SDLC INN using Cisco DLSw

Sample Conversion from the IBM 3745 to Communications Controller for Linux z/Series

Target Audience

- IBM's customers who use IBM 3745 or IBM 3746/900 SDLC INN to communicate to remote FEPs (Same NETID or SNI).

Purpose of this Paper

- In this paper, two FEPs will be connected over an SDLC INN. One site will be using Communications Controller for Linux on z/Series; the other site will be connected using an IBM 3745 or IBM 3746-900.

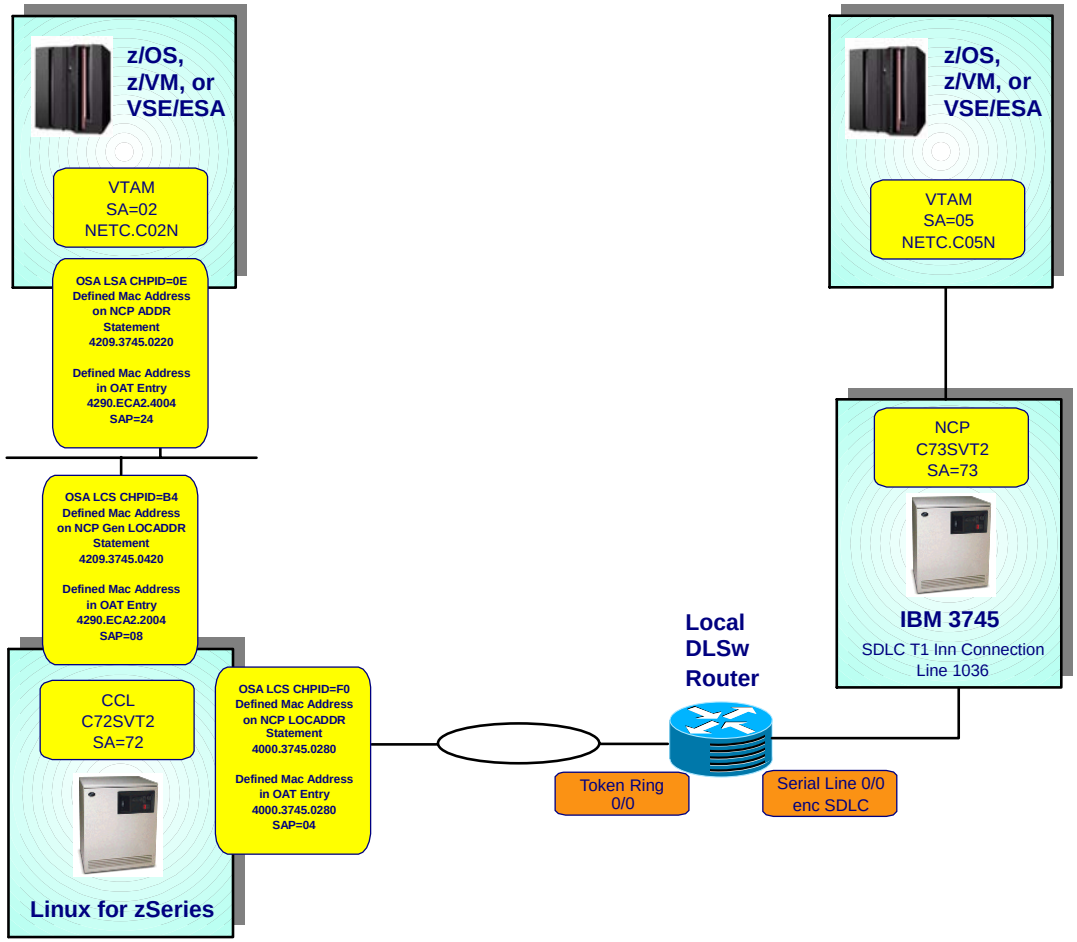
- This document will provide working examples of the following:

  - VTAM XCA Major Node – VTAM to CCL

  - NCP Physical and Logical lines
    - NCP to VTAM
    - NCP BNN Devices

  - DLSw Definitions for Routers

Configuration



Required Resources

- Two z/OS Communications Server IDs
- One Linux ID running as guests under z/VM
  - 512mb of memory
  - 3 Virtual CPs
  - 2 3390-3 DASD volumes
- Layer 2 or Layer 3 Fast Ethernet Switch
- Layer 2 Token Ring Switch or hub.
- Two OSA Fast Ethernet OSA adapters
- One Token Ring OSA adapter
- One CCU of an IBM 3745
- One Cisco IOS Router
  - For testing purposes, we used a Cisco 3600 Series IOS Router
  - Assuming SDLC connection will terminate in data center allowing us to use a DLSw Local configuration

