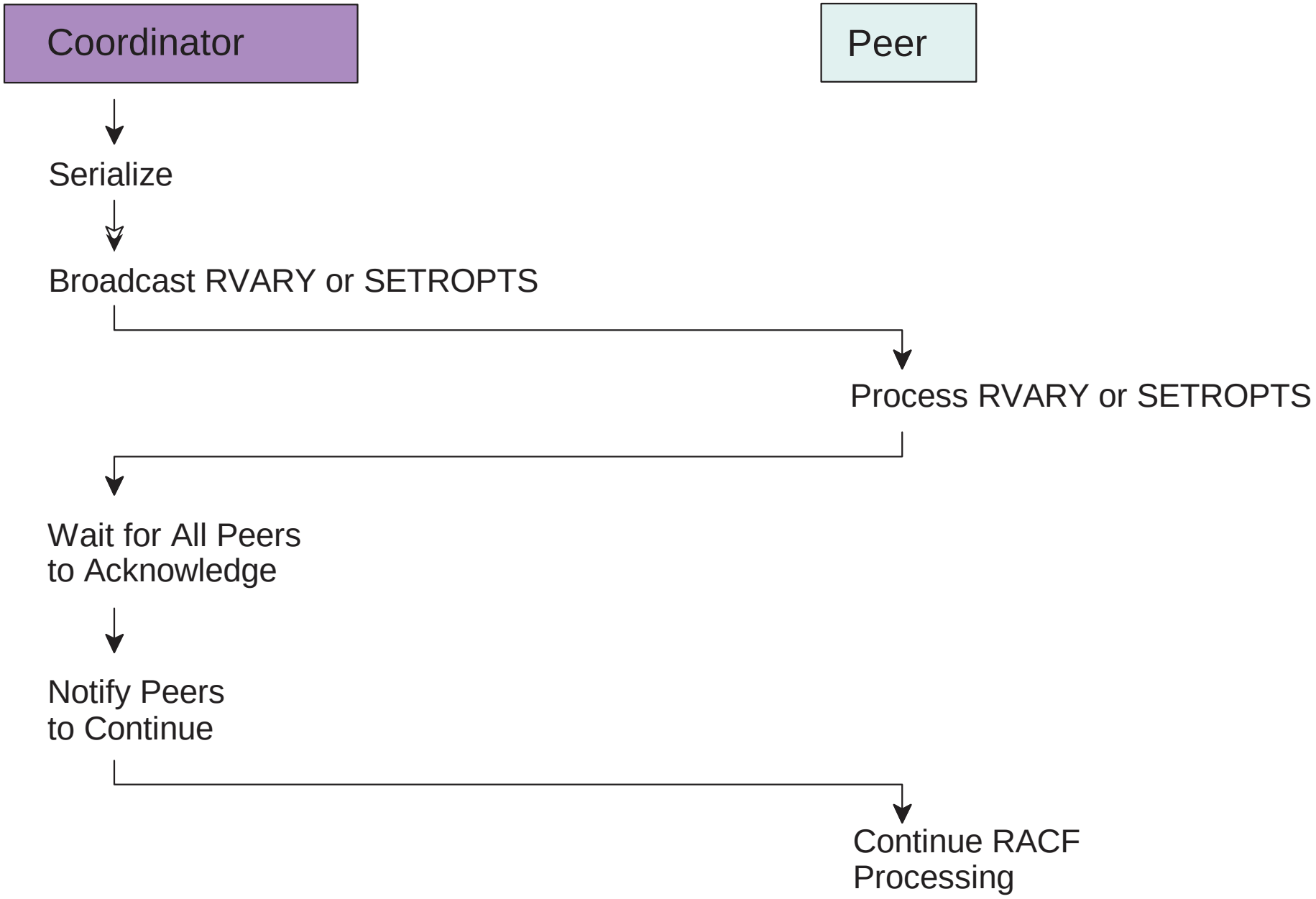

ICHRRNG
1
X'000---00'
1
ICHRDSNT
1
RACF.PRIMARY
RACF.BACKUP
255
10001000
Operational Mode at IPL
Sysplex Communication
RACF.PRIMARY
RACF.BACKUP

