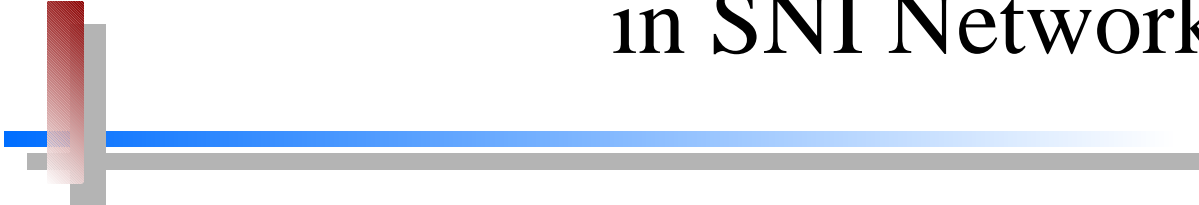# Connectivity Options for VTAM/NCP Subarea Networks

PART II:

Replacing NCP Subarea Connections in SNI Networks

Networking Systems Center

Gaithersburg, MD

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IBM

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 inter-network (SNI) connections. Connection considerations for NON-SNI networks are discussed in the document: *Connectivity Options for VTAM/NCP Subarea Networks Part I: Replacing NCP Subarea Connections in non-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, the 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 can 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, particularly 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.

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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

Lotus Notes: Karla Boyle/Gaithersburg/IBM

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       IBM Corp
       Bldg 183/2C85
       800 N. Frederick Ave
       Gaithersburg, MD   20879

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Current Configurations

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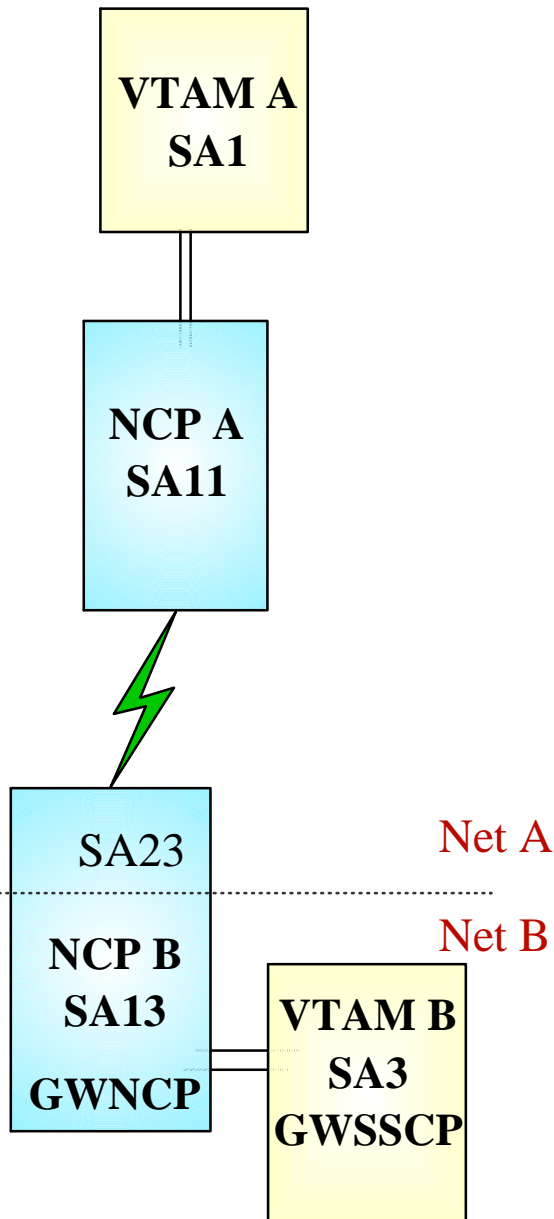
SDLC Connection to Remote GWNCP

VTAM A
SA1

NCP A
SA11

SA23   Net A
- -
NCP B   Net B
SA13   **VTAM B**
                SA3
GWNCP   **GWSSCP**

➤ A channel-attatched NCP with non-switched SDLC connections to a remote SNI GWNCP

➤ The local NCP is <u>not</u> a GWNCP

➤ Target Configurations:

If your target configuration is: **See pages:**

► OSA with token-ring connections to the remote NCP. . . . . 6 - 8 .

► OSA with token-ring connections to a router, which provides an SDLC connection to the remote NCP . . . . 9 - 12

► OSA with Ethernet connections to a router, which provides an SDLC connection to the remote NCP . . . . 13 - 16

► Channel attached router providing an SDLC connection to the remote NCP . . . . 17 - 20

► Channel attached router providing a token ring connection to the remote NCP . . . . 21 - 23

OSA - Token Ring - Remote GWNCP

➤ Channel-attached NCP

    Local NCP is **NOT** a GWNCP

    SDLC connections to a remote GWNCP

    VTAM B is the GWSSCP

➤ Local NCP replaced by:

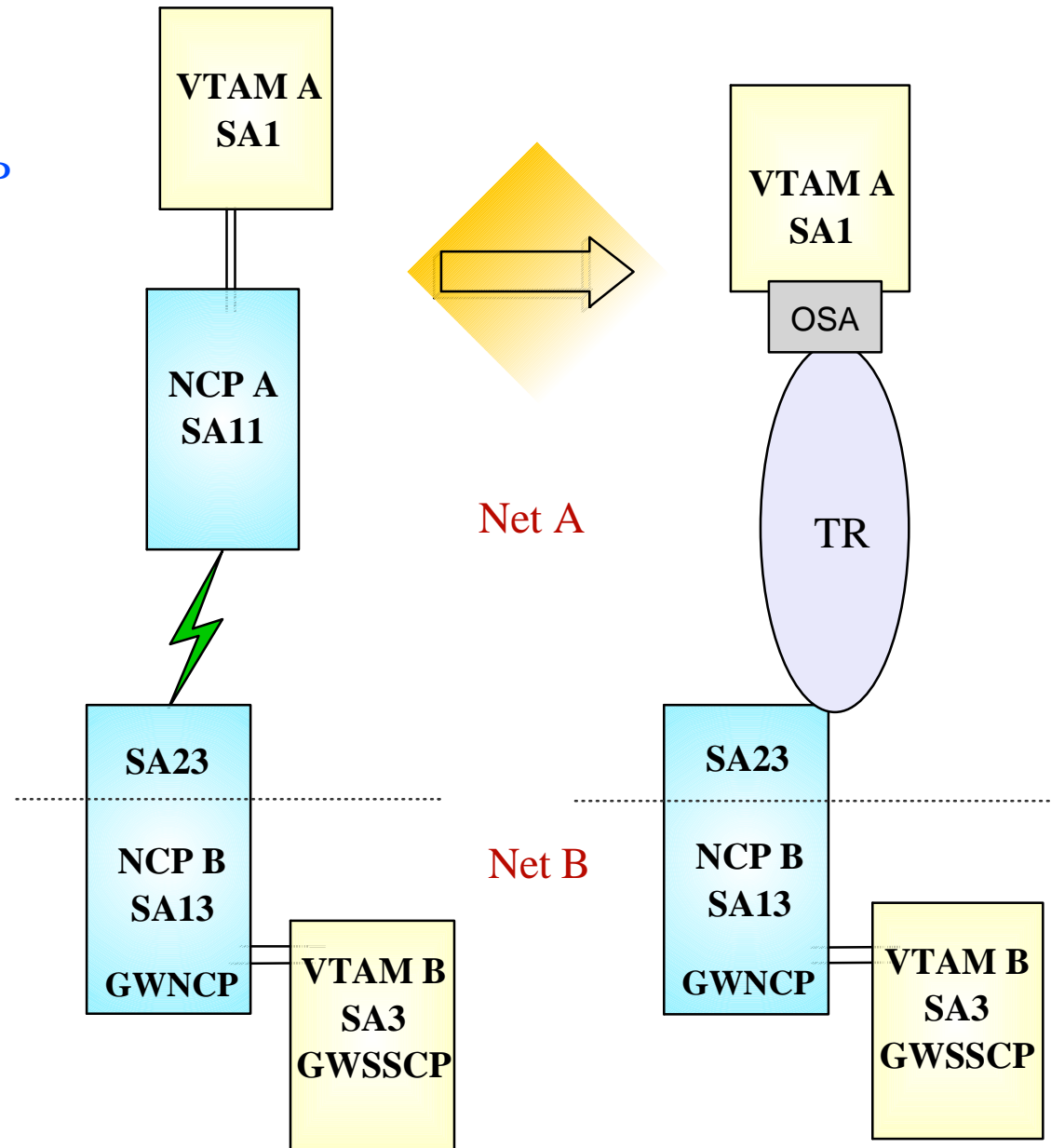   OSA and token ring connections

➤ Definition Considerations:

VTAM A

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

NCP B

- ◆ Change (SA23) PATH definitions
- ◆ Remove SDLC line definitions
- ◆ Add token ring connection

VTAM B

- ◆ No changes required

VTAM A SA1

NCP A SA11

Net A

SA23

NCP B SA13

GWNCP

VTAM B SA3 GWSSCP

Net B

VTAM A SA1

OSA

TR

SA23

NCP B SA13

GWNCP

VTAM B SA3 GWSSCP

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Subarea Connection Considerations - Host A

VTAM A SA1

✓ Remove NCP A references from VTAM start-up procedures (i.e. ATCCONxx), and operational CLISTs.

- The NCP Major Node(s) associated with NCP A are no longer required, and can be removed from the libraries (optional)

✓ Change PATH statements

- Remove PATH statements for DESTSA=11 (optional)
- CDRM definitions for VTAM B (SA3) do <u>not</u> require changes
- Change PATH statements for DESTSA=23 to reflect Adjacent SA of 23. *Example*:

```
PATH2N   PATH   DESTSA=23,
                ERO=(23,1),...
```

✓ 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=23, 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**= keyword defined in the <u>logical</u> link definitions for this connection in the NCP

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Subarea Connection Considerations - NCP B

NCP B SA13

✓ Change PATH statements in the *non-native*, (NETID=NETA, SUBAREA=23), definitions
- No changes are required to the *native* network PATH statements
- Remove PATH statements for DESTSA=11 (optional)
- Change PATH statements for DESTSA=1 to reflect an Adjacent SA of 1. ***Example:***

```
PATH1   PATH   DESTSA=1,
               ER0=(1, 1),...
```

✓ Remove or change the SDLC link definitions
- If this SDLC link is being removed from the 37XX, the definitions for this link should be removed from the NCP gen.
- If this link is going to be kept in place on the 37XX, 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=04mmmmmmmmmmmm,...
```
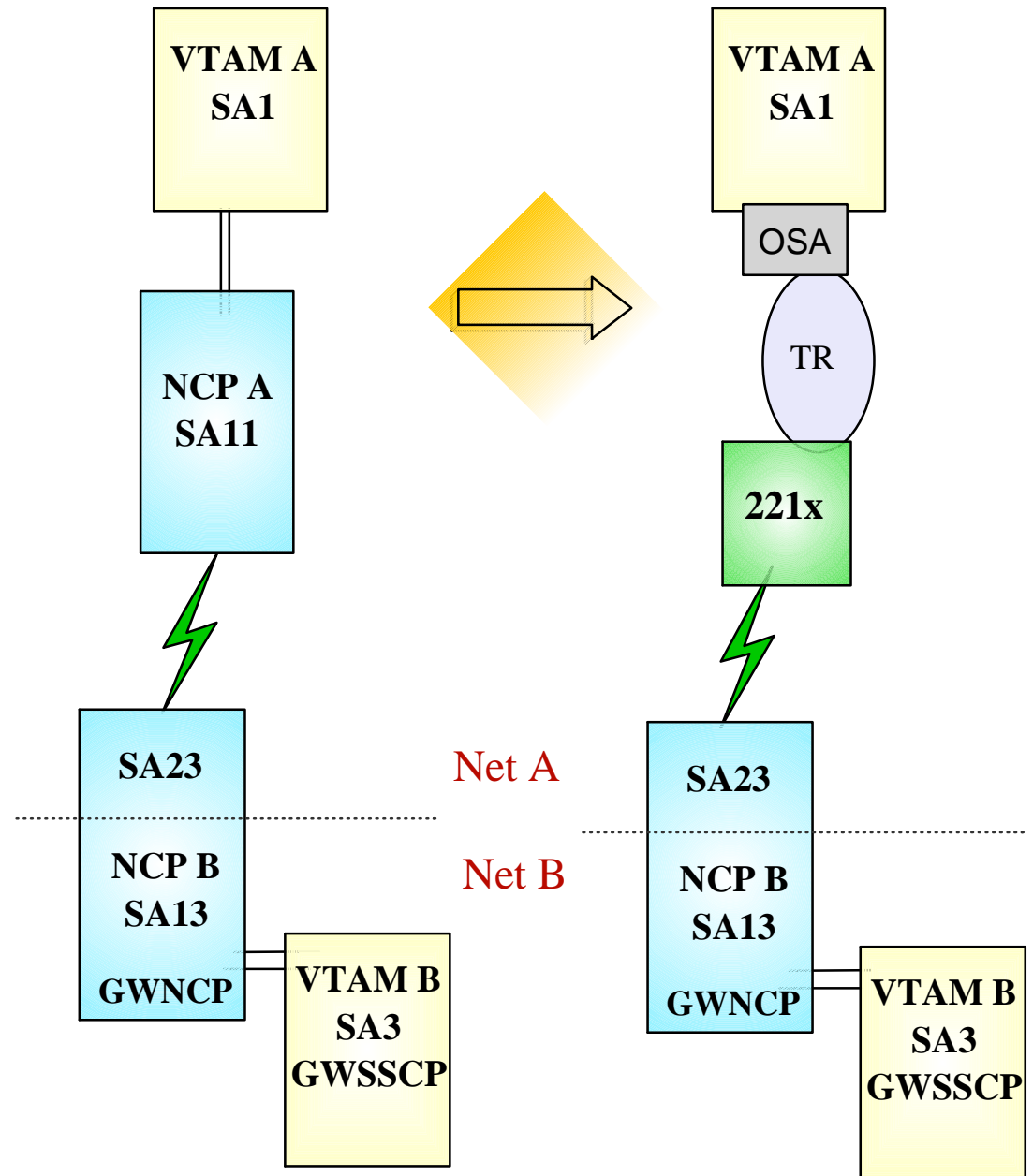
LOCADD the token-ring address of this TIC; this value must match the address specified for the **MACADDR=** keyword of the XCA PU definition in VTAM

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

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OSA - Token Ring - Router - Remote GWNCP

➤ Channel-attached NCP

   Local NCP is **NOT** a GWNCP

   SDLC connections to a remote GWNCP

   VTAM B is the GWSSCP

➤ Local NCP replaced by:

   OSA with TR LAN connections to a
   network router, which provides SDLC
   connections to the remote GWNCP

➤ Definition Considerations:

   VTAM A

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

   NCP B

   ◆ Change (SA23) PATH definitions
   ◆ Verify INN link specifications

   VTAM B

   ◆ No changes required

VTAM A
SA1

NCP A
SA11

SA23   Net A

NCP B   Net B
SA13

GWNCP

VTAM B
SA3
GWSSCP

VTAM A
SA1

OSA

TR

221x

SA23

NCP B
SA13

GWNCP

VTAM B
SA3
GWSSCP

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Subarea Connection Considerations - Host A

VTAM A SA1

✓ Remove NCP A references from VTAM start-up procedures (i.e. ATCCONxx), and operational CLISTs.

- The NCP Major Node(s) associated with NCP A are no longer required, and can be removed from the libraries (optional)

✓ Change PATH statements

- Remove PATH statements for DESTSA=11 (optional)
- CDRM definitions for VTAM B (SA3) do <u>not</u> require changes
- Change PATH statements for DESTSA=23 to reflect Adjacent SA of 23. *Example*:

```
PATH2N   PATH   DESTSA=23,
                ERO=(23,1),...
```

✓ 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=23, 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 11*)
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 11*)
TGN	this value must match the TG number specified by the **TGN=** keyword defined 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=23,
                    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

4	☑ SDLC address

Add   Change   Delete

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Subarea Connection Considerations - NCP B

NCP B
SA13

✓ Change PATH statements in the *non-native*, (NETID=NETA, SUBAREA=23), definitions
- No changes are required to the *native* network PATH statements
- Remove PATH statements for DESTSA=11 (optional)
- Change PATH statements for DESTSA=1 to reflect an Adjacent SA of 1. ***Example:***

```
PATH1    PATH   DESTSA=1,
                ER0=(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 GWNCP

➤ Channel-attached NCP
  Local NCP is **NOT** a GWNCP
  SDLC connections to a remote GWNCP
  VTAM B is the GWSSCP

➤ Local NCP replaced by:

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

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

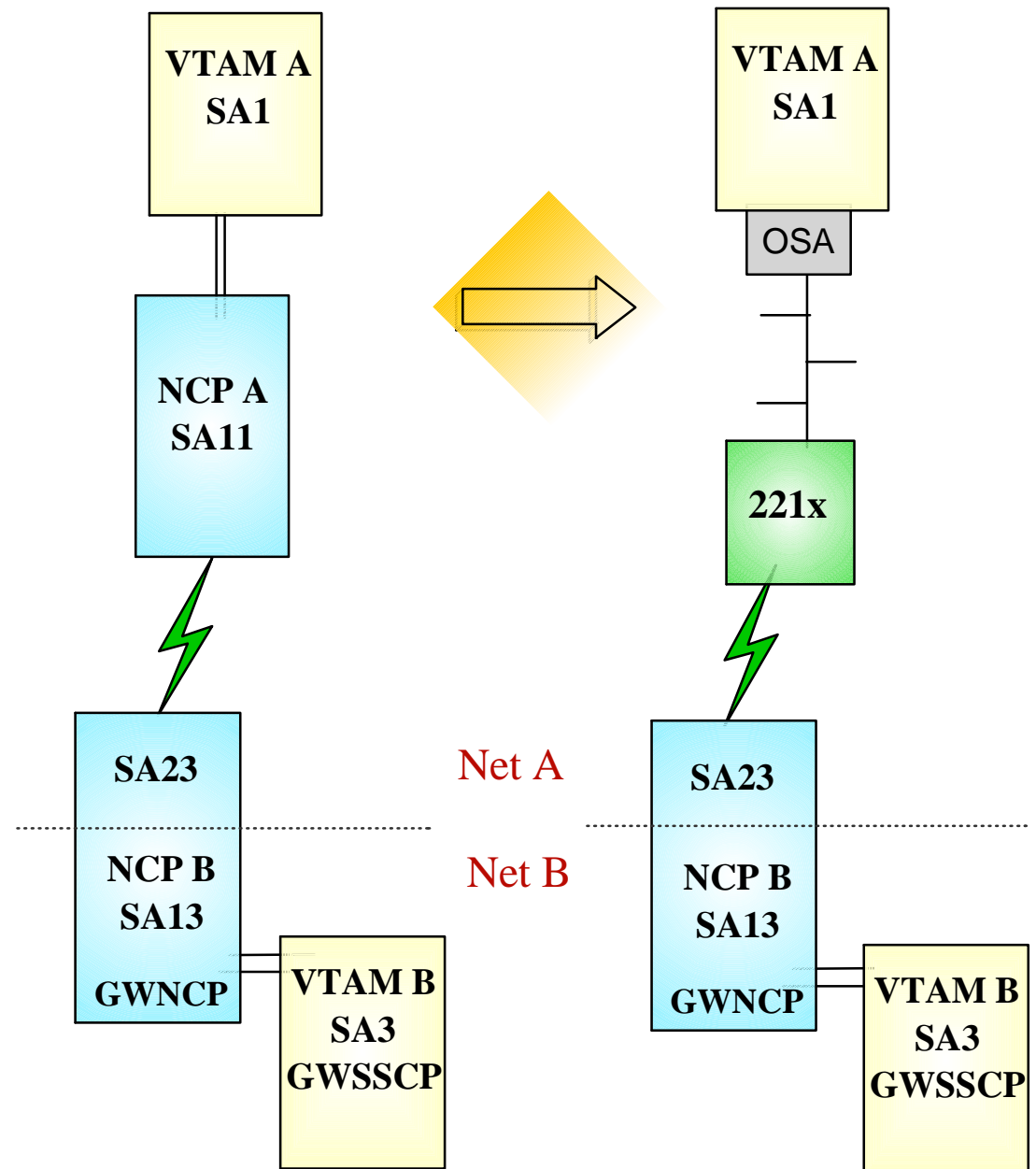➤ Definition Considerations:

  VTAM A
  ◆ Add XCA Major Node
  ◆ Change PATH statements
  ◆ Remove NCP Major Node
  NCP B
  ◆ Change (SA23) PATH definitions
  ◆ Verify INN link specifications
  VTAM B
  ◆ No changes required

VTAM A
SA1

NCP A
SA11

SA23

NCP B
SA13

GWNCP

VTAM B
SA3
GWSSCP

VTAM A
SA1

OSA

221x

SA23

NCP B
SA13

GWNCP

VTAM B
SA3
GWSSCP

Net A

Net B

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Subarea Connection Considerations - Host A

**VTAM A
SA1**

✓ Remove NCP A references from VTAM start-up procedures (i.e. ATCCONxx), and operational CLISTs.
- The NCP Major Node(s) associated with NCP A are no longer required, and can be removed from the libraries (optional)

✓ Change PATH statements
- Remove PATH statements for DESTSA=11 (optional)
- CDRM definitions for VTAM B (SA3) do <u>not</u> require changes
- Change PATH statements for DESTSA=23 to reflect Adjacent SA of 23. *Example*:

```
PATH2N   PATH   DESTSA=23,
                ER0=(23,1),...
```

✓ 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=CSMACD, SAPADDR=4,...
GRPSUB    GROUP  DIAL=NO,...
LSUB      LINE   USER=SNA,...
PSUB      PU     MACADDR=400016450010, TGN=1, PUTYPE=4, SUBAREA=23, 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
MEDIUM	Ethernet connection support (CSMACD) requires minimum maintenance levels for VTAM: OW33649 (MVS), VM61671 (VM), or DY44681 (VSE)
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 15*)
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 15*)
TGN	this value must match the TG number specified by the **TGN=** keyword defined 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=23,
                   SAPADDR=4, . . .
```

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

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

Add   Change   Delete

Subarea Connection Considerations - NCP B

NCP B
SA13

✓ Change PATH statements in the *non-native*, (NETID=NETA, SUBAREA=23), definitions
  - No changes are required to the *native* network PATH statements
  - Remove PATH statements for DESTSA=11 (optional)
  - Change PATH statements for DESTSA=1 to reflect an Adjacent SA of 1. ***Example:***

```
PATH1   PATH   DESTSA=1,
               ER0=(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, . . .
```
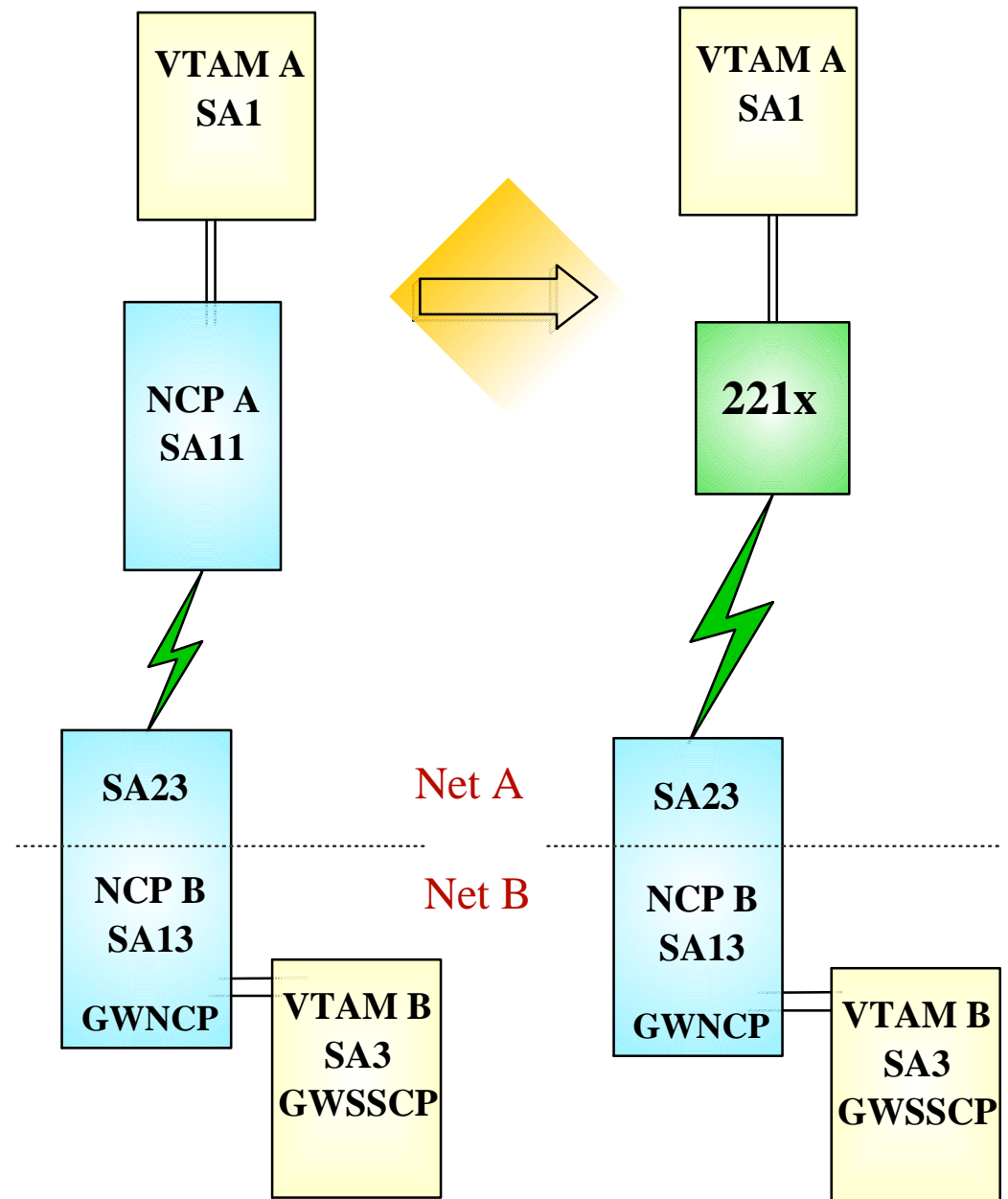
TGN   this value must match the TG number defined in the **TGN=** keyword of the XCA
               PU definition in VTAM
ADDRESS   If connecting to a device that does not support full-duplex transmission, the
               ADDRESS parameter should be set to/defaulted to HDX

Channel-attached router - Remote GWNCP

➤ Channel-attached NCP

Local NCP is **NOT** a GWNCP

SDLC connections to a remote GWNCP

VTAM B is the GWSSCP

➤ Local NCP replaced by:

Channel-attached network router, which
provides SDLC connections to the
remote GWNCP

➤ Definition Considerations:

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

NCP B
- ◆ Change (SA23) PATH definitions
- ◆ Verify INN link specifications

VTAM B
- ◆ No changes required

VTAM A SA1		VTAM A SA1
NCP A SA11		221x

SA23	Net A	SA23
NCP B SA13 GWNCP	Net B	NCP B SA13 GWNCP
	VTAM B SA3 GWSSCP		VTAM B SA3 GWSSCP

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Subarea Connection Considerations - Host A

VTAM A SA1

✓ Remove NCP A references from VTAM start-up procedures (i.e. ATCCONxx), and operational CLISTs.
- The NCP Major Node(s) associated with NCP A are no longer required, and can be removed from the libraries (optional)

✓ Change PATH statements
- Remove PATH statements for DESTSA=11 (optional)
- CDRM definitions for VTAM B (SA3) do <u>not</u> require changes
- Change PATH statements for DESTSA=23 to reflect Adjacent SA of 23. *Example*:

```
PATH2N   PATH   DESTSA=23,
                ERO=(23,1),...
```

✓ 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=23, 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 19*)
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 19*)
TGN	this value must match the TG number specified by the **TGN=** keyword defined 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=23,
                      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

4

☑ SDLC address

[Add]   [Change]   [Delete]

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Subarea Connection Considerations - NCP B

NCP B
SA13

✓ Change PATH statements in the *non-native*, (NETID=NETA, SUBAREA=23), definitions
  - No changes are required to the *native* network PATH statements
  - Remove PATH statements for DESTSA=11 (optional)
  - Change PATH statements for DESTSA=1 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

Channel-attached Router - TR-Remote GWNCP

➤ Channel-attached NCP

Local NCP is **NOT** a GWNCP

SDLC connections to a remote GWNCP

VTAM B is the GWSSCP

➤ Local NCP replaced by:

Channel-attached network router, which provides TR LAN connections to the remote GWNCP
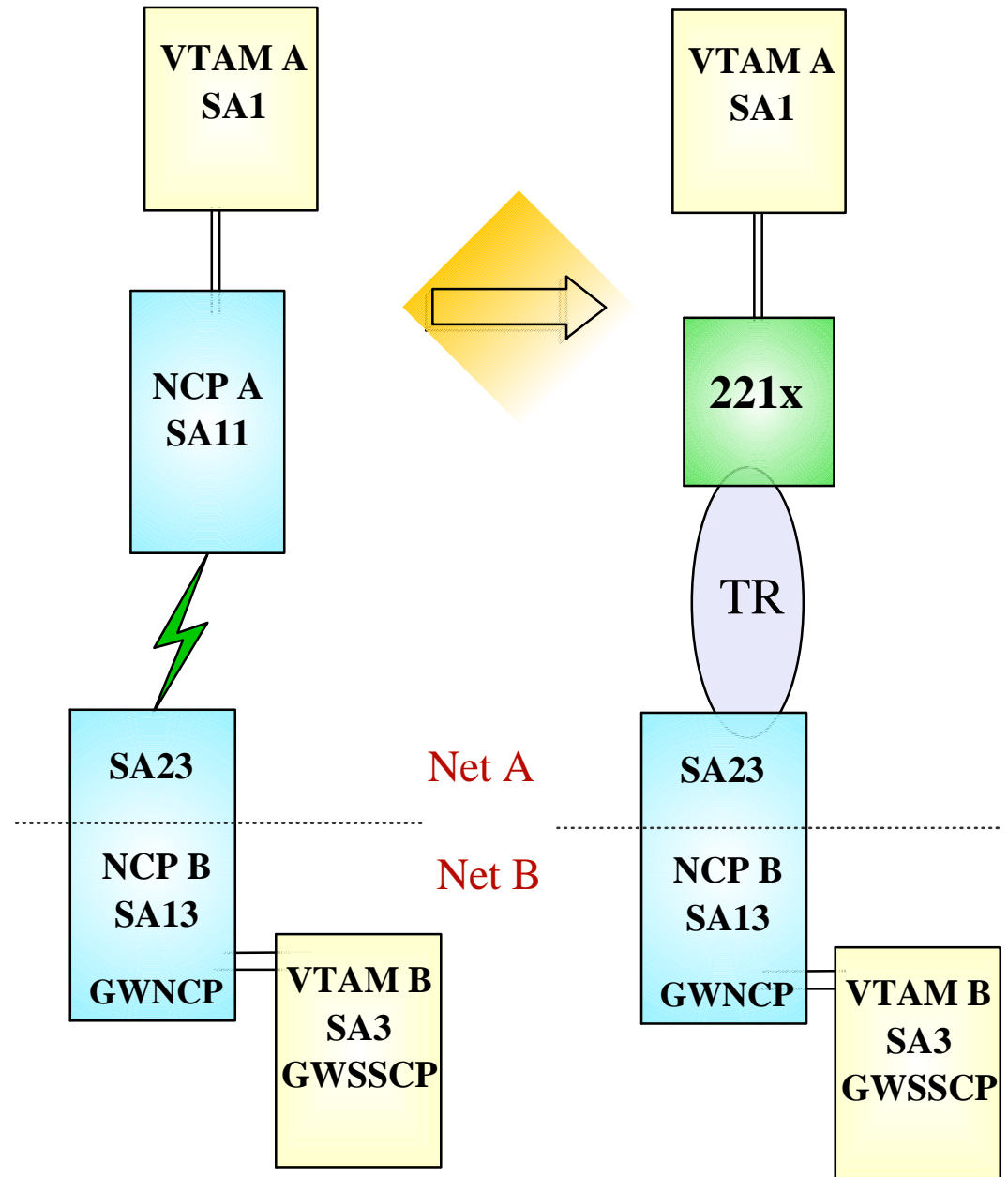
➤ Definition Considerations:

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

NCP B
- ◆ Change (SA23) PATH definitions
- ◆ Remove SDLC link definitions
- ◆ Add token ring link definitions

VTAM B
- ◆ No changes required

Left diagram:

VTAM A
SA1

NCP A
SA11

SA23

Net A

NCP B
SA13

Net B

GWNCP

VTAM B
SA3
GWSSCP

Right diagram:

VTAM A
SA1

221x

TR

SA23

NCP B
SA13

GWNCP

VTAM B
SA3
GWSSCP

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Subarea Connection Considerations - Host A

VTAM A
SA1

✓ Remove NCP A references from VTAM start-up procedures (i.e. ATCCONxx), and operational CLISTs.
- The NCP Major Node(s) associated with NCP A are no longer required, and can be removed from the libraries (optional)

✓ Change PATH statements
- Remove PATH statements for DESTSA=11 (optional)
- CDRM definitions for VTAM B (SA3) do <u>not</u> require changes
- Change PATH statements for DESTSA=23 to reflect Adjacent SA of 23. *Example*:

```
PATH2N   PATH   DESTSA=23,
                ERO=(23,1),...
```

✓ 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=23, 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=** keyword defined in the <u>logical</u> link definitions for this connection in the NCP

Subarea Connection Considerations - NCP B

NCP B SA13

✓ Change PATH statements in the *non-native*, (NETID=NETA, SUBAREA=23), definitions
- No changes are required to the *native* network PATH statements
- Remove PATH statements for DESTSA=11 (optional)
- Change PATH statements for DESTSA=1 to reflect an Adjacent SA of 1. ***Example:***

```
PATH1   PATH   DESTSA=1,
               ER0=(1, 1), . . .
```

✓ Remove or change the SDLC link definitions
- If this SDLC link is being removed from the 37XX, the definitions for this link should be removed from the NCP gen.
- If this link is going to be kept in place on the 37XX, 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=04mmmmmmmmmmm, . . .
```
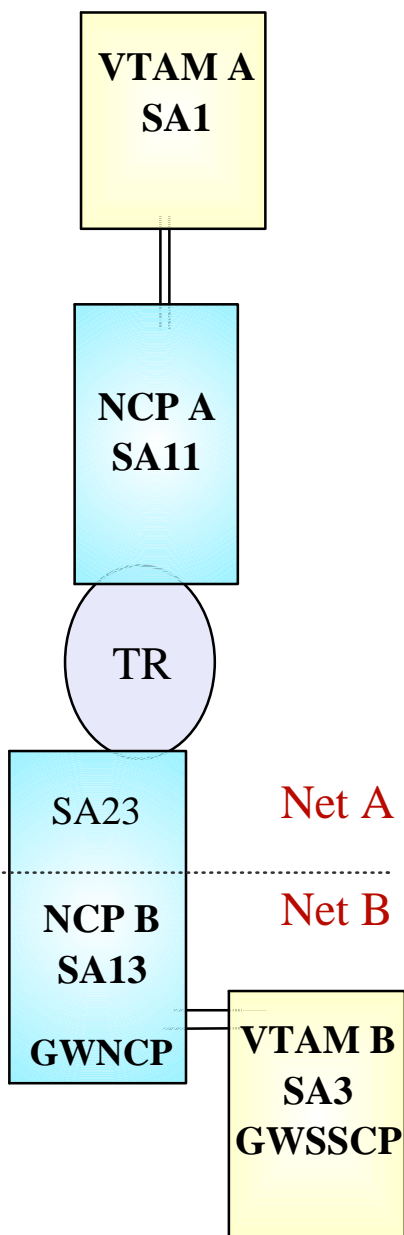
LOCADD   the token-ring address of this TIC; this value must match the address specified for the **MACADDR=** keyword of the XCA PU definition in VTAM

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

IBM

Token Ring Link to Remote GWNCP

VTAM A
SA1

NCP A
SA11

TR

SA23   Net A

- -

NCP B   Net B
SA13

GWNCP

VTAM B
SA3
GWSSCP

➤ A channel-attatched NCP with token ring connections to a remote SNI GWNCP

➤ The local NCP is <u>not</u> a GWNCP

➤ Target Configurations:

If your target configuration is:	See pages:
▶ OSA with token-ring connections to the remote GWNCP	25 - 27
▶ Channel attached router providing a token ring connection to the remote GWNCP	28 - 30

OSA - Token Ring to Remote GWNCP

- Channel-attached NCP

  Local NCP is **NOT** a GWNCP

  Token ring connections to a remote GWNCP

  VTAM B is the GWSSCP

- Local NCP replaced by:

  OSA

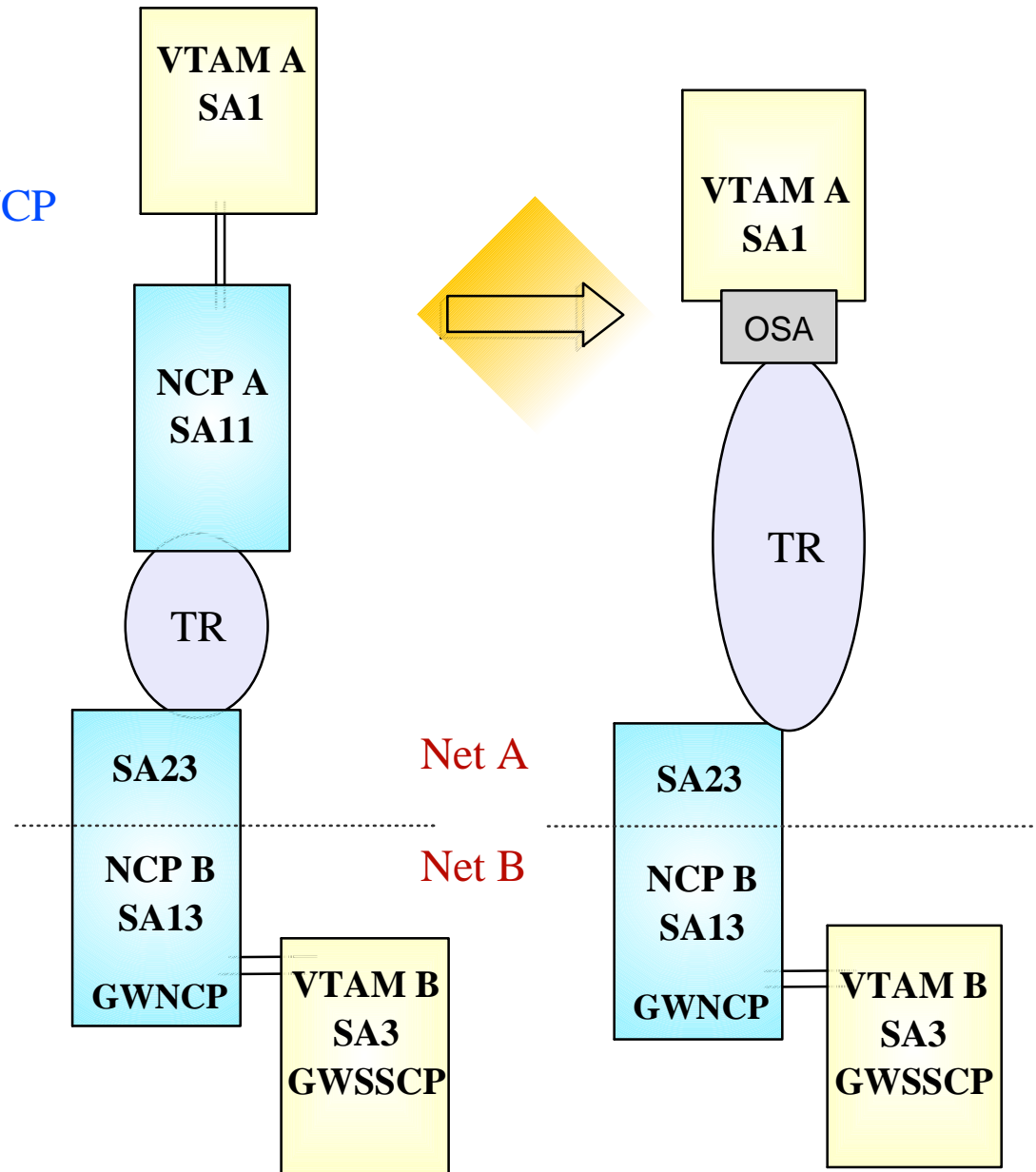- Definition Considerations:

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

  NCP B
  - ◆ Change (SA23) PATH definitions
  - ◆ Verify MACADDR specifications

  VTAM B
  - ◆ No changes required

VTAM A
SA1

VTAM A
SA1

OSA

NCP A
SA11

TR

TR

SA23

Net A

SA23

NCP B
SA13

Net B

NCP B
SA13

GWNCP

GWNCP

VTAM B
SA3
GWSSCP

VTAM B
SA3
GWSSCP

IBM

Subarea Connection Considerations - Host A

VTAM A
SA1

✓ Remove NCP A references from VTAM start-up procedures (i.e. ATCCONxx), and operational CLISTs.
  - The NCP Major Node(s) associated with NCP A are no longer required, and can be removed from the libraries (optional)

✓ Change PATH statements
  - Remove PATH statements for DESTSA=11 (optional)
  - CDRM definitions for VTAM B (SA3) do <u>not</u> require changes
  - Change PATH statements for DESTSA=23 to reflect Adjacent SA of 23. *Example*:

```
PATH2N    PATH    DESTSA=23,
                  ERO=(23,1),...
```

✓ 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=23, 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=** keyword defined in the <u>logical</u> link definitions for this connection in the NCP

IBM

Subarea Connection Considerations - NCP B

**NCP B
SA13**

✓ Change PATH statements in the *non-native*, (NETID=NETA, SUBAREA=23), definitions
- No changes are required to the *native* network PATH statements
- Remove PATH statements for DESTSA=11 (optional)
- Change PATH statements for DESTSA=1 to reflect an Adjacent SA of 1. ***Example:***

```
PATH1   PATH   DESTSA=1,
               ER0=(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=04mmmmmmmmmmmm, . . .
```

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

Channel-attached Router - TR - Remote GWNCP

➤ Channel-attached NCP

Local NCP is **NOT** a GWNCP

Token ring connections to a remote GWNCP

VTAM B is the GWSSCP

➤ Local NCP replaced by:

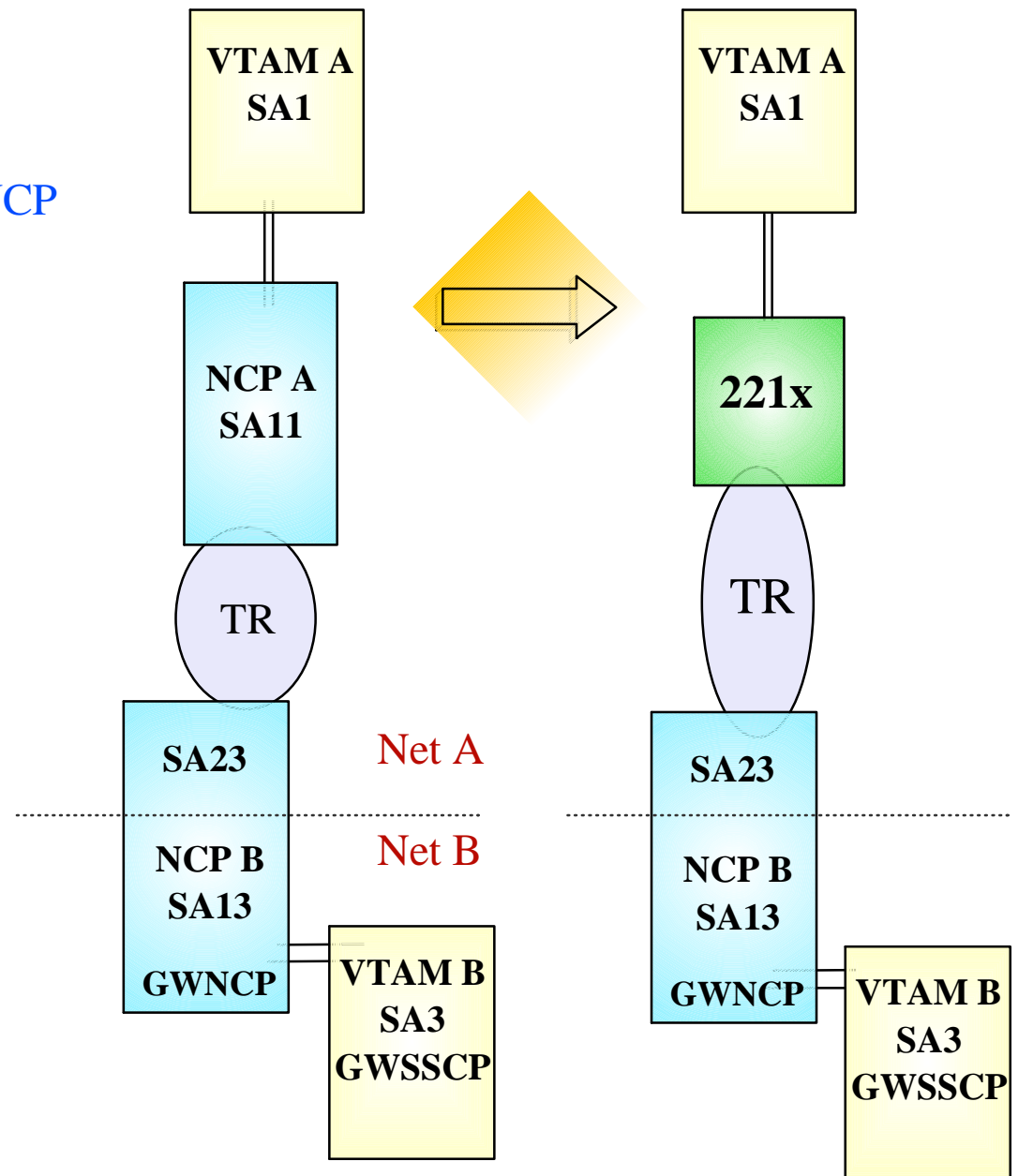Channel-attached Router

➤ Definition Considerations:

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

NCP B
- ◆ Change (SA23) PATH definitions
- ◆ Verify MACADDR specifications

VTAM B
- ◆ No changes required

Subarea Connection Considerations - Host A

VTAM A SA1

✓ Remove NCP A references from VTAM start-up procedures (i.e. ATCCONxx), and operational CLISTs.
  - The NCP Major Node(s) associated with NCP A are no longer required, and can be removed from the libraries (optional)

✓ Change PATH statements
  - Remove PATH statements for DESTSA=11 (optional)
  - CDRM definitions for VTAM B (SA3) do <u>not</u> require changes
  - Change PATH statements for DESTSA=23 to reflect Adjacent SA of 23. *Example*:

```
PATH2N   PATH   DESTSA=23,
                ER0=(23, 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=23, 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=** keyword defined in the <u>logical</u> link definitions for this connection in the NCP

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Subarea Connection Considerations - NCP B

NCP B
SA13

✓ Change PATH statements in the *non-native*, (NETID=NETA, SUBAREA=23), definitions
- No changes are required to the *native* network PATH statements
- Remove PATH statements for DESTSA=11 (optional)
- Change PATH statements for DESTSA=1 to reflect an Adjacent SA of 1. *Example:*

```
PATH1   PATH   DESTSA=1,
               ER0=(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=04mmmmmmmmmmmm,...
```
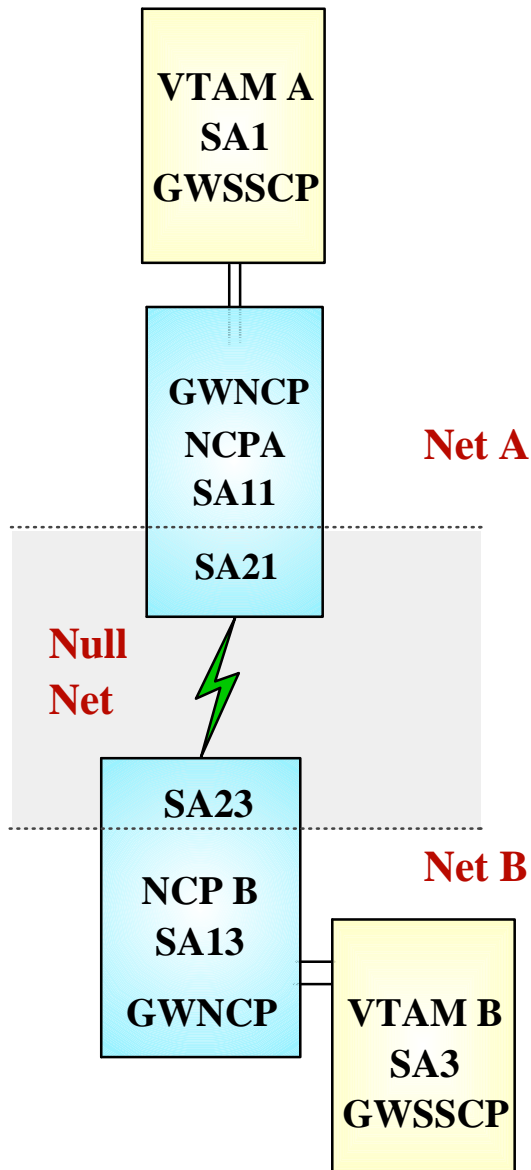
LOCADD   the token-ring address of this TIC; this value must match the address specified for the **MACADDR**= keyword of the XCA PU definition in VTAM

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

SNI Back-to-Back with SDLC Connection

VTAM A
SA1
GWSSCP

GWNCP
NCPA
SA11

Net A

SA21

Null
Net

SA23

Net B

NCP B
SA13

GWNCP

VTAM B
SA3
GWSSCP

➤ A channel-attached GWNCP with non-switched SDLC connections to a remote SNI GWNCP

➤ The connection between GWNCPs is across a null network (SNI Back-to-Back configuration).

➤ Target Configurations:

If your target configuration is:	**See pages:**
► OSA with token-ring connections to the remote NCP.	32 - 36
► OSA with token-ring connections to a router, which provides an SDLC connection to the remote NCP	37 - 42
► OSA with Ethernet connections to a router, which provides an SDLC connection to the remote NCP	43 - 48
► Channel attached router providing an SDLC connection to the remote NCP	49 - 54
► Channel attached router providing a token ring connection to the remote NCP	55 - 59

IBM

OSA-Token Ring - Remote GWNCP

➤ SNI Back-to-Back Configuration

   Local <u>and</u> remote NCPs are GWNCPs

   SDLC connections between the NCPs,
   across a null network

➤ Local NCP replaced by:

   OSA and token ring connections
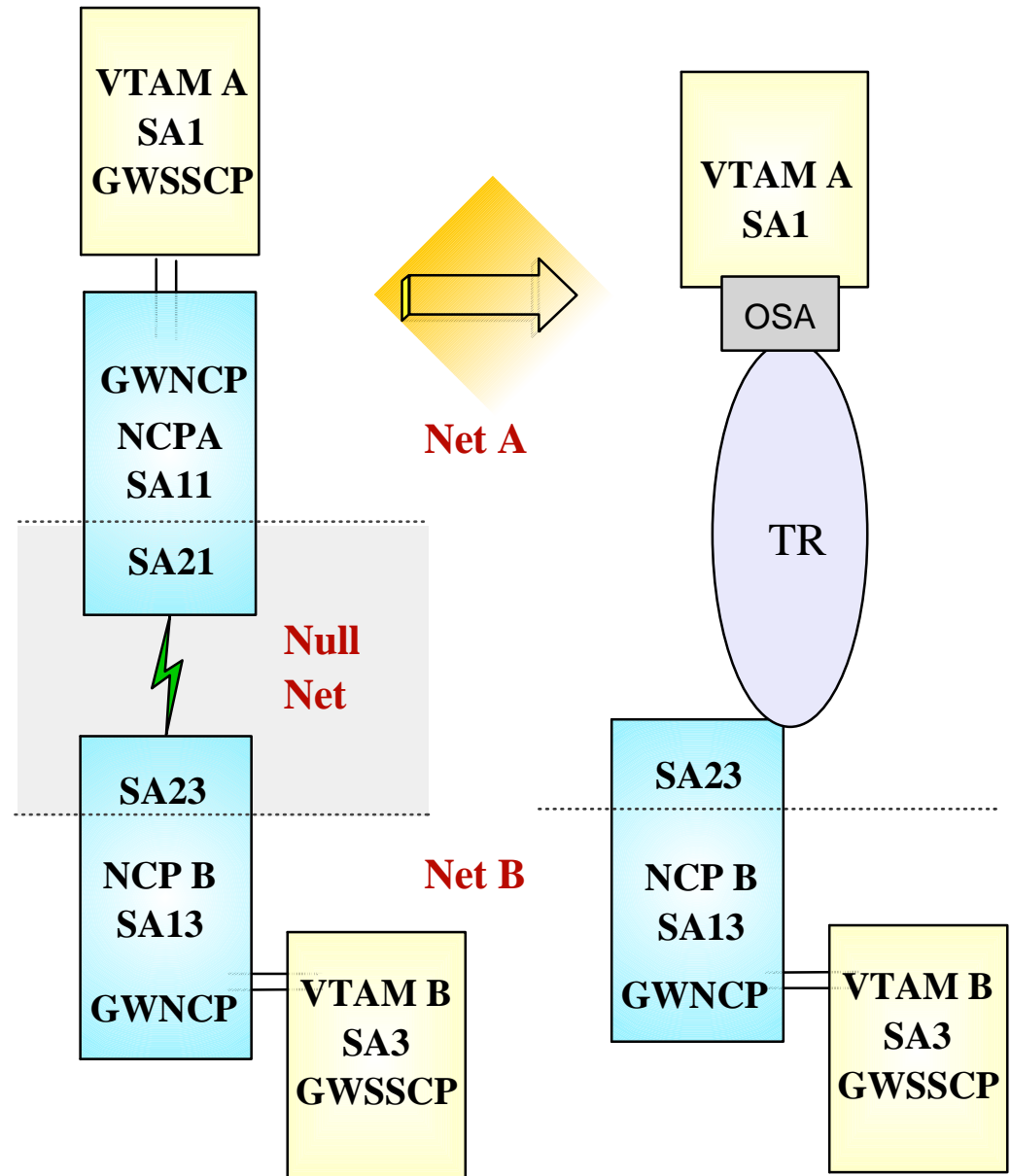
➤ Definition Considerations:

   VTAM A
- ◆ Add XCA Major Node
- ◆ Remove NCP Major Node
- ◆ Change PATH statements
- ◆ Change CDRM (HOST B) definitions

   NCP B
- ◆ Change (SA23) PATH definitions
- ◆ Change NETWORK NETID statement
- ◆ Remove SDLC line definitions
- ◆ Add token ring connection

   VTAM B
- ◆ Change CDRM GWPATH statements

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Subarea Connection Considerations - Host A

VTAM A SA1

✓ Remove NCP A references from VTAM start-up procedures (i.e. ATCCONxx), and operational CLISTs.
- The NCP Major Node(s) associated with NCP A are no longer required, and can be removed from the libraries (optional)

✓ Change PATH statements
- Remove PATH statements for DESTSA=11 (optional)
- Add PATH statements for DESTSA=23

```
PATH2N   PATH   DESTSA=23,
                ER0=(23,1),...
```

✓ 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=23, 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=** keyword defined in the <u>logical</u> link definitions for this connection in the NCP

Subarea Connection Considerations - Host A, SNI Definitions

VTAM A
SA1

✓ Change CDRM definitions for HOST B

- Remove GWPATH statements from the HOSTB CDRM definitions. VTAM A is no longer a GWSSCP for this connection, and does not use the GWPATH definitions to establish sessions with VTAM B.
- Add HOSTB CDRM statements to specify Subarea 23, with an appropriate element number, as the network address representing HOSTB in this network (NETA).
- *Sample* CDRM definitions:

```
        VBUILD    TYPE=CDRM
        NETWORK   NETID=NETB
HOSTB  CDRM       CDRDYN=YES, CDRSC=OPT, SUBAREA=23, ELEMENT=1
```

SUBAREA   This value points to the GWNCP subarea which has defined the representation (GWNAU) for HOSTB in NETA. The Subarea and Element numbers combine to form the network address for HOSTB in NETA.

ELEMENT   If not coded, this value will default to 1. If the NCP B *non-native* (HOSTA) definitions include a GWNAU ELEMENT= for HOSTB, the value provided in the CDRM statements must match the ELEMENT value coded in the GWNAU definitions.

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Subarea Connection Considerations - Host B, SNI Definitions

**VTAM B
SA3**

✓ Change GWPATH statements for HOSTA CDRM definitions. The null network (NETX) that used to be adjacent to NETB no longer exists. NETA and NETB are now adjacent to each other, and the GWPATH definitions must be changed to reflect the new relationship. Coding options for GWPATH include:

- ADJNET is now **NETA**.

- ADJNETSA is now **1**

- SUBAREA, if coded, is 13

- ELEMENT defaults to 1. If this value is coded, it <u>must</u> match the ELEMENT specified in the GWNAU definition for HostA, as coded in the *native* network (NETB) portion of NCP B.

- *Sample* CDRM definitions:

```
        VBUILD     TYPE=CDRM
        NETWORK    NETID=NETA
HOSTA   CDRM       CDRDYN=YES, CDRSC=OPT
        GWPATH     GWN=NCPB, ADJNET=NETA, ADJNETSA=1, ADJNETEL=1
```

GWN   This keyword specifies the name of the GWNCP that is to be used for sessions with HOSTA. The GWN keyword is mutually exclusive to the SUBAREA keyword. Either can be used in the GWPATH definitions, but if GWN= is *not* specified, SUBAREA is required.

ADJNETEL   This value is the element number of the destination subarea - in this case, HOSTA. The ADJNETSA,ADJNETEL combination represents the network address of HOSTA in NETA.

Subarea Connection Considerations - NCP B

NCP B
SA13

✓ Change the NETID in the *non-native* network definitions
  - The null network (NETX) no longer exists. NCP B Subarea 23 is now associated with NETA. In the NETWORK definitions for this connection, **NETID=NETA** must be specified.
✓ Change PATH statements in the *non-native*, (NETID=NETA, SUBAREA=23), definitions
  - No changes are required to the *native* network PATH statements
  - Remove PATH statements for DESTSA=21 (optional)
  - Change PATH statements for DESTSA=1 to reflect an Adjacent SA of 1. *Example:*

```
PATH1   PATH   DESTSA=1,
               ER0=(1, 1),...
```

✓ Remove or change the SDLC link definitions
  - If this SDLC link is being removed from the 37XX, definitions for this link should be removed from the NCP gen.
  - If this link is going to be kept in place on the 37XX, 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, NETID=NETA, PUTYPE=4, ADDR=04mmmmmmmmmmmm,...
```

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 - TR LAN - Router - GWNCP

➤ SNI Back-to-Back Configuration

   Local <u>and</u> remote NCPs are GWNCPs

   SDLC connections between the NCPs, across a null network

➤ Local NCP replaced by:

   OSA with TR LAN connections to a network router, which provides SDLC connections to the remote GWNCP
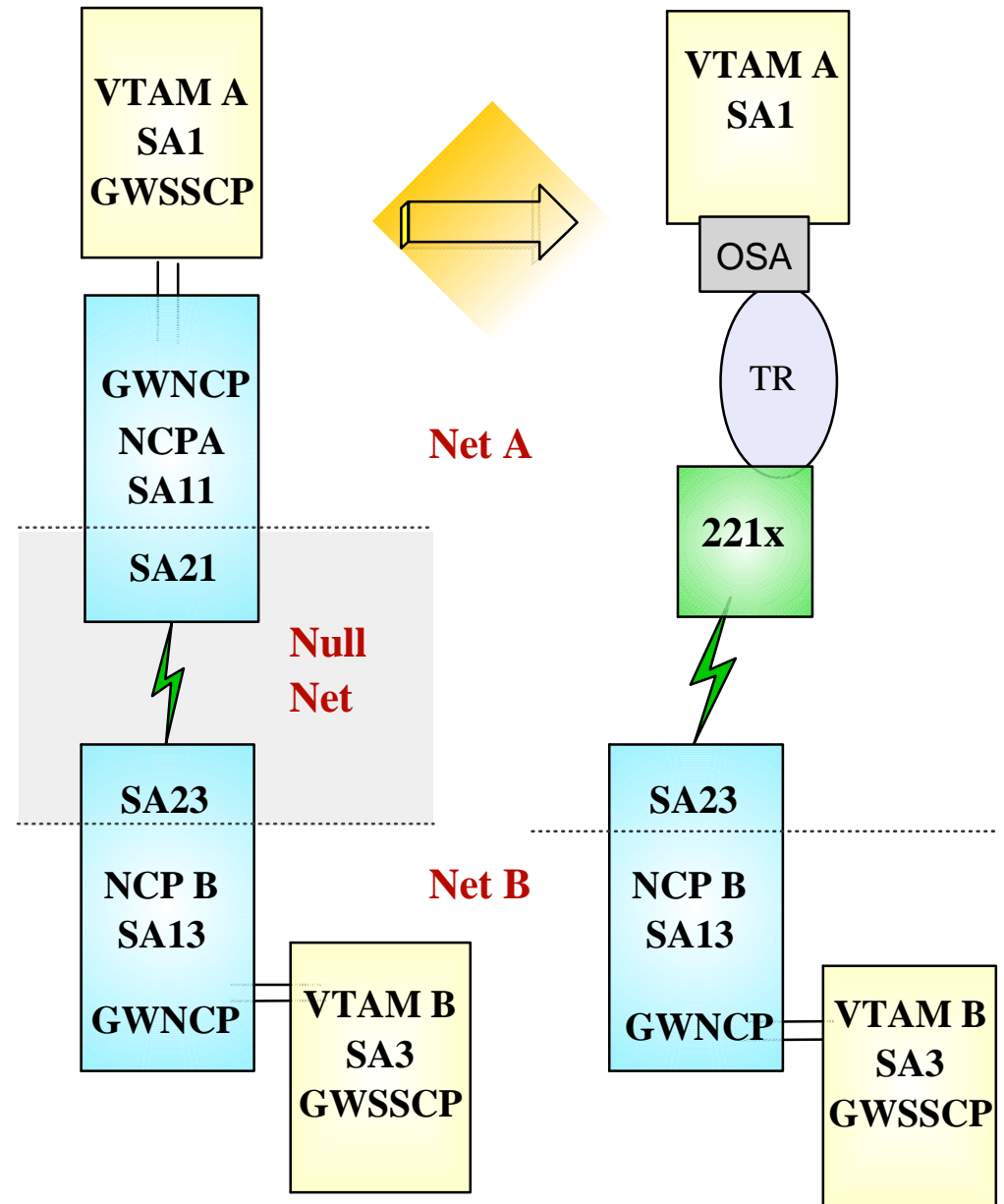
➤ Definition Considerations:

VTAM A
- ◆ Add XCA Major Node
- ◆ Remove NCP Major Node
- ◆ Change PATH statements
- ◆ Change CDRM GWPATH statements

NCP B
- ◆ Change (SA23) PATH definitions
- ◆ Change NETWORK NETID statement
- ◆ Verify INN link specifications

VTAM B
- ◆ Change CDRM GWPATH statements

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Subarea Connection Considerations - Host A

VTAM A SA1

✓ Remove NCP A references from VTAM start-up procedures (i.e. ATCCONxx), and operational CLISTs.
- The NCP Major Node(s) associated with NCP A are no longer required, and can be removed from the libraries (optional)

✓ Change PATH statements
- Remove PATH statements for DESTSA=11 (optional)
- Add PATH statements for DESTSA=23

```
PATH2N   PATH   DESTSA=23,
                ER0=(23,1),...
```

✓ 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=23, 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 39*)
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 39*)
TGN	this value must match the TG number specified by the **TGN=** keyword defined 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=23,
                     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

Add   Change   Delete

Subarea Connection Considerations - Host A, SNI Definitions

VTAM A
SA1

✓ Change CDRM definitions for HOST B

- Remove GWPATH statements from the HOSTB CDRM definitions. VTAM A is no longer a GWSSCP for this connection, and does not use the GWPATH definitions to establish sessions with VTAM B.

- Add HOSTB CDRM statements to specify Subarea 23, with an appropriate element number, as the network address representing HOSTB in this network (NETA).

- *Sample* CDRM definitions:

```
        VBUILD    TYPE=CDRM
        NETWORK   NETID=NETB
HOSTB   CDRM      CDRDYN=YES, CDRSC=OPT,  SUBAREA=23, ELEMENT=1
```

SUBAREA   This value points to the GWNCP subarea which has defined the representation (GWNAU) for HOSTB in NETA. The Subarea and Element numbers combine to form the network address for HOSTB in NETA.

ELEMENT   If not coded, this value will default to 1. If the NCP B *non-native* (HOSTA) definitions include a GWNAU ELEMENT= for HOSTB, the value provided in the CDRM statements <u>must</u> match the ELEMENT value coded in the GWNAU definitions.

Subarea Connection Considerations - Host B, SNI Definitions

VTAM B SA3	✓ Change GWPATH statements for HOSTA CDRM definitions. The null network (NETX) that used to be adjacent to NETB no longer exists. NETA and NETB are now adjacent to each other, and the GWPATH definitions must be changed to reflect the new relationship. Coding options for GWPATH include:

- ADJNET is now **NETA**.

- ADJNETSA is now **1**

- SUBAREA, if coded, is **13**

- ELEMENT defaults to 1. If this value is coded, it <u>must</u> match the ELEMENT specified in the GWNAU definition for HostA, as coded in the *native* network (NETB) portion of NCP B.

- *Sample* CDRM definitions:

```
       VBUILD    TYPE=CDRM
       NETWORK   NETID=NETA
HOSTA  CDRM      CDRDYN=YES, CDRSC=OPT
       GWPATH    GWN=NCPB, ADJNET=NETA, ADJNETSA=1, ADJNETEL=1
```

GWN
This keyword specifies the name of the GWNCP that is to be used for sessions with HOSTA. The GWN keyword is mutually exclusive to the SUBAREA keyword. Either can be used in the GWPATH definitions, but if GWN= is *not* specified, SUBAREA is required.

ADJNETEL
This value is the element number of the destination subarea - in this case, HOSTA. The ADJNETSA,ADJNETEL combination represents the network address of HOSTA in NETA.

Subarea Connection Considerations - NCP B

**NCP B
SA13**

✓ Change the NETID in the *non-native* network definitions
- The null network (NETX) no longer exists. NCP B Subarea 23 is now associated with NETA. In the NETWORK definitions for this connection, **NETID=NETA** must be specified.

✓ Change PATH statements in the *non-native*, (NETID=NETA, SUBAREA=23), definitions
- No changes are required to the *native* network PATH statements
- Remove PATH statements for DESTSA=21 (optional)
- Change PATH statements for DESTSA=1 to reflect an Adjacent SA of 1. *Example:*

```
PATH1    PATH    DESTSA=1,
                 ER0=(1, 1),...
```

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

```
SDLCL1     LINE  ADDRESS=156, SPEED=9600,...
PUL1       PU    PUTYPE=4, NETID=NETA, ANS=CONTINUE, TGN=1,...
```
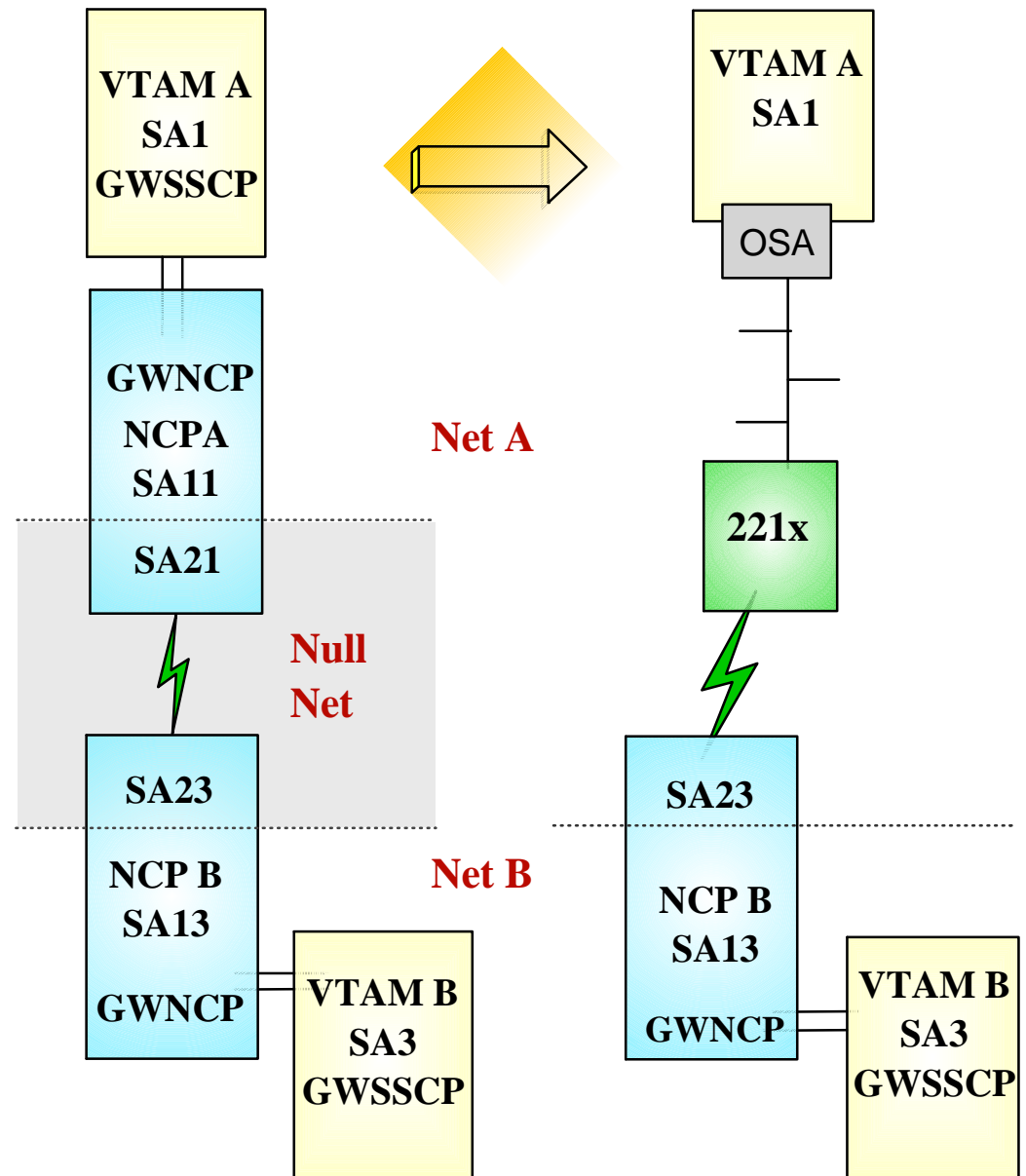
TGN   this value must match the TG number defined in the **TGN=** keyword of the XCA PU definition in VTAM

