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DMS SuperNode STP/SSP Integrated Node

SNA7 to MNA7 Conversion Guide

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NORTEL
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DMS SuperNode STP/SSP Integrated Node

SNA7 to MNA7 Conversion Guide

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About this document

Purpose

Throughout this document a single point code (SPC) Common Channel Signaling 7 (CCS7) DMS service switching point/signaling transfer point (SSP/STP) integrated node (INode) is abbreviated and referred to as an SNA7 INode. The multiple point code CCS7 DMS SSP/STP INode is abbreviated and referred to as an MNA7 INode.

This document describes the message transfer part (MTP) and signaling connection control part (SCCP) conversion of an SNA7 INode office to an MNA7 INode office. This document applies to the conversion of a single SNA7 INode, the first INode in a mated pair of SNA7 INodes and the second INode in a mated pair of SNA7 INodes.

The conversion procedures described apply to all INode products (for example, DMS-MTX and DMS-300). No additional procedures are required for other product layers.

Audience

This document is intended for personnel who are involved in planning, engineering, and administering this conversion.

How this document is organized

This document is divided into sections as follows:

- Introduction
- Material requirements
- Precautions and preparations
- Single SNA7 INode to MNA7 INode Conversion Procedure
- Mated SNA7 INode to MNA7 INode Conversion Procedure
- List of terms
- Appendices

How to check the version and issue of this document

The version and issue of the document are indicated by numbers; for example, 01.01.

The first two digits indicate the version. The version number increases each time the document is updated to support a new software release. For example, the first release of a document is 01.01. In the next software release cycle, the first release of the same document is 02.01.

The second two digits indicate the issue. The issue number increases each time the document is revised but rereleased in the same software release cycle. For example, the second release of a document in the same software release cycle is 01.02.

To determine which version of this document applies to the software in your office and how documentation for your product is organized, check the release information in one of the following documents:

- DMS-100 Product Documentation Directory, 297-8991-001
- Digital Switching Systems DMS-300 Document Index, 297-2301-001
- Digital Switching Systems UCS DMS-250 Document Index, 297-2643-001
- DMS-250 Master Index of Publications, 297-2521-001
- Wireless Systems DMS-MTX Master Index of Publications, 411-2131-001

References in this document

The following documents are referenced in this document:

- One Night Process Software Delivery Procedures, 297-8991-303
- Software Optionality Control User Guide, 297-8991-901
- Translations Guide
- LIU7 External Routing Activation Guide, 297-8991-030

What precautionary messages mean

The types of precautionary messages used in Nortel (Northern Telecom) documents include attention boxes and danger, warning, and caution messages.

An attention box identifies information that is necessary for the proper performance of a procedure or task or the correct interpretation of information or data. Danger, warning, and caution messages indicate possible risks.

Examples of the precautionary messages follow.

ATTENTION Information needed to perform a task

Attention

If the unused DS-3 ports are not deprovisioned before a DS-1/VT Mapper is installed, the DS-1 traffic will not be carried through the DS-1/VT Mapper, even though the DS-1/VT Mapper is properly provisioned.

DANGER Possibility of personal injury task



DANGER Risk of electrocution

Do not open the front panel of the inverter unless fuses F1, F2, and F3 have been removed. The inverter contains high-voltage lines. Until the fuses are removed, the high-voltage lines are active, and you risk being electrocuted.

WARNING Possibility of equipment damage



WARNING Damage to the backplane connector pins

Align the card before seating it, to avoid bending the backplane connector pins. Use light thumb pressure to align the card with the connectors. Next, use the levers on the card to seat the card into the connectors.

CAUTION Possibility of service interruption or degradation

CAUTION
Possible loss of service

Before continuing, confirm that you are removing the card from the inactive unit of the peripheral module. Subscriber service will be lost if you remove a card from the active unit.

How commands, parameters, and responses are represented

Commands, parameters, and responses in this document conform to the following conventions.

Input prompt (>)

An input prompt (>) indicates that the information that follows is a command:

>BSY

Commands and fixed parameters

Commands and fixed parameters that are entered at a MAP terminal are shown in uppercase letters:

>BSY CTRL

Variables

Variables are shown in lowercase letters:

>BSY CTRL ctrl_no

The letters or numbers that the variable represents must be entered. Each variable is explained in a list that follows the command string.

Responses

Responses correspond to the MAP display and are shown in a different type:

FP 3 Busy CTRL 0: Command request has been submitted.

FP 3 Busy CTRL 0: Command passed.

The following excerpt from a procedure shows the command syntax used in this document:

- 1 Manually busy the CTRL on the inactive plane by typing
>BSY CTRL ctrl_no

and pressing the Enter key.

where

ctrl_no is the number of the CTRL on the inactive plane

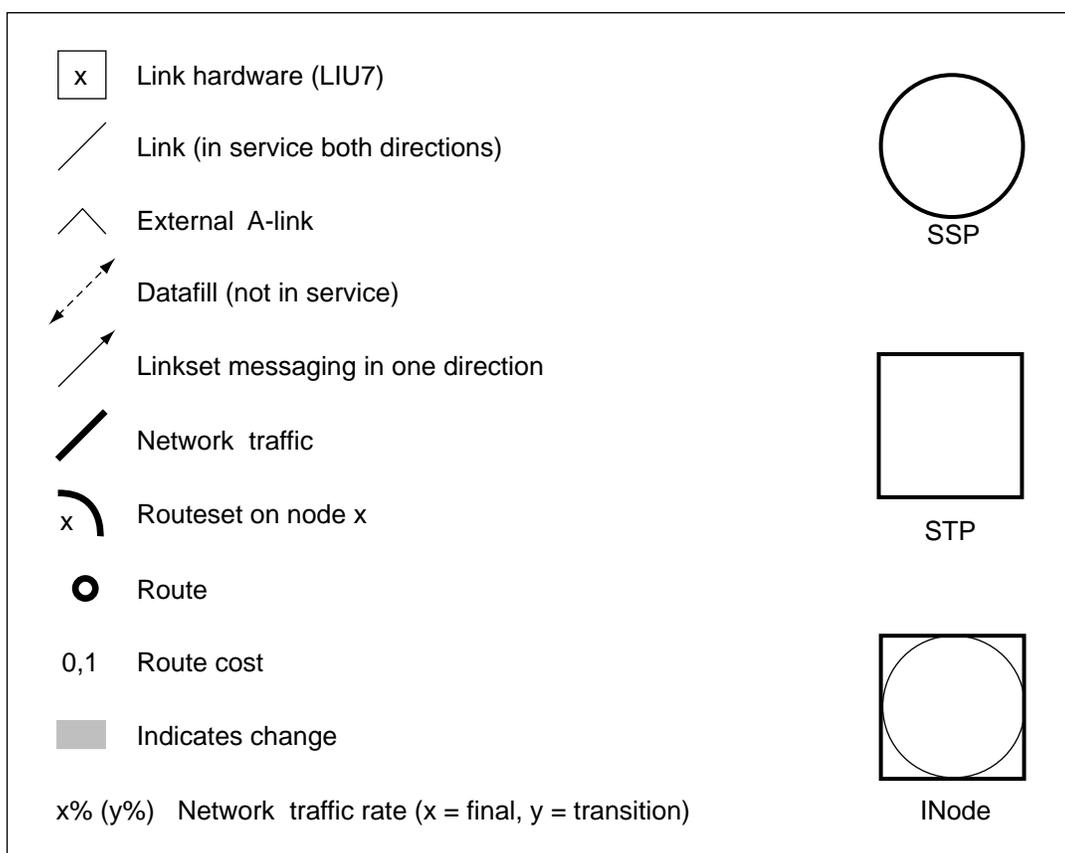
Example of a MAP response:

FP 3 Busy CTRL 0: Command request has been submitted.

FP 3 Busy CTRL 0: Command passed.

How nodes and links are represented

Illustrations used in this document contain symbols identified in the following legend:

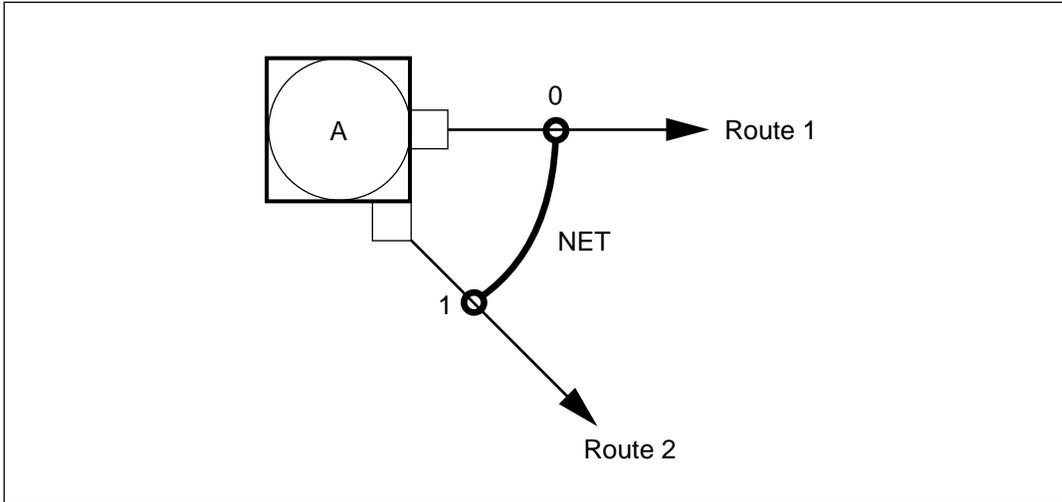


How route costs are represented

The diagrams in Chapter 4 and Chapter 5 show the nodes in a system along with the routes and routesets between nodes. Some routes have a value assigned to them. The value indicates the relative cost associated with using that route to send traffic from one node to other nodes in the system. The route with the lowest value is the preferred route between nodes.

Route costs are represented by numbers that appear beside each route. Routesets appear as routes linked together, with the destination node names shown next to the routeset. In Figure 1, NET is the destination node of the routeset containing Route 1 and Route 2. The cost of routing traffic from node A to NET using Route 1 is 0. The cost using Route 2 is 1. Route 1 is the preferred route in this routeset.

Figure 1 Example of a node with two routes to destination NET



In cases where multiple routesets lead to several destination nodes over the same set of routes, the destination nodes are represented by a column of letters. The column of letters appears beside its routeset on the diagram. In Figure 2, the letters B, C, and D appear beside the routeset on node A. This indicates that node A can route traffic to nodes B, C, and D on three routesets over routes 1, 2, and 3.

Route costs are represented by columns of numbers beside each route. Each number in the column represents a route cost. The first number in the column corresponds with the first letter in the column of destination nodes. In Figure 2, the first number in the number column for Route 1 is 1, and the first letter in the column of letters is B. This means the cost of routing traffic from node A to node B on Route 1 is 1.

The second number in the column of numbers corresponds to the second letter in the column of letters, and the third number corresponds to the third letter. In Figure 2, the second number in the column of numbers for Route 1 is 0. This means that the cost of routing traffic from node A to node C along Route 1 is 0. Therefore, Route 1 is the preferred route for routing traffic from node A to node C. Similarly, the third number is 0 and the third letter is D. This means that the cost of routing traffic from node A to node D along route 1 is 0. Notice that the third number on Route 3 is also 0. This means that the cost is the same to route traffic from node A to node D on Route 1 or Route 3.

Figure 2 Example of a node with routes to nodes B, C, and D

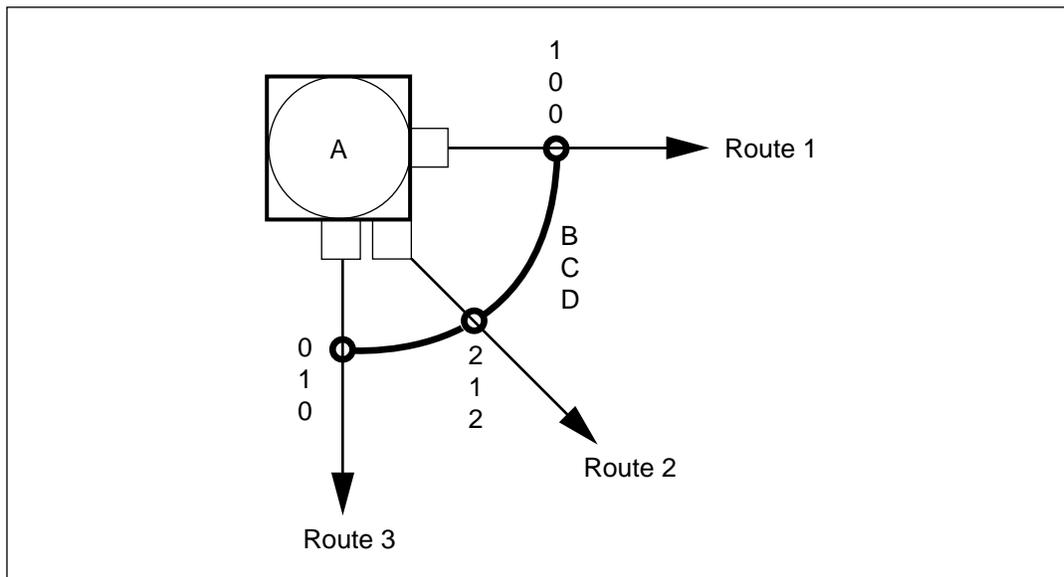


Table shows the relative cost associated with each route and node shown in Figure 2.