RVARY and SETROPTS Command Propagation

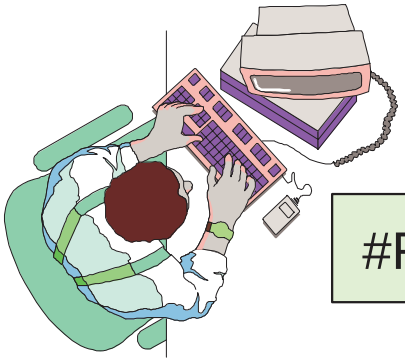




Command Propagation Processing



MVS Command Prefix Facility



Console

#RAC RVARY

SSI

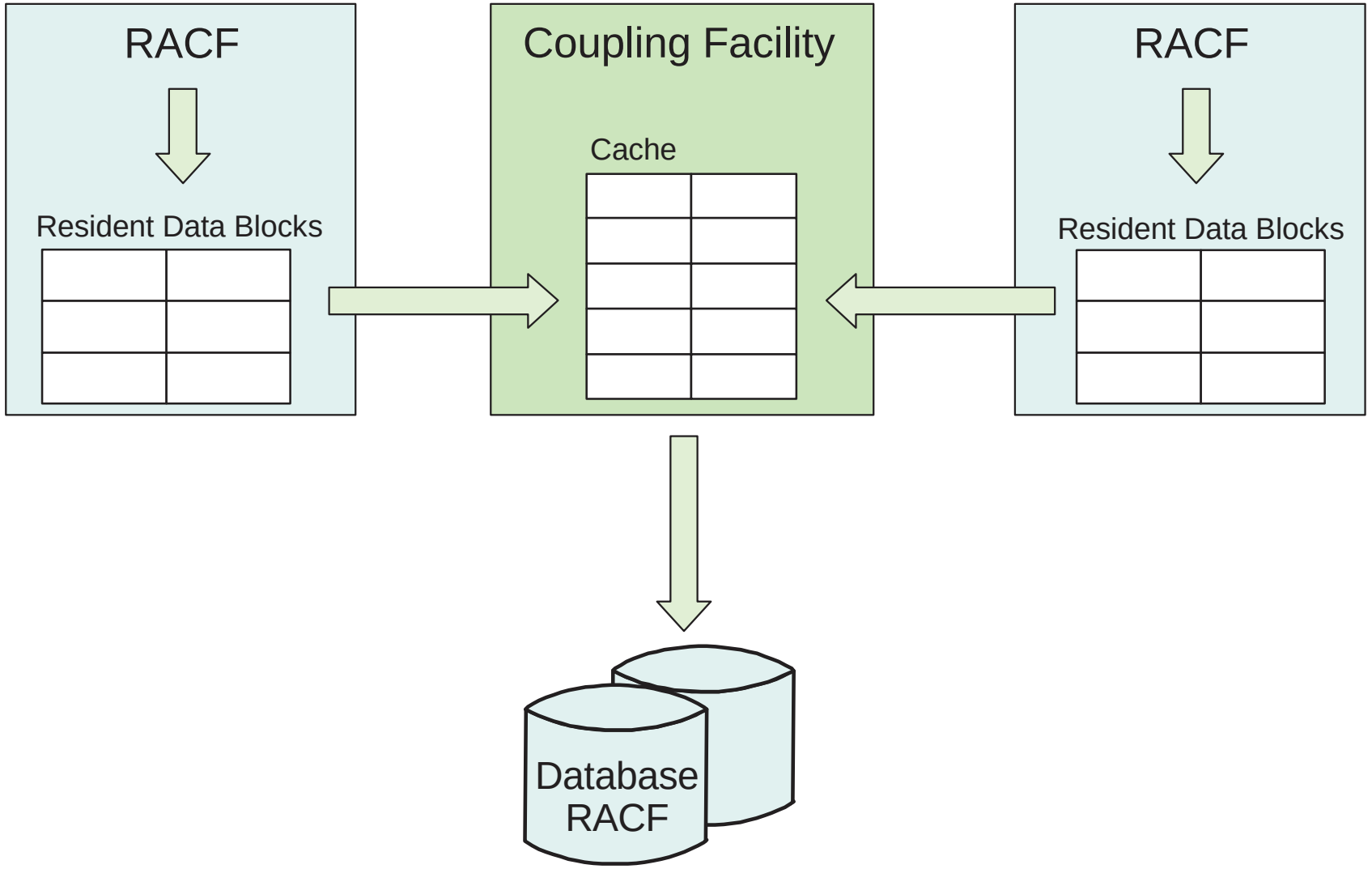
RACF Subsystem

SYS1.PARMLIB

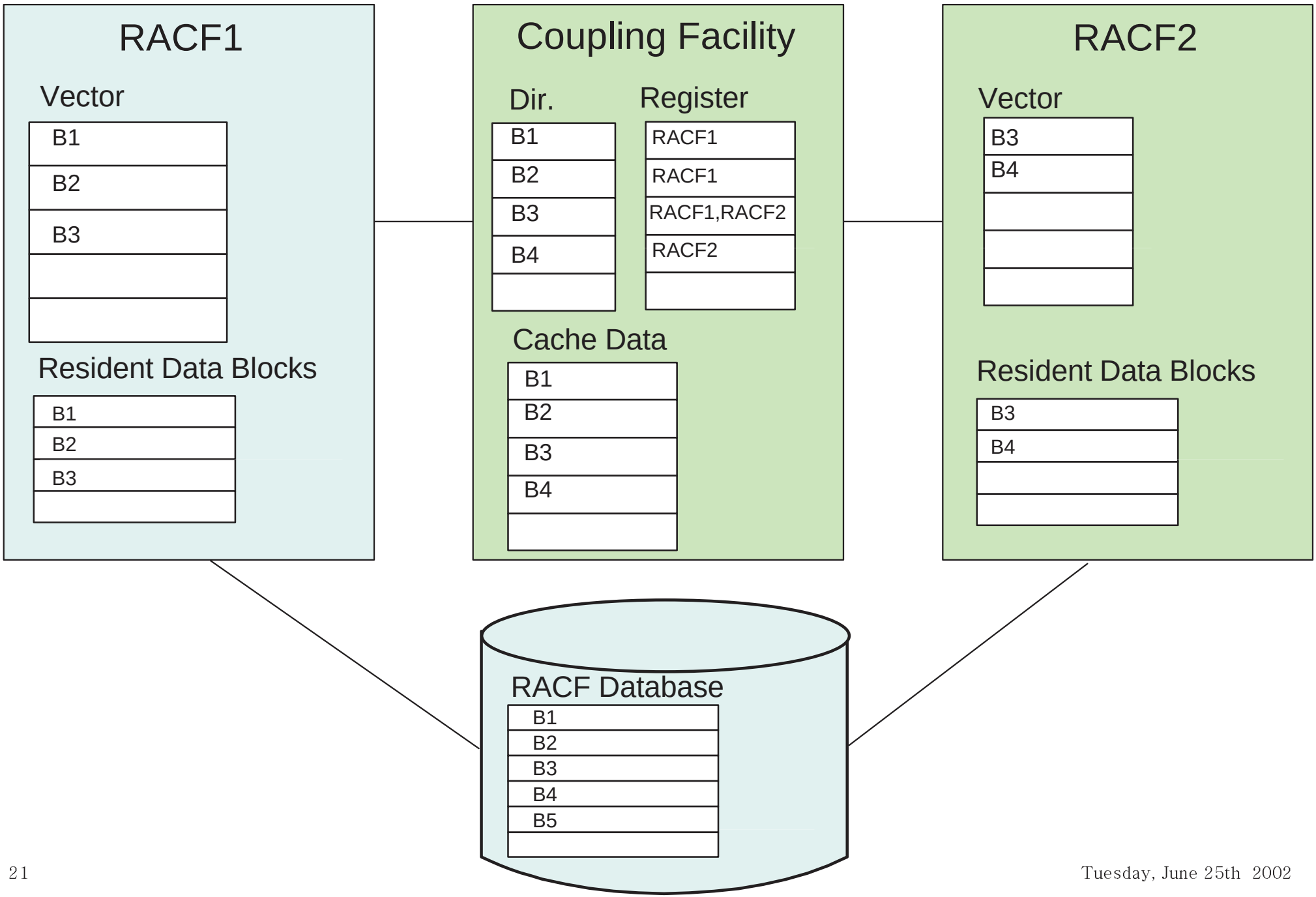
IEFSSNxx

RACF,IRRSSI00,'#RAC,M'

