User Experience Defining FICON CTCs

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Disclaimer

The content of this presentation is for demonstration only and is not intended to be an endorsement by Velocity Software. Each site is responsible for their own use of the concepts and examples presented.

- All IOCP decks passed through syntax checking
- All IOCP decks were successfully imported to an IODF
- CBDSREP reports used to verify
- None of these examples were tested on a real processor
- Most of this is simplified; many configurations are more complex

Definition

Is it a CPC or a CEC?

- [Mainframe hardware: Terminology - IBM](#)

  IBM® uses the term central processor complex (CPC) to refer to the physical collection of hardware that includes main storage, one or more central processors, timers, and channels. (Some system programmers use the term central electronic complex (CEC) to refer to the mainframe "box," but the preferred term is CPC.)

Agenda

- **IOCP statements**
- **HCD specific statements**
- **Picture**
- **Code the IOCP**
- **More IOCP examples**
  - More LPARs for SSI eight members
  - Multiple CTC pairs
  - Across CPCs
  - FICON switches
- **Implementation**
- **Reference**
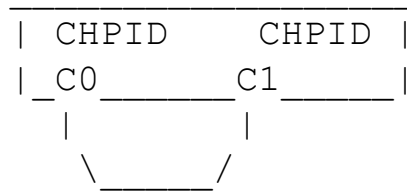
IOCP Statements

- **IOCP macros**
  - ID
    - Describes the CPC
    - MSG1 and MSG2 can be used to describe the machine and/or purpose of this IOCP deck
    - SYSTEM can be important depending on what hardware is included
    - TOK= is generated by the IOCP EXEC
  - RESOURCE
    - Defines the Channel Subsystems (CSS) and Partitions; default CSS is 0
  - CHPID
    - CHPID maps a physical channel (PCHID) to a logical channel path (CHPID)
  - CNTLUNIT
    - Defines some hardware connected to the channel path. For FCTC, it also shows the target LPAR
  - IODEVICE
    - Defines the real devices connected through the CNTLUNIT to the CHPID

- **Reference:**
  - SB10-7177-02 Input/Output Configuration Program User's Guide for ICP IOCP

HCD Specific Statements

- **In z/OS these details may be added via the ISPF HCD dialogue**
- **Can be added through the HCM interface**
- **Some examples in IOCP manual**
- **More details discovered using CBDIOCP**
  - HCD PROFILE
    - MIGRATE_EXTENDED = YES
    - SHOW_IOCP_DEFAULTS = YES
- **Three statements needed to supply necessary details**
  - *HCD SWITCH to define switch characteristics
  - *$HCDC$ to provide continuation to the IOCP macros
  - *$DFLT$ document HCD defaults

Picture

- **Create a picture of your connections**
- **May be simple text or your favorite tool (e.g. PowerPoint)**
- **This is the simplest possible CTC configuration; one pair of CHPIDs**

```
 _____
| CHPID    CHPID |
|_C0_____C1_____|
   |        |
    _____/


   C0        C1
  C010      C110       1   VM1
  C020      C120       2   VM2
  C030      C130       3   VM3
  C040      C140       4   VM4
```

```
 _____
|       CPC1           |
|     IBM 3932-A02     |
|_____|
   ___   ___
  |101| |102|
  |C0 | |C1 |
```
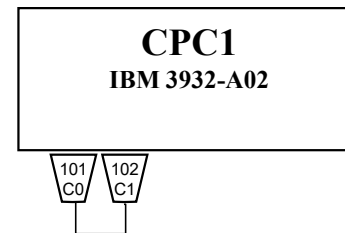
Bare Bones IOCP Source Deck

```
ID     MSG1='CTC1        IOCDS A1          REVISED 24/03/26',   X
       MSG2='I/O CONFIG FOR CPC1 (z16 3932-A02)',              X
       SYSTEM=(3932,1),                                        X
       TOK=('VM-TOKEN',F0F361F2F661F2F4F2F17AF2F67AF2F040404040X
       ,00000000,'03/26/24','21:26:20','SYS1','IODFC1')
*
       RESOURCE PARTITION=((CSS(0),(VM1,1),(VM2,2),(VM3,3),(VM4,4),  *
       (*,5),(*,6),(*,7),(*,8),(*,9),(*,A),(*,B),(*,C),(*,D),  *
       (*,E),(*,F)))
*
       CHPID PATH=(CSS(0),C0),SHARED,                          *
       PARTITION=(VM1,VM2,VM3,VM4),TYPE=FC,PCHID=101
       CNTLUNIT CUNUMBR=C010,PATH=(CSS(0),C0),UNIT=FCTC,       *
       UNITADD=((00,16)),CUADD=01
       IODEVICE ADDRESS=(C010,16),CUNUMBR=C010,UNIT=FCTC,      *
       UNITADD=00
       CNTLUNIT CUNUMBR=C020,PATH=(CSS(0),C0),UNIT=FCTC,       *
       UNITADD=((00,16)),CUADD=02
       IODEVICE ADDRESS=(C020,16),CUNUMBR=C020,UNIT=FCTC,      *
       UNITADD=00
       CNTLUNIT CUNUMBR=C030,PATH=(CSS(0),C0),UNIT=FCTC,       *
       UNITADD=((00,16)),CUADD=03
       IODEVICE ADDRESS=(C030,16),CUNUMBR=C030,UNIT=FCTC,      *
       UNITADD=00
       CNTLUNIT CUNUMBR=C040,PATH=(CSS(0),C0),UNIT=FCTC,       *
       UNITADD=((00,16)),CUADD=04
       IODEVICE ADDRESS=(C040,16),CUNUMBR=C040,UNIT=FCTC,      *
       UNITADD=00
*
```

```
       CHPID PATH=(CSS(0),C1),SHARED,                          *
       PARTITION=(VM1,VM2,VM3,VM4),TYPE=FC,PCHID=102
       CNTLUNIT CUNUMBR=C110,PATH=(CSS(0),C1),UNIT=FCTC,       *
       UNITADD=((00,16)),CUADD=01
       IODEVICE ADDRESS=(C110,16),CUNUMBR=C110,UNIT=FCTC,      *
       UNITADD=00
       CNTLUNIT CUNUMBR=C120,PATH=(CSS(0),C1),UNIT=FCTC,       *
       UNITADD=((00,16)),CUADD=02
       IODEVICE ADDRESS=(C120,16),CUNUMBR=C120,UNIT=FCTC,      *
       UNITADD=00
       CNTLUNIT CUNUMBR=C130,PATH=(CSS(0),C1),UNIT=FCTC,       *
       UNITADD=((00,16)),CUADD=03
       IODEVICE ADDRESS=(C130,16),CUNUMBR=C130,UNIT=FCTC,      *
       UNITADD=00
       CNTLUNIT CUNUMBR=C140,PATH=(CSS(0),C1),UNIT=FCTC,       *
       UNITADD=((00,16)),CUADD=04
       IODEVICE ADDRESS=(C140,16),CUNUMBR=C140,UNIT=FCTC,      *
       UNITADD=00
```

Code the IOCP; Everything the Hardware Needs

```
ID     MSG1='CTC1        IOCDS A1              REVISED 24/03/26',    X
       MSG2='I/O CONFIG FOR CPC1 (z16 3932-A02)',                   X
       SYSTEM=(3932,1),                                             X
       TOK=('VM-TOKEN',F0F361F2F661F2F4F2F17AF2F67AF2F040404040X
       ,00000000,'03/26/24','21:26:20','SYS1','IODFC1')
*
       RESOURCE PARTITION=((CSS(0),(VM1,1),(VM2,2),(VM3,3),(VM4,4),   *
             (*,5),(*,6),(*,7),(*,8),(*,9),(*,A),(*,B),(*,C),(*,D),   *
             (*,E),(*,F)))
```

- **ID**
  - Describes the CPC
  - MSG1 and MSG2 can be used to describe the machine and/or purpose of this IOCP deck
  - SYSTEM can be important depending on what hardware is included
  - TOK= is generated by the IOCP EXEC

- **RESOURCE**
  - Defines the Partitions and MIF ID for each partition
    - Since the HSA has a slot for every possible LPAR, the IOCP RESOURCE macro also has a slot for every partition in every CSS

Code the IOCP; Comments May Help Understanding

```
        CHPID PATH=(CSS(0),C0),SHARED,                              *        CHPID PATH=(CSS(0),C1),SHARED,                              *
              PARTITION=(VM1,VM2,VM3,VM4),TYPE=FC,PCHID=101               PARTITION=(VM1,VM2,VM3,VM4),TYPE=FC,PCHID=102
*                                                                  *
*    FCTC CONTROL UNIT target VM1                                   *    FCTC CONTROL UNIT 1 target VM1
        CNTLUNIT CUNUMBR=C010,PATH=(CSS(0),C0),UNIT=FCTC,         *        CNTLUNIT CUNUMBR=C110,PATH=(CSS(0),C1),UNIT=FCTC,         *
              UNITADD=((00,16)),CUADD=01                                 UNITADD=((00,16)),CUADD=01
        IODEVICE ADDRESS=(C010,16),CUNUMBR=C010,UNIT=FCTC,        *        IODEVICE ADDRESS=(C110,16),CUNUMBR=C110,UNIT=FCTC,        *
              UNITADD=00                                                 UNITADD=00
*                                                                  *
*    FCTC CONTROL UNIT target VM2                                   *    FCTC CONTROL UNIT 2 target VM2
        CNTLUNIT CUNUMBR=C020,PATH=(CSS(0),C0),UNIT=FCTC,         *        CNTLUNIT CUNUMBR=C120,PATH=(CSS(0),C1),UNIT=FCTC,         *
              UNITADD=((00,16)),CUADD=02                                 UNITADD=((00,16)),CUADD=02
        IODEVICE ADDRESS=(C020,16),CUNUMBR=C020,UNIT=FCTC,        *        IODEVICE ADDRESS=(C120,16),CUNUMBR=C120,UNIT=FCTC,        *
              UNITADD=00                                                 UNITADD=00
*                                                                  *
*    FCTC CONTROL UNIT target VM3                                   *    FCTC CONTROL UNIT 3 target VM3
        CNTLUNIT CUNUMBR=C030,PATH=(CSS(0),C0),UNIT=FCTC,         *        CNTLUNIT CUNUMBR=C130,PATH=(CSS(0),C1),UNIT=FCTC,         *
              UNITADD=((00,16)),CUADD=03                                 UNITADD=((00,16)),CUADD=03
        IODEVICE ADDRESS=(C030,16),CUNUMBR=C030,UNIT=FCTC,        *        IODEVICE ADDRESS=(C130,16),CUNUMBR=C130,UNIT=FCTC,        *
              UNITADD=00                                                 UNITADD=00
*                                                                  *
*    FCTC CONTROL UNIT target VM4                                   *    FCTC CONTROL UNIT 4 target VM4
        CNTLUNIT CUNUMBR=C040,PATH=(CSS(0),C0),UNIT=FCTC,         *        CNTLUNIT CUNUMBR=C140,PATH=(CSS(0),C1),UNIT=FCTC,         *
              UNITADD=((00,16)),CUADD=04                                 UNITADD=((00,16)),CUADD=04
        IODEVICE ADDRESS=(C040,16),CUNUMBR=C040,UNIT=FCTC,        *        IODEVICE ADDRESS=(C140,16),CUNUMBR=C140,UNIT=FCTC,        *
              UNITADD=00                                                 UNITADD=00
```

Code the IOCP; Everything the Hardware Needs

```
         CHPID  PATH=(CSS(0),C0),SHARED,                            *
               PARTITION=(VM1,VM2,VM3,VM4),TYPE=FC,PCHID=101
*
*     FCTC CONTROL UNIT target VM1
         CNTLUNIT  CUNUMBR=C010,PATH=(CSS(0),C0),UNIT=FCTC,         *
               UNITADD=((00,16)),CUADD=01
         IODEVICE  ADDRESS=(C010,16),CUNUMBR=C010,UNIT=FCTC,        *
               UNITADD=00
```

- **CHPID**
  - FICON CTCs are defined on TYPE=FC CHPIDs
- **CNTLUNIT**
  - Target LPAR is specified using the CUADD parameter. The number is the MIF ID of the target LPAR
- **IODEVICE**
  - Actual real devices (RDEV)
  - Using a device in this range will connect to the LPAR with a MIF-id of 01 or VM1

Verify the FICON CTCs Using HCD

- **EXEC CBDSIODF IODFC1 WORKIODF A 2048 (REP**
  - Create an empty IODF

- **EXEC CBDSMIGR IODFC1 * A CTC1   IOCP   A I CPC1   3932-A02 LPAR H221130**
  - Migrate the IOCP source into the IODF

- **EXEC CBDSREP IODFC1 WORKIODF A IODFC1   REP_CTC A T (REP**
  - Create the CTC report

```
CTC CONNECTION REPORT                    TIME: 16:11  DATE: 2024-05-24  PAGE T-  1
     ---------------------- SIDE 1 ---------------------- - COMMON -- ---------------------- SIDE 2 ----------------------
     PROC.CSSID PART.    DEVICE --CHPID--- ENTRY -----CU----- --DEVICE--- PROC.CSSID PART.    DEVICE ---CHPID-- ENTRY -----CU-----
LINE             NAME    NUM OS ID MOD TYP SW PO ID   LA   #  RNG TYPE UA                NAME    NUM OS ID MOD TYP SW PO ID   LA  #
------ ---------- -------- ------ -- --- --- --- -- --- ---- -- --- ---- ---- -------- -------- ------ -- --- --- --- -- -- ---- ---- -- --
   1* CPC1.0     VM1      C010 N C0 SHR FC       C010      1  16 FCTC 00
   2* CPC1.0     VM1      C020 N C0 SHR FC       C020      2  16 FCTC 00
   3* CPC1.0     VM1      C030 N C0 SHR FC       C030      3  16 FCTC 00
   4* CPC1.0     VM1      C040 N C0 SHR FC       C040      4  16 FCTC 00
   5* CPC1.0     VM1      C110 N C1 SHR FC       C110      1  16 FCTC 00
   6* CPC1.0     VM1      C120 N C1 SHR FC       C120      2  16 FCTC 00
   7* CPC1.0     VM1      C130 N C1 SHR FC       C130      3  16 FCTC 00
   8* CPC1.0     VM1      C140 N C1 SHR FC       C140      4  16 FCTC 00
------ ---------- -------- ------ -- --- --- --- -- --- ---- -- --- ---- ---- -------- -------- ------ -- --- --- --- -- -- ---- ---- -- --
```

HCD Needs More to Complete the Picture

- ***$HCDC$**
  - Continuation of standard IOCP macros to provide HCD-specific information
- ***$DFLT$**
  - Shows HCD defaults for some IOCP macros
- ***HCD SWITCH**
  - Define characteristics of a FICON switch

- **Some statement coding information in z/OS HCD User's Guide**
- **Best examples come from IOCP source extracted from HCD using CBDSIOCP EXEC with NOSA option**

HCD Needs More to Complete the Picture

```
         ID    MSG1='CTC1        IOCDS A1            REVISED 24/03/26',   X
               MSG2='I/O CONFIG FOR CPC1 (z16 3932-A02)',               X
               SYSTEM=(3932,1),                                         X
               TOK=('VM-TOKEN',F0F361F2F661F2F4F2F17AF2F67AF2F040404040X
               ,00000000,'03/26/24','21:26:20','SYS1','IODFC1')
*$HCDC$        DESC='CPC1 - z16-A02'
*$HCDC$        SERIAL='0123453932'
*
*===================================================================
         RESOURCE PARTITION=((CSS(0),(VM1,1),(VM2,2),(VM3,3),(VM4,4),  *
               (*,5),(*,6),(*,7),(*,8),(*,9),(*,A),(*,B),(*,C),(*,D),  *
               (*,E),(*,F)))
*$HCDC$        USAGE=(OS,OS,OS,OS,CF/OS,CF/OS,CF/OS,                    *
               CF/OS,CF/OS,CF/OS,CF/OS,CF/OS,CF/OS,CF/OS,CF/OS)
```