Table 1 Costs associated with each route in Figure 2

Destination node	Route 1 cost	Route 2 cost	Route 3 cost
B	1	2	0
C	0	1	1
D	0	2	0

Chapter 1: Introduction

This document provides the following procedures:

- converting a single CCS7 network address (SNA7) integrated node (INode) office into a multiple CCS7 network address (MNA7) INode office
- converting the first SNA7 INode office in a mated pair of SNA7 INodes to an MNA7 INode office
- converting the second SNA7 INode office in a mated pair of SNA7 INodes to an MNA7 INode office

This document contains the following chapters:

- Chapter 1: Introduction, which states the purpose of this document and provides an overview of the conversion procedures
- Chapter 2: Material requirements, which identifies the hardware and software requirements that must be met before starting the conversion
- Chapter 3: Precautions and preparations, which describes the precautions and the preparatory effort to be completed before starting the conversion
- Chapter 4: Single SNA7 INode to MNA7 conversion procedure, which describes the conversion of a single SNA7 INode or the first INode in a mated pair
- Chapter 5: Mated SNA7 INode to MNA7 INode conversion procedure, which describes the conversion of the second INode in a mated pair of INodes

Background

Nortel developed the DMS INode to allow operating companies to combine the functionality of a service switching point (SSP) and a signaling transfer point (STP) in a single physical location. The combined SSP and STP lowers operating costs.

There are two types of INodes: the SNA7 INode and the MNA7 INode. The SNA7 INode uses one address or point code. Traffic received by the STP portion of the INode is routed directly to the SSP portion of the same INode.

The MNA7 INode provides a separate address or point code for the SSP and the STP portions. In an MNA7 INode, circuit related traffic received by the SSP can be routed either to the STP portion of the same INode or to the STP portion of the mate INode, depending on traffic requirements. Because it can route circuit related traffic to either of the STPs, the MNA7 INode provides the load balancing capabilities of separate SSP and STP sites, and retains the lower cost advantages of the SNA7 INode.

Diagrams in this chapter

The diagrams in Chapter 1 show the SNA7 INode office as node A prior to conversion. The converted MNA7 INode office is shown as logical nodes A and B. The diagrams show CCS7 traffic as traffic between nodes H and the network, shown as Network. The diagrams do not show traffic between nodes A and C.

The percentage values shown in parentheses indicate the range of traffic flow while the steps in a section are being completed. The percentage values outside of the parentheses represent the final traffic flow throughout the network after the steps in a section are completed.

The diagrams in each section show the configuration after the steps in that section have been completed.

All symbols used in the diagrams conform to the legend in the “About this document” section of the guide.

Conversion procedure overview

This chapter describes a simplified, high-level overview of the procedure used to convert a single SNA7 INode or each of the INodes in a mated pair of INodes.

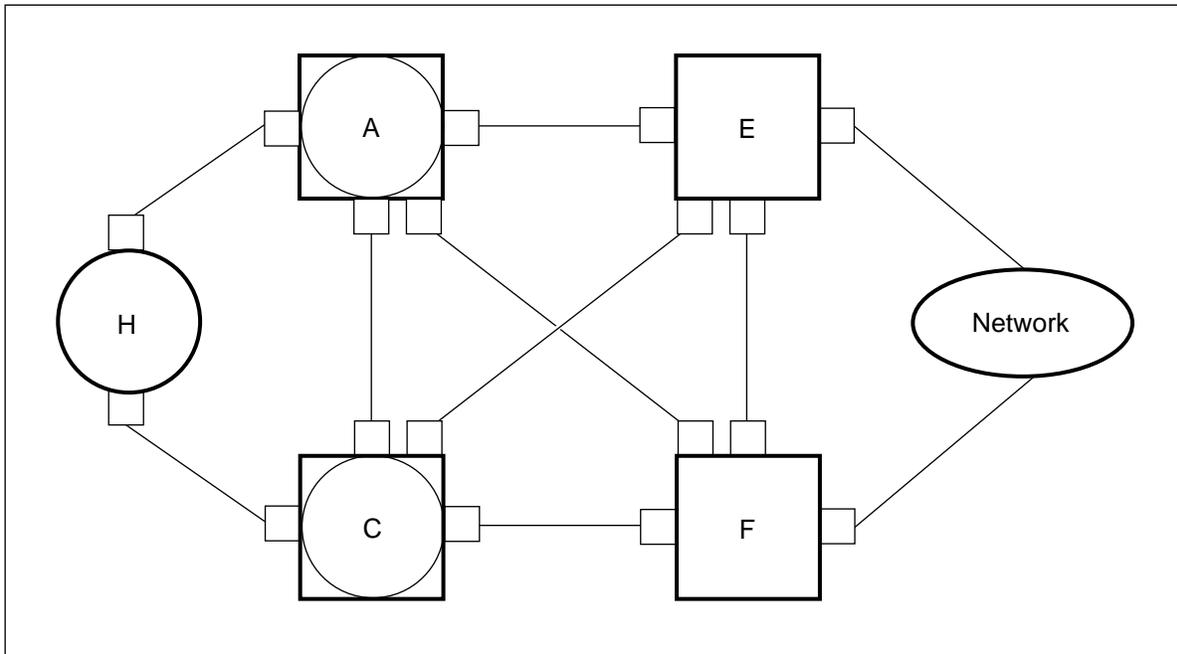
Initial conditions

Ensure that the following conditions exist at the start of the conversion procedure:

- Node A is a single point code (SNA7) INode office running software based on release TL06 or higher. See Appendix G “ONP and SOC procedure” for details.
- All routesets, linksets, and link hardware connected to the STP quad are in service. See Appendix E “Addition of new link hardware” for details.

Figure 1-1 shows the initial network configuration at the start of the conversion procedure.

Figure 1-1 Initial network configuration

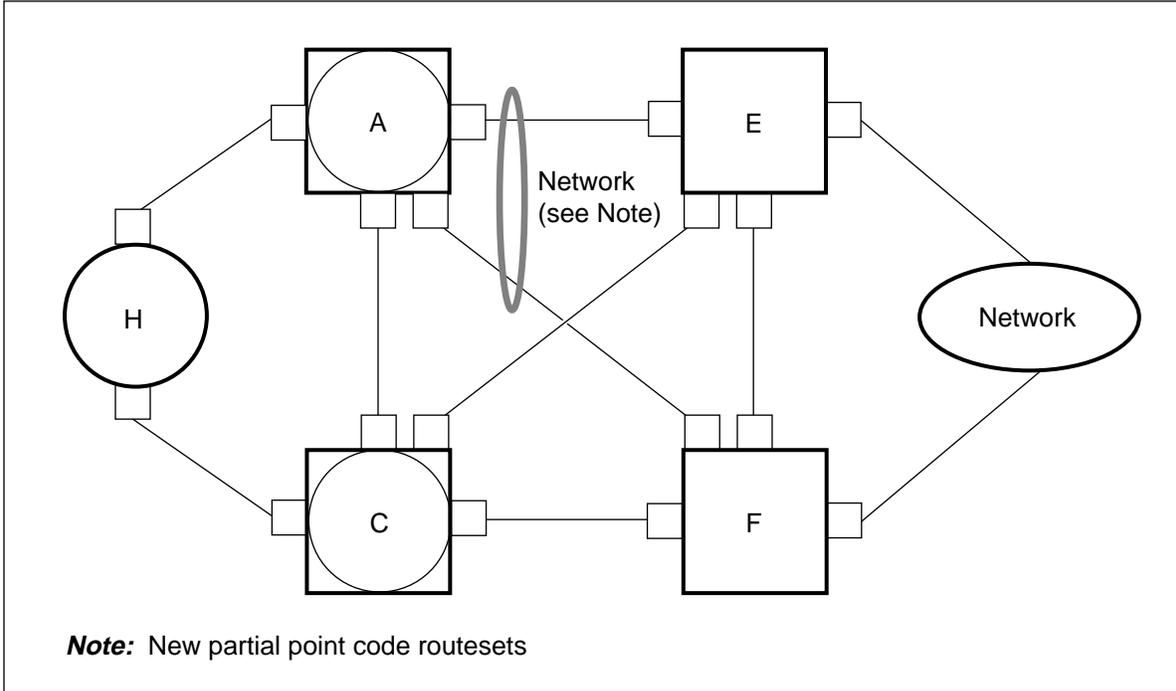


The following sections provide, in a simplified format, the steps required to convert a single SNA7 INode or each of the INodes in a mated pair of INodes to an MNA7 INode.

Reduce routeset count and remove unneeded routes

- 1 On node A enter partial point code datafill into Table C7RTESET for routesets that contain only linksets AF and AE for each Network routeset that contains linksets AC, AF, and AE. Link AC will be removed in a later step in the conversion procedure.
- 2 Remove the full point code routesets.

Figure 1-2 Configuration after reducing routeset count and removing unneeded routes

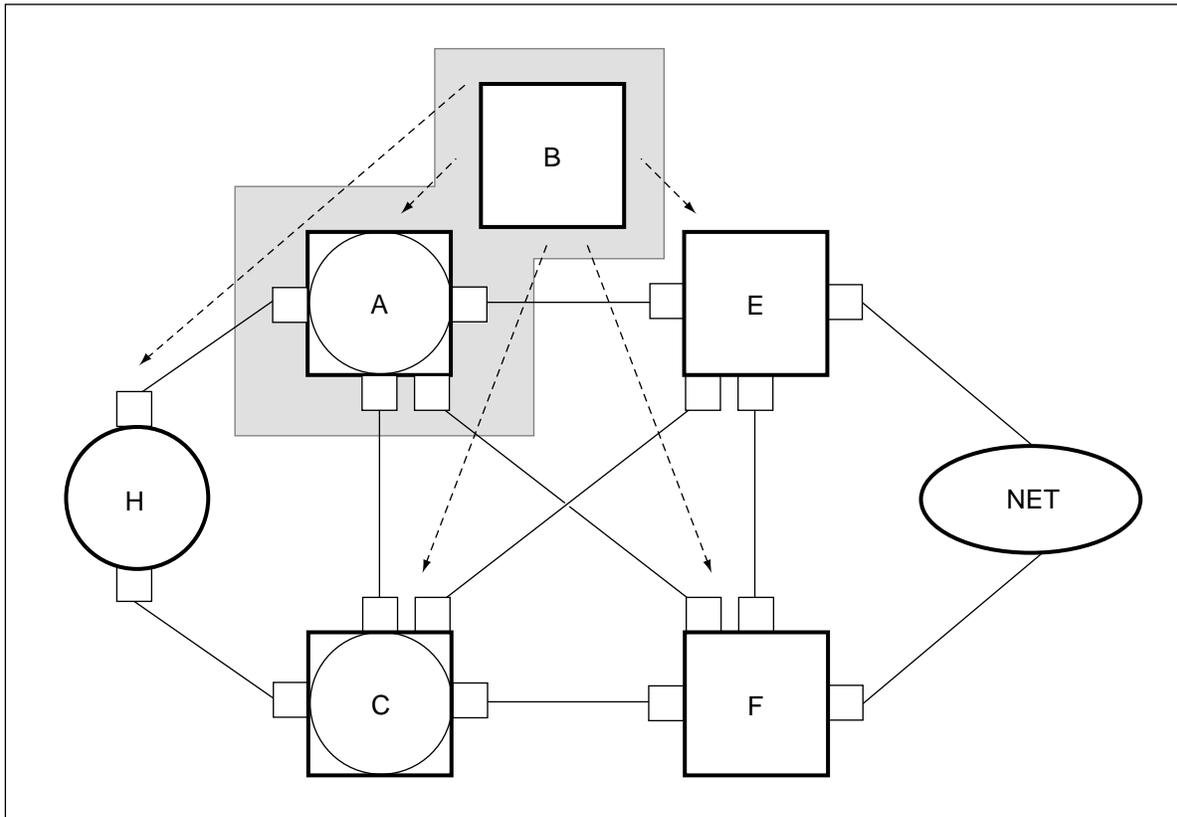


Add new logical STP node, linkset, and routeset datafill

- 3 Add the new logical STP node B.
- 4 Add routeset and linkset datafill on the new logical STP node.