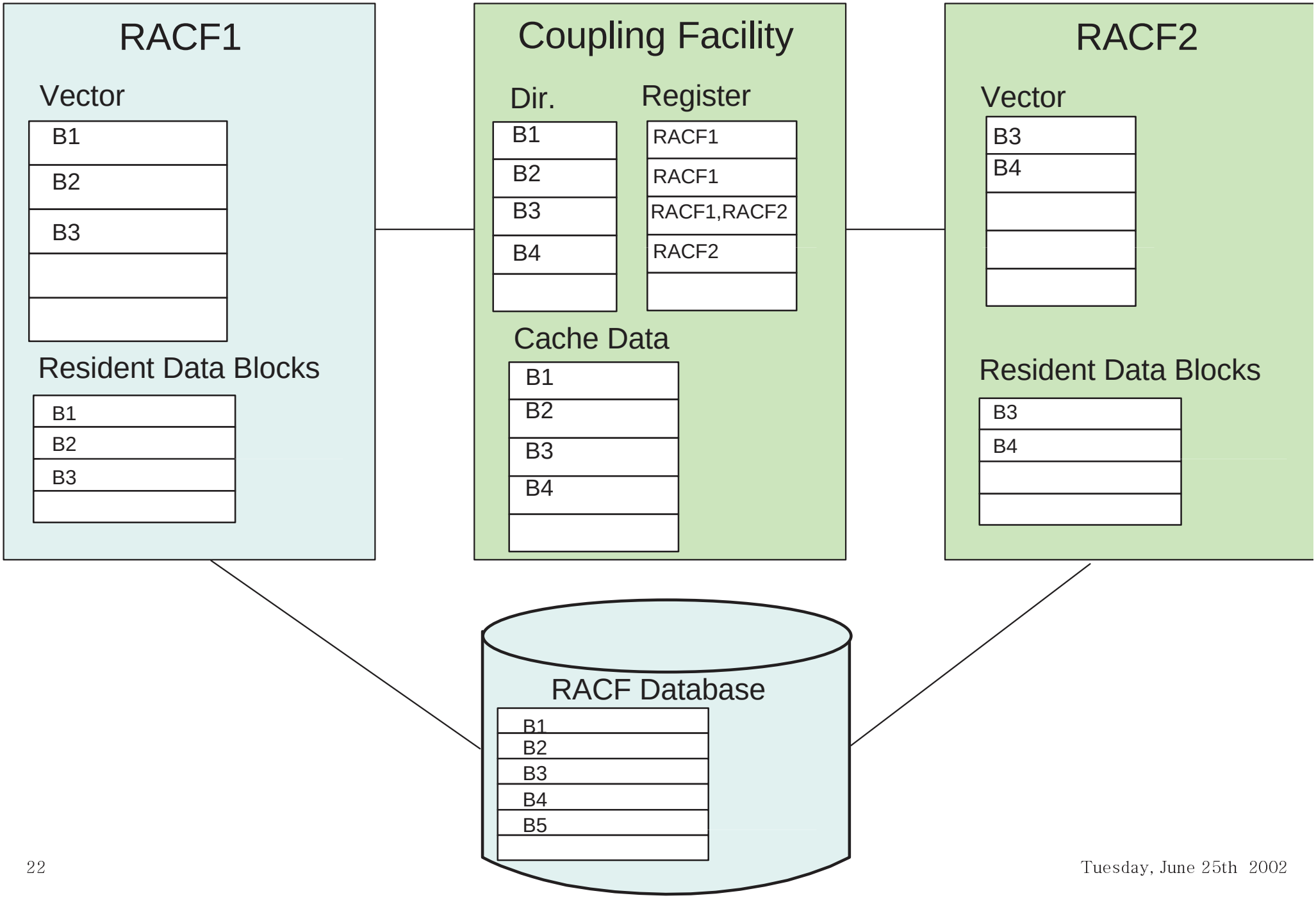
Conceptual View of Cache



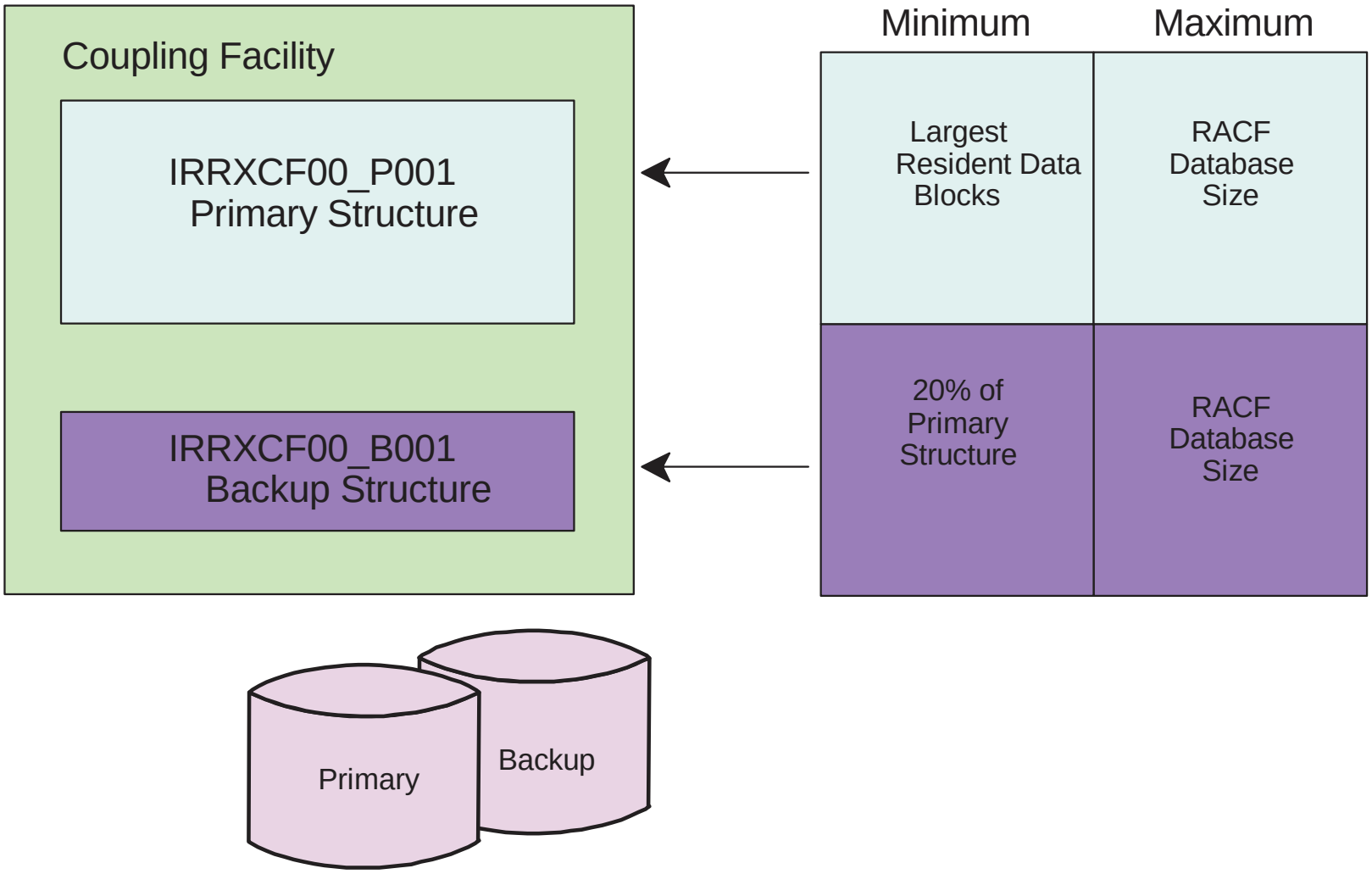