- **ID**
  - The *$HCDC$ statements provide more details about the CPC; mostly comments / description

- **RESOURCE**
  - The *$HCDC$ statements tell HCD what type of LPAR: CF. OS, FW

HCD Needs More to Complete the Picture

```
        CHPID PATH=(CSS(0),C0),SHARED,                    *                CHPID PATH=(CSS(0),C1),SHARED,                    *
              PARTITION=(VM1,VM2,VM3,VM4),TYPE=FC,PCHID=101                      PARTITION=(VM1,VM2,VM3,VM4),TYPE=FC,PCHID=102
*                                                                   *
*   FCTC CONTROL UNIT target VM1                                    *   FCTC CONTROL UNIT 1 target VM1
        CNTLUNIT CUNUMBR=C010,PATH=(CSS(0),C0),UNIT=FCTC,  *                CNTLUNIT CUNUMBR=C110,PATH=(CSS(0),C1),UNIT=FCTC,  *
              UNITADD=((00,16)),CUADD=01                                         UNITADD=((00,16)),CUADD=01
*$HCDC$       SERIAL='C000000001'                                   *$HCDC$       SERIAL='C000000001'
        IODEVICE ADDRESS=(C010,16),CUNUMBR=C010,UNIT=FCTC, *                IODEVICE ADDRESS=(C110,16),CUNUMBR=C110,UNIT=FCTC, *
              UNITADD=00                                                         UNITADD=00
*$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM3,VM4))                  *$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM3,VM4))
*                                                                   *
*   FCTC CONTROL UNIT target VM2                                    *   FCTC CONTROL UNIT 2 target VM2
        CNTLUNIT CUNUMBR=C020,PATH=(CSS(0),C0),UNIT=FCTC,  *                CNTLUNIT CUNUMBR=C120,PATH=(CSS(0),C1),UNIT=FCTC,  *
              UNITADD=((00,16)),CUADD=02                                         UNITADD=((00,16)),CUADD=02
*$HCDC$       SERIAL='C000000001'                                   *$HCDC$       SERIAL='C000000001'
        IODEVICE ADDRESS=(C020,16),CUNUMBR=C020,UNIT=FCTC, *                IODEVICE ADDRESS=(C120,16),CUNUMBR=C120,UNIT=FCTC, *
              UNITADD=00                                                         UNITADD=00
*$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM3,VM4))                  *$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM3,VM4))
*                                                                   *
*   FCTC CONTROL UNIT target VM3                                    *   FCTC CONTROL UNIT 3 target VM3
        CNTLUNIT CUNUMBR=C030,PATH=(CSS(0),C0),UNIT=FCTC,  *                CNTLUNIT CUNUMBR=C130,PATH=(CSS(0),C1),UNIT=FCTC,  *
              UNITADD=((00,16)),CUADD=03                                         UNITADD=((00,16)),CUADD=03
*$HCDC$       SERIAL='C000000001'                                   *$HCDC$       SERIAL='C000000001'
        IODEVICE ADDRESS=(C030,16),CUNUMBR=C030,UNIT=FCTC, *                IODEVICE ADDRESS=(C130,16),CUNUMBR=C130,UNIT=FCTC, *
              UNITADD=00                                                         UNITADD=00
*$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM3,VM4))                  *$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM3,VM4))
*                                                                   *
*   FCTC CONTROL UNIT target VM4                                    *   FCTC CONTROL UNIT 4 target VM4
        CNTLUNIT CUNUMBR=C040,PATH=(CSS(0),C0),UNIT=FCTC,  *                CNTLUNIT CUNUMBR=C140,PATH=(CSS(0),C1),UNIT=FCTC,  *
              UNITADD=((00,16)),CUADD=04                                         UNITADD=((00,16)),CUADD=04
*$HCDC$       SERIAL='C000000001'                                   *$HCDC$       SERIAL='C000000001'
        IODEVICE ADDRESS=(C040,16),CUNUMBR=C040,UNIT=FCTC, *                IODEVICE ADDRESS=(C140,16),CUNUMBR=C140,UNIT=FCTC, *
              UNITADD=00                                                         UNITADD=00
*$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM3,VM4))                  *$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM3,VM4))
                                                                    *
```

HCD Needs More to Complete the Picture

- **For point-to-point CTC connections, a serial number must be added to all CNTLUNIT macros that are part of the same connection**
  - *$HCDC$ SERIAL='C000000001'

- **To document defaults such as all LPARs that share the same resource**
  - *$DFLT$ PARTITION=((CSS(0),VM1,VM2,VM3,VM4))

Verify the FICON CTCs Using HCD

- **EXEC CBDSIODF IODFC1 WORKIODF A 2048 (REP**
  - Create an empty IODF

- **EXEC CBDSMIGR IODFC1 * A CTC1   IOCP   A I CPC1   3932-A02 LPAR H221130**
  - Migrate the IOCP source into the IODF

- **EXEC CBDSREP IODFC1 WORKIODF A IODFC1   REP_CTC A T (REP**
  - Create the CTC report

```
CTC CONNECTION REPORT                    TIME: 21:27  DATE: 2024-03-26  PAGE T-   1
         ----------------------- SIDE 1 ---------------------- - COMMON -- ----------------------- SIDE 2 ----------------------
         PROC.CSSID PART.      DEVICE --CHPID--- ENTRY -----CU----   --DEVICE--- PROC.CSSID PART.      DEVICE ---CHPID-- ENTRY -----CU-----
LINE                NAME       NUM OS ID MOD TYP SW PO ID   LA   #  RNG TYPE UA              NAME       NUM OS ID MOD TYP SW PO ID   LA   #
------ ---------- -------- ------ -- --- --- --- -- --- ---- --- --- --- ---- ---- -------- -------- ------ -- --- --- --- -- --- ---- ---- --
   1*  CPC1.0     VM1        C010 N C0  SHR FC        C010    1   16 FCTC 00 CPC1.0     VM1        C110 N C1  SHR FC        C110    1
   2   CPC1.0     VM1        C020 N C0  SHR FC        C020    2   16 FCTC 00 CPC1.0     VM2        C110 N C1  SHR FC        C110    1
   3   CPC1.0     VM1        C030 N C0  SHR FC        C030    3   16 FCTC 00 CPC1.0     VM3        C110 N C1  SHR FC        C110    1
   4   CPC1.0     VM1        C040 N C0  SHR FC        C040    4   16 FCTC 00 CPC1.0     VM4        C110 N C1  SHR FC        C110    1
   5*  CPC1.0     VM1        C110 N C1  SHR FC        C110    1   16 FCTC 00 CPC1.0     VM1        C010 N C0  SHR FC        C010    1
   6   CPC1.0     VM1        C120 N C1  SHR FC        C120    2   16 FCTC 00 CPC1.0     VM2        C010 N C0  SHR FC        C010    1
   7   CPC1.0     VM1        C130 N C1  SHR FC        C130    3   16 FCTC 00 CPC1.0     VM3        C010 N C0  SHR FC        C010    1
   8   CPC1.0     VM1        C140 N C1  SHR FC        C140    4   16 FCTC 00 CPC1.0     VM4        C010 N C0  SHR FC        C010    1
------ ---------- -------- ------ -- --- --- --- -- --- ---- --- --- --- ---- ---- -------- -------- ------ -- --- --- --- -- --- ---- ---- --
```

Without vs With *$HCDC$ SERIAL='C000000001'

```
CTC CONNECTION REPORT                    TIME: 16:11  DATE: 2024-05-24  PAGE T-   1
----------------------- SIDE 1 ---------------------- - COMMON -- ----------------------- SIDE 2 ----------------------
     PROC.CSSID PART.      DEVICE --CHPID--- ENTRY -----CU----- --DEVICE--- PROC.CSSID PART.      DEVICE ---CHPID-- ENTRY -----CU-----
LINE            NAME       NUM OS ID MOD TYP SW PO ID   LA  #  RNG TYPE UA               NAME       NUM OS ID MOD TYP SW PO ID   LA   #
------ ---------- -------- ------ -- --- --- -- -- ---- ---- -- --- ---- -- ---------- -------- ------ -- --- --- -- -- ---- ---- --
   1* CPC1.0     VM1        C010 N C0 SHR FC        C010      1  16 FCTC 00
   2* CPC1.0     VM1        C020 N C0 SHR FC        C020      2  16 FCTC 00
   3* CPC1.0     VM1        C030 N C0 SHR FC        C030      3  16 FCTC 00
   4* CPC1.0     VM1        C040 N C0 SHR FC        C040      4  16 FCTC 00
   5* CPC1.0     VM1        C110 N C1 SHR FC        C110      1  16 FCTC 00
   6* CPC1.0     VM1        C120 N C1 SHR FC        C120      2  16 FCTC 00
   7* CPC1.0     VM1        C130 N C1 SHR FC        C130      3  16 FCTC 00
   8* CPC1.0     VM1        C140 N C1 SHR FC        C140      4  16 FCTC 00

------ ---------- -------- ------ -- --- --- -- -- ---- ---- -- --- ---- -- ---------- -------- ------ -- --- --- -- -- ---- ---- --
```

```
CTC CONNECTION REPORT                    TIME: 21:27  DATE: 2024-03-26  PAGE T-   1
----------------------- SIDE 1 ---------------------- - COMMON -- ----------------------- SIDE 2 ----------------------
     PROC.CSSID PART.      DEVICE --CHPID--- ENTRY -----CU----- --DEVICE--- PROC.CSSID PART.      DEVICE ---CHPID-- ENTRY -----CU-----
LINE            NAME       NUM OS ID MOD TYP SW PO ID   LA  #  RNG TYPE UA               NAME       NUM OS ID MOD TYP SW PO ID   LA   #
------ ---------- -------- ------ -- --- --- -- -- ---- ---- -- --- ---- -- ---------- -------- ------ -- --- --- -- -- ---- ---- --
   1* CPC1.0     VM1        C010 N C0 SHR FC        C010      1  16 FCTC 00 CPC1.0     VM1        C110 N C1 SHR FC        C110      1
   2  CPC1.0     VM1        C020 N C0 SHR FC        C020      2  16 FCTC 00 CPC1.0     VM2        C110 N C1 SHR FC        C110      1
   3  CPC1.0     VM1        C030 N C0 SHR FC        C030      3  16 FCTC 00 CPC1.0     VM3        C110 N C1 SHR FC        C110      1
   4  CPC1.0     VM1        C040 N C0 SHR FC        C040      4  16 FCTC 00 CPC1.0     VM4        C110 N C1 SHR FC        C110      1
   5* CPC1.0     VM1        C110 N C1 SHR FC        C110      1  16 FCTC 00 CPC1.0     VM1        C010 N C0 SHR FC        C010      1
   6  CPC1.0     VM1        C120 N C1 SHR FC        C120      2  16 FCTC 00 CPC1.0     VM2        C010 N C0 SHR FC        C010      1
   7  CPC1.0     VM1        C130 N C1 SHR FC        C130      3  16 FCTC 00 CPC1.0     VM3        C010 N C0 SHR FC        C010      1
   8  CPC1.0     VM1        C140 N C1 SHR FC        C140      4  16 FCTC 00 CPC1.0     VM4        C010 N C0 SHR FC        C010      1

------ ---------- -------- ------ -- --- --- -- -- ---- ---- -- --- ---- -- ---------- -------- ------ -- --- --- -- -- ---- ---- --
```

More information in the report

```
                                   CTC CONNECTION REPORT                    TIME: 21:27  DATE: 2024-03-26  PAGE T-    1
        ---------------------- SIDE 1 ---------------------- - COMMON -- ---------------------- SIDE 2 ---------------------
        PROC.CSSID PART.    DEVICE --CHPID--- ENTRY -----CU----- --DEVICE--- PROC.CSSID PART.    DEVICE ---CHPID-- ENTRY -----CU----
LINE               NAME     NUM OS ID MOD TYP SW PO ID   LA  # RNG TYPE UA            NAME     NUM OS ID MOD TYP SW PO ID   LA   #
------ ---------- -------- ------ -- --- --- -- -- ---- ---- - --- ---- -- ---------- -------- ------ -- --- --- -- -- ---- ---- -
   1* CPC1.0     VM1      C010 N C0 SHR FC          C010      1  16 FCTC 00 CPC1.0     VM1      C110 N C1 SHR FC          C110       1
   2  CPC1.0     VM1      C020 N C0 SHR FC          C020      2  16 FCTC 00 CPC1.0     VM2      C110 N C1 SHR FC          C110       1
   3  CPC1.0     VM1      C030 N C0 SHR FC          C030      3  16 FCTC 00 CPC1.0     VM3      C110 N C1 SHR FC          C110       1
   4  CPC1.0     VM1      C040 N C0 SHR FC          C040      4  16 FCTC 00 CPC1.0     VM4      C110 N C1 SHR FC          C110       1
   5* CPC1.0     VM1      C110 N C1 SHR FC          C110      1  16 FCTC 00 CPC1.0     VM1      C010 N C0 SHR FC          C010       1
   6  CPC1.0     VM1      C120 N C1 SHR FC          C120      2  16 FCTC 00 CPC1.0     VM2      C010 N C0 SHR FC          C010       1
   7  CPC1.0     VM1      C130 N C1 SHR FC          C130      3  16 FCTC 00 CPC1.0     VM3      C010 N C0 SHR FC          C010       1
   8  CPC1.0     VM1      C140 N C1 SHR FC          C140      4  16 FCTC 00 CPC1.0     VM4      C010 N C0 SHR FC          C010       1
------ ---------- -------- ------ -- --- --- -- -- ---- ---- - --- ---- -- ---------- -------- ------ -- --- --- -- -- ---- ---- -
   9  CPC1.0     VM2      C010 N C0 SHR FC          C010      1  16 FCTC 00 CPC1.0     VM1      C120 N C1 SHR FC          C120       2
  10* CPC1.0     VM2      C020 N C0 SHR FC          C020      2  16 FCTC 00 CPC1.0     VM2      C120 N C1 SHR FC          C120       2
  11  CPC1.0     VM2      C030 N C0 SHR FC          C030      3  16 FCTC 00 CPC1.0     VM3      C120 N C1 SHR FC          C120       2
  12  CPC1.0     VM2      C040 N C0 SHR FC          C040      4  16 FCTC 00 CPC1.0     VM4      C120 N C1 SHR FC          C120       2
  13  CPC1.0     VM2      C110 N C1 SHR FC          C110      1  16 FCTC 00 CPC1.0     VM1      C020 N C0 SHR FC          C020       2
  14* CPC1.0     VM2      C120 N C1 SHR FC          C120      2  16 FCTC 00 CPC1.0     VM2      C020 N C0 SHR FC          C020       2
  15  CPC1.0     VM2      C130 N C1 SHR FC          C130      3  16 FCTC 00 CPC1.0     VM3      C020 N C0 SHR FC          C020       2
  16  CPC1.0     VM2      C140 N C1 SHR FC          C140      4  16 FCTC 00 CPC1.0     VM4      C020 N C0 SHR FC          C020       2
------ ---------- -------- ------ -- --- --- -- -- ---- ---- - --- ---- -- ---------- -------- ------ -- --- --- -- -- ---- ---- -
  17  CPC1.0     VM3      C010 N C0 SHR FC          C010      1  16 FCTC 00 CPC1.0     VM1      C130 N C1 SHR FC          C130       3
  18  CPC1.0     VM3      C020 N C0 SHR FC          C020      2  16 FCTC 00 CPC1.0     VM2      C130 N C1 SHR FC          C130       3
  19* CPC1.0     VM3      C030 N C0 SHR FC          C030      3  16 FCTC 00 CPC1.0     VM3      C130 N C1 SHR FC          C130       3
  20  CPC1.0     VM3      C040 N C0 SHR FC          C040      4  16 FCTC 00 CPC1.0     VM4      C130 N C1 SHR FC          C130       3
  21  CPC1.0     VM3      C110 N C1 SHR FC          C110      1  16 FCTC 00 CPC1.0     VM1      C030 N C0 SHR FC          C030       3
  22  CPC1.0     VM3      C120 N C1 SHR FC          C120      2  16 FCTC 00 CPC1.0     VM2      C030 N C0 SHR FC          C030       3
  23* CPC1.0     VM3      C130 N C1 SHR FC          C130      3  16 FCTC 00 CPC1.0     VM3      C030 N C0 SHR FC          C030       3
  24  CPC1.0     VM3      C140 N C1 SHR FC          C140      4  16 FCTC 00 CPC1.0     VM4      C030 N C0 SHR FC          C030       3
------ ---------- -------- ------ -- --- --- -- -- ---- ---- - --- ---- -- ---------- -------- ------ -- --- --- -- -- ---- ---- -
  25  CPC1.0     VM4      C010 N C0 SHR FC          C010      1  16 FCTC 00 CPC1.0     VM1      C140 N C1 SHR FC          C140       4
  26  CPC1.0     VM4      C020 N C0 SHR FC          C020      2  16 FCTC 00 CPC1.0     VM2      C140 N C1 SHR FC          C140       4
  27  CPC1.0     VM4      C030 N C0 SHR FC          C030      3  16 FCTC 00 CPC1.0     VM3      C140 N C1 SHR FC          C140       4
  28* CPC1.0     VM4      C040 N C0 SHR FC          C040      4  16 FCTC 00 CPC1.0     VM4      C140 N C1 SHR FC          C140       4
  29  CPC1.0     VM4      C110 N C1 SHR FC          C110      1  16 FCTC 00 CPC1.0     VM1      C040 N C0 SHR FC          C040       4
  30  CPC1.0     VM4      C120 N C1 SHR FC          C120      2  16 FCTC 00 CPC1.0     VM2      C040 N C0 SHR FC          C040       4
  31  CPC1.0     VM4      C130 N C1 SHR FC          C130      3  16 FCTC 00 CPC1.0     VM3      C040 N C0 SHR FC          C040       4
  32* CPC1.0     VM4      C140 N C1 SHR FC          C140      4  16 FCTC 00 CPC1.0     VM4      C040 N C0 SHR FC          C040       4
```