Note: The Network routeset datafill on node B is similar to the Network datafill on node A.

Figure 1-3 Configuration after adding new logical STP, linkset and routeset datafill

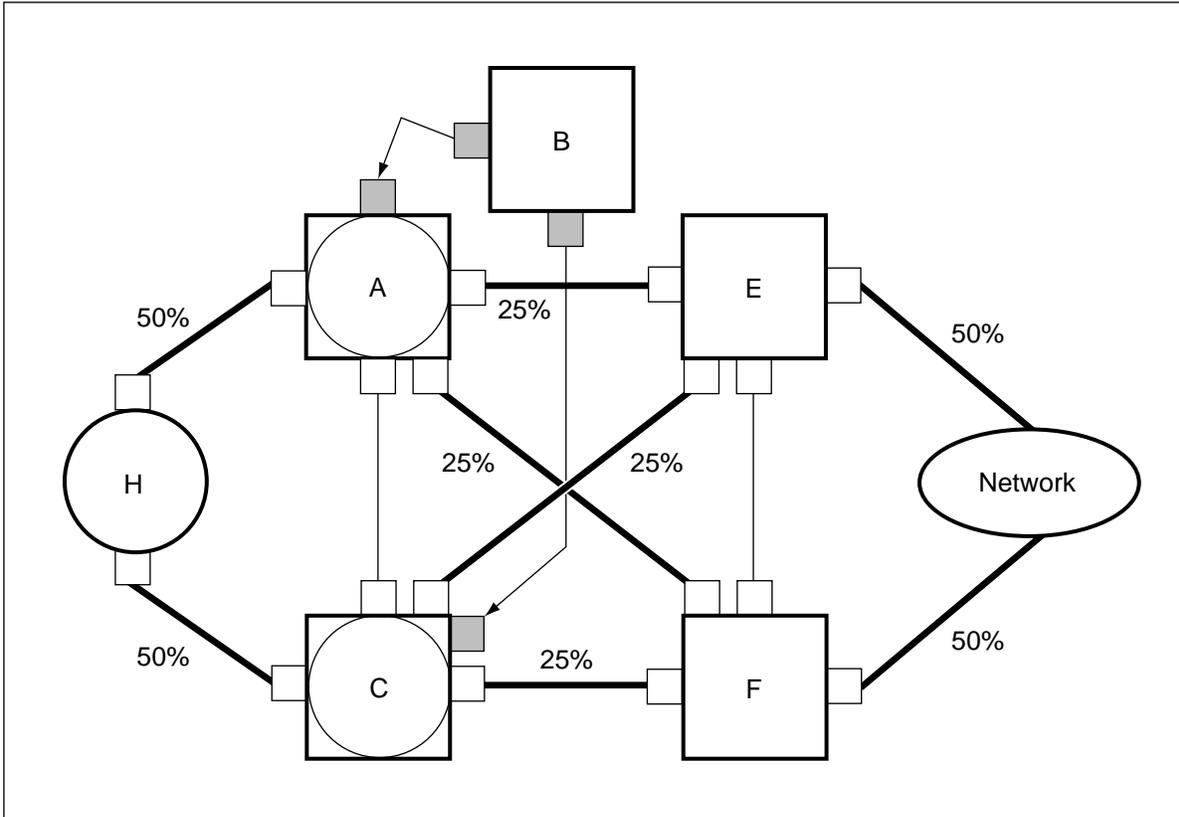


Add new LIU7 link hardware

- 5 Add one new LIU7 to logical node A, two to logical node B, and one to node C.
- 6 Physically connect nodes A and B to form an external A-link.
- 7 Physically connect nodes B and C together to form a new C-link.

Note: The INode office being converted, logical nodes A and B, requires three new LIU7s. The other INode office, node C, requires one new LIU7.

Figure 1-4 Configuration after adding new LIU7 hardware

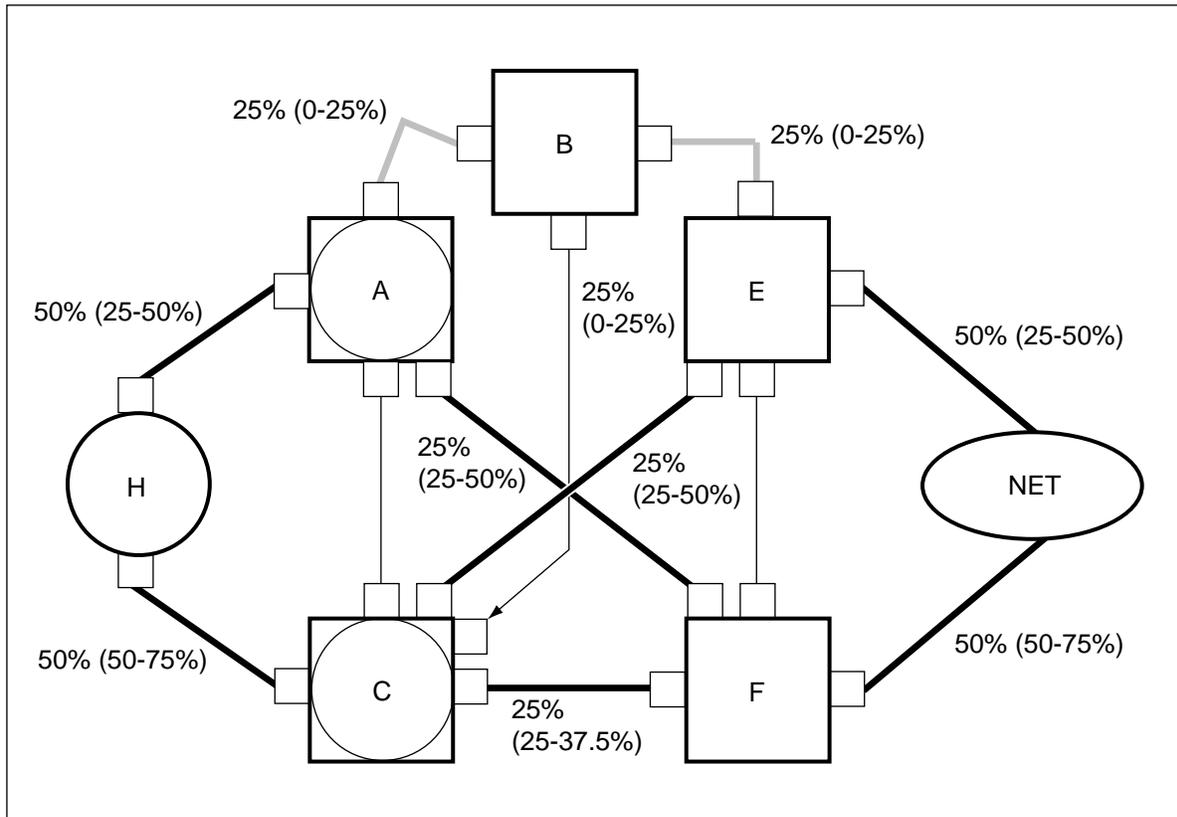


Route traffic through the logical STP node

- 8 Reroute traffic through link AE to connect node B.
- 9 Reroute traffic through link EA to connect node B.

Note: After completing these steps, network traffic begins routing through logical STP node B. Alternate routing takes place on links AF and EC while the AE links are taken out of service. The one-way BC link routes traffic while routes BE or BA are out of service.

Figure 1-5 Configuration after routing network traffic through logical STP node B

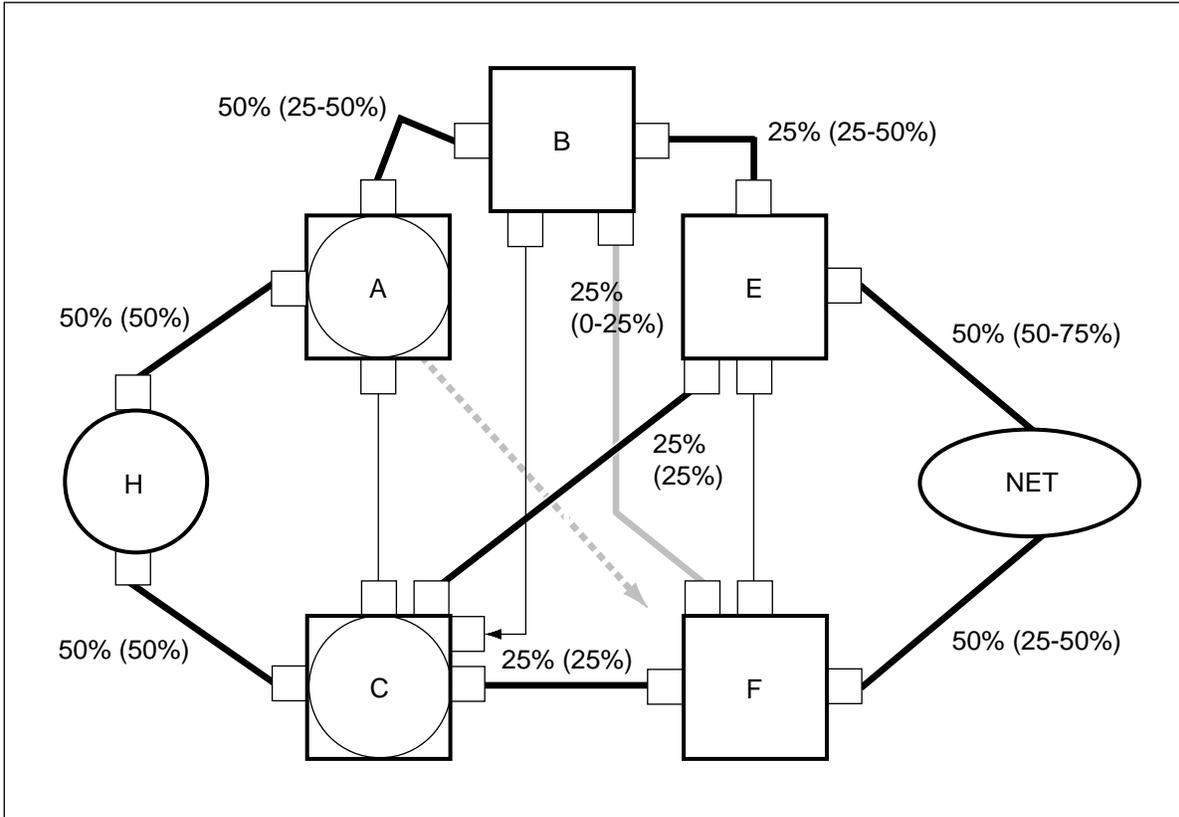


Redirect traffic on the STP to INode B-link

- 10 Redirect link AF to connect link BF.

Note: Network traffic uses alternate routing on routes BE and FC while link AF is out of service.

Figure 1-6 Configuration after redirecting network traffic through the STP to INode B-link



Reposition the INode-to-INode C-link and create the A-link

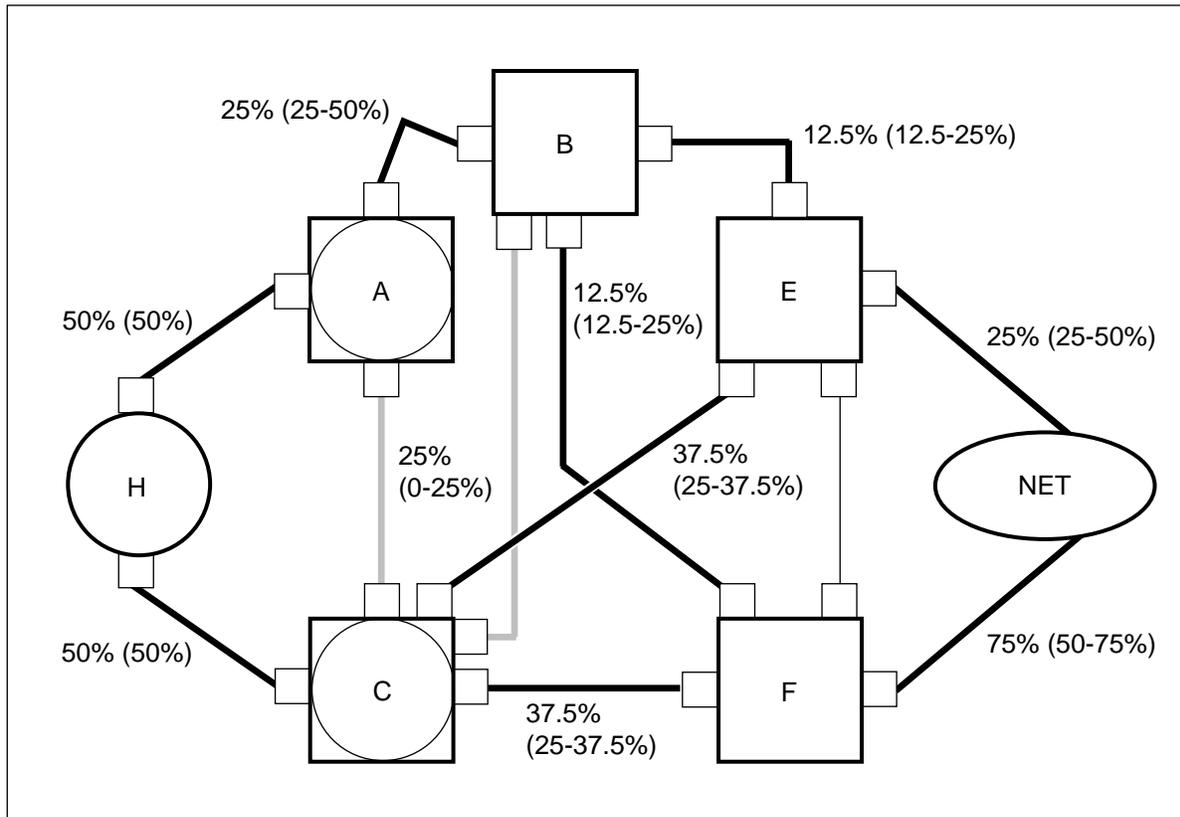


CAUTION
Call processing service outage

No call processing takes place between node C and node A while the link between node C and node A is out of service.

