


# Connectivity Options for VTAM/NCP Subarea Networks

## PART I :

Replacing NCP Subarea Connections  
in non-SNI Configurations



Networking Systems Center  
Gaithersburg, MD  
August, 1999

# Introduction

## INTRODUCTION

The introduction of new products and technologies in large systems networking has widened the scope of options for connections between SNA Subareas. As new technology is introduced into the subarea configurations, it is often necessary to change and/or replace existing subarea connections. This document identifies a number of configuration options being implemented today, and provides an overview of the changes required in the existing SNA subarea nodes in order to implement these connectivity solutions.

**NOTE:** This document discusses only intra-network (non-SNI) connections. Inter-network connections are discussed in the document: *Connectivity Options for VTAM/NCP Subarea Networks Part II: Replacing NCP Subarea Connections in SNI Configurations.*

## ABOUT THIS DOCUMENT

It is not possible to address all the available configuration alternatives in a single document. We have attempted to address the most common combinations of options and connection solutions being implemented, and the problems most likely to occur. When reviewing the configurations provided, remember to identify the configuration from the Subarea point of view. Some variances in the connections are transparent to VTAM and NCP. For example, VTAM major node definitions are the same for a channel attached 2216 as they are for a 2212; the difference in the router type is transparent to VTAM. OSA connections, however, require slightly different definitions for token-ring connections than for connections to Ethernet LANs, and have different types of restrictions and considerations, and are therefore shown in separate configuration examples.

**NOTE:** The configuration examples in this document address only leased SDLC and LAN connections. Configuration alternatives which use SDLC switched, ATM, or FDDI connections may be included in future editions.

## A NOTE ABOUT APPN

This document deals specifically with SNA Subarea connectivity, excluding SNI configurations. There are several solutions which apply to APPN configurations, or are involved in migration to APPN. These solutions are not currently addressed in this document, but will be incorporated into future editions.

# Introduction

## [USING THIS DOCUMENT](#)

The recommended procedure for using this document is:

- Use the chart on page 4 to identify the **Current** configuration that most closely resembles your current environment. Page numbers shown in the far right column reference a detailed description of the configuration.
- Associated with each **Current** configuration is a list of possible **Target** configurations. Locate the configuration that most closely resembles your target environment, and proceed to the page listed on the far right for a detailed description of this configuration, recommended code changes to the VTAM / NCP subarea definitions, and other special considerations related to this configurations.

## [FEEDBACK](#)

Please provide comments and suggestions to any of the following address:

**Internet:** [boylek@us.ibm.com](mailto:boylek@us.ibm.com)

**Lotus Notes:** Karla Boyle/Gaithersburg/IBM

**Mail:** Karla Boyle  
IBM Corp  
Bldg 183/2C85  
800 N. Frederick Ave  
Gaithersburg, MD 20879

# Current Configurations

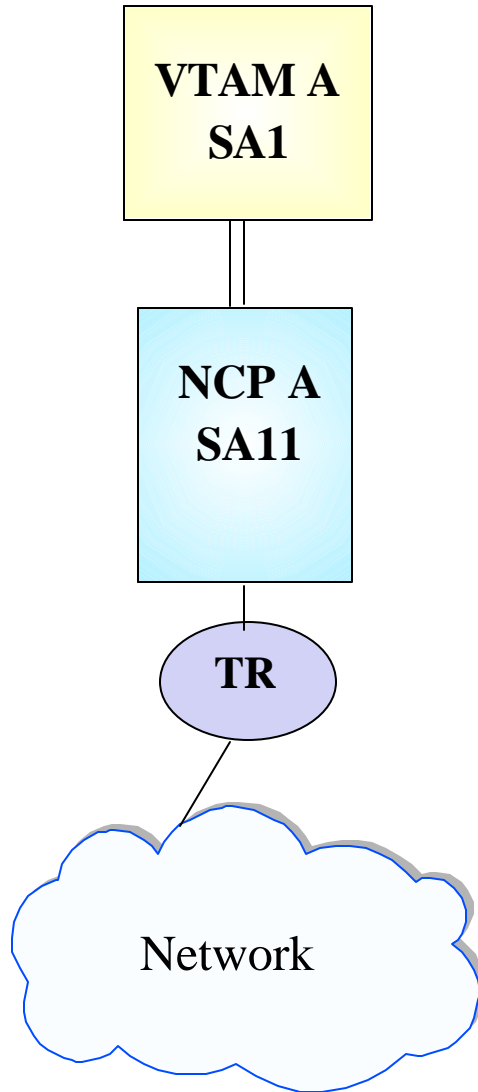
Locate the configuration which most closely resembles your current environment and advance to the page number shown at the right.

[If your current configuration uses a 37XX NCP:](#)

[See Page:](#)

▶ Serving as token-ring gateway .....	5
..	
▶ Connected to a remote NCP:	
SDLC (non-switched) connection .....	18
..	
Token-ring connection .....	42

# NCP Gateway Configurations



➤ A channel-attached NCP with token-ring connections to peripheral nodes only

➤ Target Configurations:

If your target configuration is:	See pages:
▶ OSA with token-ring connections to peripheral nodes . . . . .	6 - 8
.	
▶ OSA with Ethernet connections to peripheral nodes . . . . .	9 - 11
.	
▶ Channel attached router with token ring connections to peripheral nodes. . . . .	12 - 14
▶ Channel attached router with Ethernet connections to peripheral nodes . . . . .	15 - 17

# OSA - Token Ring Gateway

➤ Channel Attached NCP  
Token Ring Gateway to Network  
Peripheral Connections Only

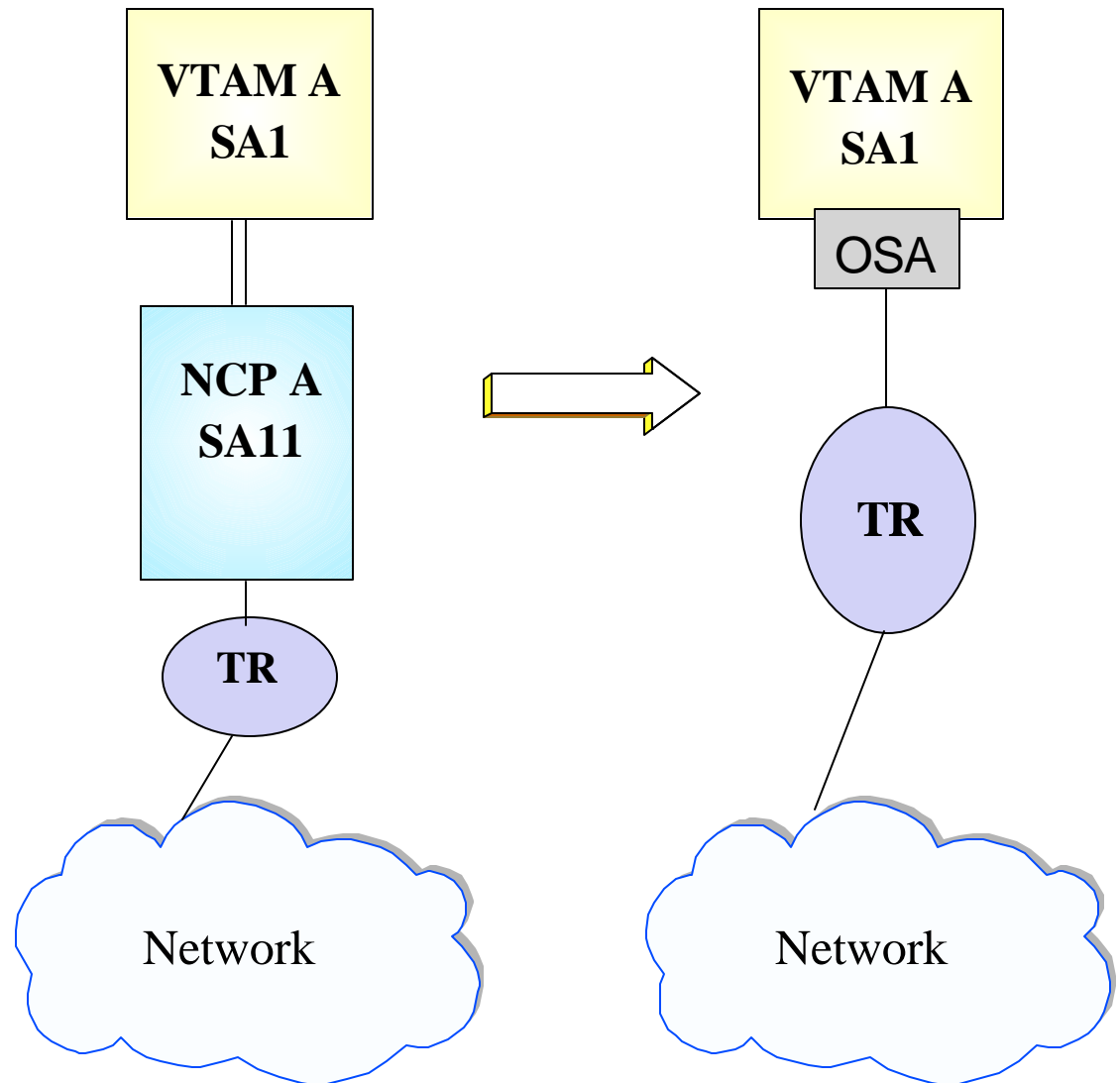
➤ NCP replaced by:  
OSA

➤ Definition Considerations  
VTAM

- ◆ Add XCA Major Node
- ◆ Remove PATH statement
- ◆ Remove NCP Major Node
- ◆ Verify Switched Major Nodes (PATH GRPNM)

Peripheral Nodes

- ◆ Destination MAC/SAP



# Host Definition Considerations for OSA - TR LAN Gateways

**VTAM A  
SA1**

- ✓ Remove NCP A references from the VTAM start-up procedures (i.e.. ATCCONxx), and operational CLISTs.
  - *The NCP Major Node associated with NCP A is no longer required, and can be removed from the libraries (optional)*
- ✓ Remove PATH statements for this NCP subarea (optional)
- ✓ Create an XCA major node for the network connection
  - *Sample XCA Definitions for connection to Peripheral Node(s):*

```

XCAP2      VBUILD TYPE=XCA
PORTPER    PORT    CUADDR=aaa, ADAPNO=0, MEDIUM=RING, SAPADDR=4, TIMER=60
GRPPER     GROUP   DIAL=YES, ANSWER=ON, CALL=INOUT, AUTOGEN=(20, L, P), . . .
    
```

*ADAPNO*            the relative adapter number, assigned by the OSA, to the port/adaptor associated with this device address (CUA=)

*SAPADDR (PORT)*        Specify a unique SAP address for each VTAM that uses this port to access the network. This value must be a multiple of 4

*GROUP name*        The name used to identify the GROUP statement must match the value specified in the switched major node PATH definitions for peripheral nodes. A *sample* of the switched node definitions is shown below. The PATH statement is used to define dial-out connections only.

```

SMNP2      VBUILD TYPE=SWNET, . . .
SWPU1     PU      ADDR=04, IDBLK=05D, IDNUM=. . .
XCAPTH    PATH    GRPNM=GRPPER, CALL=INOUT, DI ALNO=00ssxxxxxxxxxxxxxxxx, . . .
SWLU1     LU      LOCADDR=2
. . .
    
```

# Network Peripheral Node Definition Considerations



- ✓ Peripheral Node definition changes may be required
  - Peripheral nodes were previously defined with a Destination MACADDR/DSAP that pointed to the 3745 TIC. Nodes should now be defined to point to the destination MACADDR/SAP associated with this VTAM/OSA port.