Starting CCL from Linux

- From the Linux console, change to the CCL directory:
  - cd /opt/ibm/Communication_Controller_for_Linux/
- Load the CCL kernel module
  - ./load_ndh.sh
    - You will receive the message :

      NDH kernel modules loaded. You are now able to run the cclengine
- Start the CCL engine
  - nohup ./cclengine -mC72SVT2 -p2072 SVTC72 &
    - If you use telnet or ssh into the Linux host you will want to preface the command with “nohup” so that the process will remain active even after the telnet/ssh session is terminated.

Activating NCP using XCA from NETC.C02N

- From NETC.C02N activate the XCA major node

```
V NET,ACT,ID=C02XCA,ALL
IST097I VARY ACCEPTED
IST093I C02XCA ACTIVE
IST464I LINK STATION C02ETHPU HAS CONTACTED SA 72
IST093I C02ETHPU ACTIVE
```

- From NETC.C02N activate the NCP

```
V NET,ACT,ID=C72SVT2,RNAME=C02ETHPU
IST097I VARY ACCEPTED
IST093I C72SVT2 ACTIVE
IST728I GWPATHS FOR GWN C72SVT2 ARE NOW ENABLED FOR THESE CDRMS
IST778I E04N
IST314I END
IST093I C72PU89A ACTIVE
IST093I C72NPPU ACTIVE
IST720I C72PG2A HAS CONTACTED E74TEST IN NETX, SA 34
IST093I C72PG2A ACTIVE
IST464I LINK STATION C72PG2B HAS CONTACTED C02NPU SA 2
IST093I C72PG2B ACTIVE
```

Displaying the XCA Major Node from NETC.C02N

- Display the XCA major node

```
D NET,ID=C02XCA,E
IST097I DISPLAY ACCEPTED
IST075I NAME = C02XCA, TYPE = XCA MAJOR NODE 723
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST1021I MEDIUM=CSMA/CD,ADAPNO= 0,CUA=2EEA,SNA SAP= 24
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST1656I VTAMTOPO = REPORT, NODE REPORTED - YES
IST170I LINES:
IST232I C02ETHLN ACTIV----E
IST314I END
```

- Display the XCA line

```
D NET,ID=C02ETHLN,E
IST097I DISPLAY ACCEPTED
IST075I NAME = C02ETHLN, TYPE = LINE 735
IST486I STATUS= ACTIV----E, DESIRED STATE= ACTIV
IST087I TYPE = LEASED             , CONTROL = SDLC, HPDT = *NA*
IST134I GROUP = C02ETHGP, MAJOR NODE = C02XCA
IST1500I STATE TRACE = OFF
IST1656I VTAMTOPO = REPORT, NODE REPORTED - YES
IST1657I MAJOR NODE VTAMTOPO = REPORT
IST396I LNKSTA   STATUS     CTG GTG  ADJNODE ADJSA    NETID ADJL
IST397I C02ETHPU ACTIV--W-E   1   1  C72SVT2    72     NETC
IST314I END
```

Activating the Remote 3745 SDLC Line and CDRM

- Activate the CCL physical SDLC line from VTAM NETC.C05N

```
V NET,ACT,ID=C73L1036,ALL
IST093I C73L1036 ACTIVE
IST464I LINK STATION C73P1036 HAS CONTACTED C72SVT2 SA 72
IST093I C73P1036 ACTIVE
```

- Activate the CDRM from VTAM NETC.C05N

```
V NET,ACT,ID=C02N
IST093I C02N ACTIVE
```

C02XCA – XCA Major Node Definitions

```
C02XCA   VBUILD  TYPE=XCA
*
C02ETHPT PORT    MEDIUM=CSMACD,ADAPNO=0,SAPADDR=24,CUADDR=2EEA,          X
                 TIMER=100
*
C02ETHGP GROUP   DIAL=NO,ISTATUS=ACTIVE
C02ETHLN LINE    USER=SNA,ISTATUS=ACTIVE
C02ETHPU PU      MACADDR=4290ECA22004,PUTYPE=4,SUBAREA=72,TGN=1,         X
                 SAPADDR=08,ALLOWACT=YES
```