RACF Use of Coupling Facility - Read



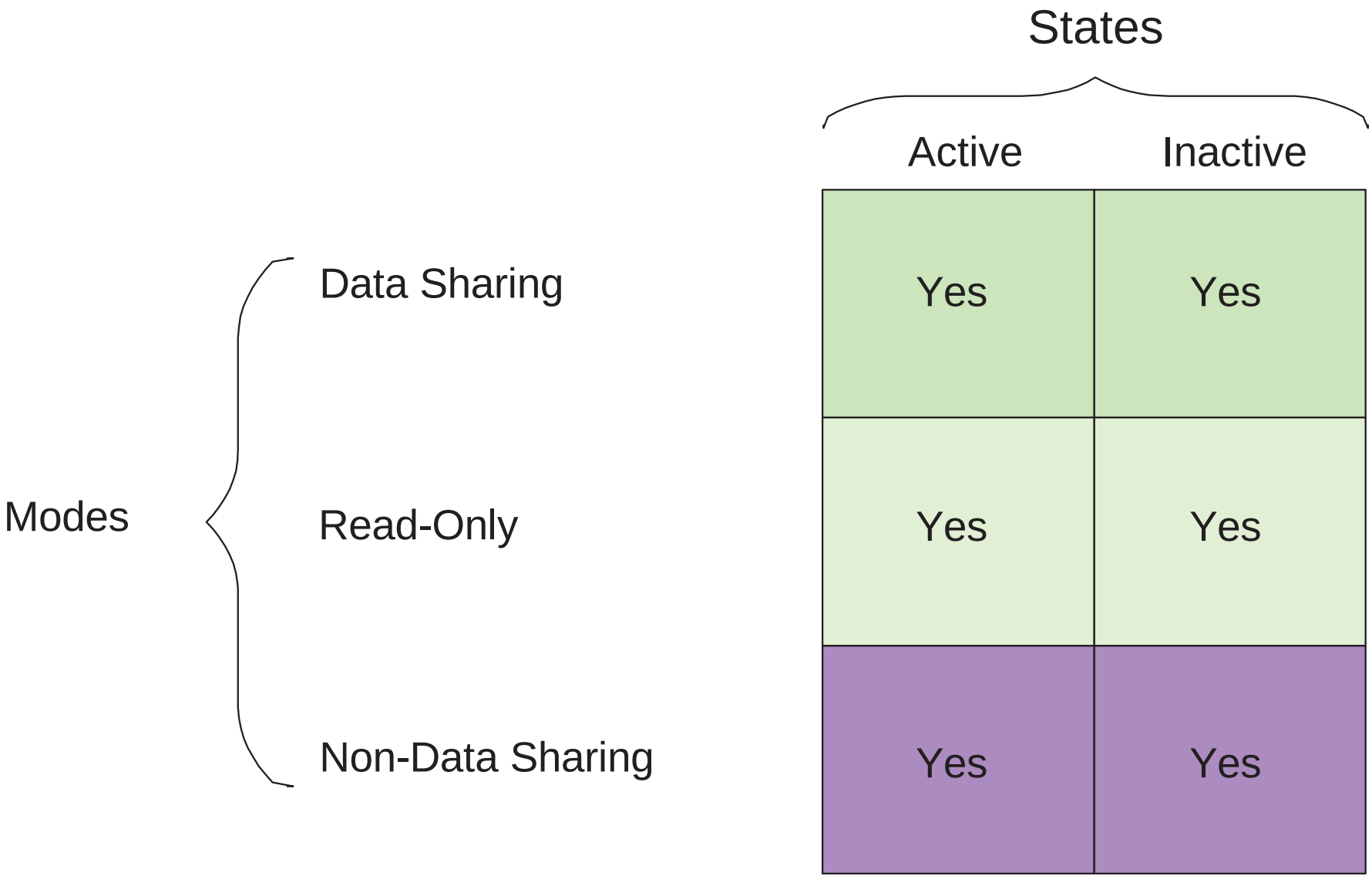
RACF Use of Coupling Facility - Write