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

IBM

OSA - Ethernet LAN - Router - GWNCP

➤ SNI Back-to-Back Configuration

Local <u>and</u> remote NCPs are GWNCPs

SDLC connections between the NCPs, across a null network

➤ Local NCP replaced by:

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

Because 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
- ◆ Change CDRM GWPATH statements

NCP B
- ◆ Change (SA23) PATH definitions
- ◆ Change NETWORK NETID statement
- ◆ Verify INN link specifications

VTAM B
- ◆ Change CDRM GWPATH statements

VTAM A
SA1
GWSSCP

GWNCP
NCPA
SA11

SA21

Null
Net

SA23

NCP B
SA13

GWNCP

VTAM B
SA3
GWSSCP

Net A

Net B

VTAM A
SA1

OSA

221x

SA23

NCP B
SA13

GWNCP

VTAM B
SA3
GWSSCP

IBM

Subarea Connection Considerations - Host A

VTAM A SA1

✓ Remove NCP A references from VTAM start-up procedures (i.e. ATCCONxx), and operational CLISTs.
- The NCP Major Node(s) associated with NCP A are no longer required, and can be removed from the libraries (optional)

✓ Change PATH statements
- Remove PATH statements for DESTSA=11 (optional)
- Add PATH statements for DESTSA=23

```
PATH2N   PATH   DESTSA=23,
                ER0=(23,1),...
```

✓ 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=CSMACD, SAPADDR=4, ...
GRPSUB    GROUP  DIAL=NO, ...
LSUB      LINE   USER=SNA, ...
PSUB      PU     MACADDR=400016450010, TGN=1, PUTYPE=4, SUBAREA=23, 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
MEDIUM	Ethernet connection support (CSMACD) requires minimum maintenance levels for VTAM: OW33649 (MVS), VM61671 (VM), or DY44681 (VSE)
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 45*)
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 45*).
TGN	this value must match the TG number specified by the **TGN=** keyword defined 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=23,
                 SAPADDR=4, . . .
```

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

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

Add   Change   Delete

Subarea Connection Considerations - Host A, SNI Definitions

VTAM A SA1

✓ Change CDRM definitions for HOST B

- Remove GWPATH statements from the HOSTB CDRM definitions. VTAM A is no longer a GWSSCP for this connection, and does not use the GWPATH definitions to establish sessions with VTAM B.

- Add HOSTB CDRM statements to specify Subarea 23, with an appropriate element number, as the network address representing HOSTB in this network (NETA).

- *Sample* CDRM definitions:

```
        VBUILD    TYPE=CDRM
        NETWORK   NETID=NETB
HOSTB   CDRM      CDRDYN=YES, CDRSC=OPT, SUBAREA=23, ELEMENT=1
```

SUBAREA   This value points to the GWNCP subarea which has defined the representation (GWNAU) for HOSTB in NETA. The Subarea and Element numbers combine to form the network address for HOSTB in NETA.

ELEMENT   If not coded, this value will default to 1. If the NCP B *non-native* (HOSTA) definitions include a GWNAU ELEMENT= for HOSTB, the value provided in the CDRM statements must match the ELEMENT value coded in the GWNAU definitions.

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Subarea Connection Considerations - Host B, SNI Definitions

VTAM B SA3

✓ Change GWPATH statements for HOSTA CDRM definitions. The null network (NETX) that used to be adjacent to NETB no longer exists. NETA and NETB are now adjacent to each other, and the GWPATH definitions must be changed to reflect the new relationship. Coding options for GWPATH include:

- ADJNET is now **NETA**.

- ADJNETSA is now **1**

- SUBAREA, if coded, is **13**

- ELEMENT defaults to 1. If this value is coded, it <u>must</u> match the ELEMENT specified in the GWNAU definition for HostA, as coded in the *native* network (NETB) portion of NCP B.

- *Sample* CDRM definitions:

```
        VBUILD    TYPE=CDRM
        NETWORK   NETID=NETA
HOSTA   CDRM      CDRDYN=YES, CDRSC=OPT
        GWPATH    GWN=NCPB, ADJNET=NETA, ADJNETSA=1, ADJNETEL=1
```

GWN   This keyword specifies the name of the GWNCP that is to be used for sessions with HOSTA. The GWN keyword is mutually exclusive to the SUBAREA keyword. Either can be used in the GWPATH definitions, but if GWN= is *not* specified, SUBAREA is required.

ADJNETEL   This value is the element number of the destination subarea - in this case, HOSTA. The ADJNETSA,ADJNETEL combination represents the network address of HOSTA in NETA.

Subarea Connection Considerations - NCP B

NCP B SA13

✓ Change the NETID in the *non-native* network definitions
- The null network (NETX) no longer exists. NCP B Subarea 23 is now associated with NETA. In the NETWORK definitions for this connection, **NETID=NETA** must be specified.

✓ Change PATH statements in the *non-native*, (NETID=NETA, SUBAREA=23), definitions
- No changes are required to the *native* network PATH statements
- Remove PATH statements for DESTSA=21 (optional)
- Change PATH statements for DESTSA=1 to reflect an Adjacent SA of 1. *Example:*

```
PATH1   PATH   DESTSA=1,
               ER0=(1, 1),...
```

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

```
SDLCL1   LINE  ADDRESS=156, SPEED=9600,...
PUL1     PU    PUTYPE=4, NETID=NETA, 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 GWNCP

➤ SNI Back-to-Back Configuration

  Local and remote NCPs are GWNCPs

  SDLC connections between the NCPs, across a null network

➤ Local NCP replaced by:

  Channel attached network router, which provides SDLC connections to the remote GWNCP

➤ Definition Considerations:
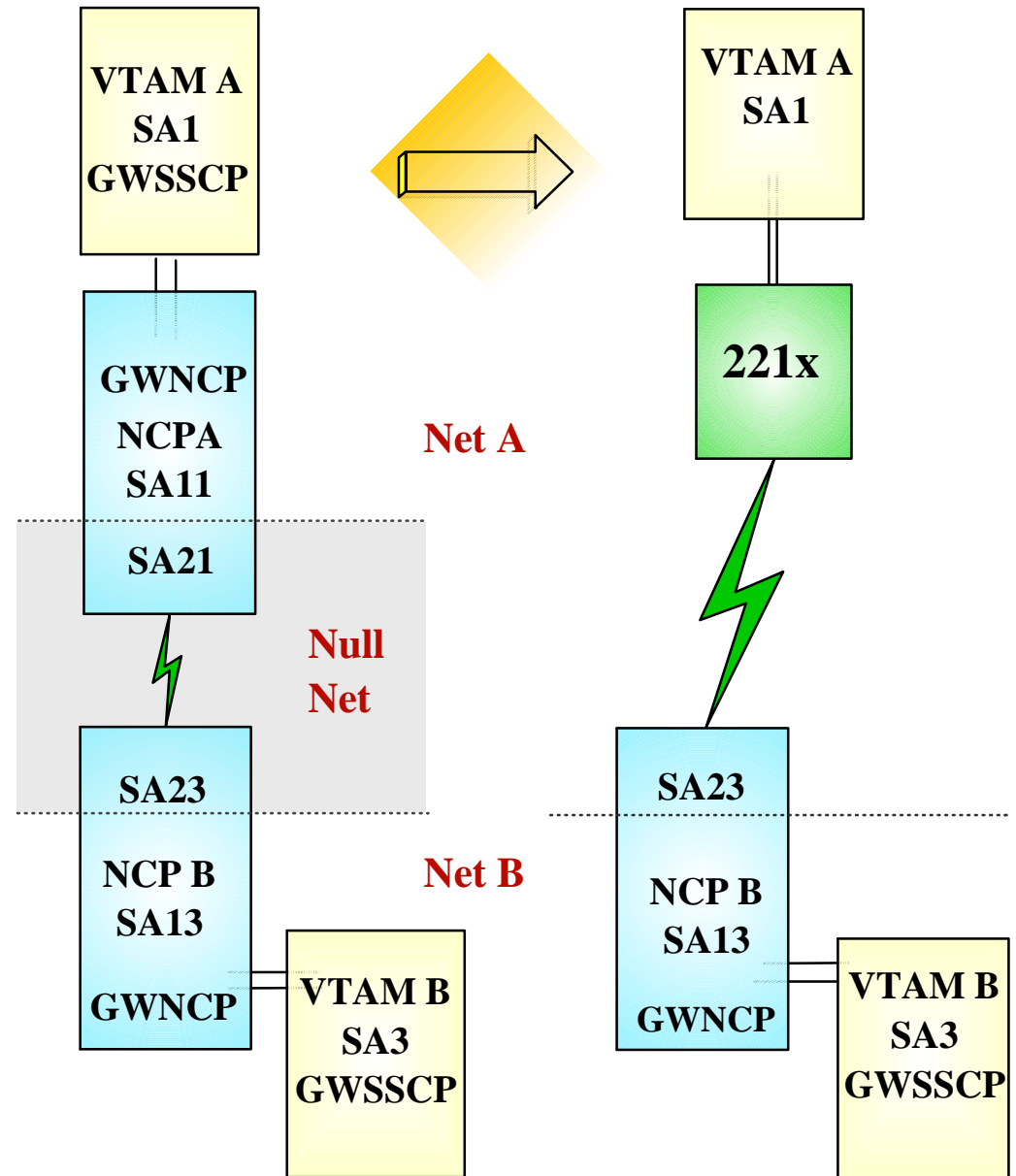
  VTAM A
  - ◆ Add XCA Major Node
  - ◆ Remove NCP Major Node
  - ◆ Change PATH statements
  - ◆ Change CDRM GWPATH statements

  NCP B
  - ◆ Change (SA23) PATH definitions
  - ◆ Change NETWORK NETID statement
  - ◆ Verify INN link specifications

  VTAM B
  - ◆ Change CDRM GWPATH statements

Left diagram:

VTAM A SA1 GWSSCP
GWNCP NCPA SA11 / SA21
Net A
Null Net
SA23
NCP B SA13 GWNCP
Net B
VTAM B SA3 GWSSCP

Right diagram:

VTAM A SA1
221x
SA23
NCP B SA13 GWNCP
VTAM B SA3 GWSSCP

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IBM

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Subarea Connection Considerations - Host A

**VTAM A
SA1**

✓ Remove NCP A references from VTAM start-up procedures (i.e. ATCCONxx), and operational CLISTs.
- The NCP Major Node(s) associated with NCP A are no longer required, and can be removed from the libraries (optional)

✓ Change PATH statements
- Remove PATH statements for DESTSA=11 (optional)
- Add PATH statements for DESTSA=23

```
PATH2N   PATH   DESTSA=23,
                ER0=(23,1),...
```

✓ 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=CSMACD, SAPADDR=4, . . .
GRPSUB   GROUP   DIAL=NO, . . .
LSUB     LINE    USER=SNA, . . .
PSUB     PU      MACADDR=400016450010, TGN=1, PUTYPE=4, SUBAREA=23, 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 51*)
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 51*)
TGN	this value must match the TG number specified by the **TGN=** keyword defined in the SDLC link definitions for this connection in the NCP

IBM

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=23,
                      SAPADDR=4, . . .
```

DLSw Interfaces [_][□][X]

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	
4	☑ SDLC address

[Add]   [Change]   [Delete]

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Subarea Connection Considerations - Host A, SNI Definitions

VTAM A SA1

✓ Change CDRM definitions for HOST B

- Remove GWPATH statements from the HOSTB CDRM definitions. VTAM A is no longer a GWSSCP for this connection, and does not use the GWPATH definitions to establish sessions with VTAM B.

- Add HOSTB CDRM statements to specify Subarea 23, with an appropriate element number, as the network address representing HOSTB in this network (NETA).

- *Sample* CDRM definitions:

```
        VBUILD    TYPE=CDRM
        NETWORK   NETID=NETB
HOSTB  CDRM       CDRDYN=YES, CDRSC=OPT, SUBAREA=23, ELEMENT=1
```

SUBAREA   This value points to the GWNCP subarea which has defined the representation (GWNAU) for HOSTB in NETA. The Subarea and Element numbers combine to form the network address for HOSTB in NETA.

ELEMENT   If not coded, this value will default to 1. If the NCP B *non-native* (HOSTA) definitions include a GWNAU ELEMENT= for HOSTB, the value provided in the CDRM statements must match the ELEMENT value coded in the GWNAU definitions.

Subarea Connection Considerations - Host B, SNI Definitions

```
┌──────────┐
│ VTAM B   │
│  SA3     │
└──────────┘
```

✓ Change GWPATH statements for HOSTA CDRM definitions. The null network (NETX) that used to be adjacent to NETB no longer exists. NETA and NETB are now adjacent to each other, and the GWPATH definitions must be changed to reflect the new relationship. Coding options for GWPATH include:

- ADJNET is now **NETA**.

- ADJNETSA is now **1**

- SUBAREA, if coded, is **13**

- ELEMENT defaults to 1. If this value is coded, it <u>must</u> match the ELEMENT specified in the GWNAU definition for HostA, as coded in the *native* network (NETB) portion of NCP B.

- *Sample* CDRM definitions:

```
        VBUILD     TYPE=CDRM
        NETWORK    NETID=NETA
HOSTA   CDRM       CDRDYN=YES, CDRSC=OPT
        GWPATH     GWN=NCPB, ADJNET=NETA, ADJNETSA=1, ADJNETEL=1
```

GWN   This keyword specifies the name of the GWNCP that is to be used for sessions with HOSTA. The GWN keyword is mutually exclusive to the SUBAREA keyword. Either can be used in the GWPATH definitions, but if GWN= is *not* specified, SUBAREA is required.

ADJNETEL   This value is the element number of the destination subarea - in this case, HOSTA. The ADJNETSA,ADJNETEL combination represents the network address of HOSTA in NETA.

Subarea Connection Considerations - NCP B

NCP B
SA13

✓ Change the NETID in the *non-native* network definitions
- The null network (NETX) no longer exists. NCP B Subarea 23 is now associated with NETA. In the NETWORK definitions for this connection, **NETID=NETA** must be specified.

✓ Change PATH statements in the *non-native*, (NETID=NETA, SUBAREA=23), definitions
- No changes are required to the *native* network PATH statements
- Remove PATH statements for DESTSA=21 (optional)
- Change PATH statements for DESTSA=1 to reflect an Adjacent SA of 1. *Example:*