- 11 Redirect traffic from C-link CA to C-link CB.
- 12 Add an A-link for link AC.

Figure 1-7 Configuration after repositioning the INode-to-INode C-link and creating the A-link

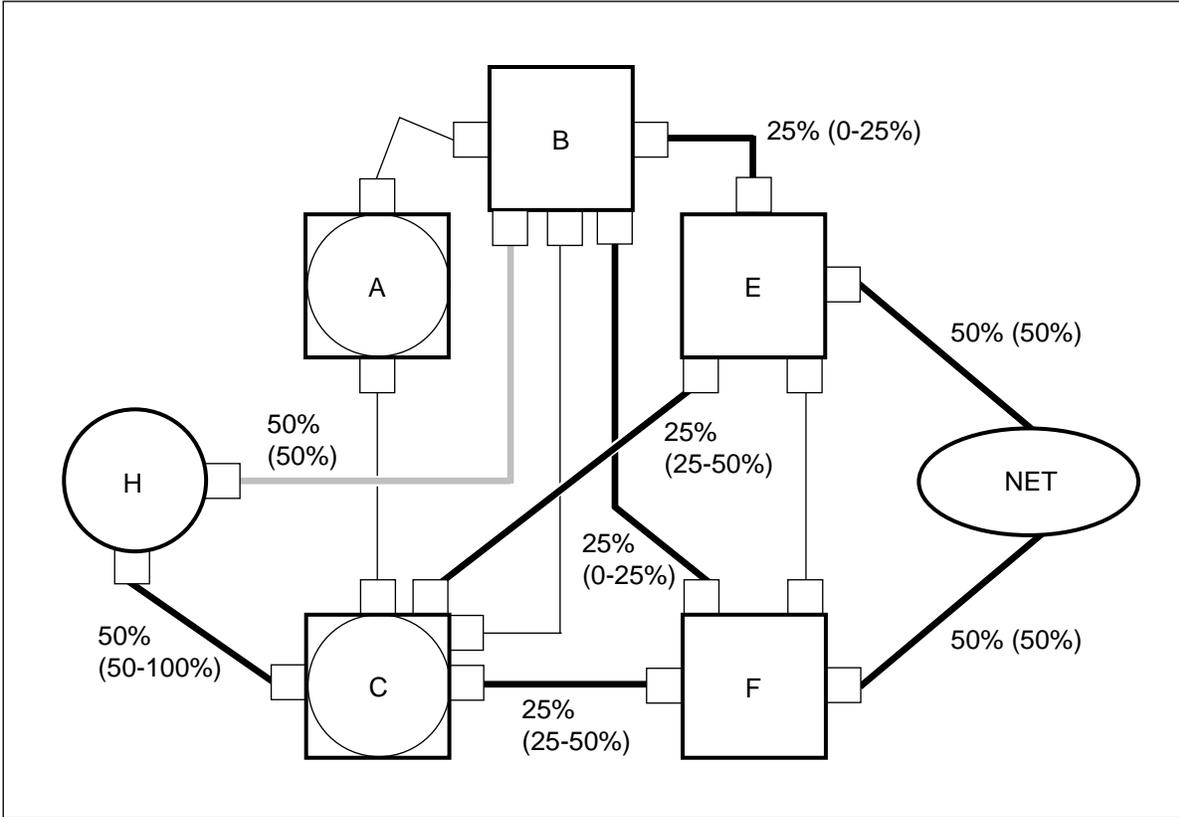


Redirect traffic on the SSP to INode A-links

- 13 Redirect traffic from link HA to link HB.

Note: Alternate traffic routing takes place on route HC while link AH is out of service.

Figure 1-8 Configuration after repositioning the SSP to INode A-links



Convert the SNA7 node to an MNA7 node

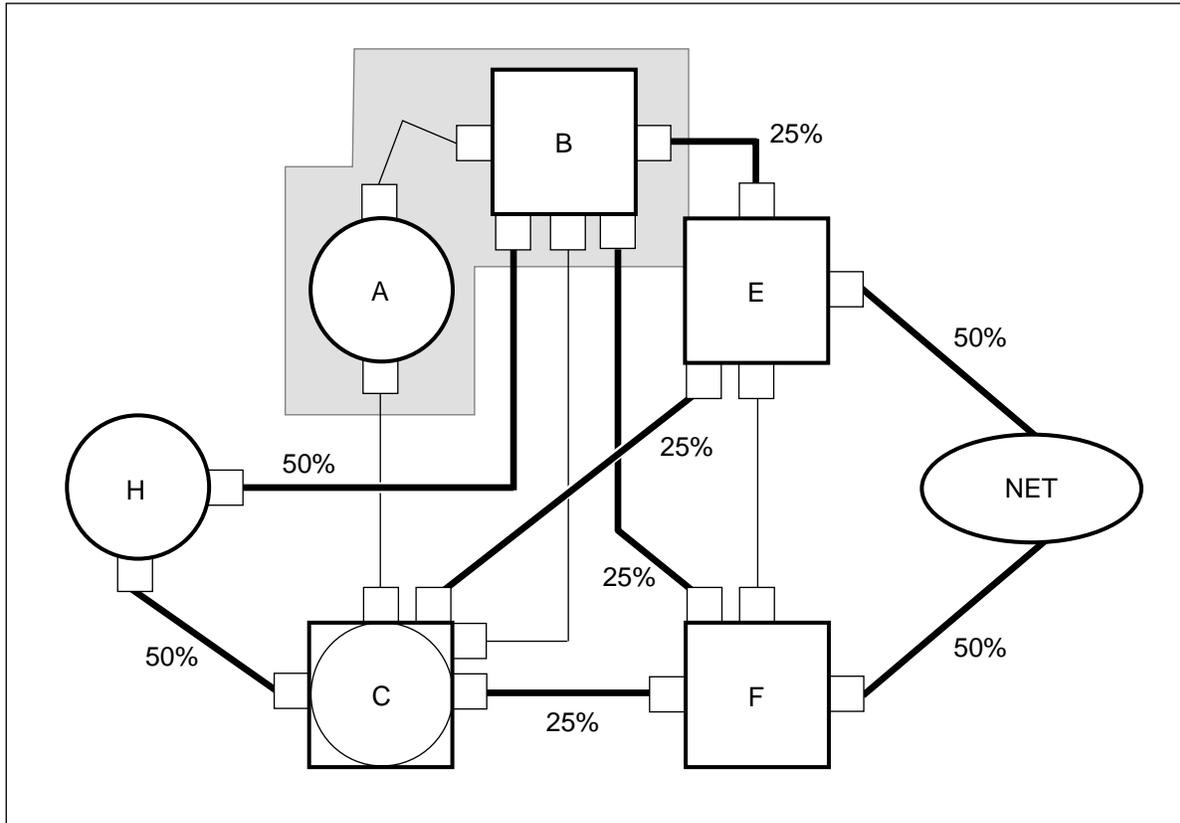


CAUTION
Possible loss of service

This step converts node A into an SSP node. SSP nodes cannot perform STP routing functions. Ensure that node A is not performing STP routing functions before the node type is modified. See Appendix D for details.

- 14 On node A, change the node type datafill in Table C7NETWRK from SSP_STP to SSP.

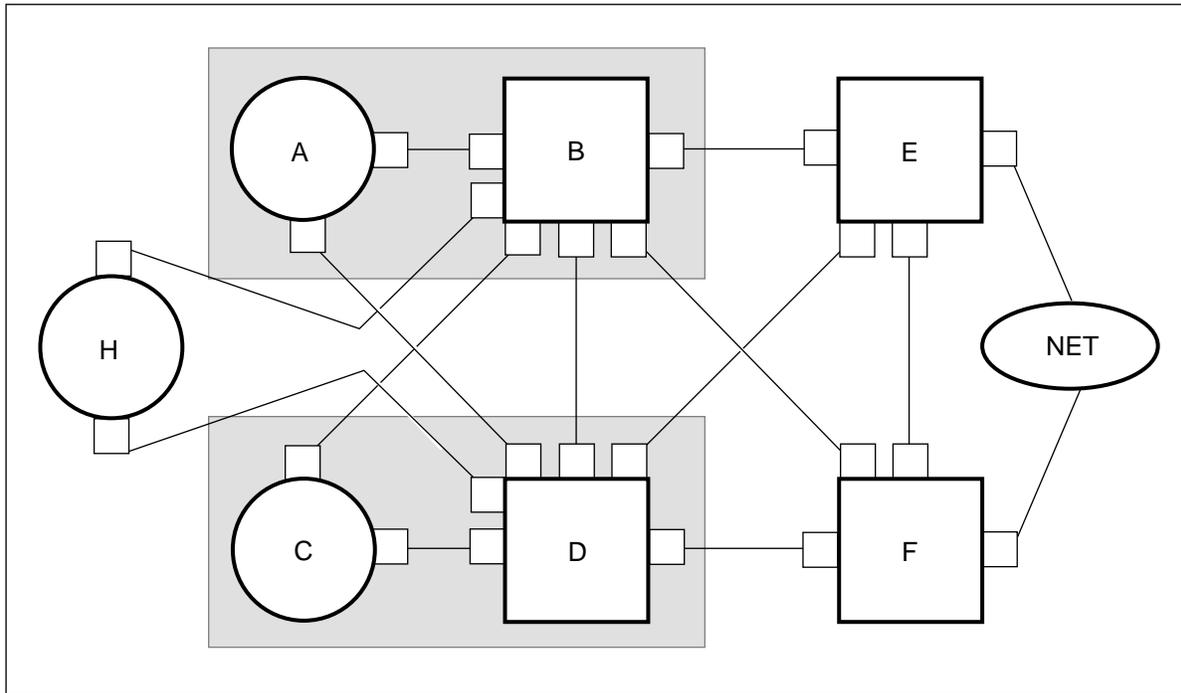
Figure 1-9 Configuration after converting the SNA7 node to an MNA7 node



- 15** If performing the procedure on a mated pair of INodes, repeat the procedure for the second mated INode.

Figure 1-10 shows the configuration of the system after both SNA7 INode offices in a mated pair have been converted to MNA7 offices.

Figure 1-10 Final configuration after converting mated INode pair



Chapter 2: Material requirements

This chapter describes the hardware and software required for the following:

- converting a single SNA7 INode office into an MNA7 INode office
- converting the first SNA7 INode office in a mated pair of SNA7 INodes to an MNA7 INode office
- converting the second SNA7 INode office in a mated pair of SNA7 INodes to an MNA7 INode office

Contact your first level of support to determine if additional materials or documents are required to support the conversion on your configuration.

Hardware requirements

The operating company is responsible for obtaining the new hardware that is required to support the new CCS7 links.

The conversion procedure requires new SS7 link hardware for the new external A-links and C-links. The total number of new LIU7s needed depends on the number of links required between adjacent nodes. A minimum of eight new LIU7s are required to convert a mated pair of INodes that are part of a standard STP quad configuration.

Install and fully test all new hardware before the actual conversion takes place. Refer to Appendix E, “Addition of new link hardware” for details concerning the addition and testing of new link hardware.