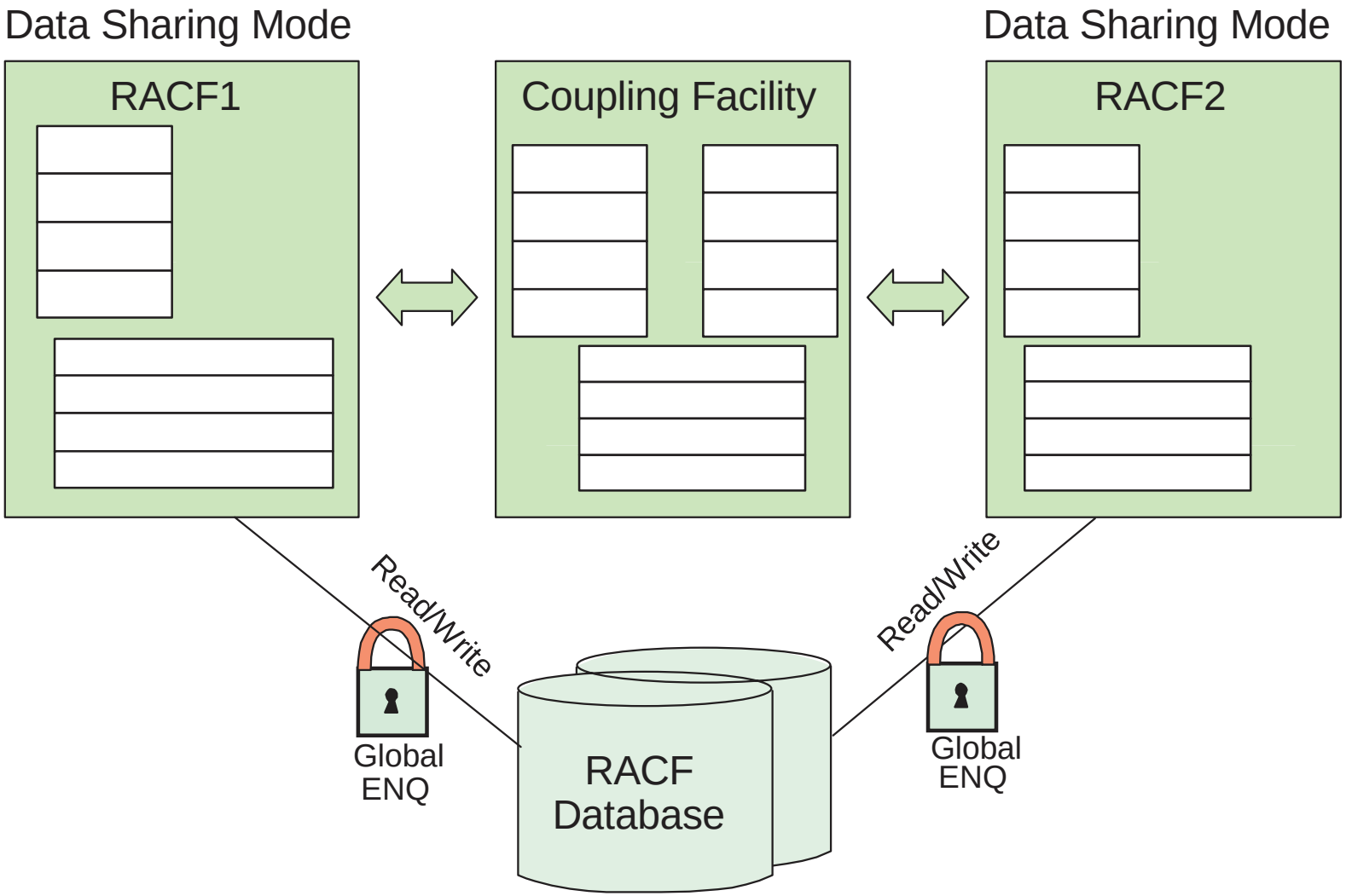
Size of Coupling Facility Cache



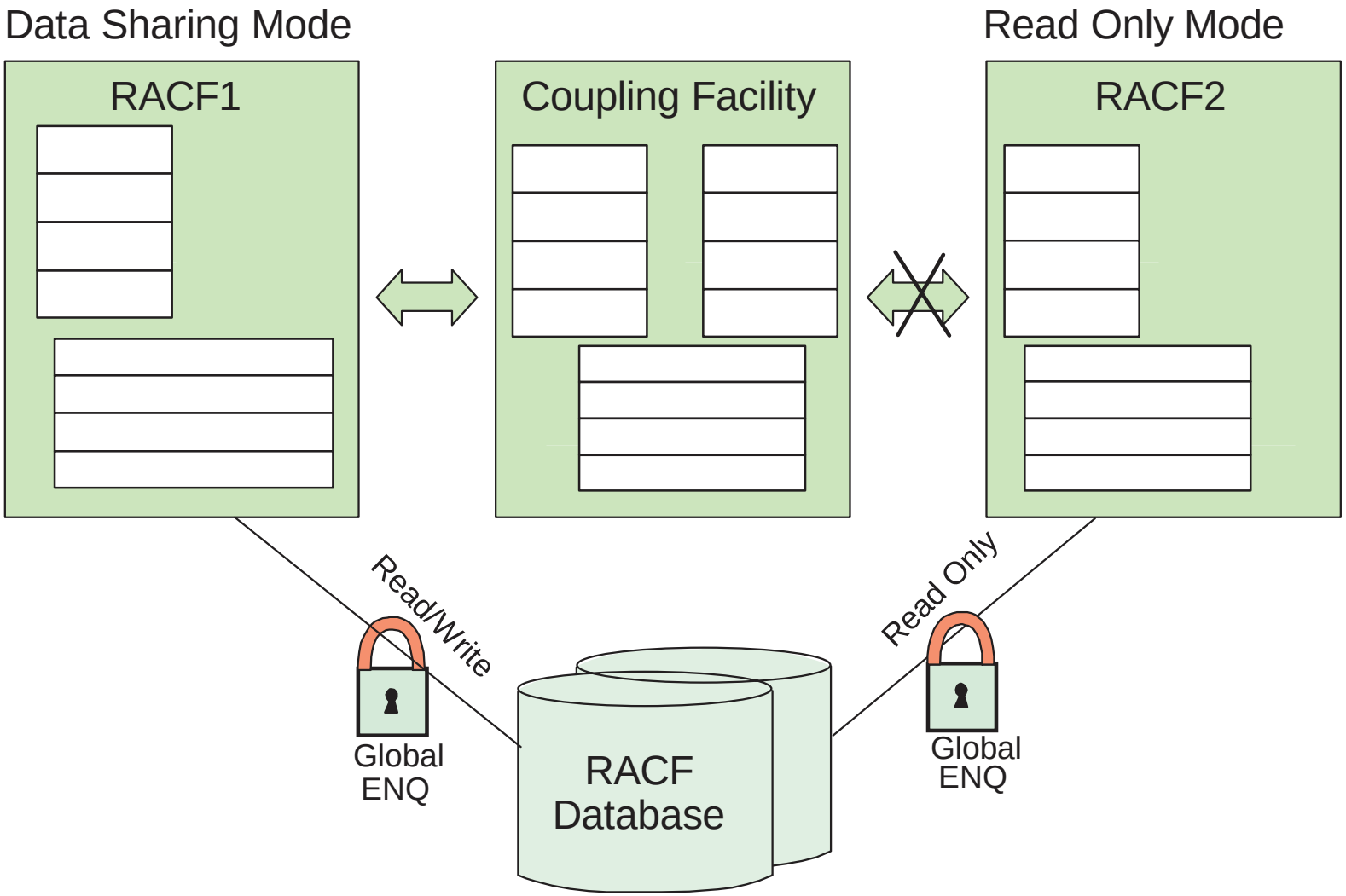
