Channel Connection Configuration Cross-Reference

June 1, 1998

Joe Casey
Phone: 914-433-7796
Tie line: 8-293-7796
email: joecasey@vnet.ibm.com
This document is available from the CLIO/S Worldwide Web page:
http://www.rs6000.ibm.com/software/sp_products/clio.html

General information

This document shows the relationships between various configuration items required to create ESCON connections between MVS and AIX. The requirements for both CLIO/S and TCP/IP are shown, although either will work without the other. (CLIO/S requires a TCP/IP connection between AIX and MVS, but that connection does not have be over the ESCON link.)

This sample configuration is for ESCON, but the configuration for Block Multiplexer channels would be quite similar.

The details of the SMIT panel layout and some of the terminology varies with AIX level, but the underlying architecture and concepts do not change.

The highlighted (**a**) tags are used to show data that is referenced in more than one place. The last section contains discussion of the tagged items.

© Copyright IBM Corp. 1996,1997

Chapter 1. The sample configuration

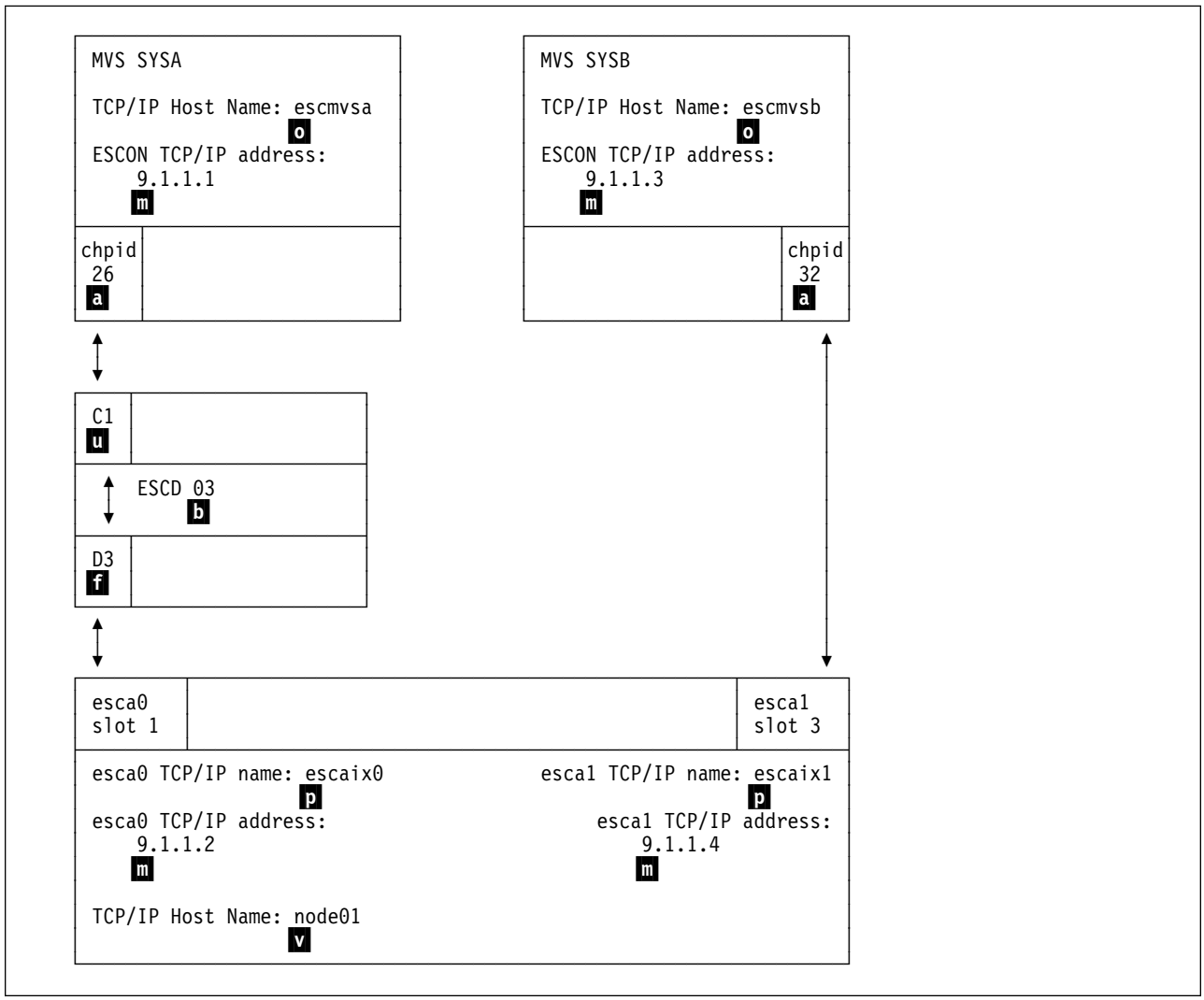


Figure 1. Sample configuration

© Copyright IBM Corp. 1996,1997

Chapter 2. The sample configuration files and displays

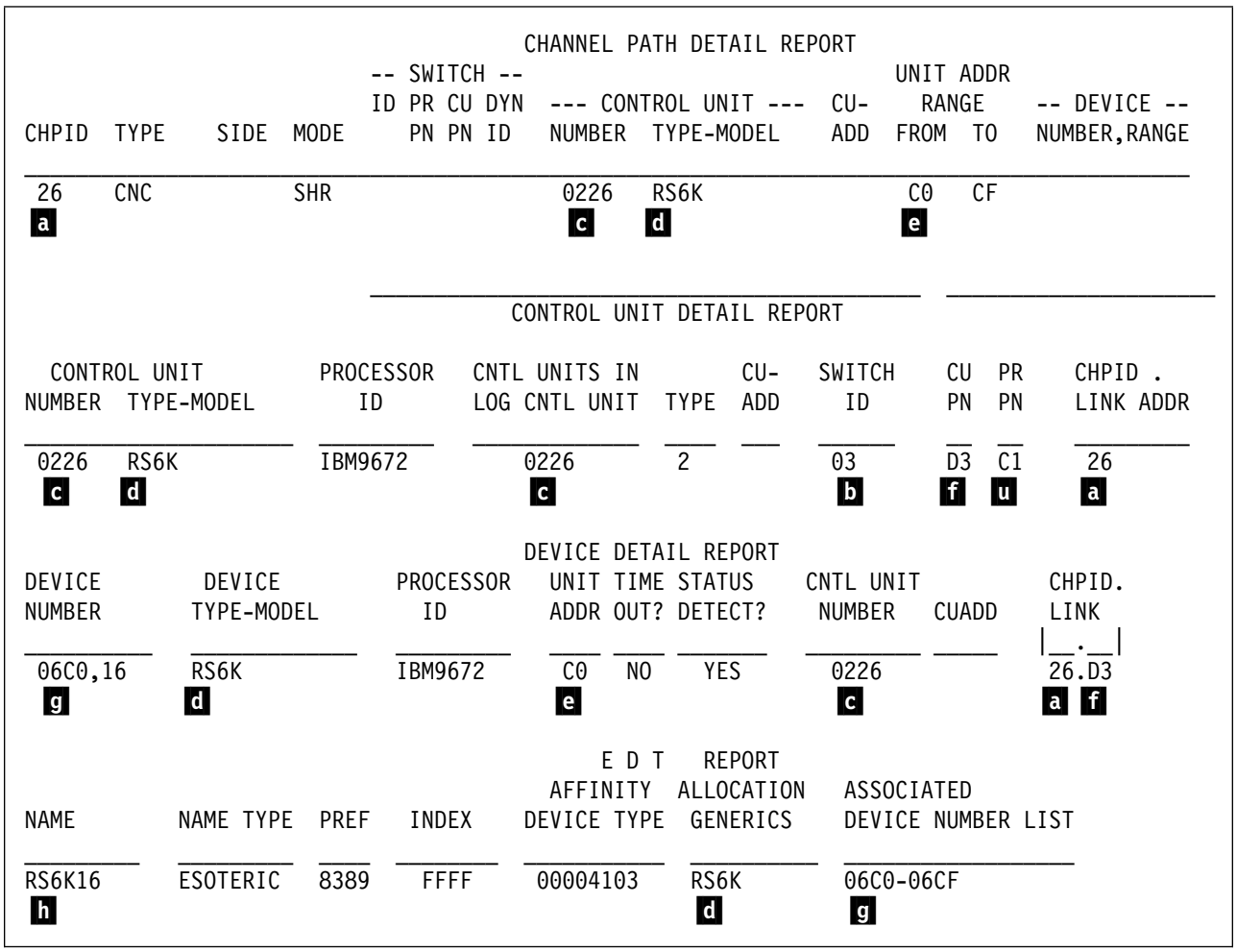
The required configuration data is shown here. For SMIT, display panels rather than input panels are shown for conciseness. The mapping from the display panels to the input panels is straightforward.