Enable LIU7 external routing if more than 255 routesets are required during or after the conversion. External routing requires at least two additional LIU7 routers. Activate external routers only after the SNA7 INode has been converted to an MNA7 INode in Table C7NETWRK. Refer to Appendix B, “Activating routeset expansion and LIU7 external routing” for more information.

The conversion procedure does not require any temporary hardware.

Software requirements

All INodes must be running software based on release TL06 or greater.

Passcode requirements

This procedure requires passwords to activate LIU7 external routing and software optionality control (SOC) options. Contact your Regional Customer Support service representative to obtain your C7RTR and MNA7 SOC right-to-use (RTU) key codes. Refer to Appendix B, “Activating routeset expansion and LIU7 external routing” and Appendix G, “ONP and SOC procedure” for details.

Chapter 3: Precautions and preparations

This chapter contains the precautions and preparations for the SNA7-to-MNA7-INode conversion procedure.

Minimize call processing outages by adhering to all limitations, precautions, and steps described in the conversion procedure.

Note: One brief service outage occurs when the SNA7 INode C-link is repositioned.

Precautions

Review this whole document before starting the conversion procedure.

Convert one INode office at a time.

Ensure that the office to be converted and all connecting nodes and network connections are in service. The network and connecting nodes must be in service to allow alternate routing during the conversion.

If possible, use partial point codes to reduce the number of routesets during the conversion procedure. After the conversion procedure is complete, enable routeset expansion and enter full point code routesets on the internal SSP and internal STP nodes if required. Routeset expansion requires extra LIU7 hardware.

Review and coordinate the upgrade procedure with the other operating companies in the network that are involved in the conversion procedure.

Additional links, routesets, and linksets are required to perform the upgrade. Allow the new hardware to soak before it carries live traffic.

The steps described in this document assume a standard STP quad configuration. If the STP configuration is different, the steps in this document may not apply. Nortel recommends creating a site-specific method of procedure (MOP) based on your particular office, before starting the

conversion procedure. A site-specific MOP reduces the risk of error during the upgrade and describes any special cases not covered by this conversion guide.

Perform this conversion procedure during times of low network traffic.

Preparation

Before starting the conversion procedure, arrange all materials, tools, and test equipment at the work location. Ensure that all new hardware required for the conversion is on site.

Obtain a new point code for each new logical node from the network operator.

Take an image of the existing office before the conversion. Take another image after the conversion has been completed.

Where additional links are required to perform the conversion, and before beginning any procedural steps, ensure that link interface units (LIU7) are either equipped in the link interface shelf (LIS) or have been engineered for the conversion.

This procedure requires passwords to activate LIU7 routing and software optionality control (SOC) options. Contact your Regional Customer Support service representative to obtain your C7RTR, STP SOC on INode, and MNA7 SOC right-to-use (RTU) key codes. Refer to Appendix G, “ONP and SOC procedure” and Appendix B, “Activating routeset expansion” for more information.

Remove all unneeded datafill from CCS7 routing tables before starting the conversion procedure. Removing all unneeded datafill eliminates confusion during the conversion process and removes data dependencies between the routing tables. For example, if SCCP routing on GTT is not being used by the office, remove all C7GTT datafill before starting the conversion.

To avoid confusion, change the names of routesets and linksets when they are repositioned from one far-end point code to another. Refer to Appendix F, “Useful utilities” for more information.

Limitations

This procedure assumes a certain cost for each routeset. The cost assigned to some routesets may need to be modified after the conversion procedure is completed in order to obtain the desired traffic flow patterns.

Partial point codes cannot be used to replace routesets that route SCCP traffic because SCCP applications require full point codes to identify the final destination node. Routesets that perform routing functions only are not used by SCCP tables and can be changed to partial point code routesets. If you want to delete the original full point code routesets, remove any tuples from tables

that depend on those routesets before deleting the routesets. Refer to Appendix A “Partial Point Codes” for more information.

If Table C7RTESET uses partial point codes for originating application messages, the application must provide the full point code in another way. For example, DMS-MTX applications provide full point code information using their application-specific table SYSCON.

In certain cases, partial point code routesets are used to eliminate a CCS7 outage by creating alternate routes while the original routeset is modified. Routesets can be modified without providing alternate routes by quickly busying, changing, and returning to service the given routeset. This method will cause a brief service outage. When a CCS7 outage occurs, calls on the affected SSPs are not dropped, but new calls cannot be initiated. If the outage is very short, the reduction in service will have very little effect, provided the network traffic rate is low.

The number of service outages depends on the redundancy of MTP and SCCP routing. If alternate routes are not available for MTP or GTT routing when the links providing the messaging are redirected, message loss will occur.

Use gateway screening to check that all STP routing has been removed from the single point code INode logical node (SSP_STP) before the node type is changed to an SSP node. Gateway screening cannot monitor messages without discarding them, but the logs generated by gateway screening will give an early indication that STP routing is taking place. Refer to Appendix D, “Using gateway screening to monitor for STP routing” for more information.

Network conversion planning and coordination

Ensure that operating company personnel are present at each office that is affected by a link change during any step of the procedure. Nortel recommends that you appoint a conversion project manager to coordinate all the steps for the conversion.

When planning the conversion, review each step and outline the procedures that apply to the network being converted.

Chapter 4: Single SNA7 INode to MNA7 INode conversion procedure

This chapter provides the procedures for converting a single SNA7 INode to a MNA7 INode. Use this procedure to convert the first node in a mated pair.

This chapter contains the following procedures:

- Enter datafill into the logical STP node
- Add new CCS7 linkset and routeset datafill
- Establish SCCP and C7ALIAS provisioning and connectivity
- Establish network connectivity
- Establish full STP quad connections
- Remove unnecessary network connections
- Convert the node type

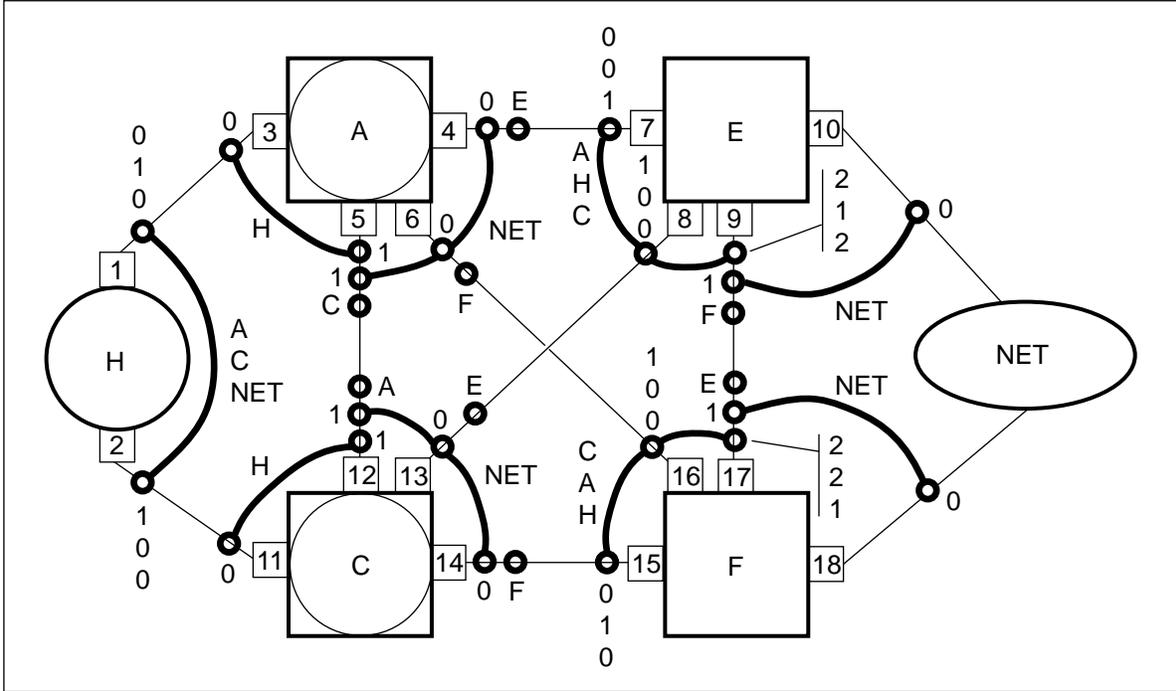
Initial network configuration

Before you start the conversion procedure, the network configuration is in the following state:

- Node A is a single point code INode office that has been upgraded to software release STPI06 or greater.
- All routesets, linksets, and link hardware connected to the STP quad are in service.

Figure 4-1 shows the office configuration at the start of the conversion process.

Figure 4-1 Initial network configuration



Determine new hardware requirements

Determine any new hardware requirements before starting the conversion procedure.

Note: All hardware used during the conversion procedure remains in service after the procedure is finished. The procedure requires no temporary hardware.

Enter datafill into the logical STP node

Change full point code routesets to partial point code routesets in Table C7RTESET. You can restore full point code routesets, if desired, after the conversion is completed.

Note: See Appendix A, “Point codes” for a more detailed explanation of point codes.

Reduce routeset count and remove extra routesets**CAUTION**
Possible loss of service

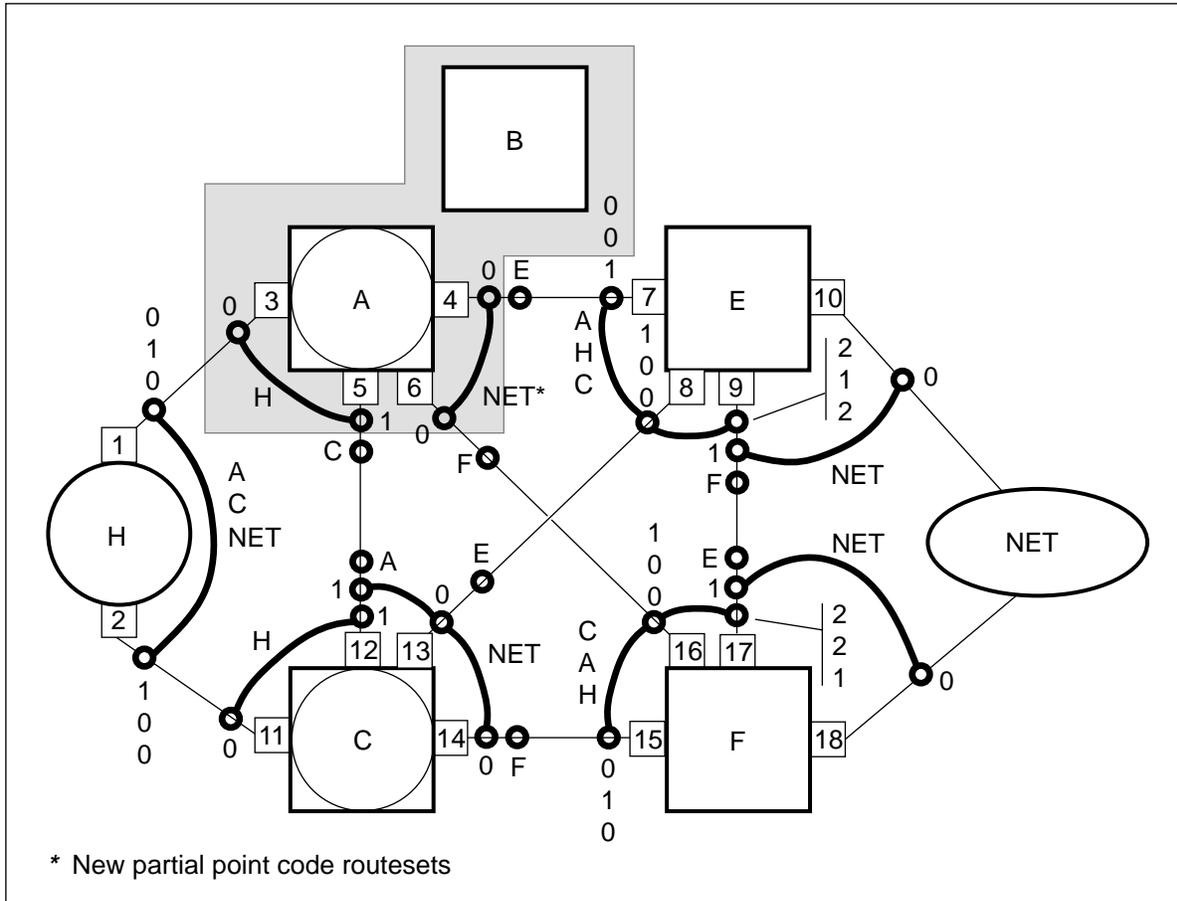
If partial point code routesets exist for the NET routesets on node A, you can temporarily add full point code routesets to Table C7RTESET while the partial point code routesets are modified. If this is not possible because of the maximum routeset limit of 255, do not take linkset AC offline until the entire conversion is complete. After the conversion is complete you can increase the routeset limit and add full point code routesets.