More information in the report

```
CTC CONNECTION REPORT                          TIME: 21:27  DATE: 2024-03-26  PAGE T-   2
     KEY                 KEY DESCRIPTION
     ---                 ---------------
     LINE NR        -    LINE NUMBER USED TO REFER TO CTC MESSAGES - A MESSAGE IS INDICATED BY AN ASTERIX (*)
     SIDE 1 / SIDE 2


                         CTC CONNECTION REPORT                          TIME: 21:27  DATE: 2024-03-26  PAGE T-   2
     KEY                 KEY DESCRIPTION
     ---                 ---------------
     LINE NR        -    LINE NUMBER USED TO REFER TO CTC MESSAGES - A MESSAGE IS INDICATED BY AN ASTERIX (*)
     SIDE 1 / SIDE 2
     PROC.CSSID     -    PROCESSOR ID RESPECTIVELY CHANNEL SUBSYSTEM ID
     PARTITION NAME -    PARTITION NAME
     DEVICE NUM     -    DEVICE NUMBER
     DEVICE OS      -    INDICATION, IF FIRST DEVICE OF RANGE IS DEFINED TO AN OPERATING SYSTEM
     CHPID ID       -    CHANNEL PATH ID IN CHANNEL SUBSYSTEM
     CHPID MOD      -    CHANNEL PATH MODE
     CHPID TYPE     -    CHANNEL PATH TYPE
     ENTRY SW       -    ENTRY SWITCH OF THE CHANNEL PATH
     ENTRY PO       -    ENTRY PORT OF THE CHANNEL PATH
     CU ID          -    CONTROL UNIT NUMBER
     CU LA          -    LINK ADDRESS OF CONTROL UNIT RELATED TO THE CHANNEL PATH
     CU #           -    LOGICAL ADDRESS (CUADD) RELATED TO THE PROCESSOR
     COMMON
     DEVICE RNG     -    DEVICE RANGE FOR DEVICES ON SIDE 1 AND SIDE 2
     DEVICE TYPE    -    DEVICE TYPE COMMON TO DEVICES ON SIDE 1 AND SIDE 2 (IF MESSAGE G751 THEN DEVICE TYPE OF SIDE 1)
     DEVICE UA      -    UNIT ADDRESS OF DEVICES RELATED TO THE PROCESSOR (COMMON TO SIDE 1 AND SIDE 2)
```

More information in the report

```
CTC CONNECTION REPORT                        TIME: 21:27  DATE: 2024-03-26  PAGE T-   3
 LINE SEV MSGID     MESSAGE TEXT
    1  W  CBDG753I  Wrap around CTC connection detected for processor CPC1.0 (partition VM1) via CHPID C0 and
                    CHPID C1 (control unit C010 and C110).
    5  W  CBDG753I  Wrap around CTC connection detected for processor CPC1.0 (partition VM1) via CHPID C1 and
                    CHPID C0 (control unit C110 and C010).
   10  W  CBDG753I  Wrap around CTC connection detected for processor CPC1.0 (partition VM2) via CHPID C0 and
                    CHPID C1 (control unit C020 and C120).
   14  W  CBDG753I  Wrap around CTC connection detected for processor CPC1.0 (partition VM2) via CHPID C1 and
                    CHPID C0 (control unit C120 and C020).
   19  W  CBDG753I  Wrap around CTC connection detected for processor CPC1.0 (partition VM3) via CHPID C0 and
                    CHPID C1 (control unit C030 and C130).
   23  W  CBDG753I  Wrap around CTC connection detected for processor CPC1.0 (partition VM3) via CHPID C1 and
                    CHPID C0 (control unit C130 and C030).
   28  W  CBDG753I  Wrap around CTC connection detected for processor CPC1.0 (partition VM4) via CHPID C0 and
                    CHPID C1 (control unit C040 and C140).
   32  W  CBDG753I  Wrap around CTC connection detected for processor CPC1.0 (partition VM4) via CHPID C1 and
                    CHPID C0 (control unit C140 and C040).
```
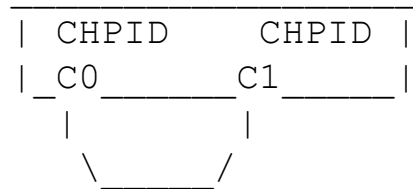
Add 4 More LPARs for 8-member SSI Picture

- **Create a picture of your connections**

```
    _____
   | CHPID    CHPID |
   |_C0_____C1_____|
      |        |
       _____/


    C0          C1
    C010        C110        1   VM1
    C020        C120        2   VM2
    C030        C130        3   VM3
    C040        C140        4   VM4
    C050        C150        5   VM5
    C060        C160        6   VM6
    C070        C170        7   VM7
    C080        C180        8   VM8
```

Code the IOCP

```
          CHPID PATH=(CSS(0),C0),SHARED,                          *
                PARTITION=(VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8),TYPE=FC,  *
                PCHID=101
*
*    PEER FCTC CONTROL UNIT 1 target VM1
          CNTLUNIT CUNUMBR=C010,PATH=(CSS(0),C0),UNIT=FCTC,          *
                UNITADD=((00,16)),CUADD=01
*$HCDC$       SERIAL='C000000001'
          IODEVICE ADDRESS=(C010,16),CUNUMBR=C010,UNIT=FCTC,         *
                UNITADD=00
*$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*
*    PEER FCTC CONTROL UNIT 2 target VM2
          CNTLUNIT CUNUMBR=C020,PATH=(CSS(0),C0),UNIT=FCTC,          *
                UNITADD=((00,16)),CUADD=02
*$HCDC$       SERIAL='C000000001'
          IODEVICE ADDRESS=(C020,16),CUNUMBR=C020,UNIT=FCTC,         *
                UNITADD=00
*$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*
*    PEER FCTC CONTROL UNIT 3 target VM3
          CNTLUNIT CUNUMBR=C030,PATH=(CSS(0),C0),UNIT=FCTC,          *
                UNITADD=((00,16)),CUADD=03
*$HCDC$       SERIAL='C000000001'
          IODEVICE ADDRESS=(C030,16),CUNUMBR=C030,UNIT=FCTC,         *
                UNITADD=00
*$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*
*    PEER FCTC CONTROL UNIT 4 target VM4
          CNTLUNIT CUNUMBR=C040,PATH=(CSS(0),C0),UNIT=FCTC,          *
                UNITADD=((00,16)),CUADD=04
*$HCDC$       SERIAL='C000000001'
          IODEVICE ADDRESS=(C040,16),CUNUMBR=C040,UNIT=FCTC,         *
                UNITADD=00
*$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*


*    PEER FCTC CONTROL UNIT 5 target VM5
          CNTLUNIT CUNUMBR=C050,PATH=(CSS(0),C0),UNIT=FCTC,          *
                UNITADD=((00,16)),CUADD=05
*$HCDC$       SERIAL='C000000001'
          IODEVICE ADDRESS=(C050,16),CUNUMBR=C050,UNIT=FCTC,         *
                UNITADD=00
*$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*
*    PEER FCTC CONTROL UNIT 6 target VM6
          CNTLUNIT CUNUMBR=C060,PATH=(CSS(0),C0),UNIT=FCTC,          *
                UNITADD=((00,16)),CUADD=06
*$HCDC$       SERIAL='C000000001'
          IODEVICE ADDRESS=(C060,16),CUNUMBR=C060,UNIT=FCTC,         *
                UNITADD=00
*$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*
*    PEER FCTC CONTROL UNIT 7 target VM7
          CNTLUNIT CUNUMBR=C070,PATH=(CSS(0),C0),UNIT=FCTC,          *
                UNITADD=((00,16)),CUADD=07
*$HCDC$       SERIAL='C000000001'
          IODEVICE ADDRESS=(C070,16),CUNUMBR=C070,UNIT=FCTC,         *
                UNITADD=00
*$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*
*    PEER FCTC CONTROL UNIT 8 target VM8
          CNTLUNIT CUNUMBR=C080,PATH=(CSS(0),C0),UNIT=FCTC,          *
                UNITADD=((00,16)),CUADD=08
*$HCDC$       SERIAL='C000000001'
          IODEVICE ADDRESS=(C080,16),CUNUMBR=C080,UNIT=FCTC,         *
                UNITADD=00
*$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*
```

Code the IOCP

```
        CHPID PATH=(CSS(0),C1),SHARED,                          *
              PARTITION=(VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8),TYPE=FC,   *
              PCHID=102
*
*    PEER FCTC CONTROL UNIT 1 target VM1
        CNTLUNIT CUNUMBR=C110,PATH=(CSS(0),C1),UNIT=FCTC,       *
              UNITADD=((00,16)),CUADD=01
*$HCDC$        SERIAL='C000000001'
        IODEVICE ADDRESS=(C110,16),CUNUMBR=C110,UNIT=FCTC,      *
              UNITADD=00
*$DFLT$        PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*
*    PEER FCTC CONTROL UNIT 2 target VM2
        CNTLUNIT CUNUMBR=C120,PATH=(CSS(0),C1),UNIT=FCTC,       *
              UNITADD=((00,16)),CUADD=02
*$HCDC$        SERIAL='C000000001'
        IODEVICE ADDRESS=(C120,16),CUNUMBR=C120,UNIT=FCTC,      *
              UNITADD=00
*$DFLT$        PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*
*    PEER FCTC CONTROL UNIT 3 target VM3
        CNTLUNIT CUNUMBR=C130,PATH=(CSS(0),C1),UNIT=FCTC,       *
              UNITADD=((00,16)),CUADD=03
*$HCDC$        SERIAL='C000000001'
        IODEVICE ADDRESS=(C130,16),CUNUMBR=C130,UNIT=FCTC,      *
              UNITADD=00
*$DFLT$        PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*
*    PEER FCTC CONTROL UNIT 4 target VM4
        CNTLUNIT CUNUMBR=C140,PATH=(CSS(0),C1),UNIT=FCTC,       *
              UNITADD=((00,16)),CUADD=04
*$HCDC$        SERIAL='C000000001'
        IODEVICE ADDRESS=(C140,16),CUNUMBR=C140,UNIT=FCTC,      *
              UNITADD=00
*$DFLT$        PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*
```

```
*    PEER FCTC CONTROL UNIT 5 target VM5
        CNTLUNIT CUNUMBR=C050,PATH=(CSS(0),C0),UNIT=FCTC,       *
              UNITADD=((00,16)),CUADD=05
*$HCDC$        SERIAL='C000000001'
        IODEVICE ADDRESS=(C050,16),CUNUMBR=C050,UNIT=FCTC,      *
              UNITADD=00
*$DFLT$        PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*
*    PEER FCTC CONTROL UNIT 6 target VM6
        CNTLUNIT CUNUMBR=C060,PATH=(CSS(0),C0),UNIT=FCTC,       *
              UNITADD=((00,16)),CUADD=06
*$HCDC$        SERIAL='C000000001'
        IODEVICE ADDRESS=(C060,16),CUNUMBR=C060,UNIT=FCTC,      *
              UNITADD=00
*$DFLT$        PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*
*    PEER FCTC CONTROL UNIT 7 target VM7
        CNTLUNIT CUNUMBR=C070,PATH=(CSS(0),C0),UNIT=FCTC,       *
              UNITADD=((00,16)),CUADD=07
*$HCDC$        SERIAL='C000000001'
        IODEVICE ADDRESS=(C070,16),CUNUMBR=C070,UNIT=FCTC,      *
              UNITADD=00
*$DFLT$        PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*
*    PEER FCTC CONTROL UNIT 8 target VM8
        CNTLUNIT CUNUMBR=C080,PATH=(CSS(0),C0),UNIT=FCTC,       *
              UNITADD=((00,16)),CUADD=08
*$HCDC$        SERIAL='C000000001'
        IODEVICE ADDRESS=(C080,16),CUNUMBR=C080,UNIT=FCTC,      *
              UNITADD=00
*$DFLT$        PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*
```

Verify the FICON CTCs Using HCD

- **EXEC IOCP CTC2 (NOWRT DESC1 SYS1 DESC2 IODFC2**
  - Use the IOCP EXEC to verify the syntax of the source deck

- **EXEC CBDSIODF IODFC2 WORKIODF A 2048 (REP**
  - Create an empty IODF

- **EXEC CBDSMIGR IODFC2 * A CTC2   IOCP   A I CPC1   3932-A02 LPAR H221130**
  - Migrate the IOCP source into the IODF

- **EXEC CBDSREP IODFC2 WORKIODF A IODFC2   REP_CTC A T (REP**
  - Create the CTC report

Add Additional CHPID Pair

- **Create a picture of your connections**
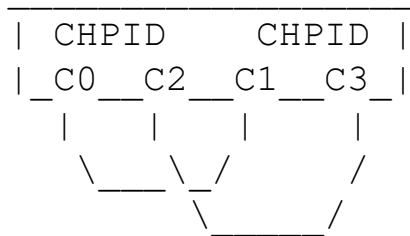
```
 _____
| CHPID     CHPID |          C0        C1       Tgt              C2        C3
|_C0__C2__C1__C3_|          C010      C110      1   VM1          C210      C310
  |    |    |      |         C020      C120      2   VM2          C220      C320
   \___\_/      /            C030      C130      3   VM3          C230      C330
       \_____/               C040      C140      4   VM4          C240      C340
                             C050      C150      5   VM5          C250      C350
                             C060      C160      6   VM6          C260      C360
                             C070      C170      7   VM7          C270      C370
                             C080      C180      8   VM8          C280      C380
```