Sample IOCP and MVS Configuration Program statements for MVS A

```
CHPID  PATH=((26)),TYPE=CNC,SWITCH=03
              a                  b
CNTLUNIT CUNUMBER=226,PATH=26,UNIT=RS6K,UNITADD=((C0,16)),LINK=D3
                 c       a      d              e           f
IODEVICE UNIT=RS6K,ADDRESS=(6C0,16),CUNUMBER=226
              d            g              c
UNITNAME NAME=RS6K1,UNIT=((6C0,16))
              h          g
```

Sample HCD List Output for MVS A

© Copyright IBM Corp. 1996,1997



```
                                    CHANNEL PATH DETAIL REPORT
                           -- SWITCH --                                UNIT ADDR
                           ID PR CU DYN  --- CONTROL UNIT ---  CU-    RANGE    -- DEVICE --
CHPID  TYPE    SIDE  MODE     PN PN ID   NUMBER  TYPE-MODEL    ADD  FROM  TO   NUMBER,RANGE
_____________________________________________________________________________________________
 26    CNC           SHR                  0226   RS6K                C0   CF
 a                                         c     d                   e

                           ____________________________________________  ____________________
                                    CONTROL UNIT DETAIL REPORT

  CONTROL UNIT         PROCESSOR   CNTL UNITS IN        CU-   SWITCH    CU  PR    CHPID .
NUMBER  TYPE-MODEL        ID       LOG CNTL UNIT  TYPE  ADD     ID      PN  PN    LINK ADDR
_____________________  _________   _____________  ____  ___   ______    __  __    _________
 0226   RS6K           IBM9672         0226        2           03       D3  C1     26
 c     d                               c                       b       f   u      a

                                    DEVICE DETAIL REPORT
DEVICE        DEVICE         PROCESSOR   UNIT TIME STATUS    CNTL UNIT          CHPID.
NUMBER       TYPE-MODEL        ID        ADDR OUT? DETECT?    NUMBER   CUADD    LINK
_________   _____________   _________   ____ ____ _______   _________ _____   |__.__|
 06C0,16     RS6K            IBM9672      C0   NO    YES       0226             26.D3
 g          d                            e                      c               a f

                                          E D T   REPORT
                                       AFFINITY  ALLOCATION   ASSOCIATED
NAME        NAME TYPE  PREF   INDEX    DEVICE TYPE  GENERICS    DEVICE NUMBER LIST
_________   _________  ____  _________  ___________  ___________  ___________________
RS6K16      ESOTERIC   8389    FFFF     00004103    RS6K        06C0-06CF
 h                                                   d           g
```

Sample IOCP and MVS Configuration Program statements for MVS B

```
CHPID  PATH=((32)),TYPE=CNC
             a
CNTLUNIT CUNUMBER=404,PATH=32,UNIT=RS6K,UNITADD=((C0,16))
                 c       a      d             e
IODEVICE UNIT=RS6K,ADDRESS=(6C0,16),CUNUMBER=404
             d            g              c
UNITNAME NAME=RS6K1,UNIT=((6C0,16))
             h           g
```

Sample TCPIP.PROFILE statements for MVS A

```
DEVICE RS6K6C0 CLAW  6C0  MVSA     AIX0     NONE  40 40 4096 4096
       i             g   j        k
LINK  LINK6C0  IP  0  RS6K6C0
      l              i
HOME
   9.1.1.1    LINK6C0
   m          l
GATEWAY
   9.1.1.2   =    LINK6C0  4096  HOST
   n              l
START RS6K6C0
      i
```

Sample TCPIP.PROFILE statements for MVS B

```
DEVICE RS6K6C0 CLAW  6C0  MVSB     AIX1     NONE  40 40 4096 4096
       i             g   j        k
LINK  LINK6C0  IP  0  RS6K6C0
      l              i
HOME
   9.1.1.3   LINK6C0
   m         l
GATEWAY
   9.1.1.4   =    LINK6C0  4096  HOST
   n              l
START RS6K6C0
      i
```

Sample TCPIP.DATA statements for MVS A and B

```
SYSA: HostName escmvsa
               o
SYSB: HostName escmvsb
               o
```

Sample HOSTS.LOCAL statements for MVS A

```
HOST : 9.1.1.1 : escmvsa ::::
       m         o
HOST : 9.1.1.2 : escaix0 ::::
       n         p
```

Sample HOSTS.LOCAL statements for MVS B

```
HOST : 9.1.1.3 : escmvsb ::::
       m         o
HOST : 9.1.1.4 : escaix1 ::::
       n         p
```