- 1 On node A, enter datafill to create new partial point code NET routesets. Ensure that the new routesets contain only linksets AF and AE (same cost) for the same full point code network or cluster as each routeset that contains linksets AC, AF, and AE.
- 2 On node A, busy and return the new partial point code NET routesets to service.
- 3 On node A, force busy, offline and delete the original full point code NET routesets that contain linksets AC, AF, and AE.
- 4 Repeat steps 1 to 3 for each routeset as required.

Note: Later in the conversion procedure INode A will become two logical nodes, A and B, that must share the resources in the office. Substituting partial point code routesets for full point code routesets increases the number of routesets available for logical nodes A and B. The new partial point code routesets are also used to carry network traffic while some of the existing routesets are taken out of service and modified.

Figure 4-3 shows the network configuration after adding datafill for the new logical STP node.

Figure 4-3 Configuration after addition of logical STP node B



Backing out

To back out at this point refer to Appendix C “Backing out.”

Add new CCS7 linkset and routeset datafill

Nodes A and B must share routeset resources because they are in the same office. Add routesets to node B only after you have reduced the number of routesets on node A. Reduce the number of routesets on node A by converting NET routesets to partial point code routesets, as described in the previous section.

Routesets and linksets on node B remain system busy until you add link hardware to the linksets. Avoid generating critical alarms and logs by keeping routesets and linksets offline until you are about to put them into service.

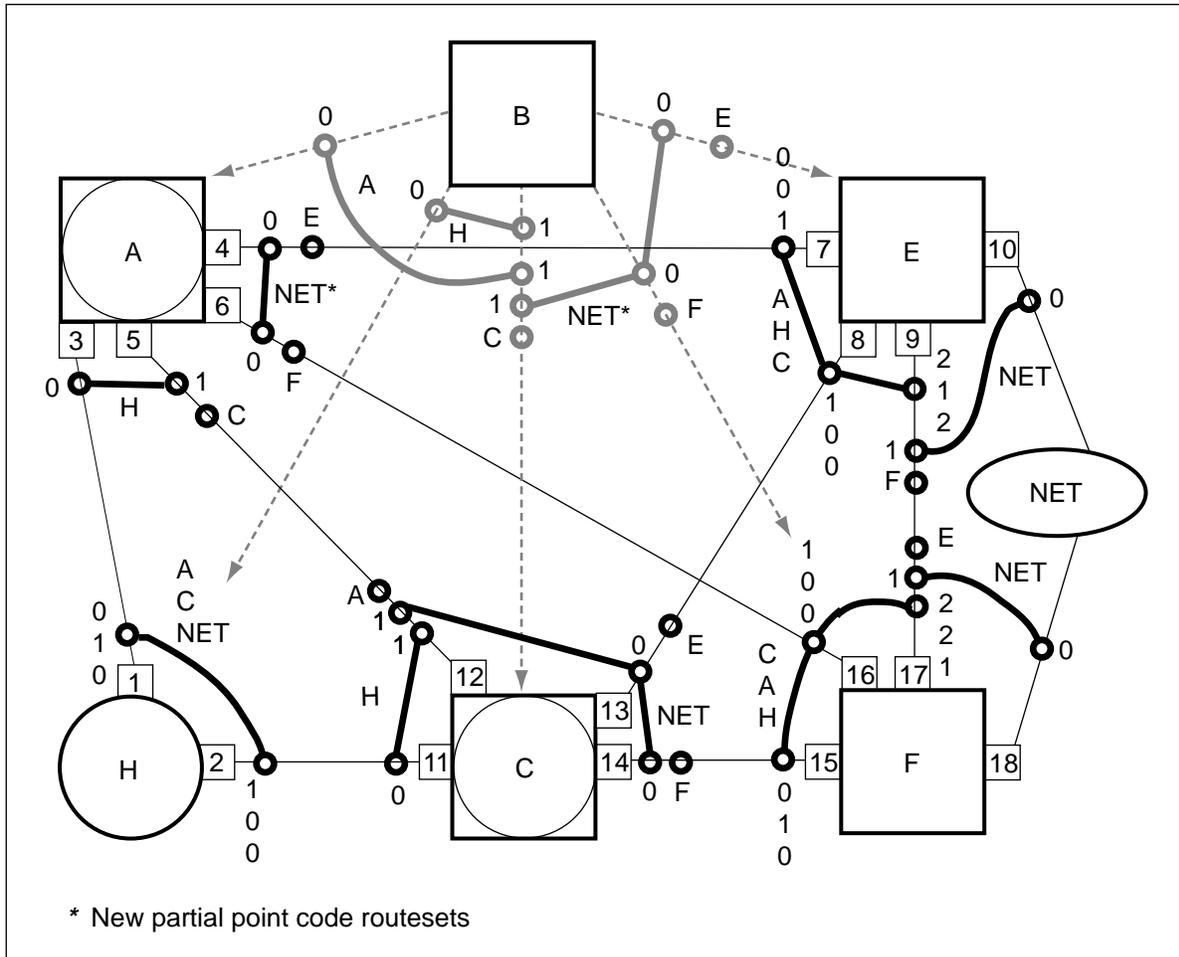
Add new linkset and routeset data to logical STP node B

This procedure adds new linkset and routeset data to the new logical STP node B.

- 1 On node B, add C7LKSET datafill for linksets BA (A-link), BC (C-link), BH (A-link), BE (B-link), and BF (B-link).
- 2 On node B, add C7RTESET datafill to node A for linksets BA (lower cost), and BC (higher cost).
- 3 On node B, add C7RTESET datafill to node H for linksets BH (lower cost) and BC (higher cost).
- 4 On node B, add C7RTESET datafill to node C for linkset BC.
- 5 On node B, add C7RTESET datafill to the NET nodes (both full and partial point code routesets, similar to node A) for linksets BF and BE (equal lower cost) and linkset BC (higher cost).
- 6 On node B, add C7RTESET datafill to node E for linkset BE.
- 7 On node B, add C7RTESET datafill to node F for linkset BF.

Figure 4-4 shows the configuration after adding linkset and routeset data to the logical STP node B.

Figure 4-4 Configuration after adding linkset and routeset data to logical STP B



Backing out

To back out at this point, refer to Appendix C “Backing out.”

Establish SCCP and C7ALIAS provisioning and connectivity

When completing this section, ensure that the following conditions are met:

- The number of tuples in Table C7NETSSN must be less than one half of the total allowable subsystem number (SSN) tuples.
- The SSP/STP and STP subsystem data in Table C7NETSSN must be identical to support SCCP alternate routing functionality.

The steps in the following sections describe how to provision the SCCP tables and Table C7ALIAS.

Note: The subsystems for node B remain system busy until node B is connected to the network and begins routing messages.

Provision Table C7NETSSN

- 1 On node B, duplicate all current C7NETSSN tuples using node B STP routesets. Use routesets with routes that are similar to the SSP/STP routesets used for node A.
- 2 On node B, at the SCCPRPC MAP level, post each remote point code (C7NETSSN tuple).
- 3 Busy and return each remote point code to service.
- 4 On node B, for each remote point code, enter the SCCPRSS MAP level and post all subsystems.
- 5 Busy and return each subsystem to service.

Provision Table C7LOCSSN

- 6 Ensure that only the SSP and SSP_STP nodes contain datafill for table C7LOCSSN.

Note: Table C7LOCSSN tuples must be present and the local subsystems must be in service before the remote point codes on the new logical STP node can be put in service. The system will display INI if the remote point code subsystems are not on the adjacent node.

Provision Table C7RSSCRN

- 7 Ensure that only STP nodes contain datafill for Table C7RSSCRN.
- 8 On node B, replace all SSP/STP routesets in Table C7RSSCRN with their corresponding STP routesets.

Provision Table C7RPLSSN

- 9 On node B, replace all SSP/STP routesets in Table C7RPLSSN with their corresponding STP routesets.

Note: This step moves the replicated subsystem load balancing function to the STP node. The network routes GTT messages on the corresponding internal SSP routesets until the STP routesets in Table C7RPLSSN are in-service.

Provision Table C7GTTYPE

- 10 No changes are necessary.

Provision Table C7ALIAS

- 11 If node A contained datafill in Table C7ALIAS before the conversion, copy the datafill into node B. Do not remove the datafill from node A.

Backing out

To back out at this point refer to Appendix C “Backing out.”

Establish network connectivity

Attention

Co-ordinate all steps in this section with the remote offices.

Add new LIU7 hardware

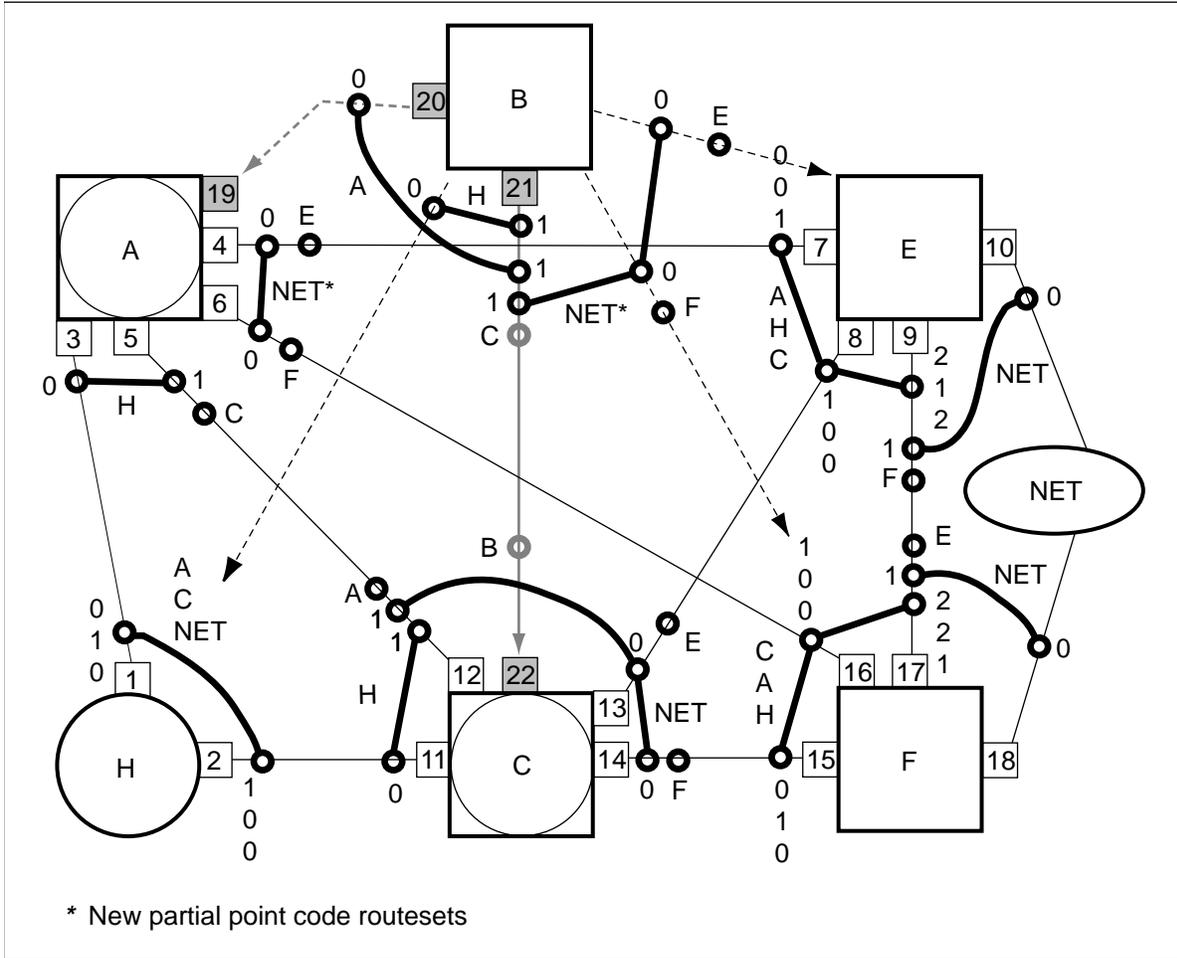
The INode office undergoing conversion requires three new LIU7s and the mate STP requires one new LIU7.

After the following steps are completed, node B is physically connected to the network. Network traffic is not routed through node B until you add network routesets to node B to the adjacent nodes.