Code the IOCP

- **CHPIDs C0 and C1 remain the same**
- **Duplicate and modify for CHPIDs C2 and C3**

```
      CHPID PATH=(CSS(0),C0),SHARED,                              *
            PARTITION=(VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8),TYPE=FC,  *
            PCHID=101
*
*    PEER FCTC CONTROL UNIT 1 target VM1
      CNTLUNIT CUNUMBR=C010,PATH=(CSS(0),C0),UNIT=FCTC,           *
            UNITADD=((00,16)),CUADD=01
*$HCDC$      SERIAL='C000000001'
      IODEVICE ADDRESS=(C010,16),CUNUMBR=C010,UNIT=FCTC,          *
            UNITADD=00
*$DFLT$      PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*
*    PEER FCTC CONTROL UNIT 2 target VM2
      CNTLUNIT CUNUMBR=C020,PATH=(CSS(0),C0),UNIT=FCTC,           *
            UNITADD=((00,16)),CUADD=02
*$HCDC$      SERIAL='C000000001'
      IODEVICE ADDRESS=(C020,16),CUNUMBR=C020,UNIT=FCTC,          *
            UNITADD=00
*$DFLT$      PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*
  and so on ...
```

```
      CHPID PATH=(CSS(0),C1),SHARED,                              *
            PARTITION=(VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8),TYPE=FC,  *
            PCHID=102
*
*    PEER FCTC CONTROL UNIT 1 target VM1
      CNTLUNIT CUNUMBR=C110,PATH=(CSS(0),C1),UNIT=FCTC,           *
            UNITADD=((00,16)),CUADD=01
*$HCDC$      SERIAL='C000000001'
      IODEVICE ADDRESS=(C110,16),CUNUMBR=C110,UNIT=FCTC,          *
            UNITADD=00
*$DFLT$      PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*
*    PEER FCTC CONTROL UNIT 2 target VM2
      CNTLUNIT CUNUMBR=C120,PATH=(CSS(0),C1),UNIT=FCTC,           *
            UNITADD=((00,16)),CUADD=02
*$HCDC$      SERIAL='C000000001'
      IODEVICE ADDRESS=(C120,16),CUNUMBR=C120,UNIT=FCTC,          *
            UNITADD=00
*$DFLT$      PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*
  and so on ...
```
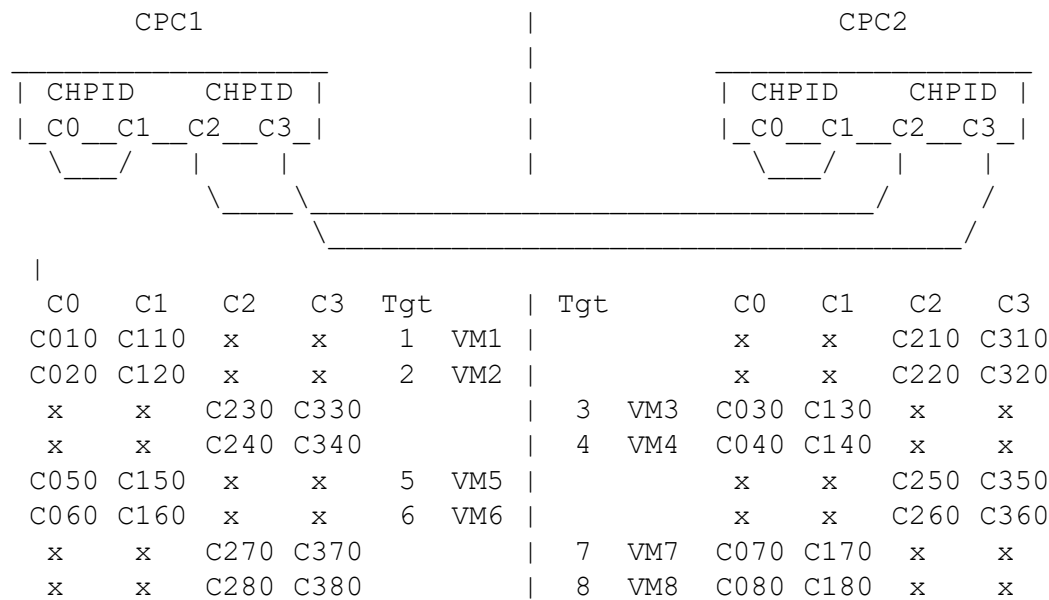
Code the IOCP

- **Complexity increases**

```
        CHPID PATH=(CSS(0),C2),SHARED,                              *
              PARTITION=(VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8),TYPE=FC,   *
              PCHID=103
*
*    PEER FCTC CONTROL UNIT 1 target VM1
        CNTLUNIT CUNUMBR=C210,PATH=(CSS(0),C2),UNIT=FCTC,           *
              UNITADD=((00,16)),CUADD=01
*$HCDC$       SERIAL='C000000002'
        IODEVICE ADDRESS=(C210,16),CUNUMBR=C210,UNIT=FCTC,          *
              UNITADD=00
*$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*
*    PEER FCTC CONTROL UNIT 2 target VM2
        CNTLUNIT CUNUMBR=C220,PATH=(CSS(0),C2),UNIT=FCTC,           *
              UNITADD=((00,16)),CUADD=02
*$HCDC$       SERIAL='C000000002'
        IODEVICE ADDRESS=(C220,16),CUNUMBR=C220,UNIT=FCTC,          *
              UNITADD=00
*$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*
  and so on ...
```

```
        CHPID PATH=(CSS(0),C3),SHARED,                              *
              PARTITION=(VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8),TYPE=FC,   *
              PCHID=104
*
*    PEER FCTC CONTROL UNIT 1 target VM1
        CNTLUNIT CUNUMBR=C310,PATH=(CSS(0),C3),UNIT=FCTC,           *
              UNITADD=((00,16)),CUADD=01
*$HCDC$       SERIAL='C000000002'
        IODEVICE ADDRESS=(C310,16),CUNUMBR=C310,UNIT=FCTC,          *
              UNITADD=00
*$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*
*    PEER FCTC CONTROL UNIT 2 target VM2
        CNTLUNIT CUNUMBR=C320,PATH=(CSS(0),C3),UNIT=FCTC,           *
              UNITADD=((00,16)),CUADD=02
*$HCDC$       SERIAL='C000000002'
        IODEVICE ADDRESS=(C320,16),CUNUMBR=C320,UNIT=FCTC,          *
              UNITADD=00
*$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
*   and so on ...
```

P R O V E N   P E R F O R M A N C E

Verify the FICON CTCs Using HCD

- **EXEC IOCP CTC3 (NOWRT DESC1 SYS1 DESC2 IODFC3**
  - Use the IOCP EXEC to verify the syntax of the source deck

- **EXEC CBDSIODF IODFC3 WORKIODF A 2048 (REP**
  - Create an empty IODF

- **EXEC CBDSMIGR IODFC3 * A CTC3   IOCP   A I CPC1   3932-A02 LPAR H221130**
  - Migrate the IOCP source into the IODF

- **EXEC CBDSREP IODFC3 WORKIODF A IODFC3   REP_CTC A T (REP**
  - Create the CTC report

Increase Availability Across Multiple CPCs

- **Create a picture of your connections**
- **Requires more CHPIDs for point-to-point CTCs**

```
          CPC1                      |                      CPC2
 _____              |              _____
| CHPID    CHPID |                  |             | CHPID    CHPID |
|_C0__C1__C2__C3_|                  |             |_C0__C1__C2__C3_|
  \___/   |     |                   |               \___/   |     |
       _____/       /
             _____/
 |
  C0    C1    C2    C3   Tgt    | Tgt          C0    C1    C2    C3
 C010  C110   x     x    1  VM1 |               x     x   C210  C310
 C020  C120   x     x    2  VM2 |               x     x   C220  C320
  x     x   C230  C330          |  3  VM3  C030  C130   x     x
  x     x   C240  C340          |  4  VM4  C040  C140   x     x
 C050  C150   x     x    5  VM5 |               x     x   C250  C350
 C060  C160   x     x    6  VM6 |               x     x   C260  C360
  x     x   C270  C370          |  7  VM7  C070  C170   x     x
  x     x   C280  C380          |  8  VM8  C080  C180   x     x
```

Code the IOCP

- **Two separate IOCP source decks**
- **Import to the same IODF**
- **Activate the same IODF on both CPCs**

```
        CHPID PATH=(CSS(0),C0),SHARED,                       *
              PARTITION=(VM1,VM2,VM5,VM6),TYPE=FC,PCHID=101
*
*    PEER FCTC CONTROL UNIT 1 target VM1
        CNTLUNIT CUNUMBR=C010,PATH=(CSS(0),C0),UNIT=FCTC,    *
              UNITADD=((00,16)),CUADD=01
*$HCDC$        SERIAL='C000000001'
        IODEVICE ADDRESS=(C010,16),CUNUMBR=C010,UNIT=FCTC,   *
              UNITADD=00
*$DFLT$        PARTITION=((CSS(0),VM1,VM2,VM5,VM6))
*
*    PEER FCTC CONTROL UNIT 2 target VM2
        CNTLUNIT CUNUMBR=C020,PATH=(CSS(0),C0),UNIT=FCTC,    *
              UNITADD=((00,16)),CUADD=02
*$HCDC$        SERIAL='C000000001'
        IODEVICE ADDRESS=(C020,16),CUNUMBR=C020,UNIT=FCTC,   *
              UNITADD=00
*$DFLT$        PARTITION=((CSS(0),VM1,VM2,VM5,VM6))
*
*    PEER FCTC CONTROL UNIT 5 target VM5
        CNTLUNIT CUNUMBR=C050,PATH=(CSS(0),C0),UNIT=FCTC,    *
              UNITADD=((00,16)),CUADD=05
*$HCDC$        SERIAL='C000000001'
        IODEVICE ADDRESS=(C050,16),CUNUMBR=C050,UNIT=FCTC,   *
              UNITADD=00
*$DFLT$        PARTITION=((CSS(0),VM1,VM2,VM5,VM6))
*
*    PEER FCTC CONTROL UNIT 6 target VM6
        CNTLUNIT CUNUMBR=C060,PATH=(CSS(0),C0),UNIT=FCTC,    *
              UNITADD=((00,16)),CUADD=06
*$HCDC$        SERIAL='C000000001'
        IODEVICE ADDRESS=(C060,16),CUNUMBR=C060,UNIT=FCTC,   *
              UNITADD=00
*$DFLT$        PARTITION=((CSS(0),VM1,VM2,VM5,VM6))
*
```

```
        CHPID PATH=(CSS(0),C1),SHARED,                       *
              PARTITION=(VM1,VM2,VM5,VM6),TYPE=FC,PCHID=102
*
*    PEER FCTC CONTROL UNIT 1 target VM1
        CNTLUNIT CUNUMBR=C110,PATH=(CSS(0),C1),UNIT=FCTC,    *
              UNITADD=((00,16)),CUADD=01
*$HCDC$        SERIAL='C000000001'
        IODEVICE ADDRESS=(C110,16),CUNUMBR=C110,UNIT=FCTC,   *
              UNITADD=00
*$DFLT$        PARTITION=((CSS(0),VM1,VM2,VM5,VM6))
*
*    PEER FCTC CONTROL UNIT 2 target VM2
        CNTLUNIT CUNUMBR=C120,PATH=(CSS(0),C1),UNIT=FCTC,    *
              UNITADD=((00,16)),CUADD=02
*$HCDC$        SERIAL='C000000001'
        IODEVICE ADDRESS=(C120,16),CUNUMBR=C120,UNIT=FCTC,   *
              UNITADD=00
*$DFLT$        PARTITION=((CSS(0),VM1,VM2,VM5,VM6))
*
*    PEER FCTC CONTROL UNIT 5 target VM5
        CNTLUNIT CUNUMBR=C150,PATH=(CSS(0),C1),UNIT=FCTC,    *
              UNITADD=((00,16)),CUADD=05
*$HCDC$        SERIAL='C000000001'
        IODEVICE ADDRESS=(C150,16),CUNUMBR=C150,UNIT=FCTC,   *
              UNITADD=00
*$DFLT$        PARTITION=((CSS(0),VM1,VM2,VM5,VM6))
*
*    PEER FCTC CONTROL UNIT 6 target VM6
        CNTLUNIT CUNUMBR=C160,PATH=(CSS(0),C1),UNIT=FCTC,    *
              UNITADD=((00,16)),CUADD=06
*$HCDC$        SERIAL='C000000001'
        IODEVICE ADDRESS=(C160,16),CUNUMBR=C160,UNIT=FCTC,   *
              UNITADD=00
*$DFLT$        PARTITION=((CSS(0),VM1,VM2,VM5,VM6))
```
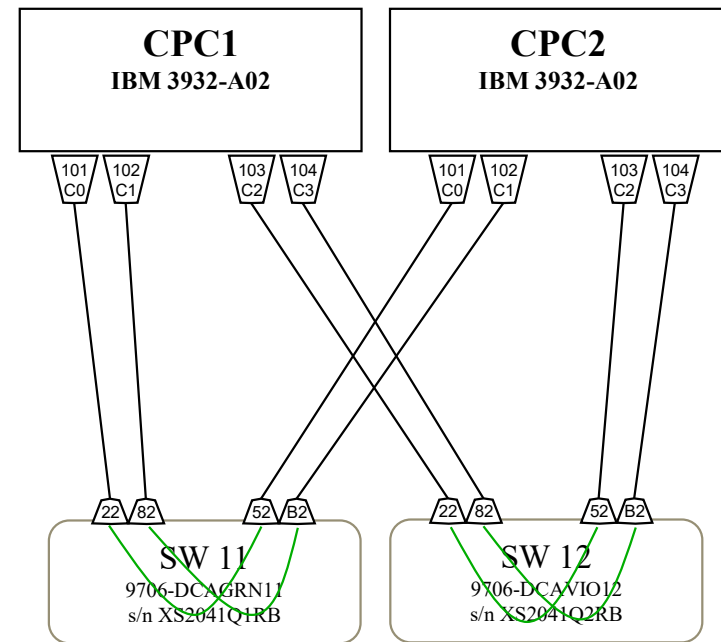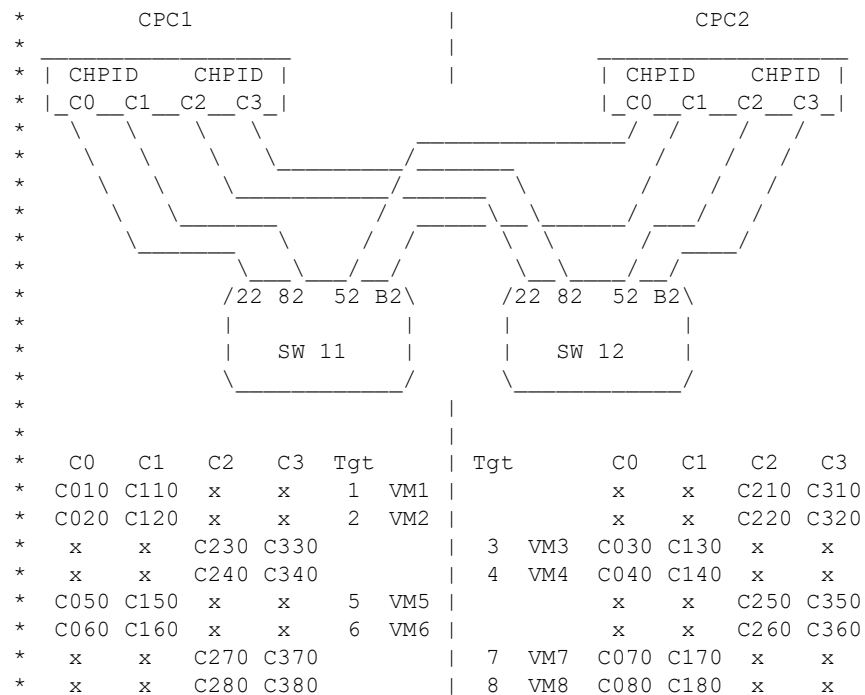
Verify the FICON CTCs Using HCD

- **EXEC IOCP CTC4CPC1 (NOWRT DESC1 SYS1 DESC2 IODFC4**
  EXEC IOCP CTC4CPC2 (NOWRT DESC1 SYS1 DESC2 IODFC4
  - Use the IOCP EXEC to verify the syntax of the source deck

