



Communication Controller for Linux on zSeries

Frame Relay BNN using Cisco DLSw

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

Target Audience

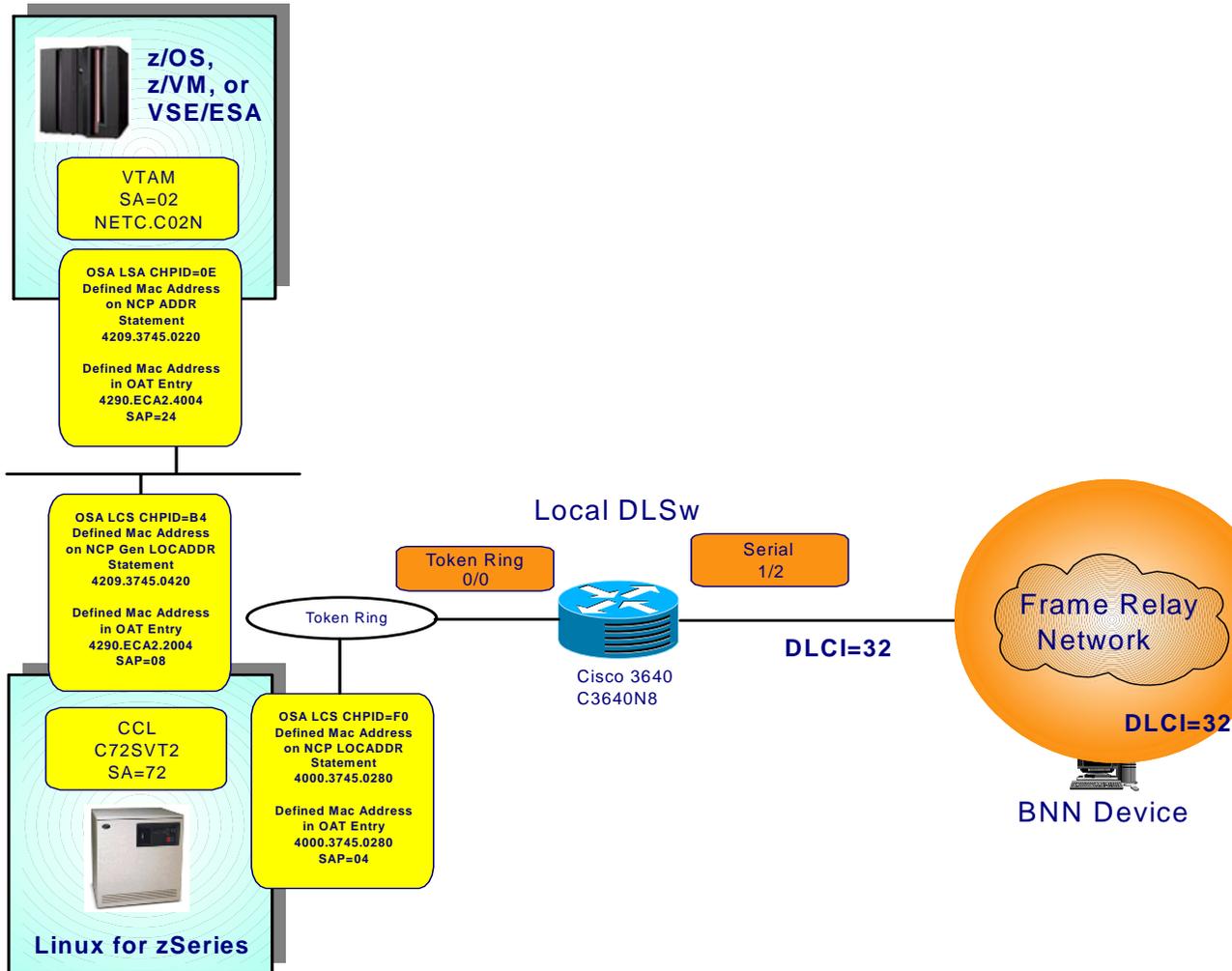
Customers using 3745/3746-900s Frame Relay BNN who will be replacing the FEP with Communication Controller for Linux z/Series V1R1.