# OSA - Ethernet Gateway

➤ Channel Attached NCP  
Token Ring Gateway to Network  
Peripheral Connections Only

➤ NCP and T-R LAN replaced by:  
OSA and Ethernet LAN

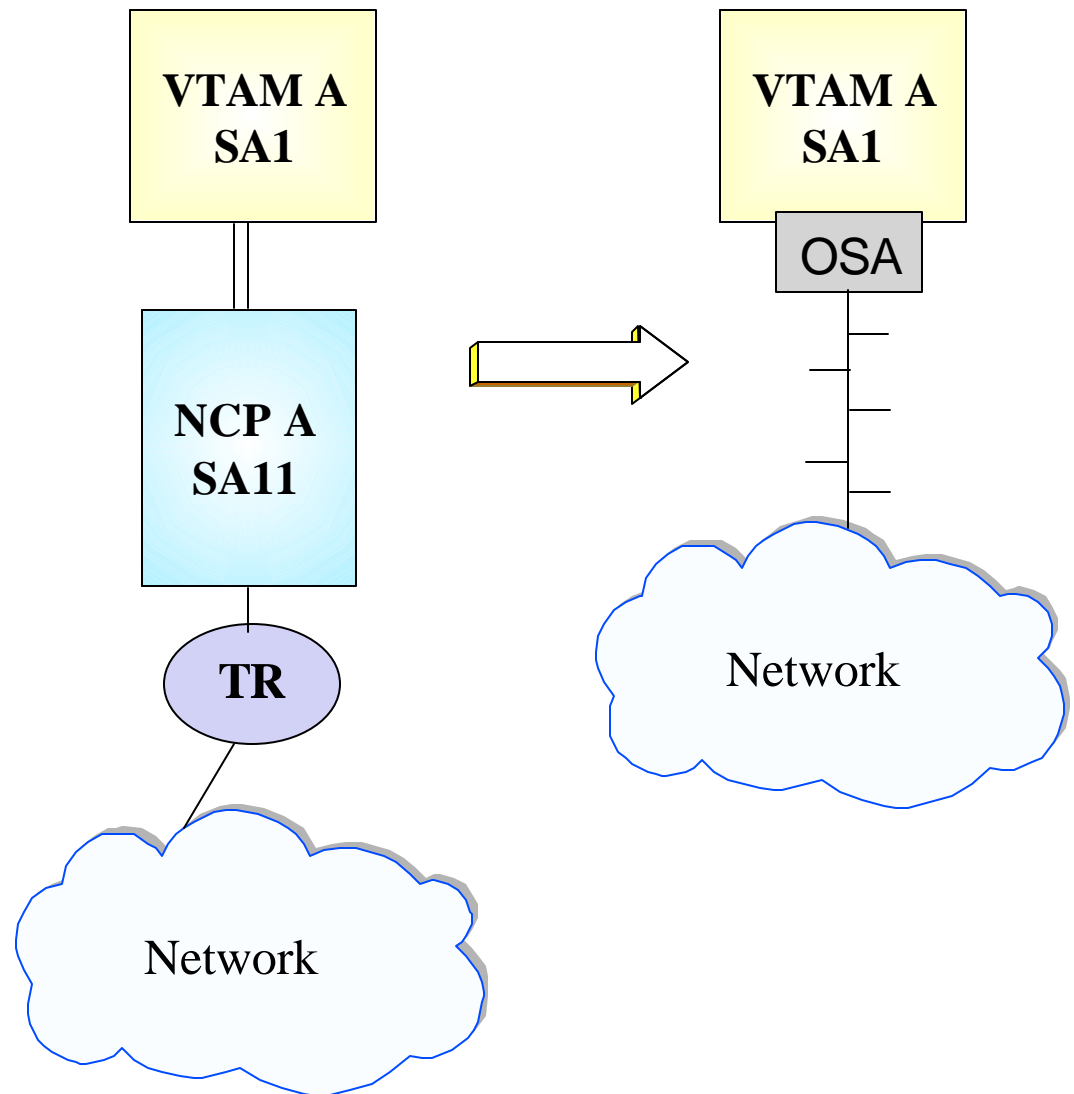
➤ Definition Considerations

## VTAM

- ◆ Add XCA Major Node
- ◆ Remove PATH statement
- ◆ Remove NCP Major Node
- ◆ Verify Switched Major Nodes (Path GRPNM)

## Peripheral Nodes

- ◆ Destination MAC/SAP



# Host Definition Considerations for OSA - Ethernet LAN Gateways

## VTAM A SA1

- ✓ Remove NCP A references from the VTAM start-up procedures (i.e.. ATCCONxx), and operational CLISTs.
  - The NCP Major Node associated with NCP A is no longer required, and can be removed from the libraries (optional)
- ✓ Remove PATH statements for this NCP subarea (optional)
- ✓ Create an XCA major node for the network connection
  - *Sample XCA Definitions for connection to Peripheral Node(s):*

```

XCAP2  VBUILD  TYPE=XCA
PORTPER  PORT    CUADDR=aaa, ADAPNO=0, MEDIUM=CSMACD, SAPADDR=4, TIMER=60
GRPPER   GROUP   DIAL=YES, ANSWER=ON, CALL=INOUT, AUTOGEN=(20, L, P), . .
    
```

*ADAPNO*            the relative adapter number, assigned by the OSA, to the port/adapter associated with this device address (CUA=)

*SAPADDR (PORT)*        Specify a unique SAP address for each VTAM that uses this port to access the network. This value must be a multiple of 4.

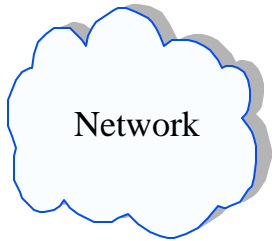
*MEDIUM*            Ethernet connection support (CSMACD) requires minimum maintenance levels for VTAM: OW33649 (MVS), VM61671 (VM), or DY44681 (VSE)

*GROUP name*        The name used to identify the GROUP statement must match the value specified in the switched major node PATH definitions for peripheral nodes. A *sample* of the switched node definitions is shown below. The PATH statement is used to define dial-out connections only.

```

SMNP2  VBUILD  TYPE=SWNET, . . .
SWPU1  PU      ADDR=04, IDBLK=05D, IDNUM=. . .
XCAPTH  PATH   GRPNM=GRPPER, CALL=INOUT, DIALNO=00ssxxxxxxxxxxxxxxxx, . . .
SWLU1  LU      LOCADDR=2
. . .
    
```

# Network Peripheral Node Definition Considerations



- ✓ Peripheral Node definition changes may be required
  - Peripheral nodes were previously defined with a Destination MACADDR/DSAP that pointed to the 3745 TIC. Nodes should now be defined to point to the destination MACADDR/SAP associated with this VTAM/OSA port.

# Router - Token Ring

- Channel Attached NCP
  - Token Ring Gateway to Network
  - Peripheral Connections Only

- NCP replaced by:
  - Channel Attached Router

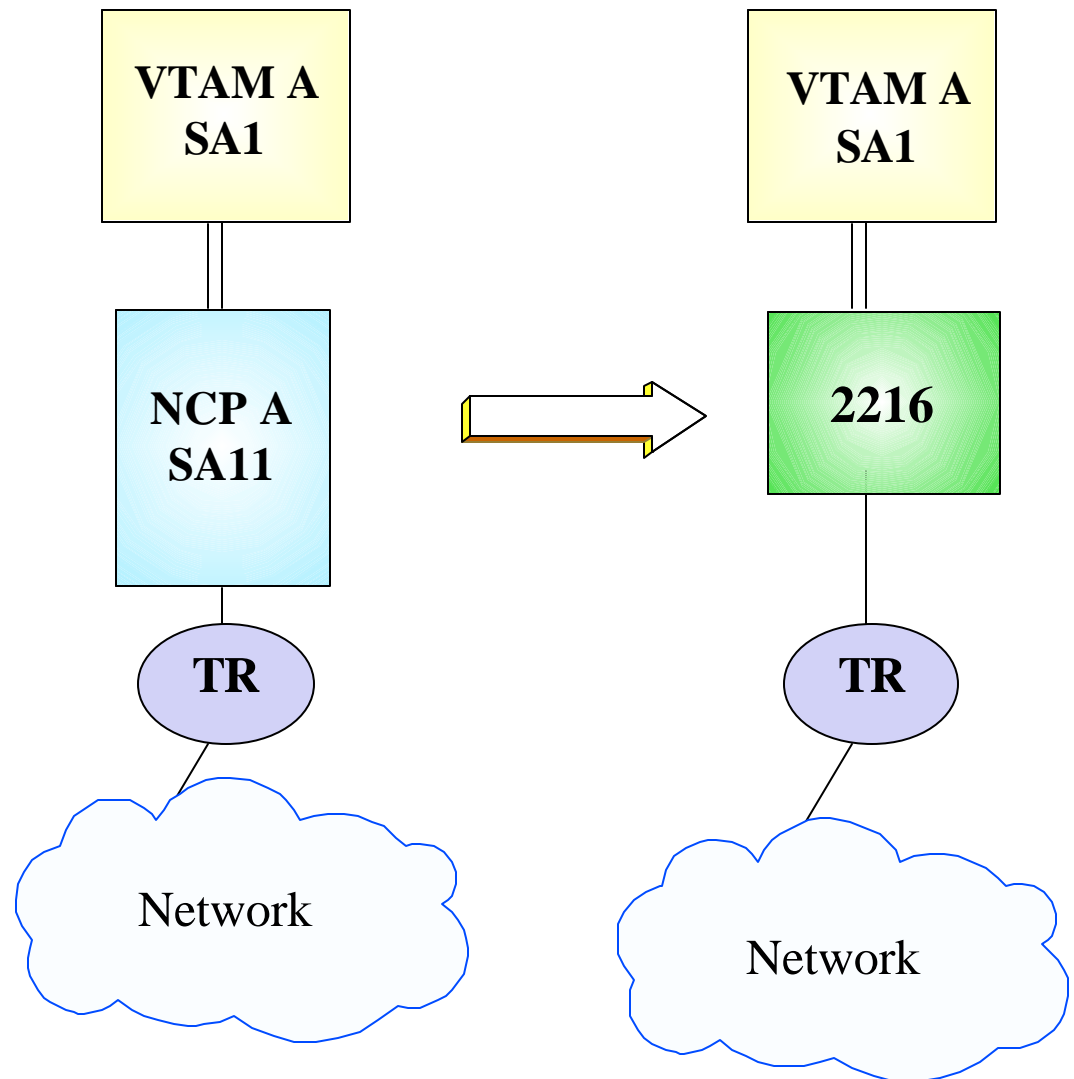
- Definition Considerations

## VTAM

- ◆ Add XCA Major Node
- ◆ Remove PATH statement
- ◆ Remove NCP Major Node
- ◆ Verify Switched Major Nodes (PATH GRPNM)

## Peripheral Nodes

- ◆ Destination MAC/SAP



# Host Definition Considerations for Router/TR LAN Gateways

**VTAM A  
SA1**

- ✓ Remove NCP A references from the VTAM start-up procedures (i.e.. ATCCONxx), and operational CLISTs.
  - The NCP Major Node associated with NCP A is no longer required, and can be removed from the libraries (optional)
- ✓ Remove PATH statements for this NCP subarea (optional)
- ✓ Create an XCA major node for the network connection
  - *Sample XCA Definitions for connection to Peripheral Node(s):*

```

XCAP2    VBUILD  TYPE=XCA
PORTPER  PORT    CUADDR=aaa, ADAPNO=0, MEDIUM=RING, SAPADDR=4, TIMER=60
GRPPER   GROUP   DIAL=YES, ANSWER=ON, CALL=INOUT, AUTOGEN=(20, L, P), . . .
    
```

*ADAPNO*            this value must match the **LAN number**, assigned to this port in the 221x LSA definitions

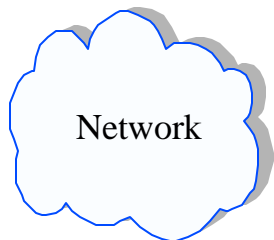
*SAPADDR (PORT)*    Specify a unique SAP address for each VTAM that uses this port to access the network. This value must be a multiple of 4

*GROUP name*        The name used to identify the GROUP statement must match the value specified in the switched major node PATH definitions for peripheral nodes. A *sample* of the switched node definitions is shown below. The PATH statement is used to define dial-out connections only.

```

SMNP2    VBUILD  TYPE=SWNET, . . .
SWPU1    PU      ADDR=04, IDBLK=05D, IDNUM=. . .
XCAPTH   PATH    GRPNM=GRPPER, CALL=INOUT, DIALNO=00ssmmmmmmmmmmmmmmmm, . . .
SWLU1    LU      LOCADDR=2
. . .
    
```