- 1 Add one LIU7 to node A and one to node B. Connect nodes A and B together to form an external A-link.
- 2 On nodes A and B, busy and return to service each new LIU7 (LIU7 numbers 19 and 20).
- 3 On node B, add new datafill for linkset BA to Table C7LINK.
- 4 Add another new LIU7 to node B and one to node C. Connect them together to form a new C-link.
- 5 On nodes B and C, busy and return to service the new LIU7s added in step 4 (LIU7 numbers 21 and 22).
- 6 On node B, add new datafill for linkset BC to Table C7LINK.
- 7 On node C, add datafill for linkset CB to Table C7LKSET. The linkset type is C-link.
- 8 On node C, add new datafill for linkset CB to Table C7LINK.
- 9 On node C, add datafill for a routeset to node B using linkset CB, to Table C7RTESET.
- 10 On node B, busy, activate, and return linkset BC to service.
- 11 On node C, busy, activate, and return linkset CB to service.
- 12 On node B, busy and return routeset C to service.
- 13 On node C, busy and return routeset B to service.

Figure 4-5 shows the network configuration after adding new LIU7 hardware.

Figure 4-5 Configuration after adding new LIU7 hardware



Stopping point

The network can be left in this state with minimal risk.

Network routing through node B

After this section is completed network traffic begins routing through logical node B. Alternate routing takes place on links AF and EC while the AE path is taken out of service.

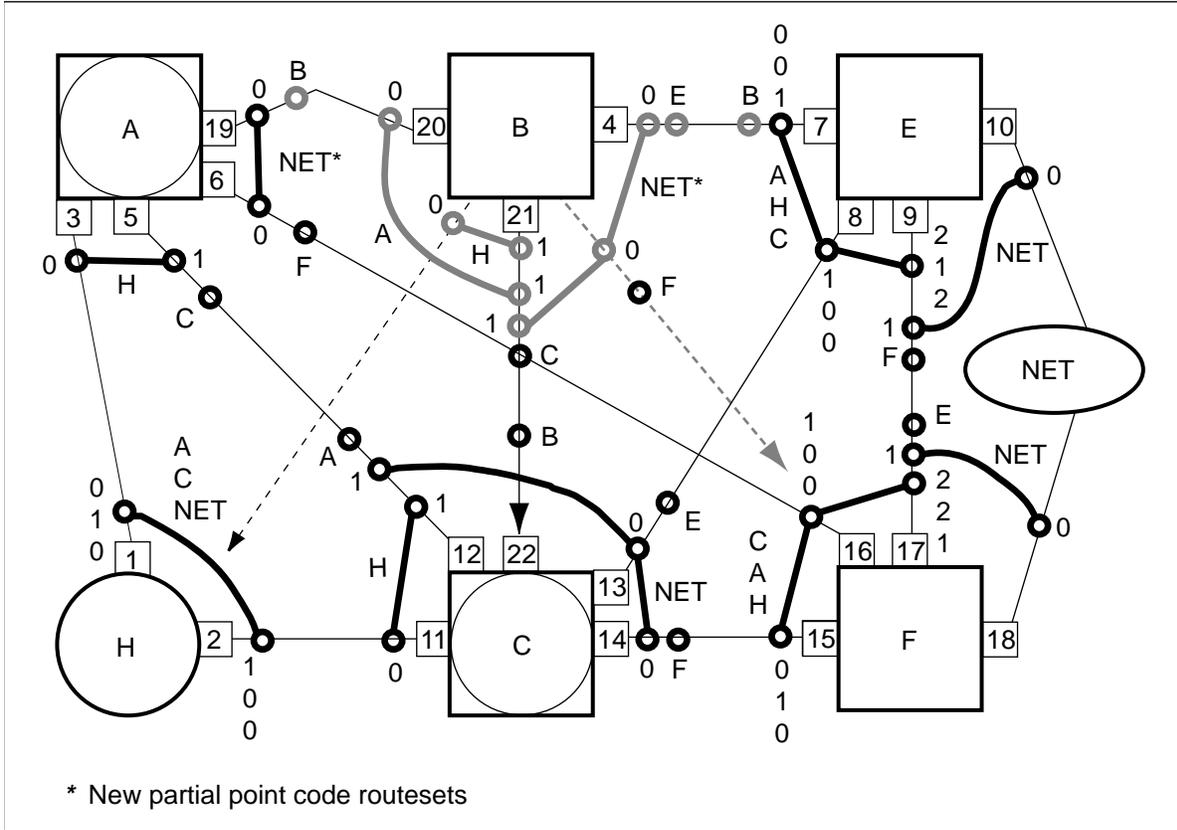
The following conditions exist until node B begins routing network traffic:

- The C-link, BC, routes traffic to node C until the BA and BE routes are in service.
- The subsystem on node A remains system busy until node B is in-service and routing messages.

- 1 On node A, busy, deactivate, and offline linkset AE.
- 2 On node E, busy, deactivate, and offline linkset EA.
- 3 On node A, busy, offline, and delete Table C7RTESET datafill for routeset E.
- 4 On node A, remove Table C7LINK datafill for linkset AE (LIU7 4) and replace it with link AB datafill (LIU7 19).
- 5 On node A, change the far-end point code (FEPC) for linkset AE from node E to node B and change the link type to A-link.
- 6 On node A, add Table C7RTESET datafill for routeset B using linkset AB (formerly AE).
- 7 On node A, add a tuple in Table C7NETSSN using routeset B. Enter a value of \$ in the SSNAME field (if required).
- 8 On node A, busy and return to service the remote point code for routeset B at the SCCPRPC MAP level (if required).
- 9 On node E, busy and offline routeset A.
- 10 On node E, change the FEPC for linkset EA from node A to node B.
- 11 On node E, add Table C7RTESET datafill for a routeset to node B using linkset EB.
- 12 On node E, add a tuple in Table C7NETSSN using routeset B. Enter a value of \$ in the SSNAME field (if required).
- 13 On node E, busy and return to service the remote point code for routeset B at the SCCPRPC MAP level (if required).
- 14 On node B, add Table C7LINK datafill previously used for the AE linkset to linkset BE (LIU7 4).
- 15 On node A, busy, activate, and return to service linkset AB (formerly AE).
- 16 On node A, busy and return to service routeset B.
- 17 On node B, busy, activate, and return to service linkset BA.
- 18 On node B, busy, activate, and return to service linkset BE.
- 19 On node B, busy and return to service routesets A, E, H, and NET.
- 20 On node E, busy, activate, and return to service linkset EB (formerly EA).
- 21 On node E, busy and return to service routeset B.

Figure 4-6 shows the network configuration after routing traffic through logical STP node B.

Figure 4-6 Configuration after network routing through node B



C7GTT provisioning

The following procedure replaces Table C7GTT tuples on node B that use node A SSP/STP routesets with corresponding node B STP routesets.

On node B, change all existing tuples in Table C7GTT that have node A SSP/STP routesets to tuples that use the corresponding STP routesets on node B.

Note: Table C7GTT datafill is not separated between logical nodes. Routing for both internal nodes A and B occurs on the same routes datafilled in Table C7GTT. GTT routing takes place on the AF and AB routes of the SSP/STP until Table C7GTT tuples are modified to use the BE and BF routes on the logical STP node.

Backing out

To back out at this point refer to Appendix C, “Backing out.”

Establish full STP quad connections

The steps in the following sections establish full network connections to the new logical STP.

Attention

Remote offices require datafill changes. Coordinate all steps in this section with the remote offices.

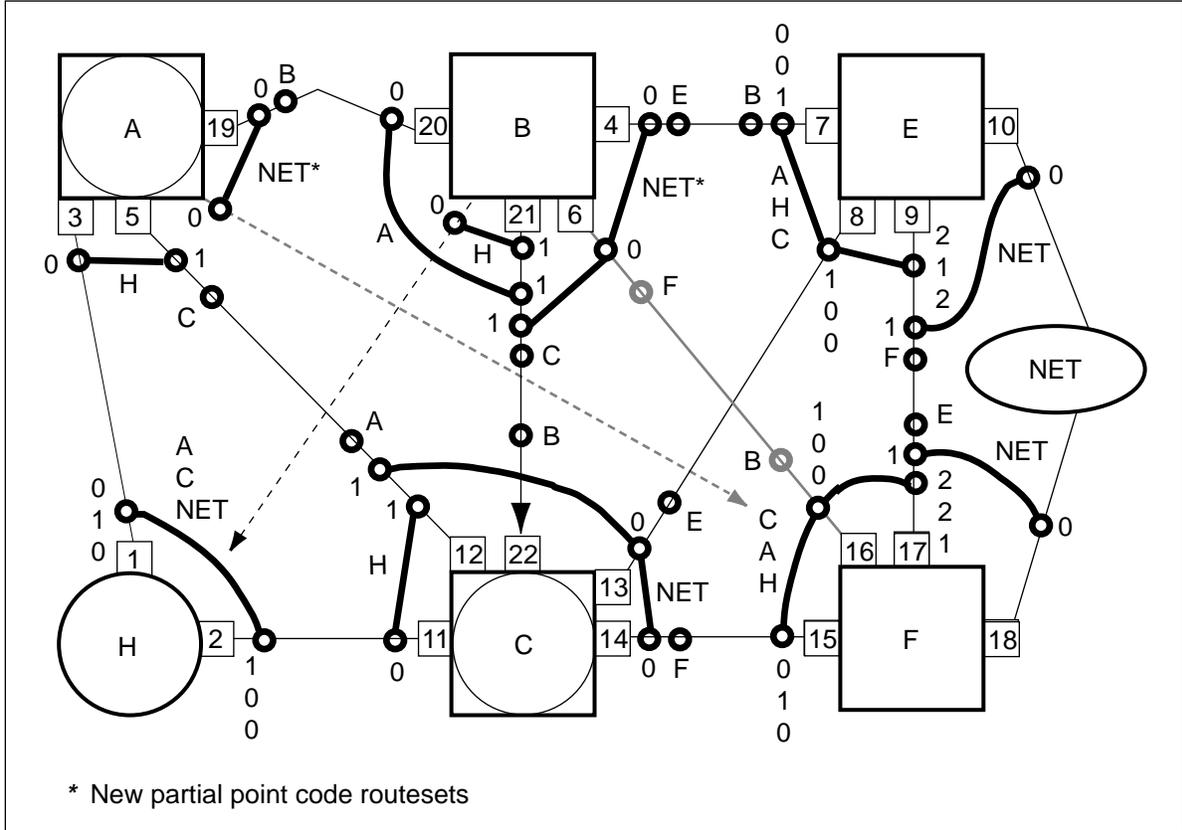
Redirect traffic on the STP B-link

The following conditions exist during this procedure:

- Alternate routing takes place on the BE and FC routesets.
 - Linkset AF on node A remains offline until later in the conversion procedure when the AF link is connected to node C.
- 1 On node A, busy, deactivate, and offline linkset AF.
 - 2 On node F, busy and offline linkset FA.
 - 3 On node A, busy, offline, and delete Table C7RTESET datafill for routeset F.
 - 4 On node A, remove Table C7LINK datafill for linkset AF.
 - 5 On node B, add Table C7LINK datafill previously used for linkset AF to linkset BF.
 - 6 On node F, modify the FEPC for linkset FA from node A to node B.
 - 7 On node F, add Table C7RTESET datafill for routeset B using linkset FB.
 - 8 On node F, add a tuple in Table C7NETSSN using routeset B and \$ in the SSNAME field (if required).
 - 9 On node F, busy and return to service the remote point code for routeset B at the SCCPRPC MAP level (if required).
 - 10 On node F, busy and return to service routeset B.
 - 11 On node F, busy and return to service linkset FB (formerly linkset FA).
 - 12 On node B, busy, activate, and return to service linkset BF.
 - 13 On node B, busy and return to service routeset F.

Figure 4-7 shows the network configuration after redirecting network traffic through the logical STP B-link.

Figure 4-7 Configuration after repositioning the STP B-link



Stopping point

The network can be left in this state with minimal risk.

Off-line the INode C-link

The following procedure takes the INode C-link offline.

Attention

Complete the steps in the next section “Repositioning and returning the INode C-link to service” immediately after completing the steps in this section.