- **EXEC CBDSIODF IODFC4 WORKIODF A 2048 (REP**
  - Create an empty IODF

- **EXEC CBDSMIGR IODFC4 * A CTC4CPC1 IOCP   A I CPC1   3932-A02 LPAR H221130**
  EXEC CBDSMIGR IODFC4 * A CTC4CPC2 IOCP   A I CPC2   3932-A02 LPAR H221130
  - Migrate the IOCP source into the IODF

- **EXEC CBDSREP IODFC4 WORKIODF A IODFC4   REP_CTC A T (REP**
  - Create the CTC report

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Multiple CPCs and Add FICON Switches

- **Create a picture of your connections**

```
*        CPC1                  |                 CPC2
*  _____              |           _____
* | CHPID   CHPID |            |          | CHPID   CHPID |
* |_C0__C1__C2__C3_|           |          |_C0__C1__C2__C3_|
*    \   \   \   \             |  _____/   /   /   /
*     \   \   \   _____      |_/_____  /   /   /
*      \   \   _____  _____/_____ \/   /   /
*       \   _____  \___ ___/_____  \/\   /   /
*        _____  \___ \_/ _____ \/ \_/   /
*                   \_  \_  \___/ _____ \/ \_/ \_/
*               /22 82  52 B2\      /22 82  52 B2\
*               |          |         |          |
*               |   SW 11  |         |   SW 12  |
*               _____/         _____/
*                     |                     |
*                     |                     |
*                     |                     |
*   C0   C1   C2   C3 Tgt  | Tgt    C0   C1   C2   C3
* C010 C110  x    x    1 VM1 |        x    x  C210 C310
* C020 C120  x    x    2 VM2 |        x    x  C220 C320
*   x    x  C230 C330        | 3  VM3 C030 C130  x    x
*   x    x  C240 C340        | 4  VM4 C040 C140  x    x
* C050 C150  x    x    5 VM5 |        x    x  C250 C350
* C060 C160  x    x    6 VM6 |        x    x  C260 C360
*   x    x  C270 C370        | 7  VM7 C070 C170  x    x
*   x    x  C280 C380        | 8  VM8 C080 C180  x    x
```

CPC1	CPC2
IBM 3932-A02	IBM 3932-A02

101 C0 102 C1   103 C2 104 C3   101 C0 102 C1   103 C2 104 C3

22 82   52 B2   22 82   52 B2

SW 11
9706-DCAGRN11
s/n XS2041Q1RB

SW 12
9706-DCAVIO12
s/n XS2041Q2RB

Code the IOCP

- **Two separate IOCP source decks**
- **Import to the same IODF**
- **Activate the same IODF on both CPCs**

```
       CHPID PATH=(CSS(0),C0),SHARED,                                  *
               PARTITION=((VM1,VM2,VM5,VM6),(=)),SWITCH=11,PCHID=101,  *
               TYPE=FC
*$HCDC$         DESC='FCTC to SW11,22'
*$HCDC$         SWPORT=((11,22))
*
*   PEER FCTC CONTROL UNIT 1 target VM1
       CNTLUNIT CUNUMBR=C010,PATH=((CSS(0),C0)),UNITADD=((00,016)),  *
               LINK=((CSS(0),1182)),CUADD=01,UNIT=FCTC
*$HCDC$         DESC='FCTC to VM1 on CPC1'
*$HCDC$         SWPORT=((11,82))
       IODEVICE ADDRESS=(C010,16),CUNUMBR=C010,UNIT=FCTC,            *
               UNITADD=00
*$DFLT$         PARTITION=((CSS(0),VM1,VM2,VM5,VM6))
*
*   PEER FCTC CONTROL UNIT 2 target VM2
       CNTLUNIT CUNUMBR=C020,PATH=((CSS(0),C0)),UNITADD=((00,016)),  *
               LINK=((CSS(0),1182)),CUADD=02,UNIT=FCTC
*$HCDC$         DESC='FCTC to VM2 on CPC1'
*$HCDC$         SWPORT=((11,82))
       IODEVICE ADDRESS=(C020,16),CUNUMBR=C020,UNIT=FCTC,            *
               UNITADD=00
*$DFLT$         PARTITION=((CSS(0),VM1,VM2,VM5,VM6))
*
   and so on ...
```

```
       CHPID PATH=(CSS(0),C1),SHARED,                                  *
               PARTITION=((VM1,VM2,VM5,VM6),(=)),SWITCH=11,PCHID=102,  *
               TYPE=FC
*$HCDC$         DESC='FCTC to SW11,82'
*$HCDC$         SWPORT=((11,82))
*
*   PEER FCTC CONTROL UNIT 1 target VM1
       CNTLUNIT CUNUMBR=C110,PATH=((CSS(0),C1)),UNITADD=((00,016)),  *
               LINK=((CSS(0),1122)),CUADD=01,UNIT=FCTC
*$HCDC$         DESC='FCTC to VM1 on CPC1'
*$HCDC$         SWPORT=((11,22))
       IODEVICE ADDRESS=(C110,16),CUNUMBR=C110,UNIT=FCTC,            *
               UNITADD=00
*$DFLT$         PARTITION=((CSS(0),VM1,VM2,VM5,VM6))
*
*   PEER FCTC CONTROL UNIT 2 target VM2
       CNTLUNIT CUNUMBR=C120,PATH=((CSS(0),C1)),UNITADD=((00,016)),  *
               LINK=((CSS(0),1122)),CUADD=02,UNIT=FCTC
*$HCDC$         DESC='FCTC to VM2 on CPC1'
*$HCDC$         SWPORT=((11,22))
       IODEVICE ADDRESS=(C120,16),CUNUMBR=C120,UNIT=FCTC,            *
               UNITADD=00
*$DFLT$         PARTITION=((CSS(0),VM1,VM2,VM5,VM6))
*
   and so on ...
```

Code the IOCP

```
       CHPID PATH=(CSS(0),C2),SHARED,                           *
             PARTITION=((VM1,VM2,VM5,VM6),(=)),SWITCH=12,PCHID=103,  *
             TYPE=FC
*$HCDC$       DESC='FCTC to SW12,22'
*$HCDC$       SWPORT=((12,22))
*
*    PEER FCTC CONTROL UNIT 3 target VM3
       CNTLUNIT CUNUMBR=C230,PATH=((CSS(0),C2)),UNITADD=((00,016)),  *
             LINK=((CSS(0),12B2)),CUADD=03,UNIT=FCTC
*$HCDC$       DESC='FCTC to VM3 on CPC2'
*$HCDC$       SWPORT=((12,B2))
       IODEVICE ADDRESS=(C230,16),CUNUMBR=C230,UNIT=FCTC,        *
             UNITADD=00
*$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM5,VM6))
*
*    PEER FCTC CONTROL UNIT 4 target VM6
       CNTLUNIT CUNUMBR=C240,PATH=((CSS(0),C2)),UNITADD=((00,016)),  *
             LINK=((CSS(0),12B2)),CUADD=04,UNIT=FCTC
*$HCDC$       DESC='FCTC to VM4 on CPC2'
*$HCDC$       SWPORT=((12,B2))
       IODEVICE ADDRESS=(C240,16),CUNUMBR=C240,UNIT=FCTC,        *
             UNITADD=00
*$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM5,VM6))
*
```

```
       CHPID PATH=(CSS(0),C3),SHARED,                           *
             PARTITION=((VM1,VM2,VM5,VM6),(=)),SWITCH=12,PCHID=104,  *
             TYPE=FC
*$HCDC$       DESC='FCTC to SW12,82'
*$HCDC$       SWPORT=((12,82))
*
*    PEER FCTC CONTROL UNIT 3 target VM3
       CNTLUNIT CUNUMBR=C330,PATH=((CSS(0),C3)),UNITADD=((00,016)),  *
             LINK=((CSS(0),1252)),CUADD=03,UNIT=FCTC
*$HCDC$       DESC='FCTC to VM3 on CPC2'
*$HCDC$       SWPORT=((12,52))
       IODEVICE ADDRESS=(C330,16),CUNUMBR=C330,UNIT=FCTC,        *
             UNITADD=00
*$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM5,VM6))
*
*    PEER FCTC CONTROL UNIT 4 target VM4
       CNTLUNIT CUNUMBR=C340,PATH=((CSS(0),C3)),UNITADD=((00,016)),  *
             LINK=((CSS(0),1252)),CUADD=04,UNIT=FCTC
*$HCDC$       DESC='FCTC to VM4 on CPC2'
*$HCDC$       SWPORT=((12,52))
       IODEVICE ADDRESS=(C340,16),CUNUMBR=C340,UNIT=FCTC,        *
             UNITADD=00
*$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM5,VM6))
*
```

Define the FICON Switches to HCD

- **Tell HCD the characteristics of the FICON switches**
- **IOCP decks no longer need the virtual *$HCDC$ SERIAL='C000000001' statements**
- **HCD determines connections from the SWPORT and LINK parameters on CHPID and CNTLUNIT macros**

```
*$HCD$   SWITCH   SWID=11,ADDRESS=11,SERIAL='XS2041Q1RB',           *
              DESC='9706-DCAGRN11',PORT=((00,FF)),UNIT=2032
*$HCD$   SWITCH   SWID=12,ADDRESS=12,SERIAL='XS2041Q2RB',           *
              DESC='9706-DCAVIO12',PORT=((00,FF)),UNIT=2032
```

Verify the FICON CTCs Using HCD

- **EXEC IOCP CTC6CPC1 (NOWRT DESC1 SYS1 DESC2 IODFC6
  EXEC IOCP CTC6CPC2 (NOWRT DESC1 SYS1 DESC2 IODFC6**

  - Use the IOCP EXEC to verify the syntax of the source deck

- **EXEC CBDSIODF IODFC6 WORKIODF A 2048 (REP**

  - Create an empty IODF

- **EXEC CBDSMIGR IODFC6 * A CTC6CPC1 IOCP   A I CPC1   3932-A02 LPAR H221130
  EXEC CBDSMIGR IODFC6 * A CTC6CPC2 IOCP   A I CPC2   3932-A02 LPAR H221130**

  - Migrate the IOCP source into the IODF

- **EXEC CBDSREP IODFC6 WORKIODF A IODFC6   REP_CTC A T (REP**

  - Create the CTC report

FICON CTC Report from HCD

```
                                CTC CONNECTION REPORT                TIME: 14:45  DATE: 2024-05-23  PAGE T-   1
      ------------------------ SIDE 1 ---------------------- - COMMON -- ------------------------ SIDE 2 --------------------
         PROC.CSSID PART.      DEVICE --CHPID--- ENTRY -----CU----- --DEVICE--- PROC.CSSID PART.      DEVICE ---CHPID-- ENTRY -----CU----
  LINE              NAME       NUM OS ID MOD TYP SW PO ID   LA   #  RNG TYPE UA            NAME       NUM OS ID MOD TYP SW PO ID   LA   #
  ------ ---------- -------- ------ -- --- --- -- -- -- ---- ---- -- --- ---- -- ---------- -------- ------ -- --- --- -- -- -- ---- ---- -
     1* CPC1.0      VM1        C010 N C0 SHR FC  11 22 C010 1182 1   16 FCTC 00 CPC1.0      VM1        C110 N C1 SHR FC  11 82 C110 1122 1
     2  CPC1.0      VM1        C020 N C0 SHR FC  11 22 C020 1182 2   16 FCTC 00 CPC1.0      VM2        C110 N C1 SHR FC  11 82 C110 1122 1
     3  CPC1.0      VM1        C050 N C0 SHR FC  11 22 C050 1182 5   16 FCTC 00 CPC1.0      VM5        C110 N C1 SHR FC  11 82 C110 1122 1
     4  CPC1.0      VM1        C060 N C0 SHR FC  11 22 C060 1182 6   16 FCTC 00 CPC1.0      VM6        C110 N C1 SHR FC  11 82 C110 1122 1
     5* CPC1.0      VM1        C110 N C1 SHR FC  11 82 C110 1122 1   16 FCTC 00 CPC1.0      VM1        C010 N C0 SHR FC  11 22 C010 1182 1
     6  CPC1.0      VM1        C120 N C1 SHR FC  11 82 C120 1122 2   16 FCTC 00 CPC1.0      VM2        C010 N C0 SHR FC  11 22 C010 1182 1
     7  CPC1.0      VM1        C150 N C1 SHR FC  11 82 C150 1122 5   16 FCTC 00 CPC1.0      VM5        C010 N C0 SHR FC  11 22 C010 1182 1
     8  CPC1.0      VM1        C160 N C1 SHR FC  11 82 C160 1122 6   16 FCTC 00 CPC1.0      VM6        C010 N C0 SHR FC  11 22 C010 1182 1
     9  CPC1.0      VM1        C230 N C2 SHR FC  12 22 C230 12B2 3   16 FCTC 00 CPC2.0      VM3        C310 N C3 SHR FC  12 B2 C310 1222 1
    10  CPC1.0      VM1        C240 N C2 SHR FC  12 22 C240 12B2 4   16 FCTC 00 CPC2.0      VM4        C310 N C3 SHR FC  12 B2 C310 1222 1
    11  CPC1.0      VM1        C270 N C2 SHR FC  12 22 C270 12B2 7   16 FCTC 00 CPC2.0      VM7        C310 N C3 SHR FC  12 B2 C310 1222 1
    12  CPC1.0      VM1        C280 N C2 SHR FC  12 22 C280 12B2 8   16 FCTC 00 CPC2.0      VM8        C310 N C3 SHR FC  12 B2 C310 1222 1
    13  CPC1.0      VM1        C330 N C3 SHR FC  12 82 C330 1252 3   16 FCTC 00 CPC2.0      VM3        C210 N C2 SHR FC  12 52 C210 1282 1
    14  CPC1.0      VM1        C340 N C3 SHR FC  12 82 C340 1252 4   16 FCTC 00 CPC2.0      VM4        C210 N C2 SHR FC  12 52 C210 1282 1
    15  CPC1.0      VM1        C370 N C3 SHR FC  12 82 C370 1252 7   16 FCTC 00 CPC2.0      VM7        C210 N C2 SHR FC  12 52 C210 1282 1
    16  CPC1.0      VM1        C380 N C3 SHR FC  12 82 C380 1252 8   16 FCTC 00 CPC2.0      VM8        C210 N C2 SHR FC  12 52 C210 1282 1
  ------ ---------- -------- ------ -- --- --- -- -- -- ---- ---- -- --- ---- -- ---------- -------- ------ -- --- --- -- -- -- ---- ---- -
    17  CPC1.0      VM2        C010 N C0 SHR FC  11 22 C010 1182 1   16 FCTC 00 CPC1.0      VM1        C120 N C1 SHR FC  11 82 C120 1122 2
    18* CPC1.0      VM2        C020 N C0 SHR FC  11 22 C020 1182 2   16 FCTC 00 CPC1.0      VM2        C120 N C1 SHR FC  11 82 C120 1122 2
    19  CPC1.0      VM2        C050 N C0 SHR FC  11 22 C050 1182 5   16 FCTC 00 CPC1.0      VM5        C120 N C1 SHR FC  11 82 C120 1122 2
    20  CPC1.0      VM2        C060 N C0 SHR FC  11 22 C060 1182 6   16 FCTC 00 CPC1.0      VM6        C120 N C1 SHR FC  11 82 C120 1122 2
    21  CPC1.0      VM2        C110 N C1 SHR FC  11 82 C110 1122 1   16 FCTC 00 CPC1.0      VM1        C020 N C0 SHR FC  11 22 C020 1182 2
    22* CPC1.0      VM2        C120 N C1 SHR FC  11 82 C120 1122 2   16 FCTC 00 CPC1.0      VM2        C020 N C0 SHR FC  11 22 C020 1182 2
    23  CPC1.0      VM2        C150 N C1 SHR FC  11 82 C150 1122 5   16 FCTC 00 CPC1.0      VM5        C020 N C0 SHR FC  11 22 C020 1182 2
    24  CPC1.0      VM2        C160 N C1 SHR FC  11 82 C160 1122 6   16 FCTC 00 CPC1.0      VM6        C020 N C0 SHR FC  11 22 C020 1182 2
    25  CPC1.0      VM2        C230 N C2 SHR FC  12 22 C230 12B2 3   16 FCTC 00 CPC2.0      VM3        C320 N C3 SHR FC  12 B2 C320 1222 2
    26  CPC1.0      VM2        C240 N C2 SHR FC  12 22 C240 12B2 4   16 FCTC 00 CPC2.0      VM4        C320 N C3 SHR FC  12 B2 C320 1222 2
    27  CPC1.0      VM2        C270 N C2 SHR FC  12 22 C270 12B2 7   16 FCTC 00 CPC2.0      VM7        C320 N C3 SHR FC  12 B2 C320 1222 2
    28  CPC1.0      VM2        C280 N C2 SHR FC  12 22 C280 12B2 8   16 FCTC 00 CPC2.0      VM8        C320 N C3 SHR FC  12 B2 C320 1222 2
    29  CPC1.0      VM2        C330 N C3 SHR FC  12 82 C330 1252 3   16 FCTC 00 CPC2.0      VM3        C220 N C2 SHR FC  12 52 C220 1282 2
    30  CPC1.0      VM2        C340 N C3 SHR FC  12 82 C340 1252 4   16 FCTC 00 CPC2.0      VM4        C220 N C2 SHR FC  12 52 C220 1282 2
    31  CPC1.0      VM2        C370 N C3 SHR FC  12 82 C370 1252 7   16 FCTC 00 CPC2.0      VM7        C220 N C2 SHR FC  12 52 C220 1282 2
    32  CPC1.0      VM2        C380 N C3 SHR FC  12 82 C380 1252 8   16 FCTC 00 CPC2.0      VM8        C220 N C2 SHR FC  12 52 C220 1282 2
  ------ ---------- -------- ------ -- --- --- -- -- -- ---- ---- -- --- ---- -- ---------- -------- ------ -- --- --- -- -- -- ---- ---- -
```