# Network Peripheral Node Definition Considerations



- ✓ Peripheral Node definition changes may be required
  - Peripheral nodes were previously defined with a Destination MACADDR/DSAP that pointed to the 3745 TIC. Nodes should now be defined to point to the destination MACADDR/SAP associated with this VTAM

# Router - Ethernet

## ➤ Channel Attached NCP

Token Ring Gateway to Network  
Peripheral Connections Only

## ➤ NCP and T-R LAN replaced by: Channel Attached Router and Ethernet LAN

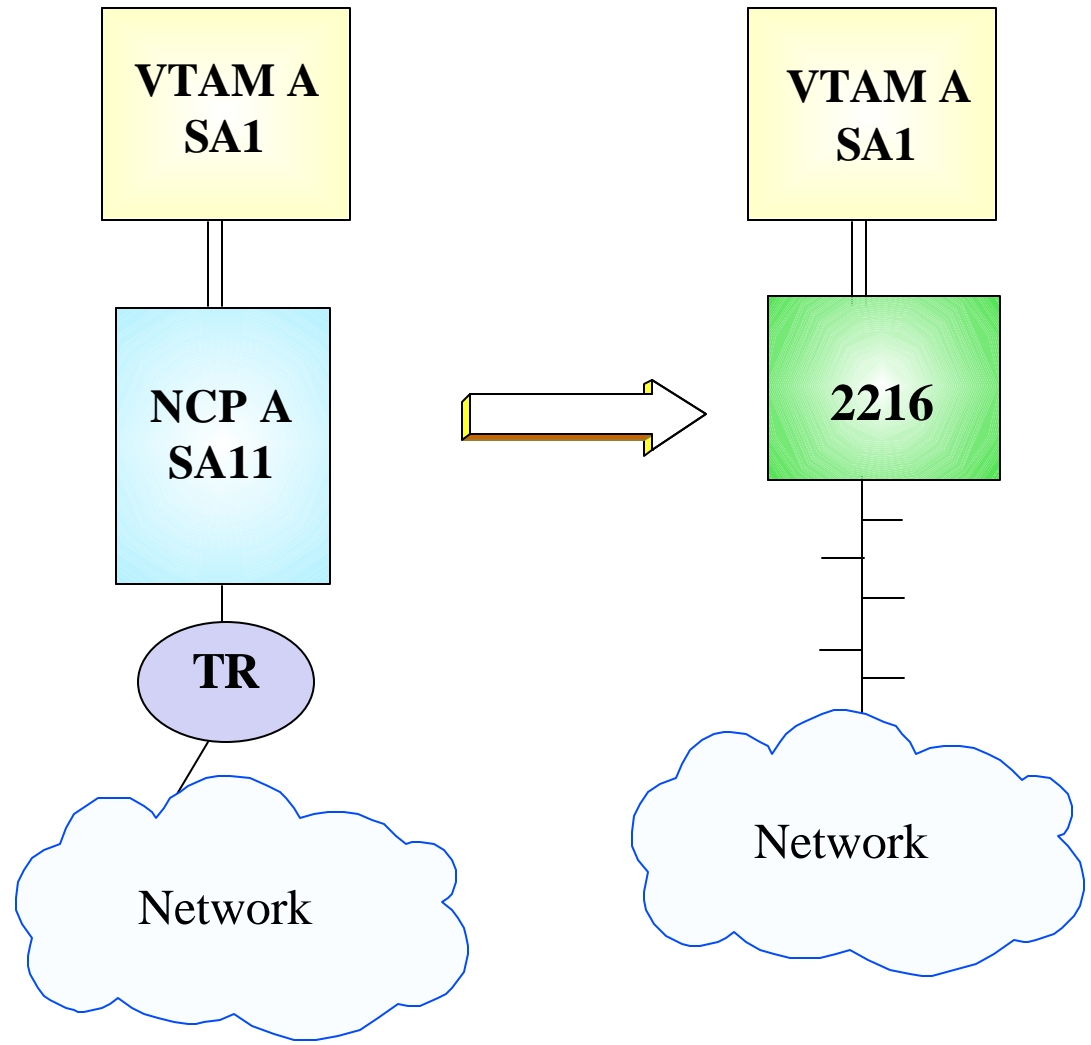
## ➤ Definition Considerations

### VTAM

- ◆ Add XCA Major Node
- ◆ Remove PATH statement
- ◆ Remove NCP Major Node
- ◆ Verify Switched Major Nodes (PATH GRPNM)

### Peripheral Nodes

- ◆ Destination MAC/SAP



# Host Definition Considerations for OSA - TR LAN Gateways

## VTAM A SA1

- ✓ Remove NCP A references from the VTAM start-up procedures (i.e.. ATCCONxx), and operational CLISTs.
  - The NCP Major Node associated with NCP A is no longer required, and can be removed from the libraries (optional)
- ✓ Remove PATH statements for this NCP subarea (optional)
- ✓ Create an XCA major node for the network connection
  - *Sample XCA Definitions for connection to Peripheral Node(s):*

```

XCAP2      VBUILD  TYPE=XCA
PORTPER    PORT    CUADDR=aaa, ADAPNO=0, MEDIUM=CSMACD, SAPADDR=4, TIMER=60
GRPPER     GROUP   DIAL=YES, ANSWER=ON, CALL=INOUT, AUTOGEN=(20, L, P), . . .
    
```

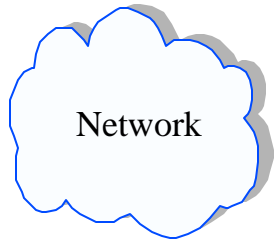
- ADAPNO*            this value must match the **LAN number**, assigned to this port in the 221x LSA definitions
- SAPADDR (PORT)*    Specify a unique SAP address for each VTAM that uses this port to access the network. This value must be a multiple of 4
- MEDIUM*           Ethernet connection support (*CSMACD*) requires minimum maintenance levels for VTAM: OW33649 (MVS), VM61671 (VM), or DY44681 (VSE)
- GROUP name*        The name used to identify the GROUP statement must match the value specified in the switched major node PATH definitions for peripheral nodes. A *sample* of the switched node definitions is shown below. The PATH statement is used to define dial-out connections only.

```

SMNP2      VBUILD  TYPE=SWNET, . . .
SWPU1      PU      ADDR=04, IDBLK=05D, IDNUM=. . .
XCAPTH     PATH    GRPNM=GRPPER, CALL=INOUT, DIALNO=00ssxxxxxxxxxxxxxxxx, . . .
SWLU1      LU      LOCADDR=2
. . .
    
```

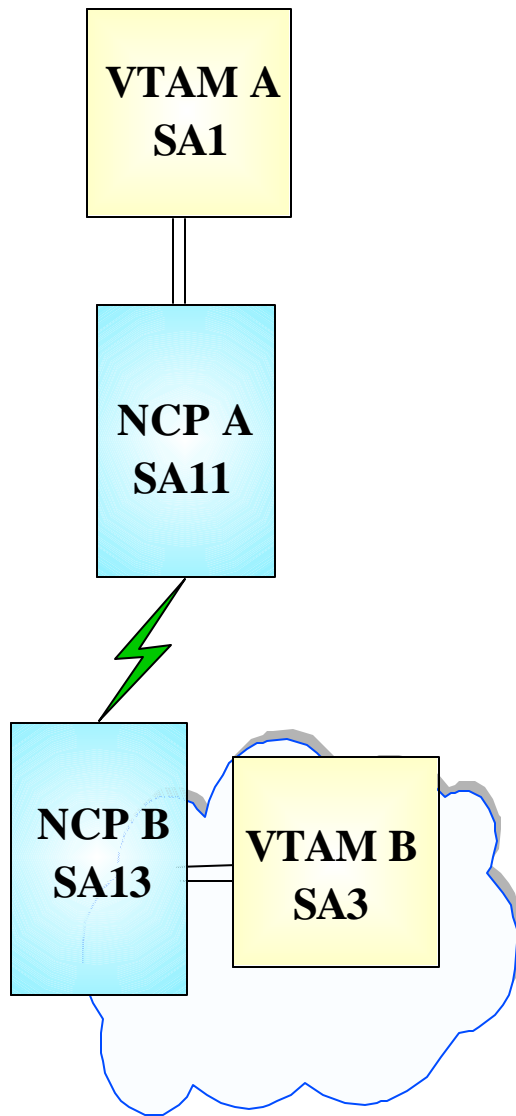


# Network Peripheral Node Definition Considerations



- ✓ Peripheral Node definition changes may be required
  - Peripheral nodes were previously defined with a Destination MACADDR/DSAP that pointed to the 3745 TIC. Nodes should now be defined to point to the destination MACADDR/SAP associated with this VTAM

# SDLC Connection to NCP



➤ A channel-attached NCP with non-switched SDLC connections to a remote NCP in the same network

➤ Target Configurations:

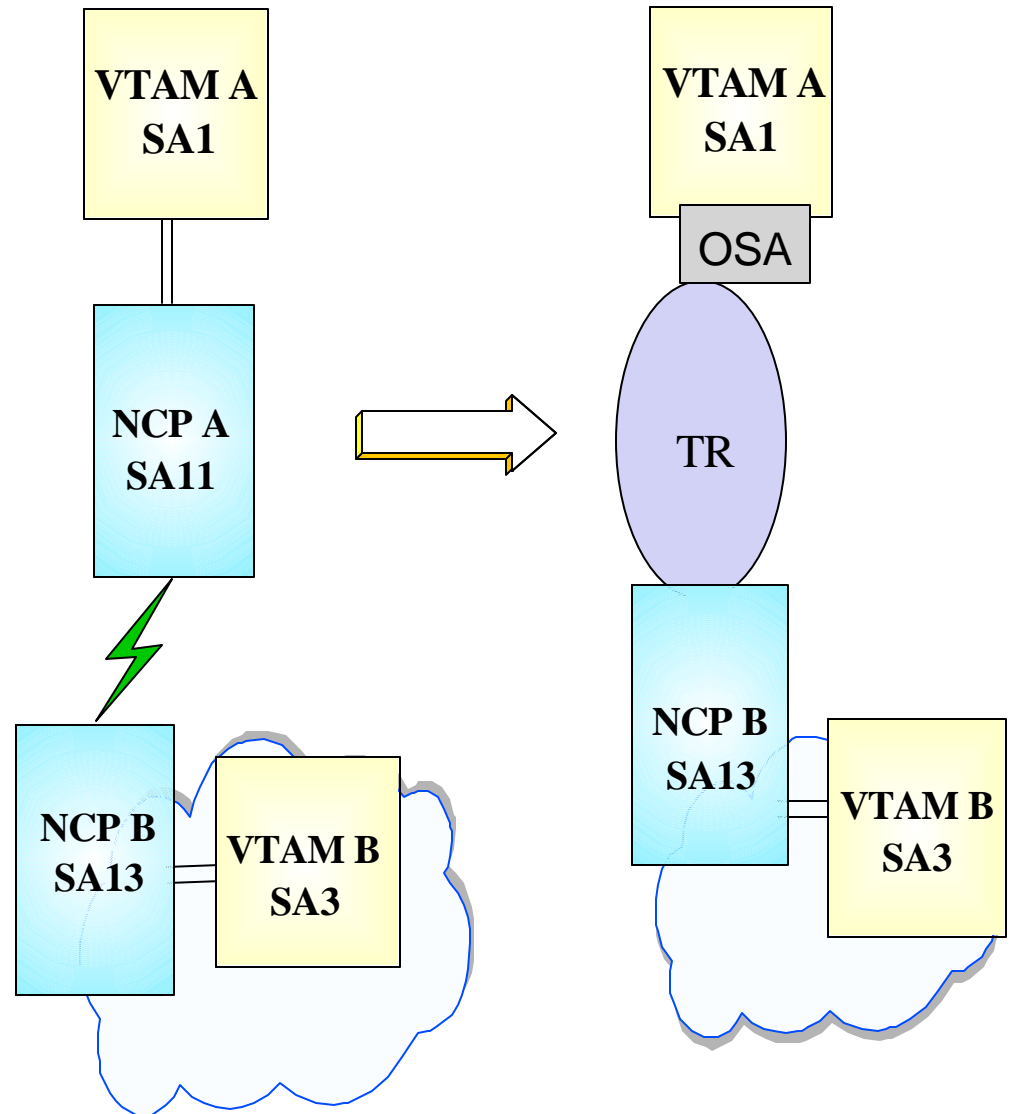
**If your target configuration is:**

**See pages:**

- ▶ OSA with token-ring connections to the remote NCP ..... 19 - 22
- ▶ OSA with token-ring connections to a router, which provides an SDLC connection to the remote NCP ..... 23 - 27
- ▶ OSA with Ethernet connections to a router, which provides an SDLC connection to the remote NCP ..... 28 - 32
- ▶ Channel attached router providing an SDLC connection to the remote NCP ..... 33 - 37
- ▶ Channel attached router providing a token ring connection to the remote NCP ..... 38 - 41