Operational States and Modes



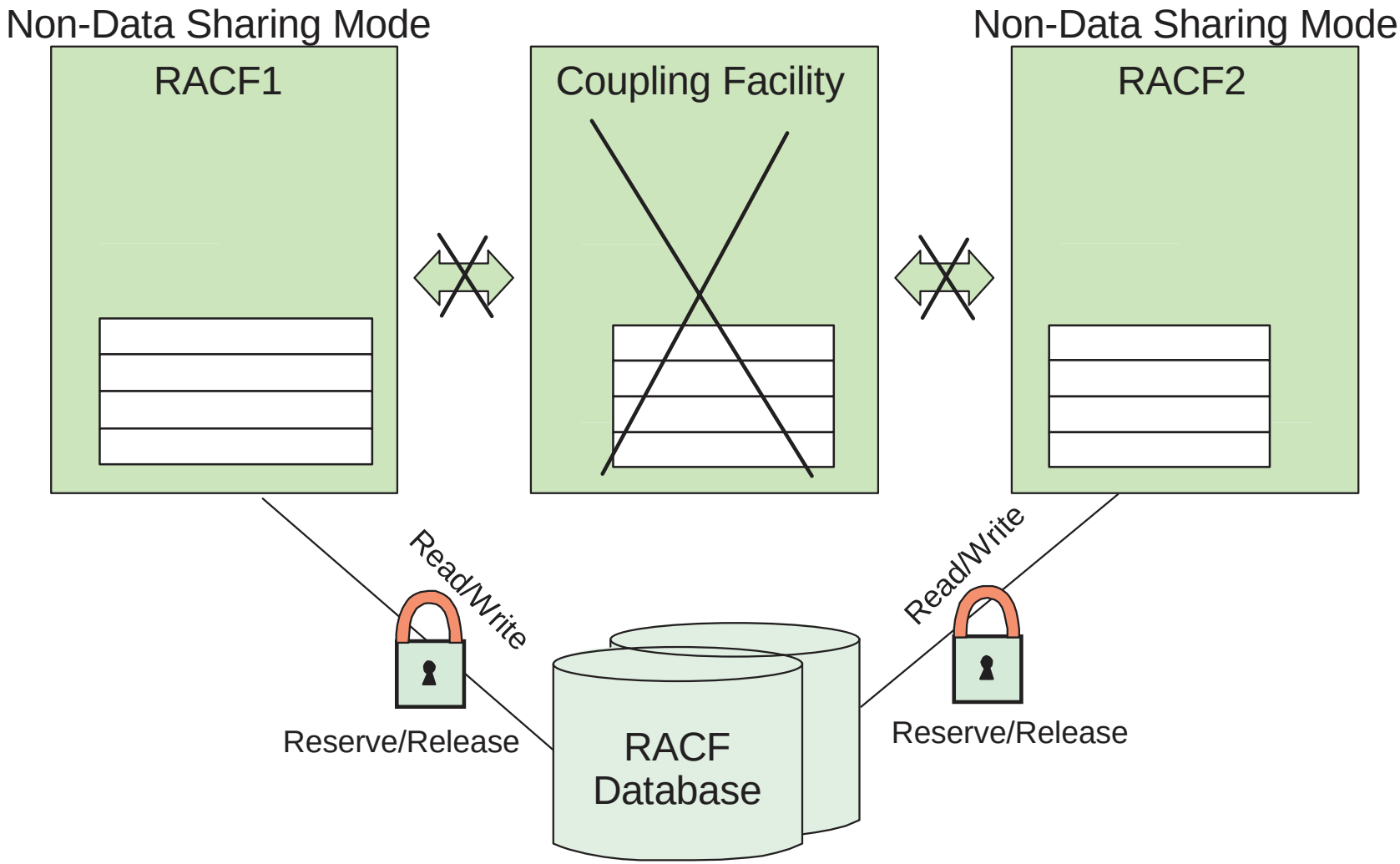
Data Sharing Mode



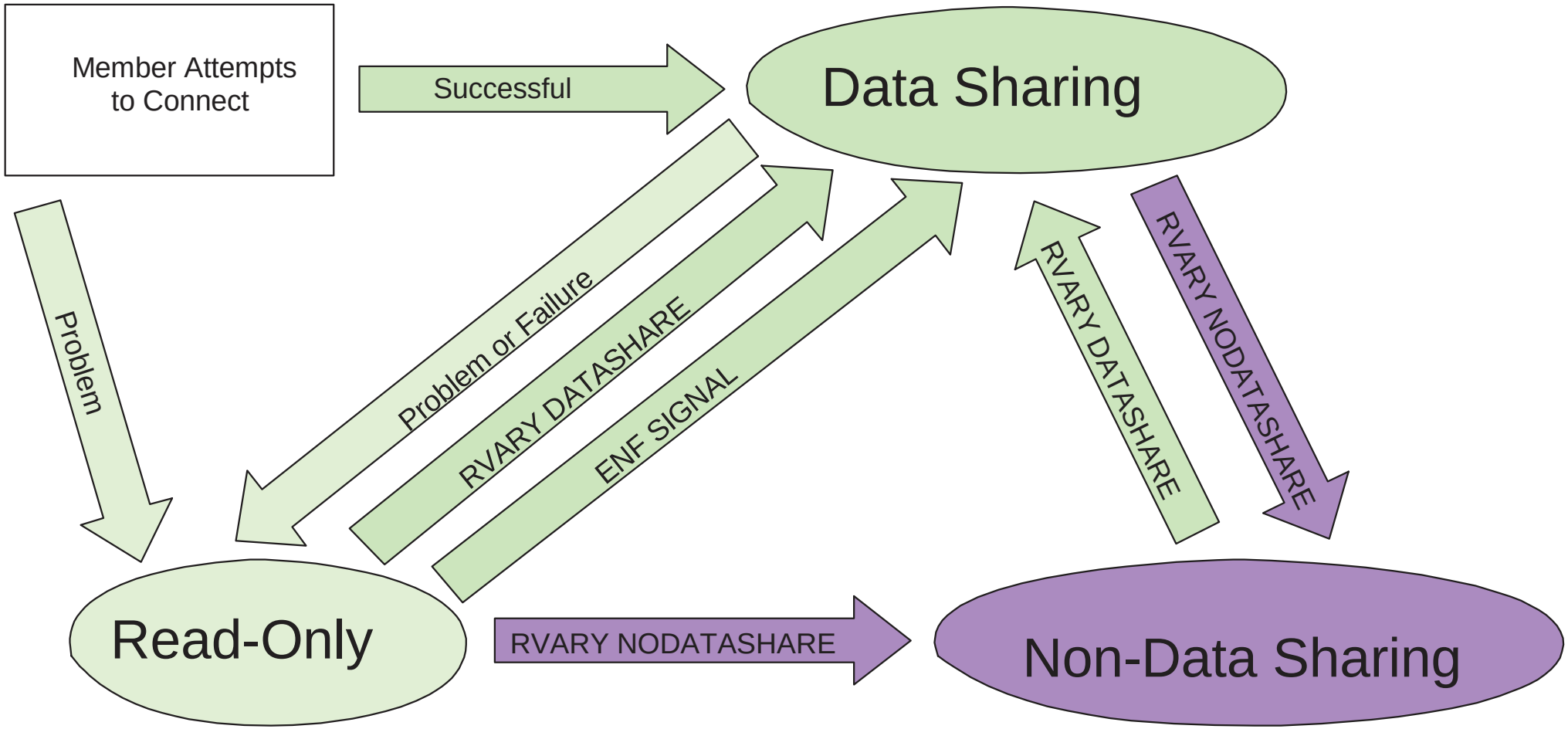