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FICON CTC Report from HCD

```
                          CTC CONNECTION REPORT                 TIME: 14:45  DATE: 2024-05-23  PAGE T-   2
        ---------------------- SIDE 1 ---------------------- - COMMON -- ----------------------- SIDE 2 --------------------
        PROC.CSSID PART.     DEVICE --CHPID--- ENTRY -----CU----- --DEVICE--- PROC.CSSID PART.     DEVICE ---CHPID-- ENTRY -----CU----
LINE               NAME      NUM OS ID MOD TYP SW PO ID   LA   #  RNG TYPE UA            NAME      NUM OS ID MOD TYP SW PO ID   LA   #
------ ---------- -------- ------ -- --- --- -- -- ---- ---- -- --- ---- -- ---------- -------- ------ -- --- --- -- -- ---- ---- -
  33   CPC1.0     VM5      C010 N C0 SHR FC  11 22 C010 1182 1   16 FCTC 00 CPC1.0     VM1      C150 N C1 SHR FC  11 82 C150 1122 5
  34   CPC1.0     VM5      C020 N C0 SHR FC  11 22 C020 1182 2   16 FCTC 00 CPC1.0     VM2      C150 N C1 SHR FC  11 82 C150 1122 5
  35*  CPC1.0     VM5      C050 N C0 SHR FC  11 22 C050 1182 5   16 FCTC 00 CPC1.0     VM5      C150 N C1 SHR FC  11 82 C150 1122 5
  36   CPC1.0     VM5      C060 N C0 SHR FC  11 22 C060 1182 6   16 FCTC 00 CPC1.0     VM6      C150 N C1 SHR FC  11 82 C150 1122 5
  37   CPC1.0     VM5      C110 N C1 SHR FC  11 82 C110 1122 1   16 FCTC 00 CPC1.0     VM1      C050 N C0 SHR FC  11 22 C050 1182 5
  38   CPC1.0     VM5      C120 N C1 SHR FC  11 82 C120 1122 2   16 FCTC 00 CPC1.0     VM2      C050 N C0 SHR FC  11 22 C050 1182 5
  39*  CPC1.0     VM5      C150 N C1 SHR FC  11 82 C150 1122 5   16 FCTC 00 CPC1.0     VM5      C050 N C0 SHR FC  11 22 C050 1182 5
  40   CPC1.0     VM5      C160 N C1 SHR FC  11 82 C160 1122 6   16 FCTC 00 CPC1.0     VM6      C050 N C0 SHR FC  11 22 C050 1182 5
  41   CPC1.0     VM5      C230 N C2 SHR FC  12 22 C230 12B2 3   16 FCTC 00 CPC2.0     VM3      C350 N C3 SHR FC  12 B2 C350 1222 5
  42   CPC1.0     VM5      C240 N C2 SHR FC  12 22 C240 12B2 4   16 FCTC 00 CPC2.0     VM4      C350 N C3 SHR FC  12 B2 C350 1222 5
  43   CPC1.0     VM5      C270 N C2 SHR FC  12 22 C270 12B2 7   16 FCTC 00 CPC2.0     VM7      C350 N C3 SHR FC  12 B2 C350 1222 5
  44   CPC1.0     VM5      C280 N C2 SHR FC  12 22 C280 12B2 8   16 FCTC 00 CPC2.0     VM8      C350 N C3 SHR FC  12 B2 C350 1222 5
  45   CPC1.0     VM5      C330 N C3 SHR FC  12 82 C330 1252 3   16 FCTC 00 CPC2.0     VM3      C250 N C2 SHR FC  12 52 C250 1282 5
  46   CPC1.0     VM5      C340 N C3 SHR FC  12 82 C340 1252 4   16 FCTC 00 CPC2.0     VM4      C250 N C2 SHR FC  12 52 C250 1282 5
  47   CPC1.0     VM5      C370 N C3 SHR FC  12 82 C370 1252 7   16 FCTC 00 CPC2.0     VM7      C250 N C2 SHR FC  12 52 C250 1282 5
  48   CPC1.0     VM5      C380 N C3 SHR FC  12 82 C380 1252 8   16 FCTC 00 CPC2.0     VM8      C250 N C2 SHR FC  12 52 C250 1282 5
------ ---------- -------- ------ -- --- --- -- -- ---- ---- -- --- ---- -- ---------- -------- ------ -- --- --- -- -- ---- ---- -
  49   CPC1.0     VM6      C010 N C0 SHR FC  11 22 C010 1182 1   16 FCTC 00 CPC1.0     VM1      C160 N C1 SHR FC  11 82 C160 1122 6
  50   CPC1.0     VM6      C020 N C0 SHR FC  11 22 C020 1182 2   16 FCTC 00 CPC1.0     VM2      C160 N C1 SHR FC  11 82 C160 1122 6
  51   CPC1.0     VM6      C050 N C0 SHR FC  11 22 C050 1182 5   16 FCTC 00 CPC1.0     VM5      C160 N C1 SHR FC  11 82 C160 1122 6
  52*  CPC1.0     VM6      C060 N C0 SHR FC  11 22 C060 1182 6   16 FCTC 00 CPC1.0     VM6      C160 N C1 SHR FC  11 82 C160 1122 6
  53   CPC1.0     VM6      C110 N C1 SHR FC  11 82 C110 1122 1   16 FCTC 00 CPC1.0     VM1      C060 N C0 SHR FC  11 22 C060 1182 6
  54   CPC1.0     VM6      C120 N C1 SHR FC  11 82 C120 1122 2   16 FCTC 00 CPC1.0     VM2      C060 N C0 SHR FC  11 22 C060 1182 6
  55   CPC1.0     VM6      C150 N C1 SHR FC  11 82 C150 1122 5   16 FCTC 00 CPC1.0     VM5      C060 N C0 SHR FC  11 22 C060 1182 6
  56*  CPC1.0     VM6      C160 N C1 SHR FC  11 82 C160 1122 6   16 FCTC 00 CPC1.0     VM6      C060 N C0 SHR FC  11 22 C060 1182 6
  57   CPC1.0     VM6      C230 N C2 SHR FC  12 22 C230 12B2 3   16 FCTC 00 CPC2.0     VM3      C360 N C3 SHR FC  12 B2 C360 1222 6
  58   CPC1.0     VM6      C240 N C2 SHR FC  12 22 C240 12B2 4   16 FCTC 00 CPC2.0     VM4      C360 N C3 SHR FC  12 B2 C360 1222 6
  59   CPC1.0     VM6      C270 N C2 SHR FC  12 22 C270 12B2 7   16 FCTC 00 CPC2.0     VM7      C360 N C3 SHR FC  12 B2 C360 1222 6
  60   CPC1.0     VM6      C280 N C2 SHR FC  12 22 C280 12B2 8   16 FCTC 00 CPC2.0     VM8      C360 N C3 SHR FC  12 B2 C360 1222 6
  61   CPC1.0     VM6      C330 N C3 SHR FC  12 82 C330 1252 3   16 FCTC 00 CPC2.0     VM3      C260 N C2 SHR FC  12 52 C260 1282 6
  62   CPC1.0     VM6      C340 N C3 SHR FC  12 82 C340 1252 4   16 FCTC 00 CPC2.0     VM4      C260 N C2 SHR FC  12 52 C260 1282 6
  63   CPC1.0     VM6      C370 N C3 SHR FC  12 82 C370 1252 7   16 FCTC 00 CPC2.0     VM7      C260 N C2 SHR FC  12 52 C260 1282 6
  64   CPC1.0     VM6      C380 N C3 SHR FC  12 82 C380 1252 8   16 FCTC 00 CPC2.0     VM8      C260 N C2 SHR FC  12 52 C260 1282 6
------ ---------- -------- ------ -- --- --- -- -- ---- ---- -- --- ---- -- ---------- -------- ------ -- --- --- -- -- ---- ---- -
```

FICON CTC Report from HCD

```
                              CTC CONNECTION REPORT                    TIME: 14:45  DATE: 2024-05-23  PAGE T-   3
       ----------------------- SIDE 1 --------------------- - COMMON -- ----------------------- SIDE 2 --------------------
       PROC.CSSID PART.     DEVICE --CHPID--- ENTRY -----CU----- --DEVICE--- PROC.CSSID PART.     DEVICE ---CHPID-- ENTRY -----CU----
LINE              NAME      NUM OS ID MOD TYP SW PO ID   LA   #  RNG TYPE UA             NAME      NUM OS ID MOD TYP SW PO ID   LA   #
------ ---------- -------- ------ -- --- --- -- -- ---- ---- -- --- ---- -- ---------- -------- ------ -- --- --- -- -- ---- ---- -
  65* CPC2.0     VM3       C030 N C0 SHR FC  11 52 C030 11B2 3   16 FCTC 00 CPC2.0     VM3       C130 N C1 SHR FC  11 B2 C130 1152 3
  66  CPC2.0     VM3       C040 N C0 SHR FC  11 52 C040 11B2 4   16 FCTC 00 CPC2.0     VM4       C130 N C1 SHR FC  11 B2 C130 1152 3
  67  CPC2.0     VM3       C070 N C0 SHR FC  11 52 C070 11B2 7   16 FCTC 00 CPC2.0     VM7       C130 N C1 SHR FC  11 B2 C130 1152 3
  68  CPC2.0     VM3       C080 N C0 SHR FC  11 52 C080 11B2 8   16 FCTC 00 CPC2.0     VM8       C130 N C1 SHR FC  11 B2 C130 1152 3
  69* CPC2.0     VM3       C130 N C1 SHR FC  11 B2 C130 1152 3   16 FCTC 00 CPC2.0     VM3       C030 N C0 SHR FC  11 52 C030 11B2 3
  70  CPC2.0     VM3       C140 N C1 SHR FC  11 B2 C140 1152 4   16 FCTC 00 CPC2.0     VM4       C030 N C0 SHR FC  11 52 C030 11B2 3
  71  CPC2.0     VM3       C170 N C1 SHR FC  11 B2 C170 1152 7   16 FCTC 00 CPC2.0     VM7       C030 N C0 SHR FC  11 52 C030 11B2 3
  72  CPC2.0     VM3       C180 N C1 SHR FC  11 B2 C180 1152 8   16 FCTC 00 CPC2.0     VM8       C030 N C0 SHR FC  11 52 C030 11B2 3
  73  CPC2.0     VM3       C210 N C2 SHR FC  12 52 C210 1282 1   16 FCTC 00 CPC1.0     VM1       C330 N C3 SHR FC  12 82 C330 1252 3
  74  CPC2.0     VM3       C220 N C2 SHR FC  12 52 C220 1282 2   16 FCTC 00 CPC1.0     VM2       C330 N C3 SHR FC  12 82 C330 1252 3
  75  CPC2.0     VM3       C250 N C2 SHR FC  12 52 C250 1282 5   16 FCTC 00 CPC1.0     VM5       C330 N C3 SHR FC  12 82 C330 1252 3
  76  CPC2.0     VM3       C260 N C2 SHR FC  12 52 C260 1282 6   16 FCTC 00 CPC1.0     VM6       C330 N C3 SHR FC  12 82 C330 1252 3
  77  CPC2.0     VM3       C310 N C3 SHR FC  12 B2 C310 1222 1   16 FCTC 00 CPC1.0     VM1       C230 N C2 SHR FC  12 22 C230 12B2 3
  78  CPC2.0     VM3       C320 N C3 SHR FC  12 B2 C320 1222 2   16 FCTC 00 CPC1.0     VM2       C230 N C2 SHR FC  12 22 C230 12B2 3
  79  CPC2.0     VM3       C350 N C3 SHR FC  12 B2 C350 1222 5   16 FCTC 00 CPC1.0     VM5       C230 N C2 SHR FC  12 22 C230 12B2 3
  80  CPC2.0     VM3       C360 N C3 SHR FC  12 B2 C360 1222 6   16 FCTC 00 CPC1.0     VM6       C230 N C2 SHR FC  12 22 C230 12B2 3
------ ---------- -------- ------ -- --- --- -- -- ---- ---- -- --- ---- -- ---------- -------- ------ -- --- --- -- -- ---- ---- -
  81  CPC2.0     VM4       C030 N C0 SHR FC  11 52 C030 11B2 3   16 FCTC 00 CPC2.0     VM3       C140 N C1 SHR FC  11 B2 C140 1152 4
  82* CPC2.0     VM4       C040 N C0 SHR FC  11 52 C040 11B2 4   16 FCTC 00 CPC2.0     VM4       C140 N C1 SHR FC  11 B2 C140 1152 4
  83  CPC2.0     VM4       C070 N C0 SHR FC  11 52 C070 11B2 7   16 FCTC 00 CPC2.0     VM7       C140 N C1 SHR FC  11 B2 C140 1152 4
  84  CPC2.0     VM4       C080 N C0 SHR FC  11 52 C080 11B2 8   16 FCTC 00 CPC2.0     VM8       C140 N C1 SHR FC  11 B2 C140 1152 4
  85  CPC2.0     VM4       C130 N C1 SHR FC  11 B2 C130 1152 3   16 FCTC 00 CPC2.0     VM3       C040 N C0 SHR FC  11 52 C040 11B2 4
  86* CPC2.0     VM4       C140 N C1 SHR FC  11 B2 C140 1152 4   16 FCTC 00 CPC2.0     VM4       C040 N C0 SHR FC  11 52 C040 11B2 4
  87  CPC2.0     VM4       C170 N C1 SHR FC  11 B2 C170 1152 7   16 FCTC 00 CPC2.0     VM7       C040 N C0 SHR FC  11 52 C040 11B2 4
  88  CPC2.0     VM4       C180 N C1 SHR FC  11 B2 C180 1152 8   16 FCTC 00 CPC2.0     VM8       C040 N C0 SHR FC  11 52 C040 11B2 4
  89  CPC2.0     VM4       C210 N C2 SHR FC  12 52 C210 1282 1   16 FCTC 00 CPC1.0     VM1       C340 N C3 SHR FC  12 82 C340 1252 4
  90  CPC2.0     VM4       C220 N C2 SHR FC  12 52 C220 1282 2   16 FCTC 00 CPC1.0     VM2       C340 N C3 SHR FC  12 82 C340 1252 4
  91  CPC2.0     VM4       C250 N C2 SHR FC  12 52 C250 1282 5   16 FCTC 00 CPC1.0     VM5       C340 N C3 SHR FC  12 82 C340 1252 4
  92  CPC2.0     VM4       C260 N C2 SHR FC  12 52 C260 1282 6   16 FCTC 00 CPC1.0     VM6       C340 N C3 SHR FC  12 82 C340 1252 4
  93  CPC2.0     VM4       C310 N C3 SHR FC  12 B2 C310 1222 1   16 FCTC 00 CPC1.0     VM1       C240 N C2 SHR FC  12 22 C240 12B2 4
  94  CPC2.0     VM4       C320 N C3 SHR FC  12 B2 C320 1222 2   16 FCTC 00 CPC1.0     VM2       C240 N C2 SHR FC  12 22 C240 12B2 4
  95  CPC2.0     VM4       C350 N C3 SHR FC  12 B2 C350 1222 5   16 FCTC 00 CPC1.0     VM5       C240 N C2 SHR FC  12 22 C240 12B2 4
  96  CPC2.0     VM4       C360 N C3 SHR FC  12 B2 C360 1222 6   16 FCTC 00 CPC1.0     VM6       C240 N C2 SHR FC  12 22 C240 12B2 4
------ ---------- -------- ------ -- --- --- -- -- ---- ---- -- --- ---- -- ---------- -------- ------ -- --- --- -- -- ---- ---- -
```