# OSA / T-R LAN to Remote NCP

- Channel-attached NCP:
  - SDLC (leased) connections to PU T4
  - All Subareas in same Network
- Local NCP / SDLC connection replaced by:
  - OSA and token ring connection
- Definition Considerations:
  - VTAM A**
    - ◆ Add XCA Major Node
    - ◆ Change PATH Statements
    - ◆ Remove NCP Major Nodes
  - VTAM B**
    - ◆ Remove PATHs to NCP A
    - ◆ Remove NCP A Major Node
  - NCP B**
    - ◆ Change PATH statements
    - ◆ Remove SDLC Line definitions
    - ◆ Add Token-Ring connection



# Subarea Connection Considerations - Host A

VTAM A  
SA1

- ✓ Remove NCP references from VTAM start-up procedures (i.e. ATCCONxx), and operational CLISTs.
  - The NCP Major Node(s) associated with NCP A and NCP B are no longer required, and can be removed from the libraries (optional)
  - NCP B **cannot** be activated from VTAM Host A
- ✓ Change PATH statements for this NCP subarea
  - Remove PATH statements for DESTSA=11 (optional)
  - Change PATH statements for DESTSA=13 and DESTSA=3 to reflect Adjacent SA of 13. i.e...

```
PATH2N  PATH  DESTSA=13,
          PATH  ERO=(13, 1), ...
PATH2V  PATH  DESTSA=3,
          PATH  ERO=(13, 1), ...
```

- ✓ Create an XCA major node for the network connection
  - *Sample XCA Definitions for Subarea Node Connection:*

```
XCAP4  VBUILD TYPE=XCA
PORTSUB PORT  CUADDR=aaa, ADAPNO=1, MEDIUM=RING, SAPADDR=4, ...
GRPSUB  GROUP DIAL=NO, ...
LSUB    LINE  USER=SNA, ...
PSUB    PU    MACADDR=400037450010, TGN=1, PUTYPE=4, SUBAREA=13, SAPADDR=4,
...

```

- ADAPNO* the relative adapter number, assigned by the OSA, to the port/adapter associated with this device address (CUA=)
- SAPADDR (PORT)* specify a unique SAP address for each VTAM that uses this port to access the network. This value must be a multiple of 4
- MACADDR* the MAC address of the remote NCP
- SAPADDR (PU)* the SAP address of the remote NCP
- TGN* the TG number specified must match the **TGN=** defined in the logical link definitions for this connection in the NCP

# Subarea Connection Considerations - Host B

## VTAM B SA3

- ✓ Remove NCP A references from start-up procedures (i.e. ATCCONxx), and operational CLISTs
  - VTAM B no longer requires copies of the NCP Major node(s) associated with NCPA and they can be deleted (optional)
  - Because NCP B **cannot** be loaded or activated from VTAM Host A, ensure that VTAM B is able to activate and load NCP B
- ✓ Remove PATH statements for DESTSA=11 (optional)
  - Path statements for DESTSA=13 and DESTSA=01 do not require changes, but should be reviewed to ensure that ER/RER/VR consistency has been maintained for the new routes to/from VTAM SA1.

# Subarea Connection Considerations - NCP B

**NCP B  
SA13**

- ✓ Ensure that NCP B can be loaded/ activated/dumped from VTAM B
  - NCP B can no longer be activated by VTAM A.
- ✓ Change PATH statements
  - Remove PATH statements for DESTSA=11 (optional)
  - Change PATH statements for DESTSA=01 to reflect an Adjacent SA of 1. *Example:*

```
PATH1  PATH  DESTSA=1,
          ERO=( 1, 1), . . .
```

- ✓ Remove or change the SDLC link definitions
  - If this SDLC link is being removed from the NCP, the definitions for this link should be removed from the NCP gen.
  - If this link is going to be kept in place on the 3745, as a fall-back or backup connection, the *ISTATUS*= keyword in the link definitions may be changed to *INACTIVE* to prevent automatic activation of the link.
- ✓ Add Token-Ring Connection / Definitions
  - *Sample* NCP definitions for a token ring subarea connection:

```
GRPPHY  GROUP  ECLTYPE=(PHYSICAL, ANY), DIAL=NO, ADAPTER=TIC2, . . .
LINTR   LINE   ADDRESS=(1089, FULL), LOCADD=400037450010, PORTADD=2, . . .
PUTR    PU     PUTYPE=1, INNPORT=YES, . . .

GRPLOG  GROUP  ECLTYPE=(LOGICAL, SUBAREA), PHYSRSC=PUTR, DIAL=NO, . . .
LINSUB  LINE   MONLINK=YES, . . .
PUSUB   PU     TGN=1, PUTYPE=4, ADDR=04xxxxxxxxxxxxxxxx, . . .
```

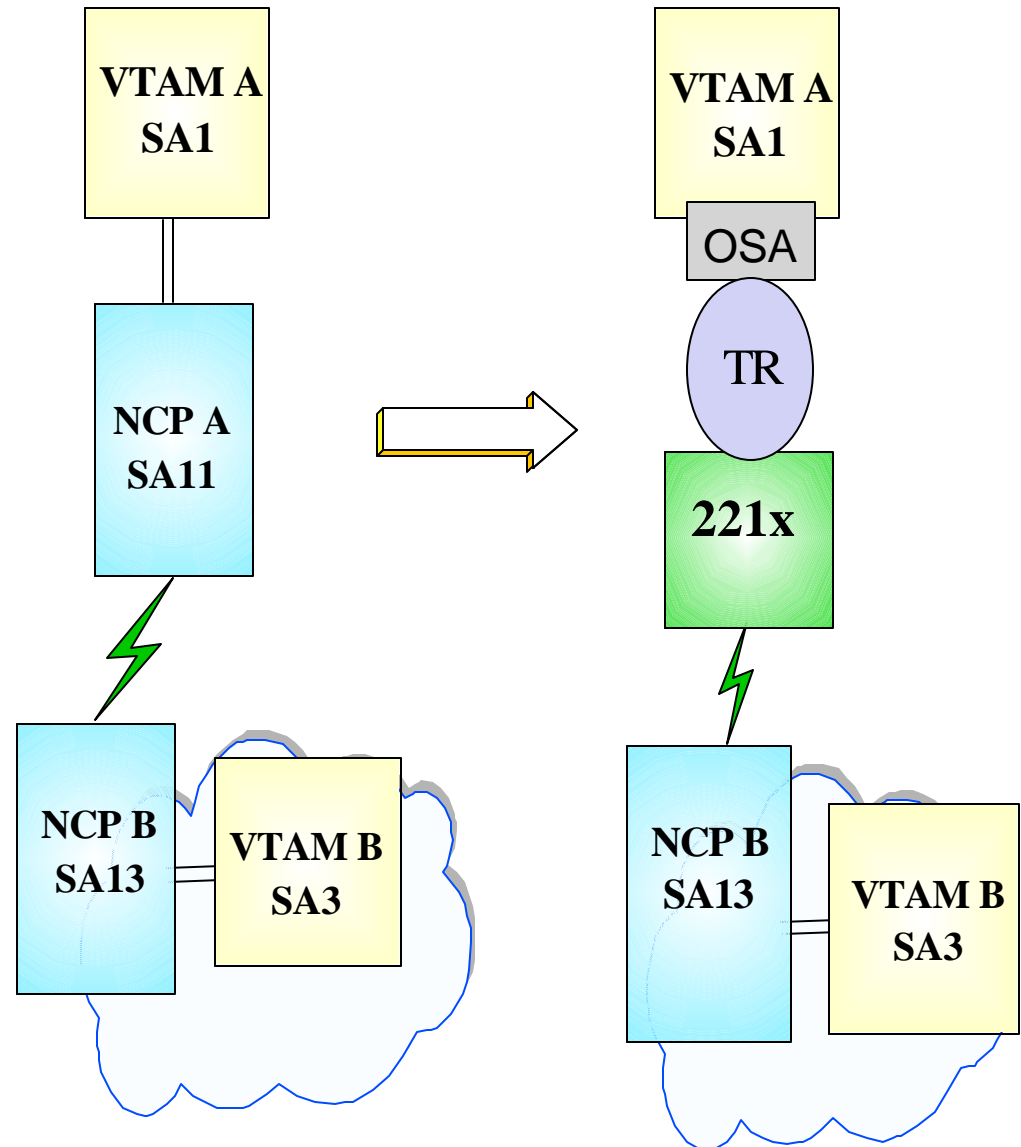
*LOCADD* the token-ring address of this TIC; this value must match the address specified for the **MACADDR**= keyword of the XCA PU definition in VTAM

*ADDR* the first 2 digits represent the SAP address assigned to the OSA token ring port used by this VTAM. This value must match the SAP address specified for the **SAPADDR**=keyword of the XCA PORT definition in VTAM; the remaining 12 digits represent the token-ring MAC address of this OSA port/adapter

*TGN* this value must match the TG number defined in the **TGN**= keyword of the XCA PU definition in VTAM

# OSA - Token Ring - Router - Remote NCP

- Channel attached NCP
  - SDLC (leased) connections to PU T4
  - All Subareas in same Network
- Local NCP replaced by:
  - OSA with TR LAN connections to a 221x router, which provides SDLC connections to the remote NCP
- Definition Considerations:
  - VTAM A**
    - ◆ Add XCA Major Node
    - ◆ Change PATH statements
    - ◆ Remove NCP Major Node
  - VTAM B**
    - ◆ Remove PATHs to NCP A
    - ◆ Remove NCP A Major Node
  - NCP B**
    - ◆ Change PATH statements
    - ◆ Verify INN link specifications



# Subarea Connection Considerations - Host A

VTAM A  
SA1

- ✓ Remove NCP references from VTAM start-up procedures (i.e. ATCCONxx), and operational CLISTs.
  - The NCP Major Node(s) associated with NCP A and NCP B are no longer required, and can be removed from the libraries (optional)
  - NCP B **cannot** be activated from VTAM Host A
- ✓ Change PATH statements for this NCP subarea
  - Remove PATH statements for DESTSA=11 (optional)
  - Change PATH statements for DESTSA=13 and DESTSA=3 to reflect Adjacent SA of 13. i.e...

```
PATH2N  PATH  DESTSA=13,
          ERO=(13, 1), ...
PATH2V  PATH  DESTSA=3,
          ERO=(13, 1), ...
```

- ✓ Create an XCA major node for the network connection
  - *Sample XCA Definitions for Subarea Node Connection:*

```
XCAP4  VBUILD TYPE=XCA
PORTSUB PORT  CUADDR=aaa, ADAPNO=1, MEDIUM=RING, SAPADDR=4, ...
GRPSUB  GROUP DIAL=NO, ...
LSUB    LINE  USER=SNA, ...
PSUB    PU    MACADDR=400016450010, TGN=1, PUTYPE=4, SUBAREA=13, SAPADDR=4,
...