Purpose of this Paper

The intent of this paper is to provide a tested solution for customers during the migration from 3745/3746-900 FEPs to Communication Controller for Linux z/Series (CCL). 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

Test Configuration



Resources Used for Solution Verification

- One z/OS Communications Server
- One Linux ID running as guest under z/VM
 - 512mb of memory
 - 3 Virtual CPs
 - 2 3390-3 DASD volumes
- Two OSA Copper Ethernet OSA adapters
- Layer 2 or Layer 3 Ethernet Switch
- One Token Ring OSA adapter
- Layer 2 Token Ring Switch or hub
- Two Cisco IOS Routers
 - For testing purposes, we used a Cisco 3600 Series IOS Router
 - Assuming Frame Relay 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
IST093I C72PU89A ACTIVE
IST093I C72NPPU ACTIVE
IST464I LINK STATION C72PG2B HAS CONTACTED C02NPU SA 2
IST093I C72PG2B ACTIVE
```

Displaying the XCA Major Node - NETC.C02N

- Display the XCA major node and the XCA Line

```
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
```

```
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
```

BNN Devices Connecting into VTAM

- From the BNN device, establish the connection to VTAM. In our case, we used TPNS to simulate boundary devices.

```
IST590I  CONNECTIN  ESTABLISHED FOR PU FRPU1001 ON LINE J00287CF
```

- Once the CONNECTIN is received at the VTAM console, the LUs downstream will receive the USS10 message and the user will be able to logon to the application.

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,USSTAB=AUSSTAB,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 BNN – Logical Definitions

```
*****
*      NTRI BNN LOGICAL LINES FOR TOKEN RING PORT 1088      *
*****
*
C72BNNG1 GROUP ECLTYPE=LOGICAL,ANS=CONTINUE,AUTOGEN=1000,CALL=INOUT,      X
              ISTATUS=ACTIVE,PHYSRSC=C72PU88A,                          X
              USSTAB=AUSSTAB,RETRIES=(10,10,10,20),XMITDLY=NONE,        X
              MODETAB=AMODETAB,NPACOLL=YES
*

```

Sample Frame Relay SMN PU and LU

```
*****
*          SMN for Frame Relay BNN                                     *
*****
*
FRSMN      VBUILD MAXGRP=10,MAXNO=180,TYPE=SWNET
*
FRPU1001 PU   ADDR=C1,PUTYPE=2,IDBLK=017,IDNUM=01001,                *
              MAXPATH=1,MAXOUT=3,ANS=CONTINUE,MODETAB=AMODETAB
FRL1001A LU   LOCADDR=2,DLOGMOD=D6327802,USSTAB=AUSSTAB*
```

Cisco Router Definitions – C3640N8

```
source-bridge ring-group 1111
dlsw local-peer
!
interface TokenRing0/0
  description Token Ring Connection to C72SVT1 doing DLSw
  no ip address
  no ip mroute-cache
  ring-speed 16
  no cdp enable
  source-bridge 2 1 1111
  source-bridge spanning
  llc2 idle-time 30000
  hold-queue 200 in
!
```

Cisco Router Definitions – C3640N8 (cont'd)

```
interface Serial1/2
  description Frame Relay INN
  mtu 2500
  no ip address
  encapsulation frame-relay IETF
  no ip mroute-cache
  keepalive 12
  serial restart-delay 0
  no fair-queue
  frame-relay map llc2 32
  frame-relay lmi-type ansi
  frame-relay intf-type dce
  frame-relay lmi-t392dce 30
  frame-relay lmi-n392dce 9
  frame-relay lmi-n393dce 10
!
interface Virtual-TokenRing0
  no ip address
  ring-speed 16
  source-bridge 3 1 1111
  source-bridge spanning
  fras-host dlsw-local-ack
  fras-host bnn Serial1/2 fr-lsap 04 vmac 4000.3640.0000 hmac 4000.3745.0280
```