```
PATH1   PATH   DESTSA=1,
               ER0=(1,1),...
```

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

```
SDLCL1    LINE  ADDRESS=156, SPEED=9600,...
PUL1      PU    PUTYPE=4, NETID=NETA, ANS=CONTINUE, TGN=1,...
```
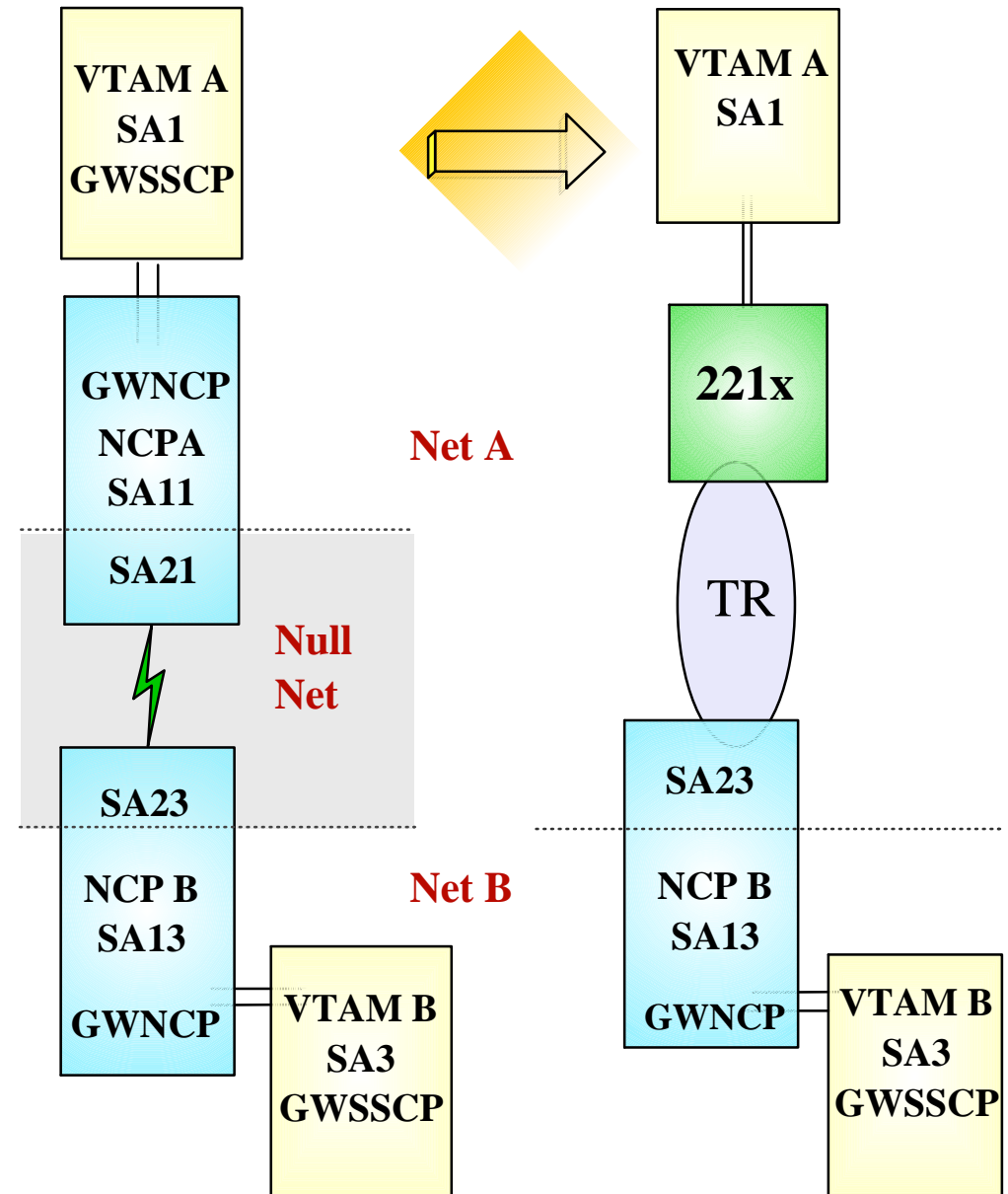
TGN   this value must match the TG number defined in the **TGN=** keyword of the XCA PU definition in VTAM

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 GWNCP

➤ SNI Back-to-Back Configuration

 Local and remote NCPs are GWNCPs
 SDLC connections between the NCPs, across
 a null network

➤ Local NCP replaced by:

 Channel attached network router, which
 provides TR LAN connections to the remote
 GWNCP

➤ Definition Considerations:

 VTAM A
 ◆ Add XCA Major Node
 ◆ Remove NCP Major Node
 ◆ Change PATH statements
 ◆ Change CDRM GWPATH statements

 NCP B
 ◆ Change (SA23) PATH definitions
 ◆ Change NETWORK NETID statement
 ◆ Remove SDLC line definitions
 ◆ Add token ring connection

 VTAM B
 ◆ Change CDRM GWPATH statements

Subarea Connection Considerations - Host A

VTAM A
SA1

✓ Remove NCP A references from VTAM start-up procedures (i.e. ATCCONxx), and operational CLISTs.
  - The NCP Major Node(s) associated with NCP A are no longer required, and can be removed from the libraries (optional)

✓ Change PATH statements
  - Remove PATH statements for DESTSA=11 (optional)
  - Add PATH statements for DESTSA=23

```
PATH2N   PATH   DESTSA=23,
                ER0=(23,1),...
```

✓ 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=23, 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=** keyword defined in the <u>logical</u> link definitions for this connection in the NCP

Subarea Connection Considerations - Host A, SNI Definitions

<table>
<tr><td>
VTAM A

SA1
</td></tr>
</table>

✓ Change CDRM definitions for HOST B

- Remove GWPATH statements from the HOSTB CDRM definitions. VTAM A is no longer a GWSSCP for this connection, and does not use the GWPATH definitions to establish sessions with VTAM B.

- Add HOSTB CDRM statements to specify Subarea 23, with an appropriate element number, as the network address representing HOSTB in this network (NETA).

- *Sample* CDRM definitions:

```
        VBUILD    TYPE=CDRM
        NETWORK   NETID=NETB
HOSTB  CDRM       CDRDYN=YES, CDRSC=OPT,  SUBAREA=23, ELEMENT=1
```

SUBAREA   This value points to the GWNCP subarea which has defined the representation (GWNAU) for HOSTB in NETA. The Subarea and Element numbers combine to form the network address for HOSTB in NETA.

ELEMENT   If not coded, this value will default to 1. If the NCP B *non-native* (HOSTA) definitions include a GWNAU ELEMENT= for HOSTB, the value provided in the CDRM statements must match the ELEMENT value coded in the GWNAU definitions.

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Subarea Connection Considerations - Host B, SNI Definitions

VTAM B SA3	✓ Change GWPATH statements for HOSTA CDRM definitions. The null network (NETX) that used to be adjacent to NETB no longer exists. NETA and NETB are now adjacent to each other, and the GWPATH definitions must be changed to reflect the new relationship. Coding options for GWPATH include:

- ADJNET is now **NETA**.

- ADJNETSA is now **1**

- SUBAREA, if coded, is **13**

- ELEMENT defaults to 1. If this value is coded, it <u>must</u> match the ELEMENT specified in the GWNAU definition for HostA, as coded in the *native* network (NETB) portion of NCP B.

- *Sample* CDRM definitions:

```
          VBUILD     TYPE=CDRM
          NETWORK    NETID=NETA
   HOSTA  CDRM       CDRDYN=YES, CDRSC=OPT
          GWPATH     GWN=NCPB, ADJNET=NETA, ADJNETSA=1, ADJNETEL=1
```

GWN — This keyword specifies the name of the GWNCP that is to be used for sessions with HOSTA. The GWN keyword is mutually exclusive to the SUBAREA keyword. Either can be used in the GWPATH definitions, but if GWN= is *not* specified, SUBAREA is required.

ADJNETEL — This value is the element number of the destination subarea - in this case, HOSTA. The ADJNETSA,ADJNETEL combination represents the network address of HOSTA in NETA.

Subarea Connection Considerations - NCP B

NCP B SA13

✓ Change the NETID in the *non-native* network definitions
- The null network (NETX) no longer exists. NCP B Subarea 23 is now associated with NETA. In the NETWORK definitions for this connection, **NETID=NETA** must be specified.

✓ Change PATH statements in the *non-native*, (NETID=NETA, SUBAREA=23), definitions
- No changes are required to the *native* network PATH statements
- Remove PATH statements for DESTSA=21 (optional)
- Change PATH statements for DESTSA=1 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 37XX, definitions for this link should be removed from the NCP gen.
- If this link is going to be kept in place on the 37XX, 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, NETID=NETA, PUTYPE=4, ADDR=04mmmmmmmmmmmm,...
```
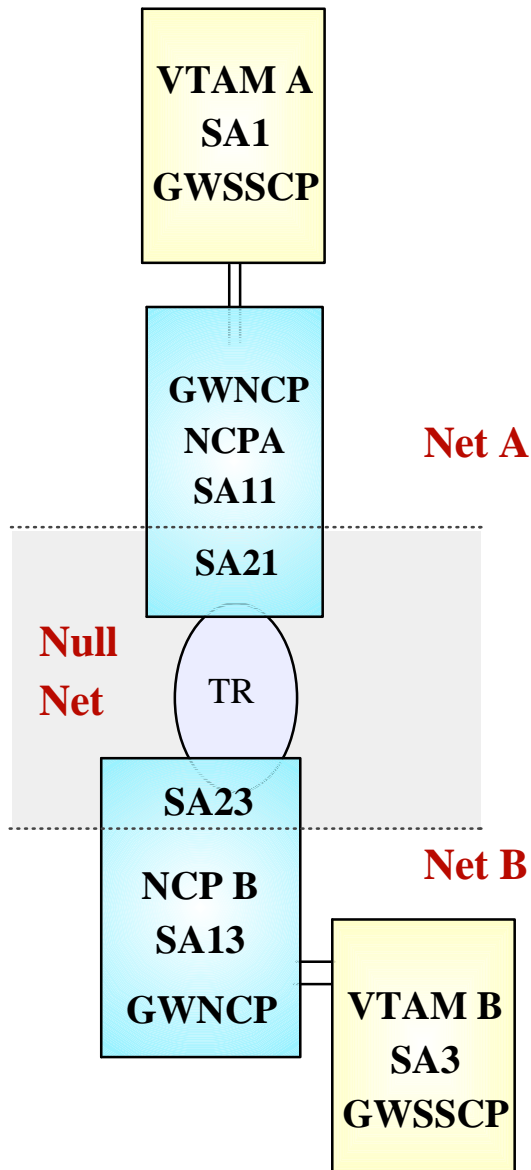
LOCADD the token-ring address of this TIC; this value must match the address specified for the **MACADDR=** keyword of the XCA PU definition in VTAM

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

SNI Back-to-Back with Token Ring Connection

VTAM A
SA1
GWSSCP

GWNCP
NCPA
SA11   Net A

SA21

Null
Net   TR

SA23

         Net B

NCP B
SA13
GWNCP   **VTAM B**
             SA3
             GWSSCP

➤ A channel-attatched GWNCP with token ring
   connections to a remote GWNCP

➤ The connection between GWNCPs is across a null
   network (SNI Back-to-Back configuration).

➤ Target Configurations:

If your target configuration is: **See pages:**

▶ OSA with token-ring connections to the remote
   GWNCP . . . . 61 - 65

▶ Channel attached router providing a token ring
   connection to the remote GWNCP . . . . 66 - 70

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OSA - Token Ring - Remote GWNCP

➤ SNI Back-to-Back Configuration

Local and remote NCPs are GWNCPs

Token Ring connections between the NCPs, across a null network

➤ Local NCP replaced by:

OSA

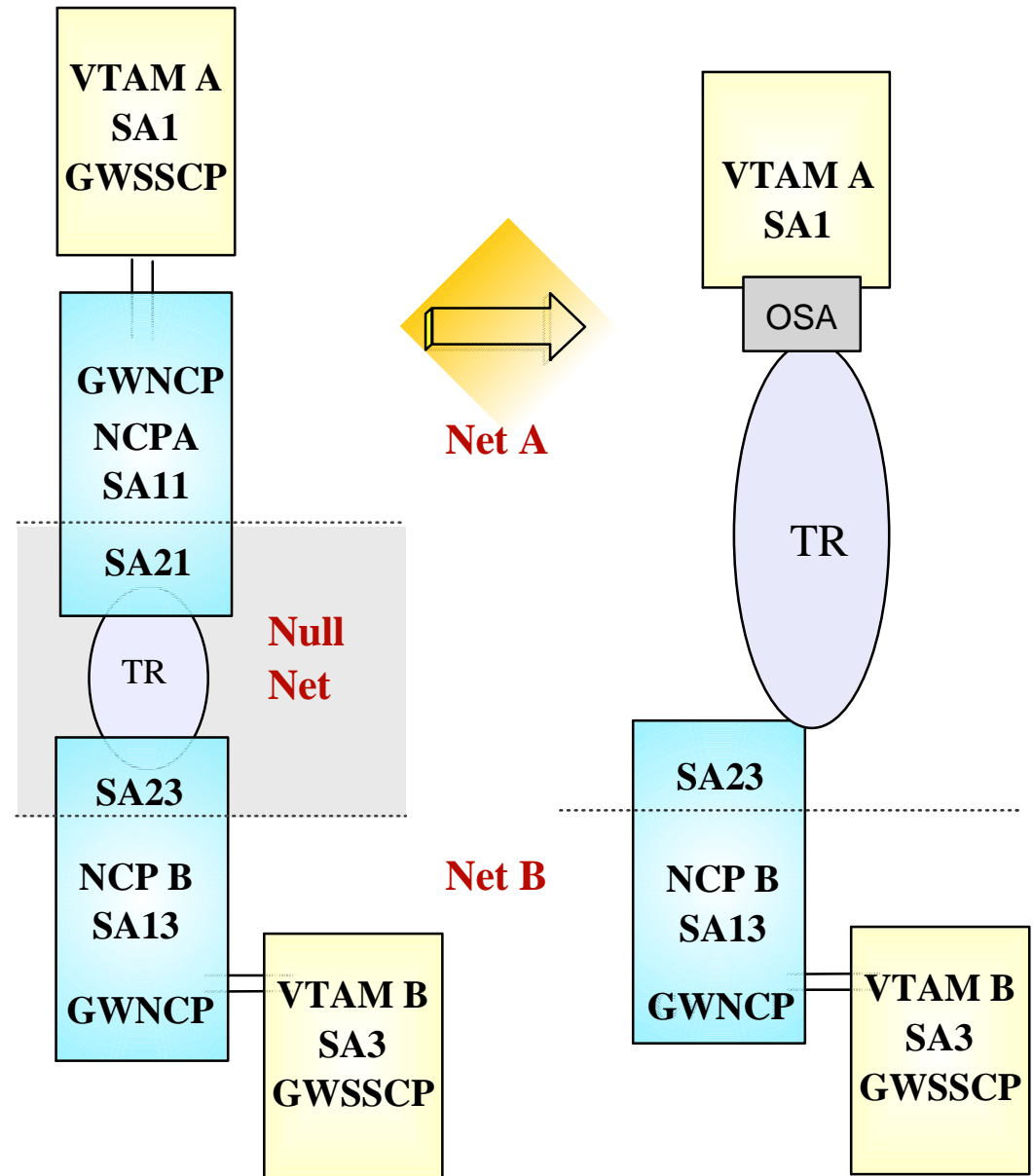➤ Definition Considerations:

VTAM A
  - ◆ Add XCA Major Node
  - ◆ Remove NCP Major Node
  - ◆ Change PATH statements
  - ◆ Change CDRM GWPATH statements

NCP B
  - ◆ Change (SA23) PATH definitions
  - ◆ Change NETWORK NETID statement
  - ◆ Verify MACADDR Specifications

VTAM B
  - ◆ Change CDRM GWPATH statements

Subarea Connection Considerations - Host A

**VTAM A
SA1**

✓ Remove NCP A references from VTAM start-up procedures (i.e. ATCCONxx), and operational CLISTs.