```

- ADAPNO* the relative adapter number, assigned by the OSA, to the port/adapter associated with this device address (CUA=)
- SAPADDR (PORT)* specify a unique SAP address for each VTAM that uses this port to access the network. This value must be a multiple of 4
- MACADDR* the MAC address of the remote NCP; this should match the address defined in the network router as the DLS Source MAC (*reference page 25*)
- SAPADDR (PU)* the SAP address of the remote NCP; this should match the value defined in the network router as the DLS Source SAP (*reference page 25*)
- TGN* this value must match the TG number specified by the **TGN=** keyword in the SDLC link definitions for this connection in the NCP



# Sample Display of DLSw Interface to a Remote NCP

**221x**

The remote NCP is represented in the Source SAP and Source MAC addresses

```

XCAP4  VBUILD TYPE=XCA
PORTSUB PORT  CUADDR=aaa,
              ADAPNO=1,
              MEDIUM=RING,
              SAPADDR=4, ...
GRPSUB  GROUP DIAL=NO, ...
LSUB    LINE  USER=SNA, ...
PSUB    PU    MACADDR=400016450010,
              TGN=1,
              PUTYPE=4, SUBAREA=13,
              SAPADDR=4, ...
    
```

**DLSw Interfaces**

Interface	Type
3	Serial-V.25BIS
4	Serial-SDLC
5	Serial-SDLC
6	Serial-SDLC

S MAC	D MAC	S SAP	D SAP	Link
400016450010	0004AC124011	4	4	4

Source MAC address: 400016450010  
 Link address: 4  
 PU type: 4 (FEP-FEP,IN)

Destination MAC address: 0004AC124011  
 ID block: 0  
 Poll type: TEST

Source SAP: 4  
 ID number: 0

Destination SAP: 4  
 SDLC address

Buttons: Add, Change, Delete

# Subarea Connection Considerations - Host B

## VTAM B SA3

- ✓ Remove NCP A references from start-up procedures (i.e. ATCCONxx), and operational CLISTs
  - VTAM B no longer requires copies of the NCP Major node(s) associated with NCPA and they can be deleted (optional)
  - Because NCP B **cannot** be loaded or activated from VTAM Host A, ensure that VTAM B is able to activate and load NCP B
- ✓ Remove PATH statements for DESTSA=11 (optional)
  - Path statements for DESTSA=13 and DESTSA=01 do not require changes, but should be reviewed to ensure that ER/RER/VR consistency has been maintained for the new routes to/from VTAM SA1.

# Subarea Connection Considerations - NCP B

**NCP B**  
**SA13**

- ✓ Ensure that NCP B can be loaded/ activated/dumped from VTAM B
  - NCP B can no longer be activated by VTAM A.
- ✓ Change PATH statements
  - Remove PATH statements for DESTSA=11 (optional)
  - Change PATH statements for DESTSA=01 to reflect an Adjacent SA of 1. *Example:*

```
PATH1  PATH  DESTSA=1,  
                ERO=( 1, 1), . . .
```

- ✓ Verify INN Link Specifications
  - Coordinate line settings with router specifications (i.e. NRZI, SPEED, etc.)
  - *Sample* SDLC link definitions for Subarea connection:

```
SDLCL1  LINE ADDRESS=156, SPEED=9600, . . .  
PUL1    PU   PUTYPE=4, ANS=CONTINUE, TGN=1, . . .
```

*TGN*                    this value must match the TG number defined in the TGN= keyword of the XCA PU definition in VTAM

*ADDRESS*                If connecting to a device that does not support full-duplex transmission, the ADDRESS parameter should be set to/defaulted to HDX.

# OSA - Ethernet - Router - Remote NCP

## ➤ Channel attached NCP

SDLC (leased) connections to PU T4  
All Subareas in same Network

## ➤ Local NCP replaced by:

OSA with Ethernet LAN connections to a network router, which provides SDLC connections to the remote NCP

*Because the NCP does not support SNA Ethernet connections, a network router must be used to bridge between the NCP and the LAN*

## ➤ Definition Considerations:

### VTAM A

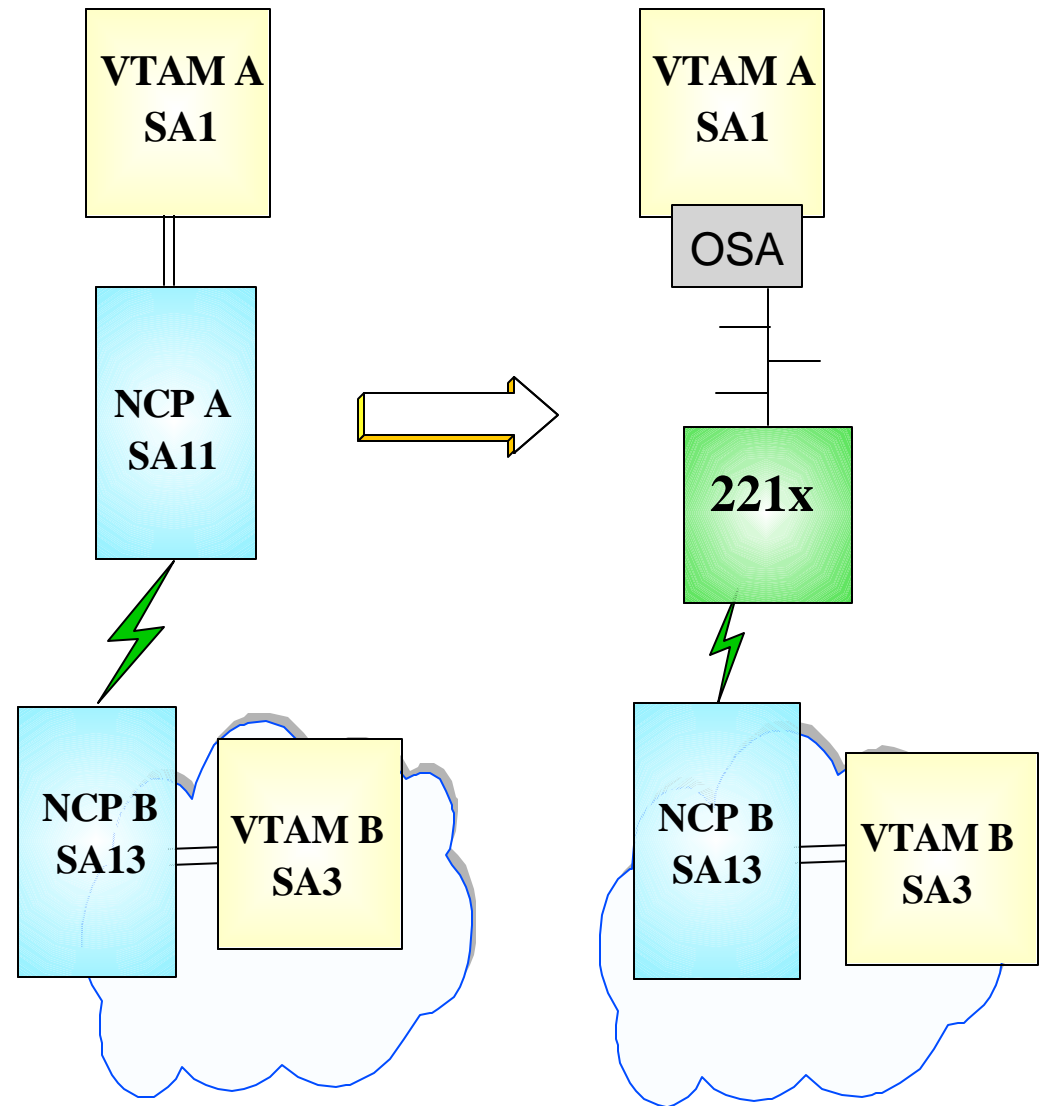
- ◆ Add XCA Major Node
- ◆ Remove NCP Major Node
- ◆ Change PATH statements

### VTAM B

- ◆ Remove PATHs to NCP A
- ◆ Remove NCP A Major Node

### NCP B

- ◆ Change PATH statements
- ◆ Verify INN link specifications



# Subarea Connection Considerations - Host A

**VTAM A  
SA1**

- ✓ Remove NCP references from VTAM start-up procedures (i.e. ATCCONxx), and operational CLISTs.
  - The NCP Major Node(s) associated with NCP A and NCP B are no longer required, and can be removed from the libraries (optional)
  - NCP B **cannot** be activated from VTAM Host A
- ✓ Change PATH statements for this NCP subarea
  - Remove PATH statements for DESTSA=11 (optional)
  - Change PATH statements for DESTSA=13 and DESTSA=3 to reflect Adjacent SA of 13. i.e...

```
PATH2N  PATH  DESTSA=13,
          ERO=(13, 1), ...
PATH2V  PATH  DESTSA=3,
          ERO=(13, 1), ...
```

- ✓ Create an XCA major node for the network connection
  - *Sample XCA Definitions for Subarea Node Connection:*

```
XCAP4   VBUILD TYPE=XCA
PORTSUB PORT  CUADDR=aaa, ADAPNO=1, MEDI UM=CSMACD, SAPADDR=4, ...
GRPSUB  GROUP DIAL=NO, ...
LSUB    LINE  USER=SNA, ...
PSUB    PU    MACADDR=400016450010, TGN=1, PUTYPE=4, SUBAREA=13, SAPADDR=4,
...

```

- ADAPNO** the relative adapter number, assigned by the OSA, to the port/adapter associated with this device address (CUA=)
- MEDIUM** Ethernet connection support (CSMACD) requires minimum maintenance levels for VTAM: OW33649 (MVS), VM61671 (VM), or DY44681 (VSE)
- SAPADDR (PORT)** specify a unique SAP address for each VTAM that uses this port to access the network. This value must be a multiple of 4
- MACADDR** the MAC address of the remote NCP; this should match the address defined in the network router as the DLS Source MAC (*reference page 30*)
- SAPADDR (PU)** the SAP address of the remote NCP; this should match the value defined in the network router as the DLS Source SAP (*reference page 30*)
- TGN** this value must match the TG number specified by the **TGN=** keyword in the SDLC link definitions for this connection in the NCP

# Sample Display of DLSw Interface to a Remote NCP

**221x**

The remote NCP is represented in the Source SAP and Source MAC addresses

```

XCAP4  VBUILD TYPE=XCA
PORTSUB PORT  CUADDR=aaa,
              ADAPNO=1,
              MEDIUM=CSMACD,
              SAPADDR=4, ...

GRPSUB  GROUP DIAL=NO, ...
LSUB    LINE  USER=SNA, ...
PSUB    PU    MACADDR=400016450010,
              TGN=1,
              PUTYPE=4, SUBAREA=13,
              SAPADDR=4, ...
    
```

Note that the MAC addresses are non-canonical, even when the host is accessed via an Ethernet LAN.

The screenshot shows the 'DLSw Interfaces' window with a table of interfaces and a detailed configuration panel for interface 5.

Interface	Type
3	Serial-V.25BIS
4	Serial-SDLC
5	Serial-SDLC
6	Serial-SDLC

S MAC	D MAC	S SAP	D SAP	Link
400016450010	0004AC124011	4	4	4

Configuration details for interface 5:

- Source MAC address: 400016450010
- Link address: 4
- PU type: 4 (FEP-FEP,IN)
- Destination MAC address: 0004AC124011
- ID block: 0
- Poll type: TEST
- Source SAP: 4
- ID number: 0
- Destination SAP: 4
- SDLC address

Buttons: Add, Change, Delete

# Subarea Connection Considerations - Host B

## VTAM B SA3

- ✓ Remove NCP A references from start-up procedures (i.e. ATCCONxx), and operational CLISTs
  - VTAM B no longer requires copies of the NCP Major node(s) associated with NCPA and they can be deleted (optional)
  - Because NCP B **cannot** be loaded or activated from VTAM Host A, ensure that VTAM B is able to activate and load NCP B
- ✓ Remove PATH statements for DESTSA=11 (optional)
  - Path statements for DESTSA=13 and DESTSA=01 do not require changes, but should be reviewed to ensure that ER/RER/VR consistency has been maintained for the new routes to/from VTAM SA1.

# Subarea Connection Considerations - NCP B

**NCP B  
SA13**

- ✓ Ensure that NCP B can be loaded/ activated/dumped from VTAM B
  - NCP B can no longer be activated by VTAM A.
- ✓ Change PATH statements
  - Remove PATH statements for DESTSA=11 (optional)
  - Change PATH statements for DESTSA=01 to reflect an Adjacent SA of 1. *Example:*

```
PATH1  PATH  DESTSA=1,  
                ERO=( 1, 1), . . .
```

- ✓ Verify INN Link Specifications
  - Coordinate line settings with router specifications (i.e. NRZI, SPEED, etc.)
  - *Sample* SDLC link definitions for Subarea connection:

```
SDLCL1  LINE ADDRESS=156, SPEED=9600, . . .  
PUL1    PU   PUTYPE=4, ANS=CONTINUE, TGN=1, . . .
```

*TGN*                    this value must match the TG number defined in the TGN= keyword of the XCA PU definition in VTAM

*ADDRESS*                If connecting to a device that does not support full-duplex transmission, the ADDRESS parameter should be set to/defaulted to HDX.



