



Communication Controller for Linux on zSeries

# Ethernet BNN using Cisco DLSw

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

## Target Audience

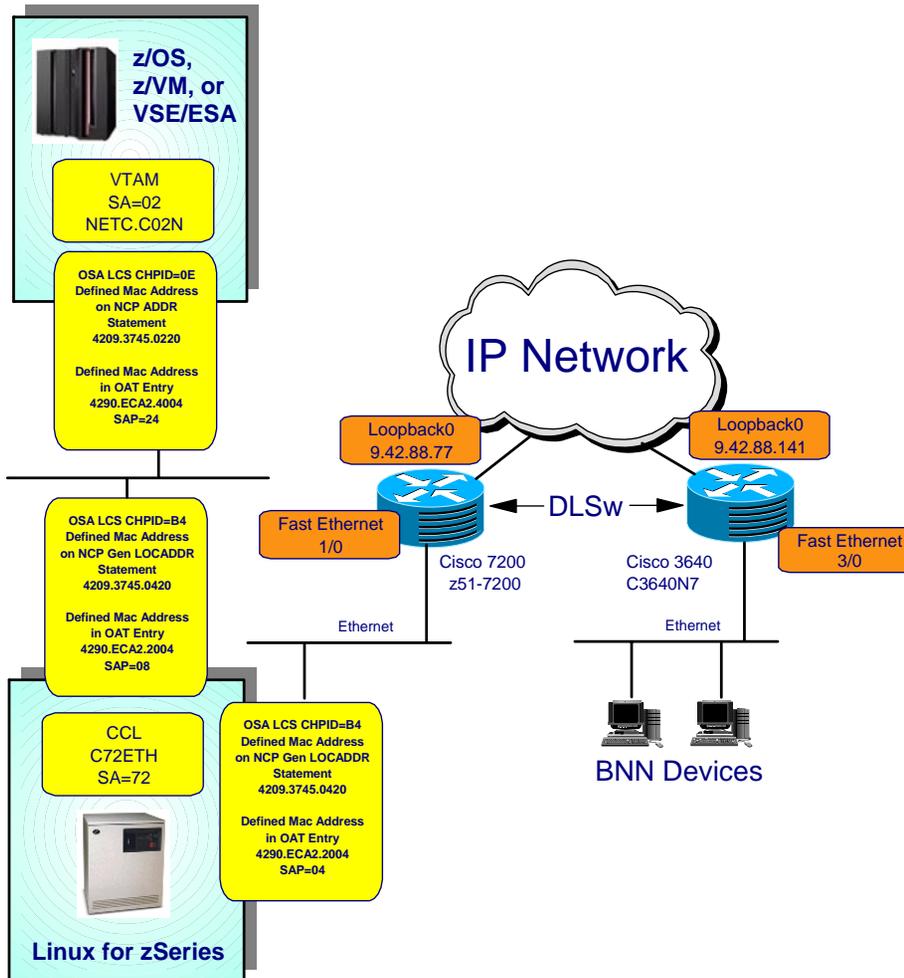
Customers using Ethernet BNN in a remote branch. A 3745/3746 900 will be replaced in the datacenter and NTRI will be converted to Ethernet using Communication Controller for Linux z/Series V1R1.

## 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 – CCL to 3745
  - VTAM to Communication Controller for Linux z/Series
  - 3745 to Communication Controller for Linux z/Series
- 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 Switches
- Two Cisco IOS Routers
  - For testing purposes, we used Cisco 3600 and 7200 Series IOS Routers

# 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 -mC72ETH -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 C72ETH SA 72
IST093I C02ETHPU ACTIVE
```

- **From NETC.C02N activate the NCP**

```
V NET,ACT,ID=C72ETH,ALL
IST097I VARY ACCEPTED
IST093I C72ETH 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 C72ETH 72 NETC
IST314I END
```

## BNN Devices Connecting into VTAM

- From the BNN device, establish the connection to VTAM. In our case, we used TPNS and Communications Server (NT and Linux) to simulate boundary devices.

```
IST590I CONNECTIN ESTABLISHED FOR PU NTPU1001 ON LINE J0028F9F
```

- 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

# C72ETH – 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)
*
C72TR89 LINE ADDRESS=(1089,FULL),TRSPEED=16,PORTADD=89, X
          LOCADD=420937450420,NPACOLL=YES
C72PU89A PU
```

# C72ETH – NTRI Logical Line to C73ETH

```

*****
*           NTRI INN LOGICAL CONNECTIONS FOR 1089           *
*           Native Connection to VTAM C02N and VTAM C05N     *
*****
*
C72INNG2 GROUP ECLTYPE=(LOGICAL,SUBAREA),ANS=CONT,MONLINK=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
*
*-----
* Link Station to VTAM NETC.C02N
*-----
*
C72LG2B  LINE  TGN=1,TGCONF=SINGLE
C72PG2B  PU    ADDR=18420937450220,SSAP=(08,H)

```

# C72SVT2 – NTRI BNN – Logical Definitions

```
*****
*      NTRI BNN LOGICAL LINES FOR TOKEN RING PORT 1089      *
*****
*
C72BNNG2 GROUP ECLTYPE=LOGICAL,ANS=CONTINUE,AUTOGEN=1000,CALL=INOUT, X
           ISTATUS=ACTIVE,PHYSRSC=C72PU89A, X
           RETRIES=(10,10,10,20),XMITDLY=NONE,NPACOLL=YES
*
```

# Sample NTRI SMN PU and LU

```
*****
*          SMN for NTRI BNN                                     *
*****
*
NTRISMN  VBUILD  MAXGRP=10 ,MAXNO=180 ,TYPE=SWNET
*
NTPU1001 PU      ADDR=C1 ,PUTYPE=2 ,IDBLK=017 ,IDNUM=01001 ,      *
              MAXPATH=1 ,MAXOUT=3 ,ANS=CONTINUE ,MODETAB=AMODETAB
NTL1001A LU      LOCADDR=2 ,DLOGMOD=D6327802 ,USSTAB=AUSSTAB
```

## Cisco Router Definitions – Z51-7200

```
dlsw local-peer peer-id 9.42.88.77
dlsw remote-peer 0 tcp 9.42.88.141
dlsw bridge-group 1
!
interface Loopback0
  description Loopback Interface for VIPA
  ip address 9.42.88.77 255.255.255.252
  ip broadcast-address 0.0.0.0
  no ip unreachable
  no ip proxy-arp
  no ip route-cache
  no ip mroute-cache
!
interface FastEthernet1/0
  description DSLw Connection to CCL C72
  mac-address 0200.7200.5210
  no ip address
  no ip unreachable
  no ip proxy-arp
  no ip route-cache
  duplex full
  bridge-group 1
!
bridge 1 protocol ieee
```

## Cisco Router Definitions – C3640N7

```
dlsw local-peer peer-id 9.42.88.141
dlsw remote-peer 0 tcp 9.42.88.77
dlsw bridge-group 1
!
interface Loopback0
  description Loopback Interface for Router
  ip address 9.42.88.141 255.255.255.252
!
interface FastEthernet3/0
  description Connection to CCL SVT PCs
  no ip address
  no ip redirects
  no ip unreachable
  no ip proxy-arp
  speed 100
  full-duplex
  no cdp enable
  bridge-group 1
end
!
bridge 1 protocol ieee
```