Data Sharing and Read-Only Modes



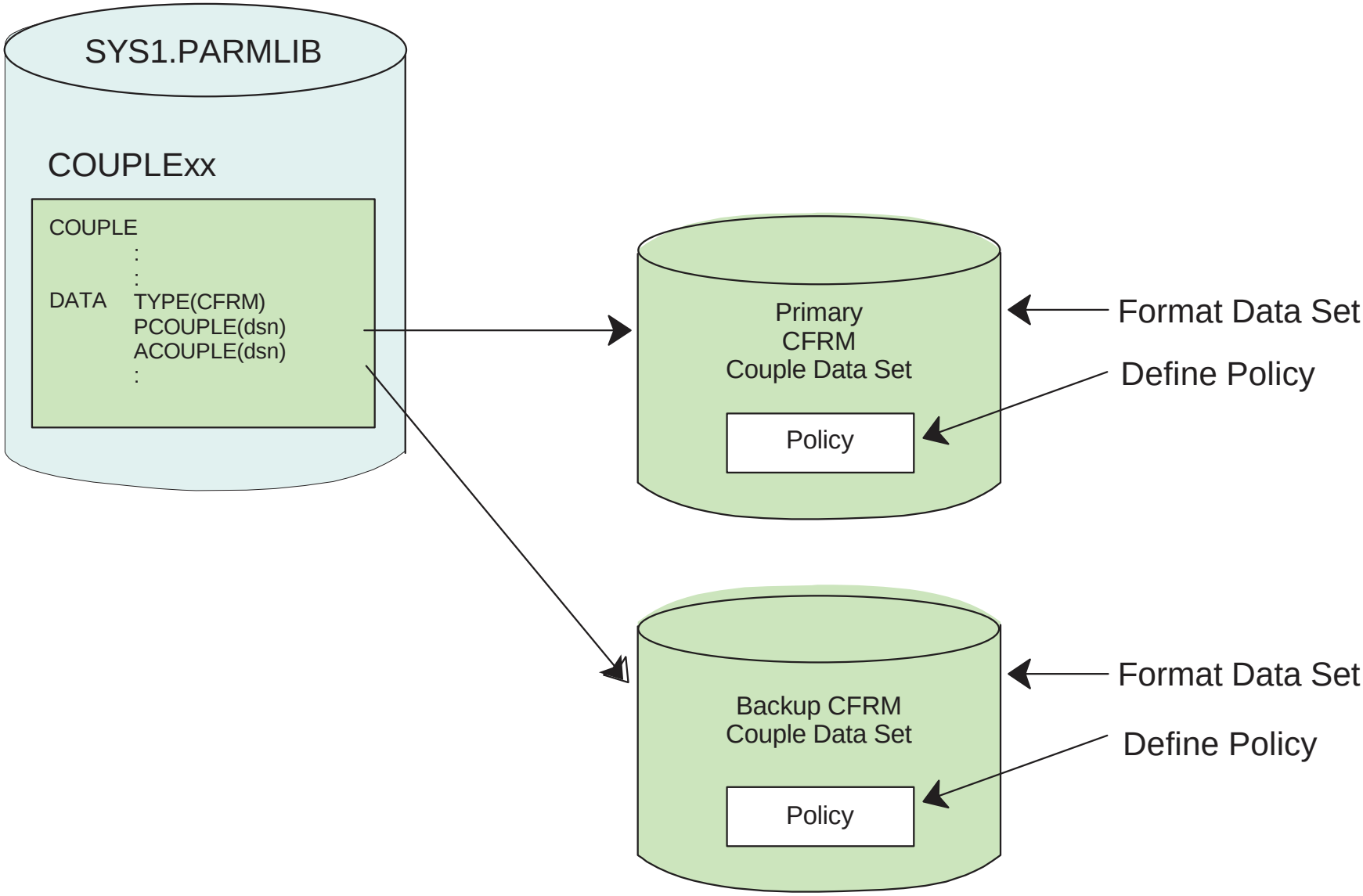
Non-Data Sharing Modes



How Do Modes Change?



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

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