# Router - SDLC - Remote NCP

➤ Channel attached NCP

SDLC (leased) connections to PU T4  
All Subareas in same Network

➤ Local NCP replaced by:

Channel attached 221x router, which  
provides SDLC connections to the remote  
NCP

➤ Definition Considerations:

VTAM A

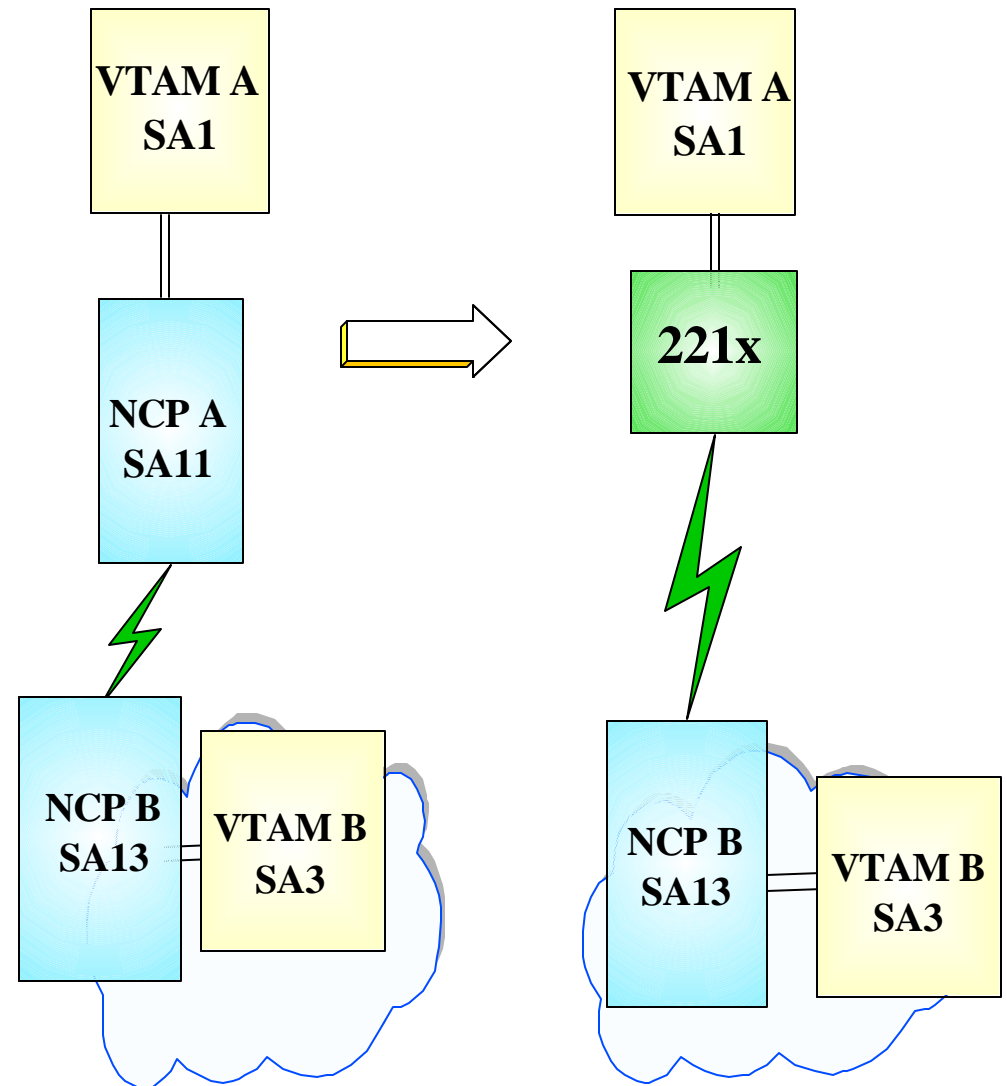
- ◆ Add XCA Major Node
- ◆ Remove NCP Major Node
- ◆ Change PATH statements

VTAM B

- ◆ Remove PATHs to NCP A
- ◆ Remove NCP A Major Node

NCP B

- ◆ Change PATH statements
- ◆ Verify INN link specifications



# Subarea Connection Considerations - Host A

VTAM A  
SA1

- ✓ Remove NCP references from VTAM start-up procedures (i.e. ATCCONxx), and operational CLISTs.
  - The NCP Major Node(s) associated with NCP A and NCP B are no longer required, and can be removed from the libraries (optional)
  - NCP B **cannot** be activated from VTAM Host A
- ✓ Change PATH statements for this NCP subarea
  - Remove PATH statements for DESTSA=11 (optional)
  - Change PATH statements for DESTSA=13 and DESTSA=3 to reflect Adjacent SA of 13. i.e...

```
PATH2N  PATH  DESTSA=13,
          ERO=(13, 1), ...
PATH2V  PATH  DESTSA=3,
          ERO=(13, 1), ...
```

- ✓ Create an XCA major node for the network connection
  - *Sample XCA Definitions for Subarea Node Connection:*

```
XCAP4  VBUILD TYPE=XCA
PORTSUB PORT  CUADDR=aaa, ADAPNO=1, MEDIUM=RING, SAPADDR=4, ...
GRPSUB  GROUP DIAL=NO, ...
LSUB    LINE  USER=SNA, ...
PSUB    PU    MACADDR=400016450010, TGN=1, PUTYPE=4, SUBAREA=13, SAPADDR=4,
...

```

*ADAPNO*

this value must match the **LAN number**, assigned to this port in the 221x LSA definitions

*SAPADDR (PORT)*

specify a unique SAP address for each VTAM that uses this port to access the network. This value must be a multiple of 4

*MACADDR*

the MAC address of the remote NCP; this should match the address defined in the network router as the DLS **Source MAC** (*reference page 35*)

*SAPADDR (PU)*

the SAP address of the remote NCP; this should match the value defined in the network router as the DLS **Source SAP** (*reference page 35*)

*TGN*

this value must match the TG number specified by the **TGN=** keyword in the SDLC link definitions for this connection in the NCP

# Sample Display of DLSw Interface to a Remote NCP

**221x**

The remote NCP is represented in the Source SAP and Source MAC addresses

```

XCAP4  VBUILD TYPE=XCA
PORTSUB PORT CUADDR=aaa,
          ADAPNO=1,
          MEDIUM=RING,
          SAPADDR=4, ...
GRPSUB  GROUP DIAL=NO, ...
LSUB    LINE  USER=SNA, ...
PSUB    PU    MACADDR=400016450010,
          TGN=1,
          PUTYPE=4, SUBAREA=13,
          SAPADDR=4, ...
    
```

**DLSw Interfaces**

Interface	Type
3	Serial-V.25BIS
4	Serial-SDLC
5	Serial-SDLC
6	Serial-SDLC

S MAC	D MAC	S SAP	D SAP	Link
400016450010	0004AC124011	4	4	4

Source MAC address	Link address	PU type
400016450010	4	4 (FEP-FEP,IN)
Destination MAC address	ID block	Poll type
0004AC124011	0	TEST
Source SAP	ID number	
4	0	
Destination SAP	<input checked="" type="checkbox"/> SDLC address	
4		

Add Change Delete

# Subarea Connection Considerations - Host B

## VTAM B SA3

- ✓ Remove NCP A references from start-up procedures (i.e. ATCCONxx), and operational CLISTs
  - VTAM B no longer requires copies of the NCP Major node(s) associated with NCPA and they can be deleted (optional)
  - Because NCP B **cannot** be loaded or activated from VTAM Host A, ensure that VTAM B is able to activate and load NCP B
- ✓ Remove PATH statements for DESTSA=11 (optional)
  - Path statements for DESTSA=13 and DESTSA=01 do not require changes, but should be reviewed to ensure that ER/RER/VR consistency has been maintained for the new routes to/from VTAM SA1.

# Subarea Connection Considerations - NCP B

**NCP B**  
**SA13**

- ✓ Ensure that NCP B can be loaded/ activated/dumped from VTAM B
  - NCP B can no longer be activated by VTAM A.
- ✓ Change PATH statements
  - Remove PATH statements for DESTSA=11 (optional)
  - Change PATH statements for DESTSA=01 to reflect an Adjacent SA of 1. *Example:*

```
PATH1  PATH  DESTSA=1,  
                ERO=( 1, 1), . . .
```

- ✓ Verify INN Link Specifications
  - Coordinate line settings with router specifications (i.e. NRZI, SPEED, etc.)
  - *Sample* SDLC link definitions for Subarea connection:

```
SDLCL1  LINE ADDRESS=156, SPEED=9600, . . .  
PUL1    PU   PUTYPE=4, ANS=CONTINUE, TGN=1, . . .
```

*TGN*                    this value must match the TG number defined in the TGN= keyword of the XCA PU definition in VTAM

*ADDRESS*                If connecting to a device that does not support full-duplex transmission, the ADDRESS parameter should be set to/defaulted to HDX.

# Router - Token Ring - Remote NCP

## ➤ Channel attached NCP

SDLC (leased) connections to PU T4  
All Subareas in same Network

## ➤ Local NCP replaced by:

Channel attached 221x router, which  
provides TR LAN connections to the  
remote NCP

## ➤ Definition Considerations:

### VTAM A

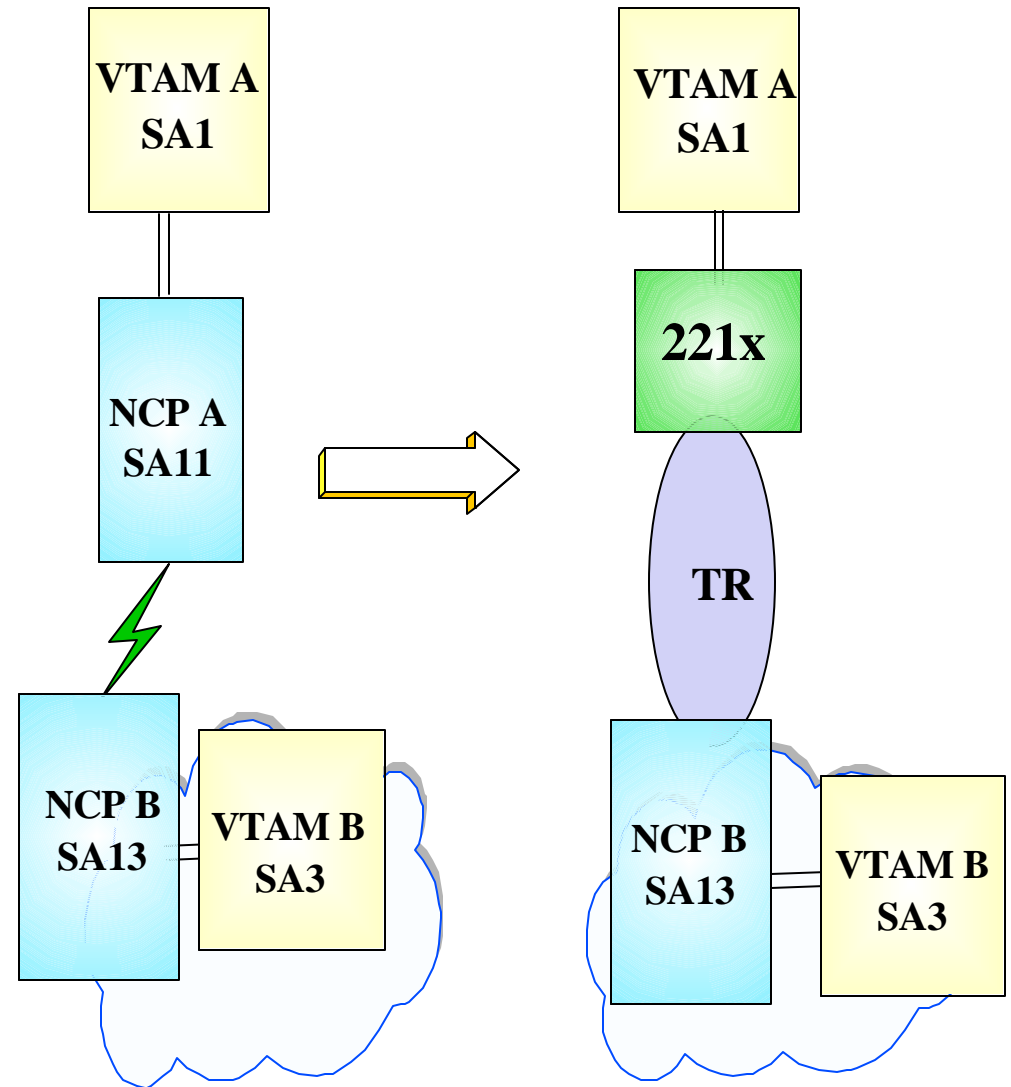
- ◆ Add XCA Major Node
- ◆ Remove NCP Major Node
- ◆ Change PATH statements