Sample userid.PARCONF file for MVS A and MVS B

```
 escaix0   1   4    9.1.1.2
p                   n
 escaixb   1   4    9.1.1.4
p                   n
```

Sample Missing Interrupt Handler from SYS1.PARMLIB(IECIOS00)

```
 MIH TIME=00:00,DEV=(6C0-6CF)
                    g
```

Sample SMIT 'Show Defined Subchannels' panel

```
 Subchannel        System Name     Address
 Set Name        Local    Remote   Lc Rm Gr Type     Path
 ------------------------------------------------------
 es0             AIX0     MVSA     c0 c0 2  CLAW     c10
 q               k        j        r  e  s  t        u
 6c2                               c2 c2 1  3088     c10
 q                                 r  e  s  t        u
 6c3                               c3 c3 1  3088     c10
 6c4                               c4 c4 1  3088     c10
 6c5                               c5 c5 1  3088     c10
 6c6                               c6 c6 1  3088     c10
 6c7                               c7 c7 1  3088     c10
 6c8                               c8 c8 1  3088     c10
 6c9                               c9 c9 1  3088     c10
 6ca                               ca ca 1  3088     c10
 6cb                               cb cb 1  3088     c10
 es1             AIX1     MVSB     b0 c0 2  CLAW     010
 q               k        j        r  e             u
 bc2                               b2 c2 1  3088     010
 q                                 r  e             u
 bc3                               b3 c3 1  3088     010
 bc4                               b4 c4 1  3088     010
 bc5                               b5 c5 1  3088     010
 bc6                               b6 c6 1  3088     010
 bc7                               b7 c7 1  3088     010
 bc8                               b8 c8 1  3088     010
 bc9                               b9 c9 1  3088     010
 bca                               ba ca 1  3088     010
 bcb                               bb cb 1  3088     010
```

Sample SMIT 'Show Defined Fibre' panel

```
Fibre            Slot   Subchannel
Label            Number Sets
-------------------------------------------------
cable1           1      es0,6c2,6c3,6c4,6c5,6c6,6c7,6c8,6c9,6ca,6cb
                        q
cable2           3      es1,bc2,bc3,bc4,bc5,bc6,bc7,bc8,bc9,bca,bcb
                        q
```

Sample SMIT 'Show Defined ESCON Network Interfaces' panel

```
             Local    Internet        Remote   Internet
Name Status  System   Address         System   Address         Netmask
-------------------------------------------------------------------------------
es0  up      AIX0     9.1.1.2         MVSA     9.1.1.1         255.255.255.0
 q           k        n               j        m
es1  up      AIX1     9.1.1.4         MVSB     9.1.1.3         255.255.255.0
 q           k        n               j        m
```

Sample CLIO/S /etc/parctc file

```
 escmvsa  node01    /dev/esca0 1    6c2-6cf
 o        v                    h    g
 escmvsb  node01    /dev/esca1 1    6c2-6cf  Lb2
 o        v                    h    g        r
```

Sample CLIO/S /etc/parconf file entries

```
 escmvsa   2   4    9.1.1.1
 o                  m
 escmvsb   2   4    9.1.1.3
 o                  m
```

Sample /etc/hosts file entry

```
 9.117.1.1 node01
           v
 9.1.1.1 escmvsa
 m       o
 9.1.1.3 escmvsb
 m       o
```

Chapter 3. Comments on the tagged items

a The chpid number is referenced in the `CHPID` and `CNTLUNIT` IOCP macroinstructions.

b The switch (ESCON Director) number is referenced in the `CHPID` IOCP macroinstruction.

c The `CUNUMBER` is used in the `CNTLUNIT` and `IODEVICE` IOCP macroinstructions.

d `UNIT` is used in the `CNTLUNIT` and `IODEVICE` IOCP macroinstructions. `RS6K` is the correct unit name for the latest levels of IOCP. Earlier values have included `CTC` and `SCTC`. For block mux channels, use `3088`

e The unit address is referenced in the `CNTLUNIT` IOCP macroinstruction and in the `smit esca` subchannel panels. In this sample configuration, the unit address is equal to the two rightmost digits of the device address, **g** , since there is no `UNITADD` parameter in the `IODEVICE` macroinstruction.

f The link number is referenced in the `CNTLUNIT` IOCP macroinstruction. It is the 'outgoing' port on the ESCON Director, the one that the control unit is attached to.