FICON CTC Report from HCD

```
                                CTC CONNECTION REPORT                     TIME: 14:45  DATE: 2024-05-23  PAGE T-   4
        ----------------------- SIDE 1 ---------------------- - COMMON -- ----------------------- SIDE 2 --------------------
           PROC.CSSID PART.     DEVICE --CHPID--- ENTRY -----CU----- --DEVICE--- PROC.CSSID PART.     DEVICE ---CHPID-- ENTRY -----CU----
  LINE                NAME      NUM OS ID MOD TYP SW PO ID   LA   #  RNG TYPE UA              NAME      NUM OS ID MOD TYP SW PO ID   LA   #
  ------ ---------- -------- ------ -- --- --- -- -- ---- ---- -- --- ---- -- ---------- -------- ------ -- --- --- -- -- ---- ---- -
     97  CPC2.0     VM7      C030 N C0 SHR FC  11 52 C030 11B2 3   16 FCTC 00 CPC2.0     VM3      C170 N C1 SHR FC  11 B2 C170 1152 7
     98  CPC2.0     VM7      C040 N C0 SHR FC  11 52 C040 11B2 4   16 FCTC 00 CPC2.0     VM4      C170 N C1 SHR FC  11 B2 C170 1152 7
     99* CPC2.0     VM7      C070 N C0 SHR FC  11 52 C070 11B2 7   16 FCTC 00 CPC2.0     VM7      C170 N C1 SHR FC  11 B2 C170 1152 7
    100  CPC2.0     VM7      C080 N C0 SHR FC  11 52 C080 11B2 8   16 FCTC 00 CPC2.0     VM8      C170 N C1 SHR FC  11 B2 C170 1152 7
    101  CPC2.0     VM7      C130 N C1 SHR FC  11 B2 C130 1152 3   16 FCTC 00 CPC2.0     VM3      C070 N C0 SHR FC  11 52 C070 11B2 7
    102  CPC2.0     VM7      C140 N C1 SHR FC  11 B2 C140 1152 4   16 FCTC 00 CPC2.0     VM4      C070 N C0 SHR FC  11 52 C070 11B2 7
    103* CPC2.0     VM7      C170 N C1 SHR FC  11 B2 C170 1152 7   16 FCTC 00 CPC2.0     VM7      C070 N C0 SHR FC  11 52 C070 11B2 7
    104  CPC2.0     VM7      C180 N C1 SHR FC  11 B2 C180 1152 8   16 FCTC 00 CPC2.0     VM8      C070 N C0 SHR FC  11 52 C070 11B2 7
    105  CPC2.0     VM7      C210 N C2 SHR FC  12 52 C210 1282 1   16 FCTC 00 CPC1.0     VM1      C370 N C3 SHR FC  12 82 C370 1252 7
    106  CPC2.0     VM7      C220 N C2 SHR FC  12 52 C220 1282 2   16 FCTC 00 CPC1.0     VM2      C370 N C3 SHR FC  12 82 C370 1252 7
    107  CPC2.0     VM7      C250 N C2 SHR FC  12 52 C250 1282 5   16 FCTC 00 CPC1.0     VM5      C370 N C3 SHR FC  12 82 C370 1252 7
    108  CPC2.0     VM7      C260 N C2 SHR FC  12 52 C260 1282 6   16 FCTC 00 CPC1.0     VM6      C370 N C3 SHR FC  12 82 C370 1252 7
    109  CPC2.0     VM7      C310 N C3 SHR FC  12 B2 C310 1222 1   16 FCTC 00 CPC1.0     VM1      C270 N C2 SHR FC  12 22 C270 12B2 7
    110  CPC2.0     VM7      C320 N C3 SHR FC  12 B2 C320 1222 2   16 FCTC 00 CPC1.0     VM2      C270 N C2 SHR FC  12 22 C270 12B2 7
    111  CPC2.0     VM7      C350 N C3 SHR FC  12 B2 C350 1222 5   16 FCTC 00 CPC1.0     VM5      C270 N C2 SHR FC  12 22 C270 12B2 7
    112  CPC2.0     VM7      C360 N C3 SHR FC  12 B2 C360 1222 6   16 FCTC 00 CPC1.0     VM6      C270 N C2 SHR FC  12 22 C270 12B2 7
  ------ ---------- -------- ------ -- --- --- -- -- ---- ---- -- --- ---- -- ---------- -------- ------ -- --- --- -- -- ---- ---- -
    113  CPC2.0     VM8      C030 N C0 SHR FC  11 52 C030 11B2 3   16 FCTC 00 CPC2.0     VM3      C180 N C1 SHR FC  11 B2 C180 1152 8
    114  CPC2.0     VM8      C040 N C0 SHR FC  11 52 C040 11B2 4   16 FCTC 00 CPC2.0     VM4      C180 N C1 SHR FC  11 B2 C180 1152 8
    115  CPC2.0     VM8      C070 N C0 SHR FC  11 52 C070 11B2 7   16 FCTC 00 CPC2.0     VM7      C180 N C1 SHR FC  11 B2 C180 1152 8
    116* CPC2.0     VM8      C080 N C0 SHR FC  11 52 C080 11B2 8   16 FCTC 00 CPC2.0     VM8      C180 N C1 SHR FC  11 B2 C180 1152 8
    117  CPC2.0     VM8      C130 N C1 SHR FC  11 B2 C130 1152 3   16 FCTC 00 CPC2.0     VM3      C080 N C0 SHR FC  11 52 C080 11B2 8
    118  CPC2.0     VM8      C140 N C1 SHR FC  11 B2 C140 1152 4   16 FCTC 00 CPC2.0     VM4      C080 N C0 SHR FC  11 52 C080 11B2 8
    119  CPC2.0     VM8      C170 N C1 SHR FC  11 B2 C170 1152 7   16 FCTC 00 CPC2.0     VM7      C080 N C0 SHR FC  11 52 C080 11B2 8
    120* CPC2.0     VM8      C180 N C1 SHR FC  11 B2 C180 1152 8   16 FCTC 00 CPC2.0     VM8      C080 N C0 SHR FC  11 52 C080 11B2 8
    121  CPC2.0     VM8      C210 N C2 SHR FC  12 52 C210 1282 1   16 FCTC 00 CPC1.0     VM1      C380 N C3 SHR FC  12 82 C380 1252 8
    122  CPC2.0     VM8      C220 N C2 SHR FC  12 52 C220 1282 2   16 FCTC 00 CPC1.0     VM2      C380 N C3 SHR FC  12 82 C380 1252 8
    123  CPC2.0     VM8      C250 N C2 SHR FC  12 52 C250 1282 5   16 FCTC 00 CPC1.0     VM5      C380 N C3 SHR FC  12 82 C380 1252 8
    124  CPC2.0     VM8      C260 N C2 SHR FC  12 52 C260 1282 6   16 FCTC 00 CPC1.0     VM6      C380 N C3 SHR FC  12 82 C380 1252 8
    125  CPC2.0     VM8      C310 N C3 SHR FC  12 B2 C310 1222 1   16 FCTC 00 CPC1.0     VM1      C280 N C2 SHR FC  12 22 C280 12B2 8
    126  CPC2.0     VM8      C320 N C3 SHR FC  12 B2 C320 1222 2   16 FCTC 00 CPC1.0     VM2      C280 N C2 SHR FC  12 22 C280 12B2 8
    127  CPC2.0     VM8      C350 N C3 SHR FC  12 B2 C350 1222 5   16 FCTC 00 CPC1.0     VM5      C280 N C2 SHR FC  12 22 C280 12B2 8
    128  CPC2.0     VM8      C360 N C3 SHR FC  12 B2 C360 1222 6   16 FCTC 00 CPC1.0     VM6      C280 N C2 SHR FC  12 22 C280 12B2 8
  ------ ---------- -------- ------ -- --- --- -- -- ---- ---- -- --- ---- -- ---------- -------- ------ -- --- --- -- -- ---- ---- -
```

Locate Available FCTCs Between Any Pair of LPARs

- **Simple XEDIT macro**

```
/*locate SCTCs between specified LPARs in HCD CTC report        */
Address 'XEDIT'
Arg lp1 lp2 .
'SET ARBCHAR ON $'
'ZONE 1 *'
all_cmd = 'ALL / 'lp1' $ 'lp2' /|/ 'lp2' $ 'lp1' /'
'MSG' all_cmd
all_cmd
'SET ALT 0 0'
```

```
 IODFC1   REP_CTC   K1  F 133   Trunc=133 Size=246 Line=127 Col=1 Alt=0
====>
ALL / VM2 $ VM4 /|/ VM4 $ VM2 /
00127    12  CPC1.0    VM2      C040 N C0 SHR FC        C040      4   16 FCTC 00 CPC1.0    VM4      C120 N C1 SHR FC        C120      2
00131    16  CPC1.0    VM2      C140 N C1 SHR FC        C140      4   16 FCTC 00 CPC1.0    VM4      C020 N C0 SHR FC        C020      2
00143    26  CPC1.0    VM4      C020 N C0 SHR FC        C020      2   16 FCTC 00 CPC1.0    VM2      C140 N C1 SHR FC        C140      4
00147    30  CPC1.0    VM4      C120 N C1 SHR FC        C120      2   16 FCTC 00 CPC1.0    VM2      C040 N C0 SHR FC        C040      4
00247 * * * End of File * * *


 IODFC6   REP_CTC   K1  F 133   Trunc=133 Size=373 Line=141 Col=1 Alt=0
====>
ALL / VM2 $ VM4 /|/ VM4 $ VM2 /
00141    26  CPC1.0    VM2      C240 N C2 SHR FC  12 22 C240 12B2 4   16 FCTC 00 CPC2.0    VM4      C320 N C3 SHR FC  12 B2 C320 1222 2
00145    30  CPC1.0    VM2      C340 N C3 SHR FC  12 82 C340 1252 4   16 FCTC 00 CPC2.0    VM4      C220 N C2 SHR FC  12 52 C220 1282 2
00219    90  CPC2.0    VM4      C220 N C2 SHR FC  12 52 C220 1282 2   16 FCTC 00 CPC1.0    VM2      C340 N C3 SHR FC  12 82 C340 1252 4
00223    94  CPC2.0    VM4      C320 N C3 SHR FC  12 B2 C320 1222 2   16 FCTC 00 CPC1.0    VM2      C240 N C2 SHR FC  12 22 C240 12B2 4
00374 * * * End of File * * *
```

Decide Where to Make Dynamic I/O Changes

Dynamic Change Decision

- **Choose how and where to manage I/O configuration**
  - Manage with z/OS if z/OS LPARs or guests are in use
    - z/VM can use and activate IODF generated with z/OS HCD
    - z/OS cannot use IODF generated be z/VM HCD
- **z/VM has two options**
  - HCD
    - Import IODF from z/OS and manage activation
    - Build and maintain IODF directly on z/VM HCD
      - Using IOCP decks
      - Using HCM
    - Single IODF can have all CPCs in a site configuration; that share peripheral devices
  - Native z/VM CP Dynamic I/O commands
    - Requires more in depth IOCP knowledge
    - Making dynamic changes requires careful execution to minimize possibility of mistakes
    - Each CPC has its own IOCP deck

Dynamic Activation Options

- **z/OS can do it all (configuration requirements must be met)**
- **Shared**
  - z/OS maintain IODF; activate hardware changes
  - Copy IODF to z/VM; export function documented in z/OS HCD User's Guide
  - Use CBDSIMP on z/VM
  - Use CBDSACT to soft activate on z/VM
- **z/VM HCD only**
  - HCM not covered
- **Native z/VM Commands**
  - EXEC IOCP for syntax checking
  - z/VM CP Dynamic I/O commands
  - EXEC IOCP to write IOCDS
  - CP SET IOCDS An

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Preparing a CPC for Dynamic I/O Changes

Configure for Dynamic I/O - Hardware

- **Choose <u>one</u> LPAR to manage I/O for entire CPC**
- **Configure the CPC from the HMC**
  - Customize Activation Profiles
  - Select LPAR profile
  - View the "Security" tab
  - Check the box for "Input/output (I/O) configuration control"

Configure for Dynamic I/O - Software

- **z/VM SYSTEM CONFIG**

    - Features,
       Disable,
          DYNamic_I/O,   Allow hardware I/O changes

    - Features,
       Enable,
          SET_DYNamic_io,   Allow use of SET DYNamic ON/OFF command
          SET_DEVices,   Allow privileged users to reset CP's view of real devices
          NEW_DEVices_initialized_when_added
                              CP will create a real device control block (RDEV)
                              when it receives an I/O machine check (IOMCK)

One-time Hardware Enablement on Each CPC at Install if Possible

- **Code IOCP**
  - Syntax check with IOCP program to generate proper TOKEN statement
  - Optionally extract from IODF using CBDSIOCP and SA parameter
- **Copy to USB – HMC has restrictions on usable devices**
  - Be sure to include the TOK= parameter on the ID macro
  - Be sure to remove all of the comments
- **Shutdown all running LPARs**
- **Use Stand-Alone IOCP program on CPC**
- **POR (IML / Activate) the CPC**
- **This is all documented in the HMC User's Guide**

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Implement a Dynamic Change Using z/VM HCD

- **Update IODF or create new IODF**
  - Directly on z/VM CBDIODSP user-id
    - Validate using CBDSPROD to convert WORKIODF to PRODIODF
  - On z/OS TSO HCD
    - Export and transfer directly or FTP; Receive to CBDIODSP 191
- **Place a copy of the IODF onto the MAINT CF1 disk.**
  - CP will match the IODF information with the TOKEN.
- **Test activation of the IODF on CBDIODSP**
  - EXEC CBDSACT IODFfn cpcnm * (TEST
  - Review CBDSACT MSGLOG for errors
- **Activate the hardware changes once on <u>each</u> CPC**
  - EXEC CBDSACT IODFfn cpcnm iocds# (FORCE
- **Software-only activate on other z/VM LPARs on the CPC**
  - EXEC CBDSACT IODFfn cpcnm iocds# (SOFTNOval

Steps to Implement Change
Using z/VM CP Commands

- **Update the IOCP source statements with proposed changes**
  - Example is adding 4 more LPARs to change SSI from 4 members to 8 members (CTC1 to CTC2 above)
- **Run IOCP EXEC with NOWRT option to check syntax**
  - Do not load or activate
- **Use some sort of compare utility to extract differences between old and new IOCP**
  - XCOPY software had a utility called CMPR; this package is no longer available
  - Fran Hensler's XCOMPARE is available from the VM Workshop page
- **Use the output from the compare utility to code z/VM CP Dynamic I/O commands**
  - DEFINE / MODIFY CHPID
  - DEFINE / MODIFY CNTLUNIT
  - DEFINE / MODIFY DEVICE

Steps to Implement Change
Using z/VM CP Commands

- **Put all the commands to implement the change into a single EXEC.**

  Include Signal On Error to abort the EXEC if any CP Dynamic I/O command received a non-zero return code.