### VTAM B

- ◆ Remove PATHs to NCP A
- ◆ Remove NCP A Major Node

### NCP B

- ◆ Change PATH statements
- ◆ Remove SDLC link definitions
- ◆ Add token ring link definitions



# Subarea Connection Considerations - Host A

VTAM A  
SA1

- ✓ Remove NCP references from VTAM start-up procedures (i.e. ATCCONxx), and operational CLISTS.
  - The NCP Major Node(s) associated with NCP A and NCP B are no longer required, and can be removed from the libraries (optional)
  - NCP B **cannot** be activated from VTAM Host A
- ✓ Change PATH statements for this NCP subarea
  - Remove PATH statements for DESTSA=11 (optional)
  - Change PATH statements for DESTSA=13 and DESTSA=3 to reflect Adjacent SA of 13. i.e...

```
PATH2N  PATH  DESTSA=13,
          ERO=(13, 1), ...
PATH2V  PATH  DESTSA=3,
          ERO=(13, 1), ...
```

- ✓ Create an XCA major node for the network connection
  - *Sample XCA Definitions for Subarea Node Connection:*

```
XCAP4  VBUILD TYPE=XCA
PORTSUB PORT  CUADDR=aaa, ADAPNO=1, MEDIUM=RING, SAPADDR=4, ...
GRPSUB  GROUP DIAL=NO, ...
LSUB    LINE  USER=SNA, ...
PSUB    PU    MACADDR=400037450010, TGN=1, PUTYPE=4, SUBAREA=13, SAPADDR=4,
...

```

*ADAPNO*

this value must match the **LAN number**, assigned to this port in the 221x LSA definitions

*SAPADDR (PORT)*

specify a unique SAP address for each VTAM that uses this port to access the network. This value must be a multiple of 4

*MACADDR*

the MAC address of the remote NCP

*SAPADDR (PU)*

the SAP address of the remote NCP

*TGN*

the TG number specified must match the **TGN=** defined in the logical link definitions for this connection in the NCP

# Subarea Connection Considerations - Host B

## VTAM B SA3

- ✓ Remove NCP A references from start-up procedures (i.e. ATCCONxx), and operational CLISTs
  - VTAM B no longer requires copies of the NCP Major node(s) associated with NCPA and they can be deleted (optional)
  - Because NCP B **cannot** be loaded or activated from VTAM Host A, ensure that VTAM B is able to activate and load NCP B
- ✓ Remove PATH statements for DESTSA=11 (optional)
  - Path statements for DESTSA=13 and DESTSA=01 do not require changes, but should be reviewed to ensure that ER/RER/VR consistency has been maintained for the new routes to/from VTAM SA1.



# Subarea Connection Considerations - NCP B

**NCP B**  
**SA13**

- ✓ Ensure that NCP B can be loaded/ activated/dumped from VTAM B
  - NCP B can no longer be activated by VTAM A.
- ✓ Change PATH statements
  - Remove PATH statements for DESTSA=11 (optional)
  - Change PATH statements for DESTSA=01 to reflect an Adjacent SA of 1. *Example:*

```
PATH1  PATH  DESTSA=1,  
                ERO=(1, 1), . . .
```

- ✓ Remove or change the SDLC link definitions
  - If this SDLC link is being removed from the NCP, the definitions for this link should be removed from the NCP gen.
  - If this link is going to be kept in place on the 3745, as a fall-back or backup connection, the *ISTATUS=* keyword in the link definitions may be changed to *INACTIVE* to prevent automatic activation of the link.
- ✓ Add Token-Ring Connection / Definitions
  - *Sample* NCP definitions for a token ring subarea connection:

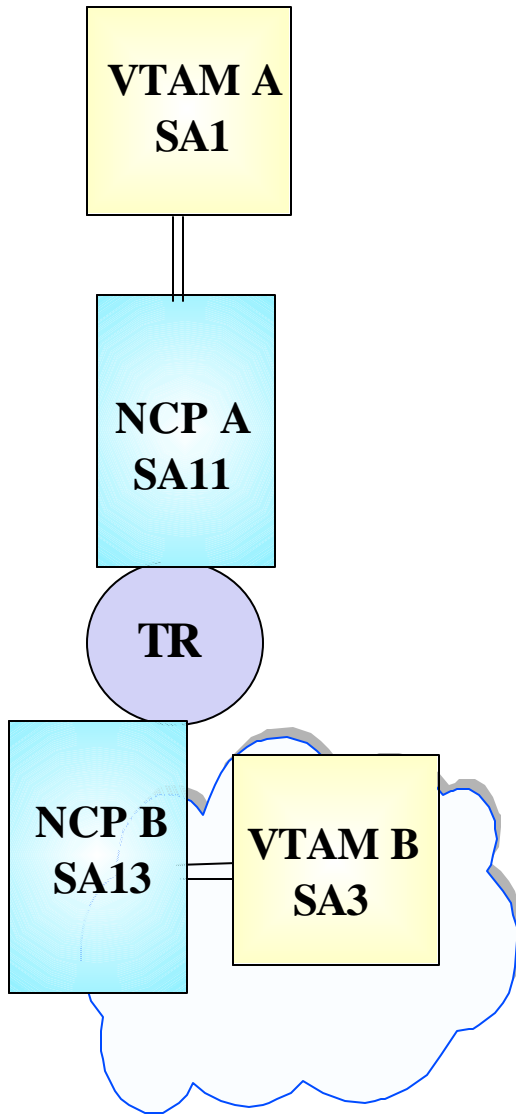
```
GRPPHY  GROUP  ECLTYPE=(PHYSICAL, ANY), DIAL=NO, ADAPTER=TIC2, . . .  
LINTR   LINE  ADDRESS=(1089, FULL), LOCADD=400037450010, PORTADD=2, . . .  
PUTR    PU    PUTYPE=1, INNPORT=YES, . . .  
  
GRPLOG  GROUP  ECLTYPE=(LOGICAL, SUBAREA), PHYSRSC=PUTR, DIAL=NO, . . .  
LINSUB  LINE  MONLINK=YES, . . .  
PUSUB   PU    TGN=1, PUTYPE=4, ADDR=04xxxxxxxxxxxxxxxx, . . .
```

**LOCADD** the token-ring address of this TIC; this value must match the address specified for the **MACADDR=** keyword of the XCA PU definition in VTAM

**ADDR** the first 2 digits represent the SAP address assigned to the 221x token ring port used by this VTAM. This value must match the SAP address specified for the **SAPADDR=**keyword of the XCA PORT definition in VTAM; the remaining 12 digits represent the token-ring MAC address of this 221x port/adaptor

**TGN** this value must match the TG number defined in the **TGN=** keyword of the XCA PU definition in VTAM

# Token Ring Connection to Remote NCP



➤ A channel-attached NCP with token-ring connections to a remote NCP in the same network

➤ Target Configurations:

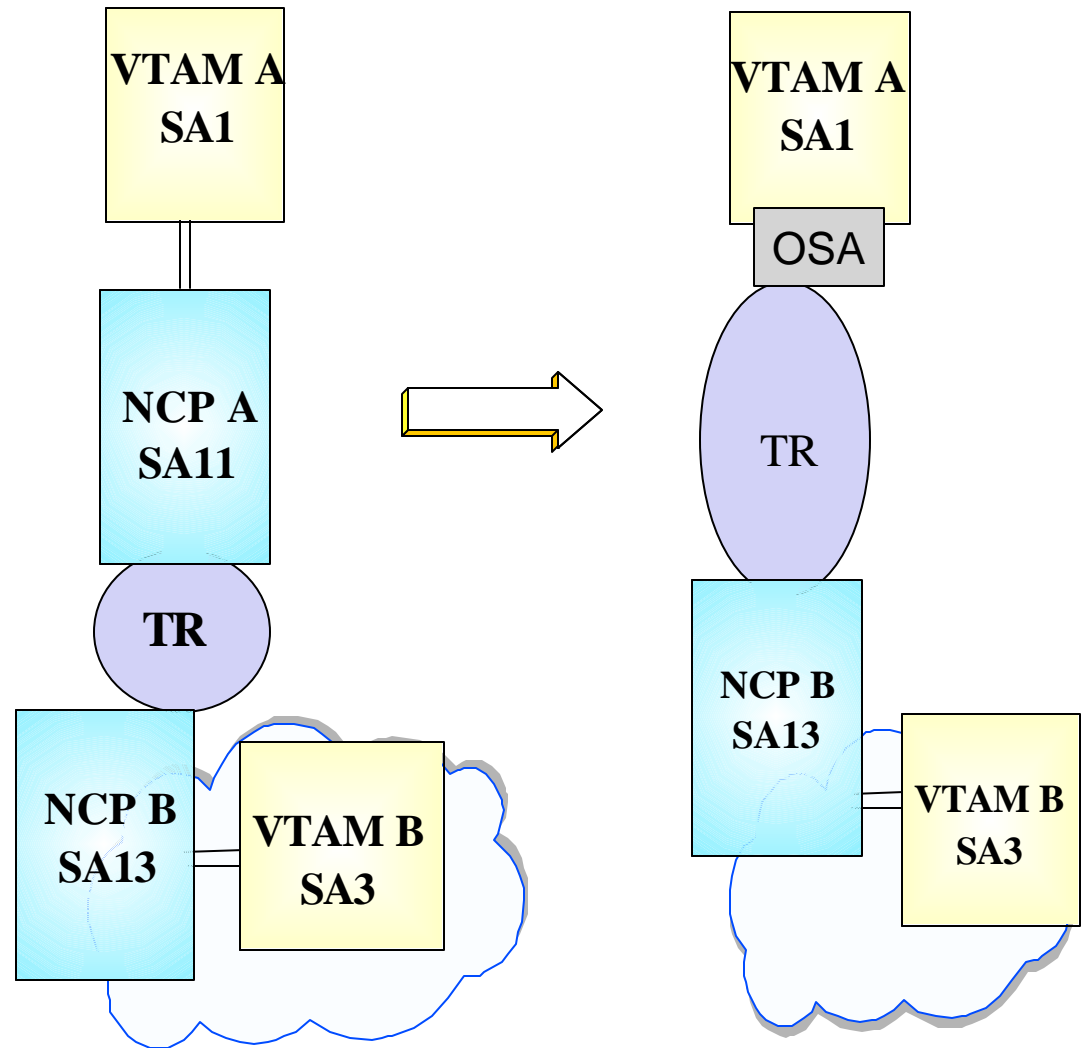
**If your target configuration is:**

**See pages:**

- ▶ OSA with token-ring connections to the remote NCP..... 43 - 46  
..
- ▶ Channel attached router providing a token ring connection to the remote NCP ..... 47 - 50

# OSA - Token Ring - Remote NCP

- Channel attached NCP:
  - Token Ring LAN connections to PU T4
  - All Subareas in same Network
- Local NCP replaced by:
  - OSA
- Definition Considerations:
  - VTAM A**
    - ◆ Add XCA Major Node
    - ◆ Change PATH Statements
    - ◆ Remove NCP Major Node
  - VTAM B**
    - ◆ Remove PATHs to NCP A
    - ◆ Remove NCP A Major Node
  - NCP B**
    - ◆ Change PATH statements
    - ◆ Verify MACADDR specifications



# Subarea Connection Considerations - Host A

VTAM A  
SA1

- ✓ Remove NCP references from VTAM start-up procedures (i.e. ATCCONxx), and operational CLISTs.
  - The NCP Major Node(s) associated with NCP A and NCP B are no longer required, and can be removed from the libraries (optional)
  - NCP B **cannot** be activated from VTAM Host A
- ✓ Change PATH statements for this NCP subarea
  - Remove PATH statements for DESTSA=11 (optional)
  - Change PATH statements for DESTSA=13 and DESTSA=3 to reflect Adjacent SA of 13. i.e...

```
PATH2N  PATH  DESTSA=13,
          PATH  ERO=(13, 1), ...
PATH2V  PATH  DESTSA=3,
          PATH  ERO=(13, 1), ...
```

- ✓ Create an XCA major node for the network connection
  - *Sample XCA Definitions for Subarea Node Connection:*

```
XCAP4  VBUILD TYPE=XCA
PORTSUB PORT  CUADDR=aaa, ADAPNO=1, MEDIUM=RING, SAPADDR=4, ...
GRPSUB  GROUP DIAL=NO, ...
LSUB    LINE  USER=SNA, ...
PSUB    PU    MACADDR=400037450010, TGN=1, PUTYPE=4, SUBAREA=13, SAPADDR=4,
...