- The NCP Major Node(s) associated with NCP A are no longer required, and can be removed from the libraries (optional)

✓ Change PATH statements

- Remove PATH statements for DESTSA=11 (optional)
- Add PATH statements for DESTSA=23

```
PATH2N   PATH   DESTSA=23,
                ERO=(23,1),...
```

✓ 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=23, 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=** keyword defined in the logical link definitions for this connection in the NCP

Subarea Connection Considerations - Host A, SNI Definitions

**VTAM A
SA1**

✓ Change CDRM definitions for HOST B

- Remove GWPATH statements from the HOSTB CDRM definitions. VTAM A is no longer a GWSSCP for this connection, and does not use the GWPATH definitions to establish sessions with VTAM B.

- Add HOSTB CDRM statements to specify Subarea 23, with an appropriate element number, as the network address representing HOSTB in this network (NETA).

- *Sample* CDRM definitions:

```
        VBUILD    TYPE=CDRM
        NETWORK   NETID=NETB
HOSTB   CDRM      CDRDYN=YES, CDRSC=OPT,  SUBAREA=23, ELEMENT=1
```

SUBAREA   This value points to the GWNCP subarea which has defined the representation (GWNAU) for HOSTB in NETA. The Subarea and Element numbers combine to form the network address for HOSTB in NETA.

ELEMENT   If not coded, this value will default to 1. If the NCP B *non-native* (HOSTA) definitions include a GWNAU ELEMENT= for HOSTB, the value provided in the CDRM statements <u>must</u> match the ELEMENT value coded in the GWNAU definitions.

Subarea Connection Considerations - Host B, SNI Definitions

<table>
<tr><td>

VTAM B

SA3

</td><td>

✓ Change GWPATH statements for HOSTA CDRM definitions. The null network (NETX) that used to be adjacent to NETB no longer exists. NETA and NETB are now adjacent to each other, and the GWPATH definitions must be changed to reflect the new relationship. Coding options for GWPATH include:

</td></tr>
</table>

- ADJNET is now **NETA**.

- ADJNETSA is now **1**

- SUBAREA, if coded, is **13**

- ELEMENT defaults to 1. If this value is coded, it <u>must</u> match the ELEMENT specified in the GWNAU definition for HostA, as coded in the *native* network (NETB) portion of NCP B.

- *Sample* CDRM definitions:

```
         VBUILD    TYPE=CDRM
         NETWORK   NETID=NETA
HOSTA    CDRM      CDRDYN=YES, CDRSC=OPT
         GWPATH    GWN=NCPB, ADJNET=NETA, ADJNETSA=1, ADJNETEL=1
```

GWN
: This keyword specifies the name of the GWNCP that is to be used for sessions with HOSTA. The GWN keyword is mutually exclusive to the SUBAREA keyword. Either can be used in the GWPATH definitions, but if GWN= is *not* specified, SUBAREA is required.

ADJNETEL
: This value is the element number of the destination subarea - in this case, HOSTA. The ADJNETSA,ADJNETEL combination represents the network address of HOSTA in NETA.

Subarea Connection Considerations - NCP B

NCP B SA13

✓ Change the NETID in the *non-native* network definitions
- The null network (NETX) no longer exists. NCP B Subarea 23 is now associated with NETA. In the NETWORK definitions for this connection, **NETID=NETA** must be specified.

✓ Change PATH statements in the *non-native*, (NETID=NETA, SUBAREA=23), definitions
- No changes are required to the *native* network PATH statements
- Remove PATH statements for DESTSA=21 (optional)
- Change PATH statements for DESTSA=1 to reflect an Adjacent SA of 1. *Example:*

```
PATH1   PATH   DESTSA=1,
               ER0=(1, 1),...
```

✓ Verify the INN link specifications
- Verify NETID= specifications on the link PU 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, NETID=NETA, PUTYPE=4, ADDR=04mmmmmmmmmmmm,...
```
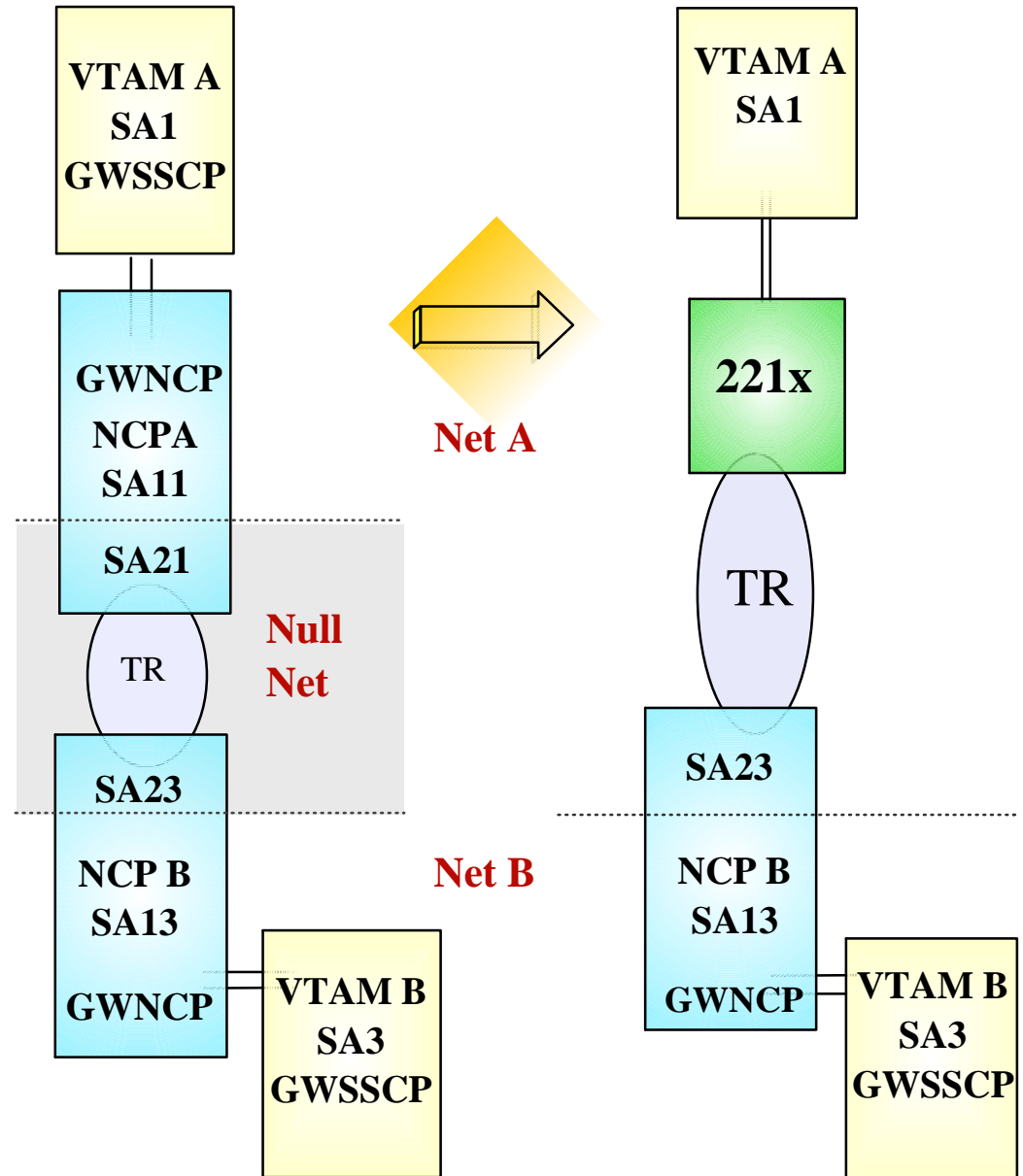
LOCADD — the token-ring address of this TIC; this value must match the address specified for the **MACADDR=** keyword of the XCA PU definition in VTAM

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

Channel-attached Router - TR - GWNCP

➤ SNI Back-to-Back Configuration

  Local and remote NCPs are GWNCPs

  Token Ring connections between the
  NCPs, across a null network

➤ Local NCP replaced by:

  Channel-attached router

➤ Definition Considerations:

  VTAM A
  - ◆ Add XCA Major Node
  - ◆ Remove NCP Major Node
  - ◆ Change PATH statements
  - ◆ Change CDRM GWPATH statements

  NCP B
  - ◆ Change (SA23) PATH definitions
  - ◆ Change NETWORK NETID statement
  - ◆ Verify MACADDR specifications

  VTAM B
  - ◆ Change CDRM GWPATH statements

Left diagram:

VTAM A
SA1
GWSSCP

GWNCP
NCPA
SA11

SA21

TR — Null Net

SA23

NCP B
SA13
GWNCP

VTAM B
SA3
GWSSCP

Net A

Net B

Right diagram:

VTAM A
SA1

221x

TR

SA23

NCP B
SA13
GWNCP

VTAM B
SA3
GWSSCP

Subarea Connection Considerations - Host A

VTAM A SA1

✓ Remove NCP A references from VTAM start-up procedures (i.e. ATCCONxx), and operational CLISTs.

- The NCP Major Node(s) associated with NCP A are no longer required, and can be removed from the libraries (optional)

✓ Change PATH statements

- Remove PATH statements for DESTSA=11 (optional)
- Add PATH statements for DESTSA=23

```
PATH2N   PATH   DESTSA=23,
                ER0=(23,1),...
```

✓ 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=23, 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=** keyword defined in the <u>logical</u> link definitions for this connection in the NCP

Subarea Connection Considerations - Host A, SNI Definitions

VTAM A SA1

✓ Change CDRM definitions for HOST B

- Remove GWPATH statements from the HOSTB CDRM definitions. VTAM A is no longer a GWSSCP for this connection, and does not use the GWPATH definitions to establish sessions with VTAM B.

- Add HOSTB CDRM statements to specify Subarea 23, with an appropriate element number, as the network address representing HOSTB in this network (NETA).

- *Sample* CDRM definitions:

```
            VBUILD     TYPE=CDRM
            NETWORK    NETID=NETB
   HOSTB  CDRM         CDRDYN=YES, CDRSC=OPT,  SUBAREA=23, ELEMENT=1
```

SUBAREA   This value points to the GWNCP subarea which has defined the representation (GWNAU) for HOSTB in NETA. The Subarea and Element numbers combine to form the network address for HOSTB in NETA.

ELEMENT   If not coded, this value will default to 1. If the NCP B *non-native* (HOSTA) definitions include a GWNAU ELEMENT= for HOSTB, the value provided in the CDRM statements must match the ELEMENT value coded in the GWNAU definitions.

Subarea Connection Considerations - Host B, SNI Definitions

VTAM B SA3

✓ Change GWPATH statements for HOSTA CDRM definitions. The null network (NETX) that used to be adjacent to NETB no longer exists. NETA and NETB are now adjacent to each other, and the GWPATH definitions must be changed to reflect the new relationship. Coding options for GWPATH include:

- ADJNET is now **NETA**.

- ADJNETSA is now **1**

- SUBAREA, if coded, is **13**

- ELEMENT defaults to 1. If this value is coded, it <u>must</u> match the ELEMENT specified in the GWNAU definition for HostA, as coded in the *native* network (NETB) portion of NCP B.

- *Sample* CDRM definitions:

```
          VBUILD     TYPE=CDRM
          NETWORK    NETID=NETA
HOSTA     CDRM       CDRDYN=YES, CDRSC=OPT
          GWPATH     GWN=NCPB, ADJNET=NETA, ADJNETSA=1, ADJNETEL=1
```

GWN   This keyword specifies the name of the GWNCP that is to be used for sessions with HOSTA. The GWN keyword is mutually exclusive to the SUBAREA keyword. Either can be used in the GWPATH definitions, but if GWN= is *not* specified, SUBAREA is required.

ADJNETEL   This value is the element number of the destination subarea - in this case, HOSTA. The ADJNETSA,ADJNETEL combination represents the network address of HOSTA in NETA.

Subarea Connection Considerations - NCP B

NCP B
SA13

✓ Change the NETID in the *non-native* network definitions
  - The null network (NETX) no longer exists. NCP B Subarea 23 is now associated with NETA. In the NETWORK definitions for this connection, **NETID=NETA** must be specified.

✓ Change PATH statements in the *non-native*, (NETID=NETA, SUBAREA=23), definitions
  - No changes are required to the *native* network PATH statements
  - Remove PATH statements for DESTSA=21 (optional)
  - Change PATH statements for DESTSA=1 to reflect an Adjacent SA of 1. ***Example:***

```
PATH1    PATH   DESTSA=1,
                ER0=(1, 1),...
```

✓ Verify the INN link specifications
  - Verify NETID= specifications on the link PU 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, NETID=NETA, PUTYPE=4, ADDR=04mmmmmmmmmmmm,...
```

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

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