g The device address is referenced in the `IODEVICE` IOCP macroinstruction, in the `UNITNAME` MVS configuration program statement, in the TCPIP.PROFILE DEVICE statement, in the SYS1.PARMLIB(IECIOS00) missing interrupt handler entry, and in the CLIO/S /etc/parctc file. Note that the term 'subchannel' is often used on AIX to refer to device addresses on MVS.

h The esoteric name is referenced in the `UNITNAME` MVS configuration program statement and (in truncated form) in the /etc/parctc file. CLIO/S requires it to have the form RS6Knn, where nn is in the range 0-99 with no leading '0'. In this sample configuration the same esoteric name can be used for both units because they are on different MVS systems. If the esoteric name is missing or incorrect, CLIO/S will not be able to allocate a device/subchannel.

i The TCP/IP device name is referenced in the TCPIP.PROFILE DEVICE, LINK, and START statements.

j The TCP/IP MVS host name is referenced in the TCPIP.PROFILE DEVICE statement, in the `smit esca` subchannel panels, and in the `smit esca` network interfaces panels. It must be in uppercase. This name is used during low-level initialization and is **not** the same as the MVS TCP/IP **hostname** (**o**).

k The TCP/IP MVS workstation name is referenced in the TCPIP.PROFILE DEVICE statement, in the `smit esca` subchannel panels, and in the `smit esca` network interfaces panels. It must be in uppercase. This name is used during low-level initialization and is **not** the same as the AIX TCP/IP **hostname** (**p**).

l The MVS TCP/IP link name is referenced in the TCPIP.PROFILE LINK, HOME, and GATEWAY statements.

m The MVS internet address is referenced in the TCPIP.PROFILE HOME statement, the HOSTS.LOCAL dataset, the `smit esca` network interfaces panels, the /etc/hosts file, and the /etc/parconf file.

n The AIX internet address is referenced in the TCPIP.PROFILE GATEWAY statement, the HOSTS.LOCAL dataset, and the `smit esca` network interfaces panels.

© Copyright IBM Corp. 1996,1997

Note that the full AIX internet address is not required in the GATEWAY statement. Depending on your network, it would be possible to use just the first octet.

o The TCP/IP MVS hostname is referenced in the TCPIP.DATA dataset, the HOSTS.LOCAL dataset, the /etc/hosts file, the /etc/parconf file, and the /etc/parctc file.

p The TCP/IP ESCON adapter AIX hostname is referenced in the HOSTS.LOCAL dataset and the userid.PARCONF dataset.

q The subchannel set names are referenced in the `smit esca` subchannel, network interfaces, and fibre panels. Note that the 'esn' format is required for the subchannel sets that are used by TCP/IP.

r The local address is referenced in the `smit esca` subchannel panel and possibly in the CLIO/S /etc/parctc file. The value is arbitrary and must be unique. Commonly the local address is chosen to equal the remote (unit) address, but this is not required and sometimes (as in this sample configuration) the uniqueness requirement makes it impossible. CLIO/S expects the local address to be equal to the device address, which may or may not be equal to the unit address. If the local address is not equal to the device address, then the 'local' parameter must be used in the /etc/parctc entry.

Note that only a portion of the full 16-address range for each adapter has been used. As configured here, no process will be able to use device addresses 6cc-6cf.

s TCP/IP uses pairs of subchannels (with an even subchannel as the first of the pair), so the group value should always be 2. CLIO/S uses only one subchannel at a time, and requires that there be only one subchannel per group.

t The type is always CLAW for TCP/IP, always 3088 for CLIO/S.

u The path refers to the ESCON Director (ESCD) port used to get back to the MVS channel. The first two characters of this value are the ESCD port number (01 is used if there is no ESCD involved). The third character is used to differentiate between different `CUADD` values, which are not used in this sample configuration.

v The host name is referenced in the /etc/parctc file and is defined in the /etc/hosts file. It is the value returned by the AIX **hostname** command. This is probably NOT the name of the ESCON adapter interface, but is commonly set to the name of the ethernet adapter.

Chapter 4. Bibliography

- CLIO/S User's Guide and Reference
- AIX 4.1 ESCON Adapter: User's Guide and Service Information, SC31-8197
- IBM TCP/IP for MVS Customization and Administration Guide V3 R1, SC31-7134
- Enterprise System/9000 Enterprise System/3090 Input/Output Configuration Program User's Guide and ESCON Channel-to-Channel Reference, GC38-0097
- MVS Configuration Program, GC28-1615

© Copyright IBM Corp. 1996,1997