  - CP SET DYNamic ON
  - Signal On Error
  - Issue CP commands to dynamically make changes
    - **NOTE**: If any command fails, keep track of what was completed. Either reverse the completed commands or fix the failed commands. Write either the old or a new IOCP to a new IOCDS and activate it.
  - Signal Off Error
  - If commands complete successfully, run **IOCP** EXEC again with write option to create an IOCDS
  - Issue **CP SET IOCDS_active** command to activate the new IOCDS
    - This will change the hardware pointer so that the new IOCDS is selected at a future POR.
  - CP SET DYNamic OFF

Implement Change Using z/VM CP Commands

- **Compare new IOCP source to old IOCP source to create "diff" file**
  - Fran Hensler's XCOMPARE – XCOMPARE CTC2 IOCP A CTC1 IOCP A (DISK
  - Results in XCOMPARE LISTING A

```
FILE 1    1           ID   MSG1='CTC2    IOCDS A2        REVISED 24/03/26',  X    FILE 1    74  *    PEER FCTC CONTROL UNIT 5 target VM5
FILE 2    1           ID   MSG1='CTC1    IOCDS A1        REVISED 24/03/26',  X    FILE 1    75        CNTLUNIT CUNUMBR=C050,PATH=(CSS(0),C0),UNIT=FCTC,              *
FILE 1    4                TOK=('VM-TOKEN',F0F361F2F761F2F4F0F87AF2F07AF3F540404040X   FILE 1    76            UNITADD=((00,16)),CUADD=05
FILE 1    5                ,00000000,'03/27/24','08:20:35','SYS1','IODFC2')          FILE 1    77  *$HCDC$      SERIAL='C000000001'
FILE 2    4                TOK=('VM-TOKEN',F0F361F2F661F2F4F2F17AF2F67AF2F040404040X   FILE 1    78        IODEVICE ADDRESS=(C050,16),CUNUMBR=C050,UNIT=FCTC,            *
FILE 2    5                ,00000000,'03/26/24','21:26:20','SYS1','IODFC1')          FILE 1    79            UNITADD=00
FILE 1    11               (VM5,5),(VM6,6),(VM7,7),(VM8,8,                   *    FILE 1    80  *$DFLT$      PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
FILE 1    12               (*,9),(*,A),(*,B),(*,C),(*,D),(*,E),(*,F)))            FILE 1    82  *    PEER FCTC CONTROL UNIT 6 target VM6
FILE 1    13  *$HCDC$      USAGE=(OS,OS,OS,OS,OS,OS,OS,OS,                   *    FILE 1    83        CNTLUNIT CUNUMBR=C060,PATH=(CSS(0),C0),UNIT=FCTC,             *
FILE 1    14               CF/OS,CF/OS,CF/OS,CF/OS,CF/OS,CF/OS)                  FILE 1    84            UNITADD=((00,16)),CUADD=06
FILE 2    11               (*,5),(*,6),(*,7),(*,8),(*,9),(*,A),(*,B),(*,C),(*,D),  *   FILE 2    70        CHPID PATH=(CSS(0),C1),SHARED,                      *
FILE 2    12               (*,E),(*,F)))                                  FILE 2    71            PARTITION=(VM1,VM2,VM3,VM4),TYPE=FC,PCHID=102
FILE 2    13  *$HCDC$      USAGE=(OS,OS,OS,OS,CF/OS,CF/OS,CF/OS,             *    FILE 2    72  *
FILE 2    14               CF/OS,CF/OS,CF/OS,CF/OS,CF/OS,CF/OS,CF/OS,CF/OS)       FILE 2    73  *    PEER FCTC CONTROL UNIT 1 target VM1
FILE 1    31  *  C050    C150     5  VM5                                     FILE 2    74        CNTLUNIT CUNUMBR=C110,PATH=(CSS(0),C1),UNIT=FCTC,             *
FILE 1    32  *  C060    C160     6  VM6                                     FILE 2    75            UNITADD=((00,16)),CUADD=01
FILE 1    33  *  C070    C170     7  VM7                                     FILE 1    86        IODEVICE ADDRESS=(C060,16),CUNUMBR=C060,UNIT=FCTC,            *
FILE 1    34  *  C080    C180     8  VM8                                     FILE 2    77        IODEVICE ADDRESS=(C110,16),CUNUMBR=C110,UNIT=FCTC,            *
FILE 1    39               PARTITION=(VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8),TYPE=FC, *   FILE 1    88  *$DFLT$      PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
FILE 1    40               PCHID=101                                        FILE 2    79  *$DFLT$      PARTITION=((CSS(0),VM1,VM2,VM3,VM4))
FILE 2    35               PARTITION=(VM1,VM2,VM3,VM4),TYPE=FC,PCHID=101           FILE 1    90  *    PEER FCTC CONTROL UNIT 7 target VM7
FILE 1    48  *$DFLT$      PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))      FILE 1    91        CNTLUNIT CUNUMBR=C070,PATH=(CSS(0),C0),UNIT=FCTC,             *
FILE 2    43  *$DFLT$      PARTITION=((CSS(0),VM1,VM2,VM3,VM4))                  FILE 1    92            UNITADD=((00,16)),CUADD=07
FILE 1    56  *$DFLT$      PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))      FILE 2    81  *    PEER FCTC CONTROL UNIT 2 target VM2
FILE 2    51  *$DFLT$      PARTITION=((CSS(0),VM1,VM2,VM3,VM4))                  FILE 2    82        CNTLUNIT CUNUMBR=C120,PATH=(CSS(0),C1),UNIT=FCTC,             *
FILE 1    64  *$DFLT$      PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))      FILE 2    83            UNITADD=((00,16)),CUADD=02
FILE 2    59  *$DFLT$      PARTITION=((CSS(0),VM1,VM2,VM3,VM4))                  FILE 1    94        IODEVICE ADDRESS=(C070,16),CUNUMBR=C070,UNIT=FCTC,            *
FILE 1    72  *$DFLT$      PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))      FILE 2    85        IODEVICE ADDRESS=(C120,16),CUNUMBR=C120,UNIT=FCTC,            *
FILE 2    67  *$DFLT$      PARTITION=((CSS(0),VM1,VM2,VM3,VM4))                  FILE 1    96  *$DFLT$      PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
                                                                            FILE 2    87  *$DFLT$      PARTITION=((CSS(0),VM1,VM2,VM3,VM4))
```

And <u>many</u> more…

Create CP Dynamic I/O Commands

- **Use the output from the compare utility, the new and old IOCP source files to code**

```
CTC2    IOCP    A1  F 80  Trunc=80 Size=177 Line=38 Col=1 Alt=0
====>
     |...+....1....+....2....+....3....+....4....+....5....+....6....+....7....+....>
00038          CHPID PATH=(CSS(0),C0),SHARED,                                     *
00039               PARTITION=(VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8),TYPE=FC,          *
00040               PCHID=101
00043          CNTLUNIT CUNUMBR=C010,PATH=(CSS(0),C0),UNIT=FCTC,                  *
00044               UNITADD=((00,16)),CUADD=01
00045 *$HCDC$       SERIAL='C000000001'
00046          IODEVICE ADDRESS=(C010,16),CUNUMBR=C010,UNIT=FCTC,                 *
00047               UNITADD=00
00048 *$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))

CTC1    IOCP    A1  F 80  Trunc=80 Size=107 Line=34 Col=1 Alt=0
====>
     |...+....1....+....2....+....3....+....4....+....5....+....6....+....7....+....>
00034          CHPID PATH=(CSS(0),C0),SHARED,                                     *
00035               PARTITION=(VM1,VM2,VM3,VM4),TYPE=FC,PCHID=101
00038          CNTLUNIT CUNUMBR=C010,PATH=(CSS(0),C0),UNIT=FCTC,                  *
00039               UNITADD=((00,16)),CUADD=01
00040 *$HCDC$       SERIAL='C000000001'
00041          IODEVICE ADDRESS=(C010,16),CUNUMBR=C010,UNIT=FCTC,                 *
00042               UNITADD=00
00043 *$DFLT$       PARTITION=((CSS(0),VM1,VM2,VM3,VM4))
```

```
FILE 1    1       ID    MSG1='CTC2    IOCDS A2        REVISED 24/03/26',   X
FILE 2    1       ID    MSG1='CTC1    IOCDS A1        REVISED 24/03/26',   X
FILE 1    4             TOK=('VM-TOKEN',F0F361F2F761F2F4F0F87AF2F07AF3F540404040X
FILE 1    5             ,00000000,'03/27/24','08:20:35','SYS1','IODFC2')
FILE 2    4             TOK=('VM-TOKEN',F0F361F2F661F2F4F2F17AF2F67AF2F040404040X
FILE 2    5             ,00000000,'03/26/24','21:26:20','SYS1','IODFC1')
FILE 1   11             (VM5,5),(VM6,6),(VM7,7),(VM8,8),                          *
FILE 1   12             (*,9),(*,A),(*,B),(*,C),(*,D),(*,E),(*,F))
FILE 1   13  *$HCDC$    USAGE=(OS,OS,OS,OS,OS,OS,OS,OS,                           *
FILE 1   14             CF/OS,CF/OS,CF/OS,CF/OS,CF/OS,CF/OS,CF/OS)
FILE 2   11             (*,5),(*,6),(*,7),(*,8),(*,9),(*,A),(*,B),(*,C),(*,D),   *
FILE 2   12             (*,E),(*,F))
FILE 2   13  *$HCDC$    USAGE=(OS,OS,OS,OS,CF/OS,CF/OS,CF/OS,                      *
FILE 2   14             CF/OS,CF/OS,CF/OS,CF/OS,CF/OS,CF/OS,CF/OS)
FILE 1   31  *  C050    C150    5  VM5
FILE 1   32  *  C060    C160    6  VM6
FILE 1   33  *  C070    C170    7  VM7
FILE 1   34  *  C080    C180    8  VM8
FILE 1   39             PARTITION=(VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8),TYPE=FC,     *
FILE 1   40             PCHID=101
FILE 2   35             PARTITION=(VM1,VM2,VM3,VM4),TYPE=FC,PCHID=101
FILE 1   48  *$DFLT$    PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
FILE 2   43  *$DFLT$    PARTITION=((CSS(0),VM1,VM2,VM3,VM4))
FILE 1   56  *$DFLT$    PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
FILE 2   51  *$DFLT$    PARTITION=((CSS(0),VM1,VM2,VM3,VM4))
FILE 1   64  *$DFLT$    PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
FILE 2   59  *$DFLT$    PARTITION=((CSS(0),VM1,VM2,VM3,VM4))
FILE 1   72  *$DFLT$    PARTITION=((CSS(0),VM1,VM2,VM3,VM4,VM5,VM6,VM7,VM8))
FILE 2   67  *$DFLT$    PARTITION=((CSS(0),VM1,VM2,VM3,VM4))
```

CP DEFINE LPAR VM5 MIF_id 05   **repeat for the other three new LPARs**

CP MODIFY CHPID C0 ADD INIT VM5 VM6 VM7 VM8 ACC VM5 VM6 VM7 VM8   **repeat for all CHPIDs**

CP MODIFY DEVICE C010-C01F ADD PART VM5 VM6 VM7 VM8   **repeat for all IODEVICEs**

Implement Change Using z/VM CP Commands

- **Put commands into an EXEC**

```
/* Add 4 more LPARs with FCTCs */

Address 'COMMAND'
Parse Source With . exec_nm .
'CP SPOOL CONSOLE TO * START NAME' exec_nm 'CONLOG'
Trace 'C'
Signal On Error
  'CP DEFINE LPAR VM5 MIF_id 05'
  'CP DEFINE LPAR VM6 MIF_id 06'
  'CP DEFINE LPAR VM7 MIF_id 07'
  'CP DEFINE LPAR VM8 MID_id 08'

  'CP MODIFY CHPID C0 ADD INIT VM5 VM6 VM7 VM8 ACC VM5 VM6 VM7 VM8'
  'CP MODIFY CHPID C1 ADD INIT VM5 VM6 VM7 VM8 ACC VM5 VM6 VM7 VM8'

  'CP MODIFY DEVICE C010-C01F ADD PART VM5 VM6 VM7 VM8'
/* more MODIFY DEVICE commands for other */

  'CP DEFINE CU C050 TYPE FICON_CTC UNITADD 00-16 CUADD 05 CHPID C0'
/* more DEFINE CNTLUNIT commands for new CNTLUNITs with CUADD for 05, 06, 07, 08 */

  'CP DEFINE DEV C050-C05F UNITADD 00 CU C050 NOTDASD STAT PAR VM1 VM2 VM3 VM4 VM5 VM6 VM7 VM8'
/* more DEFINE DEVICE commands for new IODEVICEs for the new LPARs */

Signal Off Error /* if we got this far then all of the HSA updates were successful */
```

Implement Change Using z/VM CP Commands

- **Put commands into an EXEC (continuation)**

```
iocp_fn = 'NEWIOCP1'
IOCDS = 'A3'
token1 = 'SYS1'
token2 = 'IODF11'

'GETFMADR'
Pull . . tmpvdev .
'CP DEFINE VFB-512 AS' tmpvdev 'BLK 75000'
'ACCESS' tmpvdev 'B'
'EXEC VMLINK IOCP_SOURCE <* C> (WRITE'
'COPYFILE' iocp_fn 'IOCP C = = B (REPLACE'
'EXEC IOCP' iocp_fn '(WRT'IOCDS 'DESC1' token1 'DESC2' token2
Say 'IOCP RC='rc
If rc \> 4 Then
  Do
    'ERASE' iocp_fn 'LISTING B'
    'CP SET IOCDS' IOCDS
    'CP SET TOKEN DESC1' token1 'DESC2' token2
    'COPYFILE' iocp_fn 'IOCP B = = C (REPLACE OLDD'
  End

'RELEASE B (DETACH'
'RELEASE C (DETACH'
Error:
erc = rc
'CP SPOOL CONSOLE STOP CLOSE TERM'
Exit erc
```

Questions?

References

- **HELP DYNIO**
  ```
  Change specific device handling after initialization
  Change the definition of an existing CHPID
  Change the definition of an existing control unit
  Change the definition of one or more existing
     real devices
  Change the IOCDS file used during the next POR
  Define a new channel path identifier
  Define a new control unit
  Define one or more new real devices
  Delete an existing channel path identifier
  Delete an existing control unit
  Delete one or more existing real devices
  Enable or disable the ability to dynamically change
     the processor's I/O configuration
  Turn configuration mode on or off
  ```

Bibliography

- **Library bibliography HELP LIBRARY**

- **Pointer to VM publications from http://www.vm.ibm.com/library**

- **Input/Output Configuration Program User's Guide for ICP IOCP SB10-7177-02**
- **z/OS 3.1 Hardware Configuration Definition User's Guide SC34-2669-60**
  - Some information about $HCDC$, HCD SWITCH, $DFLT$
- **z/OS and z/VM: z/OS and z/VM V6R2.0 HCD Messages SC34-2669-60**
- **z/VM I/O Configuration V7R3 SC24-6291-73**
- **z/VM CP Messages and Codes V7R3 GC24-6270-73**
- **z/VM CP Planning and Administration V7R3 SC24-6271-73**
- **z/VM CP Commands and Utilities Reference V7R3 C24-6268-73**

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