C72SVT2 – NTRI Physical Line Definitions

```
*********************************************************************
* Physical NTRI Lines
*********************************************************************
*
C72PTRG1 GROUP ECLTYPE=(PHY,ANY),ADAPTER=TIC2,ANS=CONT,MAXTSL=16732,   X
               RCVBUFC=32000,ISTATUS=ACTIVE,XID=NO,                    X
               RETRIES=(20,5,5),NPACOLL=(YES,EXTENDED)
*
C72TR88  LINE  ADDRESS=(1088,FULL),TRSPEED=16,PORTADD=88,              X
               LOCADD=400037450280,NPACOLL=YES
C72PU88A PU
*
C72TR89  LINE  ADDRESS=(1089,FULL),TRSPEED=16,PORTADD=89,              X
               LOCADD=420937450420,NPACOLL=YES
C72PU89A PU
```

C72SVT2 – NTRI Logical Line to VTAM

```
*********************************************************************
* Connection to VTAM SA=02                                          *
*********************************************************************
*
C72INNG2 GROUP ECLTYPE=(LOGICAL,SUBAREA),ANS=CONT,                    X
               ISTATUS=ACTIVE,LOCALTO=13.5,REMOTTO=18.2,              X
               T2TIMER=(0.2,0.2,3),PHYSRSC=C72PU89A,                  X
               SDLCST=(C72PRI,C72SEC),NPACOLL=YES
*
C72LG2B  LINE  TGN=1,TGCONF=SINGLE,MONLINK=CONT
C72PG2B  PU    ADDR=18420937450220,SSAP=(08,H)
```

C72SVT2 – NTRI Logical Line to C73SVT2

```
************************************************************
* INN Connection to SA=73 – SDLC INN to 3745
************************************************************
*
C72INNG1 GROUP ECLTYPE=(LOGICAL,SUBAREA),ANS=CONT,PHYSRSC=C72PU88A,     X
               LOCALTO=13.5,REMOTTO=18.2,T2TIMER=(0.2,0.2,3),           X
               ISTATUS=ACTIVE,SDLCST=(C72PRI,C72SEC),NPACOLL=YES,       X
               MONLINK=CONT
*
C72LG1B  LINE  TGN=2,TGCONF=SINGLE
C72PG1B  PU    ADDR=04400036400004,SSAP=(04,H),BLOCK=(4096,8),          X
               MODULO=8,MAXOUT=7
```

C73SVT2 – SDLC INN Definition

```
C73INN1  GROUP ACTIVTO=60.0,ANS=CONT,CLOCKNG=EXT,DATRATE=HIGH,DIAL=NO, X
               DUPLEX=FULL,IRETRY=NO,ISTATUS=ACTIVE,LNCTL=SDLC,         X
               MAXOUT=7,MAXPU=1,MONLINK=YES,NEWSYNC=NO,NRZI=YES,        X
               PASSLIM=254,PAUSE=0.2,REPLYTO=1,RETRIES=(3,1,3),         X
               SDLCST=(C73PRI,C73SEC),SERVLIM=254,TRANSFR=27,TYPE=NCP
*
C73L1036 LINE  ADDRESS=(1036,FULL),ISTATUS=ACTIVE
C73P1036 PU    PUTYPE=4,TGN=2
```

Cisco Router Definitions

```
source-bridge ring-group 1111
dlsw local-peer
!
interface TokenRing0/0
 description Token Ring Connection to C72SVT2
 no ip address
 no ip unreachables
 no ip proxy-arp
 no ip mroute-cache
 ring-speed 16
 no cdp enable
 source-bridge 2 1 1111
 source-bridge spanning
!
interface Serial1/0
 description SDLC Connection to C73SVT2
 mtu 6000
 no ip address
 encapsulation sdlc
 no ip mroute-cache
 no keepalive
 serial restart-delay 0
 nrzi-encoding
 sdlc vmac 4000.3640.0000
 sdlc N1 16000
 sdlc address 04 seconly
 sdlc partner 4000.3745.0280 04
 sdlc dlsw 4
```

Hints and Tips

- When defining the SDLC VMAC Address, the last byte must be coded as x'00'
  example: 4000.3640.0000
- It is recommended to code the SDLC Address as "seconly" on the Cisco router
  example (sdlc address 04 seconly)
- The SDLC station address will replace the last byte of the SDLC VMAC address. The result of this replacement will be the MAC address coded on the NCP ADDR statement
  example: 4000.3640.0004
- Cisco SDLC supports only MODULO 8 – make sure to code MODULO=8 and MAXOUT=7 on the SDLCST statements (or below),
- MLTG is not supported when using DLSw. You must code TGCONF=SINGLE on the logical line definition.