```

- ADAPNO* the relative adapter number, assigned by the OSA, to the port/adaptor associated with this device address (CUA=)
- SAPADDR (PORT)* specify a unique SAP address for each VTAM that uses this port to access the network. This value must be a multiple of 4
- MACADDR* the MAC address of the remote NCP
- SAPADDR (PU)* the SAP address of the remote NCP
- TGN* the TG number specified must match the **TGN=** defined in the logical link definitions for this connection in the NCP

# Subarea Connection Considerations - Host B

## VTAM B SA3

- ✓ Remove NCP A references from start-up procedures (i.e. ATCCONxx), and operational CLISTs
  - VTAM B no longer requires copies of the NCP Major node(s) associated with NCPA and they can be deleted (optional)
- ✓ Remove PATH statements for DESTSA=11 (optional)
  - Path statements for DESTSA=13 and DESTSA=01 do not require changes, but should be reviewed to ensure that ER/RER/VR consistency has been maintained for the new routes to/from VTAM SA1.

# Subarea Connection Considerations - NCP B

NCP B  
SA13

- ✓ Change PATH statements
  - Remove PATH statements for DESTSA=11 (optional)
  - Change PATH statements for DESTSA=01 to reflect an Adjacent SA of 1. *Example:*

```
PATH1  PATH  DESTSA=1,  
                ERO=(1, 1), . . .
```

- ✓ Verify the INN link specifications
  - *Sample NCP definitions for a token ring subarea connection:*

```
GRPPHY  GROUP  ECLTYPE=(PHYSICAL, ANY), DIAL=NO, ADAPTER=TIC2, . . .  
LINTR   LINE   ADDRESS=(1089, FULL), LOCADD=400037450010, PORTADD=2, . . .  
PUTR    PU     PUTYPE=1, INNPORT=YES, . . .  
  
GRPLOG  GROUP  ECLTYPE=(LOGICAL, SUBAREA), PHYSRSC=PUTR, DIAL=NO, . . .  
LINSUB  LINE   MNLINK=YES, . . .  
PUSUB   PU     TGN=1, PUTYPE=4, ADDR=04XXXXXXXXXXXXXXXX, . . .
```

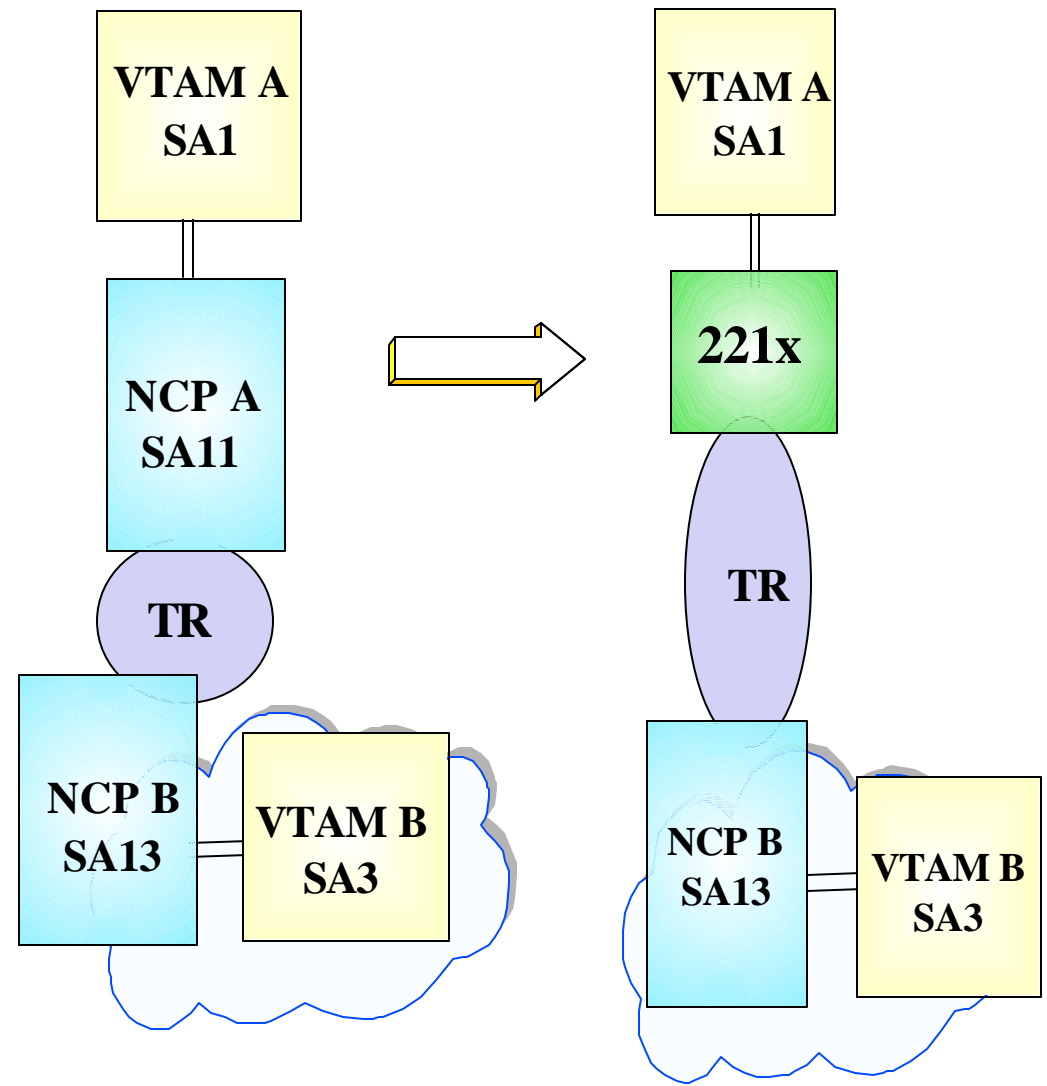
*LOCADD* the token-ring address of this TIC; this value must match the address specified for the **MACADDR=** keyword of the XCA PU definition in VTAM

*ADDR* the first 2 digits represent the SAP address assigned to the OSA token ring port used by this VTAM. This value must match the SAP address specified for the **SAPADDR=** keyword of the XCA PORT definition in VTAM; the remaining 12 digits represent the token-ring MAC address of this OSA port/adaptor

*TGN* this value must match the TG number defined in the **TGN=** keyword of the XCA PU definition in VTAM

# Router / Token Ring - Remote NCP

- Channel attached NCP:
  - Token Ring LAN connections to PU T4
  - All Subareas in same Network
- Local NCP replaced by:
  - Channel attached 221x router
- Definition Considerations:
  - VTAM A**
    - ◆ Add XCA Major Node
    - ◆ Change PATH Statements
    - ◆ Remove NCP Major Node
  - VTAM B**
    - ◆ Remove PATHs to NCP A
    - ◆ Remove NCP A Major Node
  - NCP B**
    - ◆ Change PATH statements
    - ◆ Verify MACADDR specifications



# Subarea Connection Considerations - Host A

VTAM A  
SA1

- ✓ Remove NCP references from VTAM start-up procedures (i.e. ATCCONxx), and operational CLISTS.
  - The NCP Major Node(s) associated with NCP A and NCP B are no longer required, and can be removed from the libraries (optional)
  - NCP B **cannot** be activated from VTAM Host A
- ✓ Change PATH statements for this NCP subarea
  - Remove PATH statements for DESTSA=11 (optional)
  - Change PATH statements for DESTSA=13 and DESTSA=3 to reflect Adjacent SA of 13. i.e...

```
PATH2N  PATH  DESTSA=13,
          ERO=(13, 1), ...
PATH2V  PATH  DESTSA=3,
          ERO=(13, 1), ...
```

- ✓ Create an XCA major node for the network connection
  - *Sample XCA Definitions for Subarea Node Connection:*

```
XCAP4   VBUILD  TYPE=XCA
PORTSUB PORT    CUADDR=aaa, ADAPNO=1, MEDIUM=RING, SAPADDR=4, ...
GRPSUB  GROUP   DIAL=NO, ...
LSUB    LINE    USER=SNA, ...
PSUB    PU      MACADDR=400037450010, TGN=1, PUTYPE=4, SUBAREA=13, SAPADDR=4,
...     ...
```

*ADAPNO*

this value must match the **LAN number**, assigned to this port in the 221x LSA definitions

*SAPADDR (PORT)*

specify a unique SAP address for each VTAM that uses this port to access the network. This value must be a multiple of 4

*MACADDR*

the MAC address of the remote NCP

*SAPADDR (PU)*

the SAP address of the remote NCP

*TGN*

the TG number specified must match the **TGN=** defined in the logical link definitions for this connection in the NCP



# Subarea Connection Considerations - Host B

## VTAM B SA3

- ✓ Remove NCP A references from start-up procedures (i.e. ATCCONxx), and operational CLISTs
  - VTAM B no longer requires copies of the NCP Major node(s) associated with NCPA and they can be deleted (optional)
- ✓ Remove PATH statements for DESTSA=11 (optional)
  - Path statements for DESTSA=13 and DESTSA=01 do not require changes, but should be reviewed to ensure that ER/RER/VR consistency has been maintained for the new routes to/from VTAM SA1.

# Subarea Connection Considerations - NCP B

**NCP B  
SA13**

- ✓ Change PATH statements
  - Remove PATH statements for DESTSA=11 (optional)
  - Change PATH statements for DESTSA=01 to reflect an Adjacent SA of 1. *Example:*

```
PATH1  PATH  DESTSA=1,
        ERO=(1, 1), . . .
```

- ✓ Verify the INN link specifications
  - *Sample NCP definitions for a token ring subarea connection:*

```
GRPPHY  GROUP  ECLTYPE=(PHYSICAL, ANY), DIAL=NO, ADAPTER=TIC2, . . .
LINTR   LINE  ADDRESS=(1089, FULL), LOCADD=400037450010, PORTADD=2, . . .
PUTR    PU    PUTYPE=1, INNPORT=YES, . . .

GRPLOG  GROUP  ECLTYPE=(LOGICAL, SUBAREA), PHYSRSC=PUTR, DIAL=NO, . . .
LINSUB  LINE  MONLINK=YES, . . .
PUSUB   PU    TGN=1, PUTYPE=4, ADDR=04XXXXXXXXXXXXXXXX, . . .
```

**LOCADD** the token-ring address of this TIC; this value must match the address specified for the **MACADDR=** keyword of the XCA PU definition in VTAM

**ADDR** the first 2 digits represent the SAP address assigned to the 221x token ring port used by this VTAM. This value must match the SAP address specified for the **SAPADDR=**keyword of the XCA PORT definition in VTAM; the remaining 12 digits represent the token-ring MAC address of this 221x port/adapter

**TGN** this value must match the TG number defined in the **TGN=** keyword of the XCA PU definition in VTAM