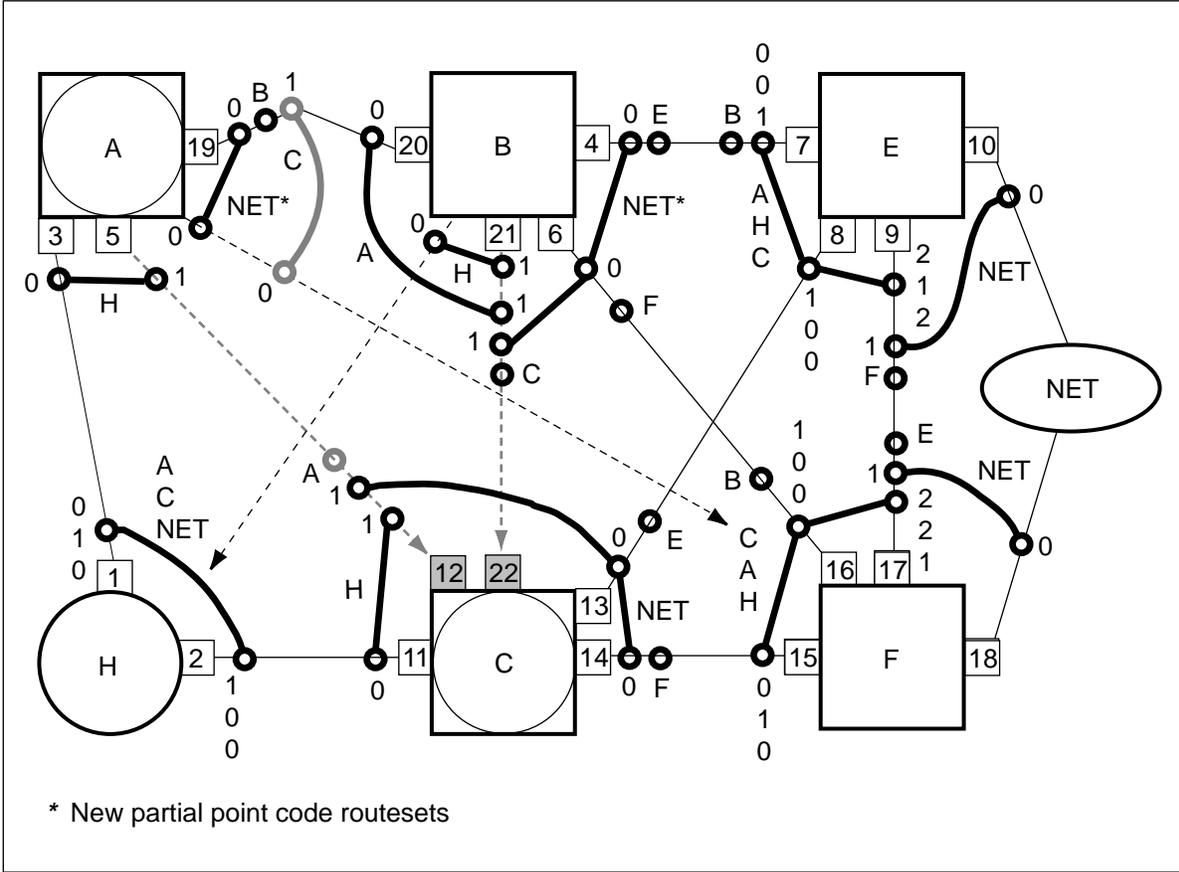
**CAUTION**
Loss of service

No call processing takes place between node C and node A while routesets C and A are out of service.

- 1 On node A, busy and offline routeset C.
- 2 On node A, busy, deactivate, and offline linkset AC.
- 3 On node C, busy and offline linkset CA.
- 4 On node C, busy and offline routeset A.
- 5 On node A, modify routeset C by deleting route AC, adding linkset AF (lower cost), and adding linkset AB (formerly AE, higher cost).
- 6 On node A, busy and return to service routeset C.
- 7 On node C, remove Table C7LINK datafill for linkset CA.
- 8 On node C, busy, offline, and delete routeset B.
Note: Critical alarms may be generated on node B when the link to node B is taken offline.
- 9 On node C, busy, deactivate, and offline linkset CB.
- 10 On node C, remove Table C7LINK datafill for linkset CB.
- 11 On node C, delete linkset CB.

Figure 4-8 shows the network configuration after taking the INode C-link offline.

Figure 4-8 Configuration after offlining the INode C-link



Reposition and return the INode C-link to service



CAUTION
Call processing service outage

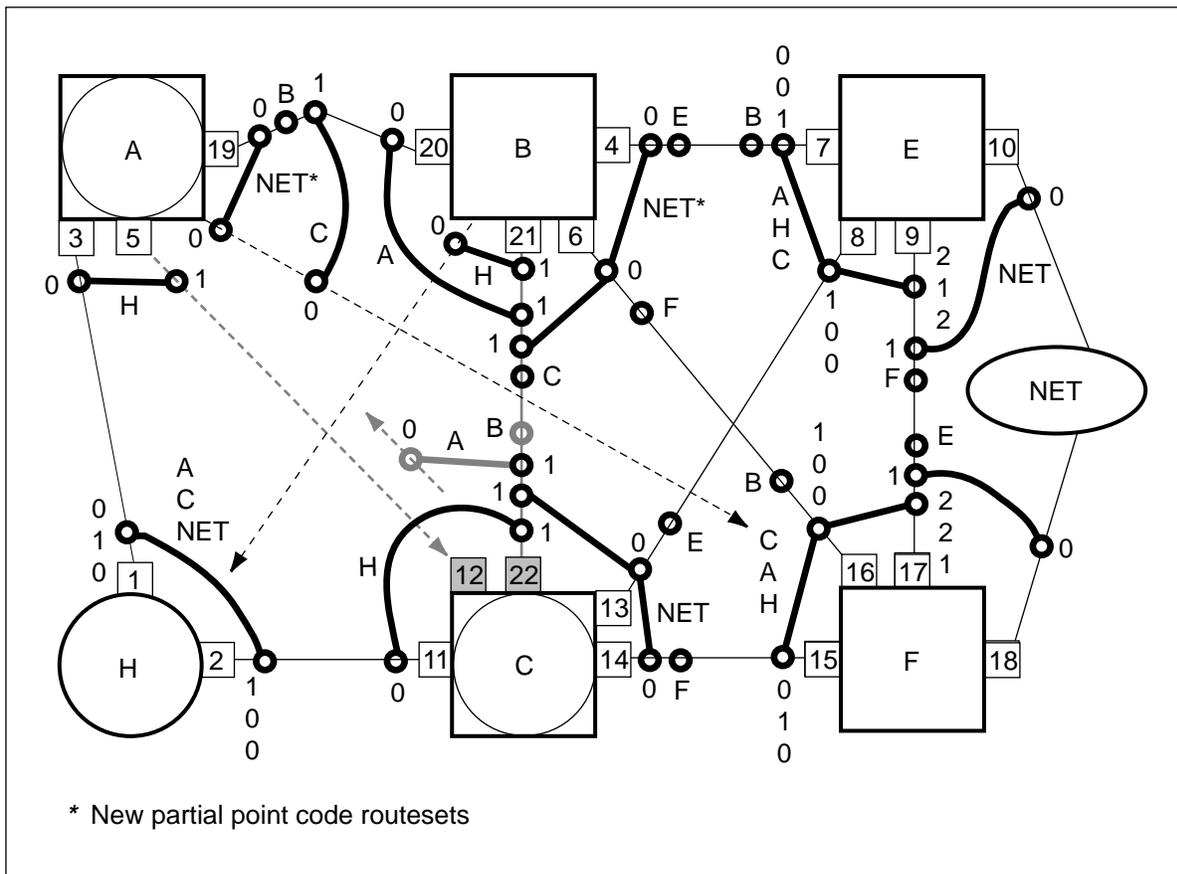
No call processing takes place between node C and node A while routesets C and A are out of service.

- 1 On node C, change the FEPC of linkset CA from node A to node B, and the link type to C-link.
- 2 On node C, add Table C7LINK datafill for link CB to linkset CB (formerly linkset CA).
- 3 On node C, add new datafill to Table C7LKSET for the new linkset CA (A-link), on node A.

- 4 On node C, modify Table C7RTESET datafill for routeset A, adding the new linkset CA (lowest cost) to the existing CB linkset (formerly CA).
- 5 On node C, add Table C7RTESET datafill for routeset B, using linkset CB.
- 6 On node C, busy, activate, and return to service linkset CB.
- 7 On node C, busy and return to service routesets A and B.

Figure 4-9 shows the network configuration after repositioning the INode C-link and returning it to service.

Figure 4-9 Configuration after repositioning the INode C-link and returning it to service



Stopping point

The network can be left in this state with minimal risk.

Backing out

To back out at this point refer to Appendix C “Backing out.”

Remove unnecessary network connections

Attention

Co-ordinate all steps in this section with the remote offices.

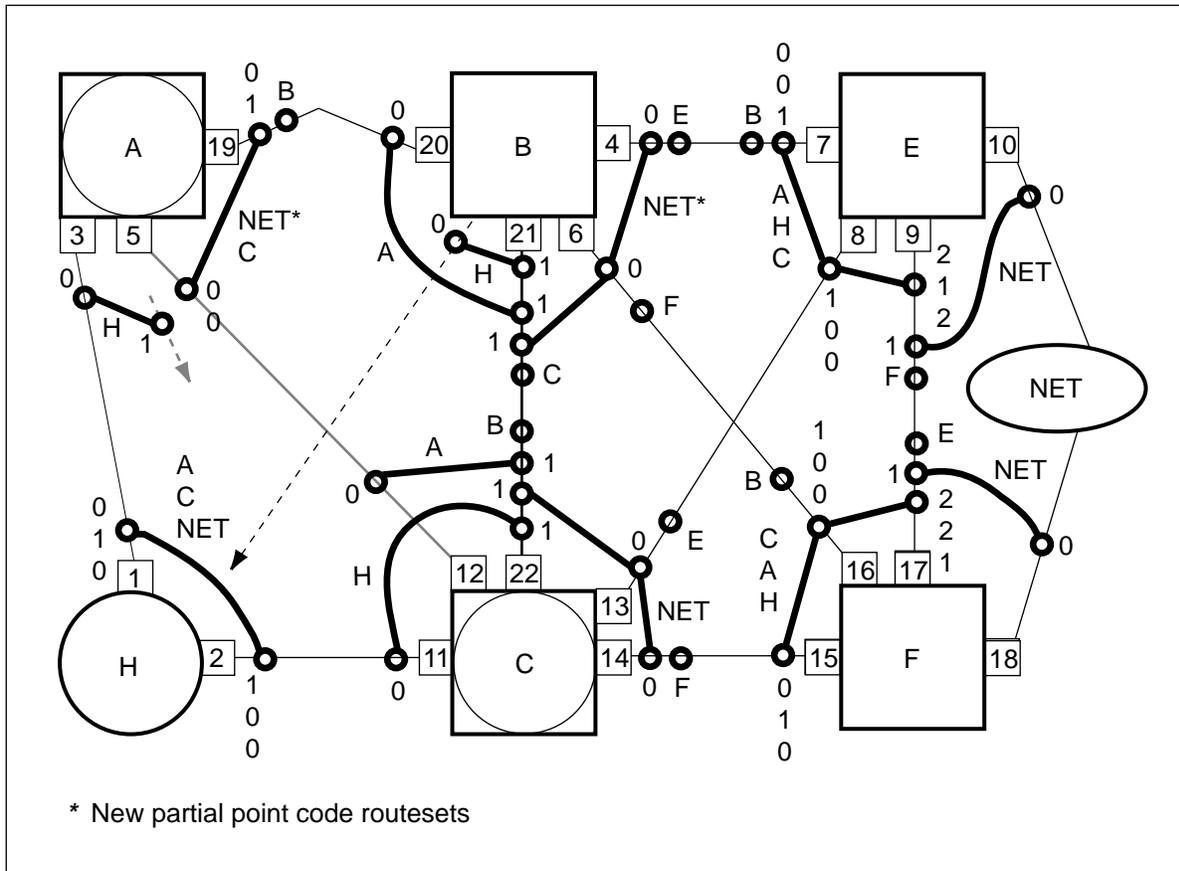
Connect the INode A-link

The following procedure removes the existing AC C-link and converts the existing AF C-link to a new AC A-link. If the AC C-link is not converted to an A-link, the node type of node A cannot be changed at the end of the conversion procedure. Alternate routing takes place on route AB while the A-link is being added.

- 1 On node C, add Table C7LINK datafill for linkset CA.
- 2 On node A, change the FEPC of linkset AC to NIL or to an unused value and change the link type to A-link.
- 3 On node A, delete Table C7LINK datafill for linkset AC.
- 4 On node A, change the FEPC of linkset AF from node F to node C and change the link type to A-link.
- 5 On node A, add Table C7LINK datafill for the new AC linkset, formerly linkset AF.
- 6 On node A, busy, activate, and return to service linkset AC.
- 7 On node C, busy, activate, and return to service linkset CA.

Figure 4-10 shows the network configuration after connecting the INode A-link.

Figure 4-10 Configuration after connecting the INode A-link



Re-position the INode to local SSP routes

The following procedure uses partial point code routesets to temporarily route messages while the full point code routeset is out of service.

- 1 On node A, add a partial point code routeset for routing messages to node H using linkset AB (formerly AE) and the new linkset AC.
- 2 On node A, busy and return to service the partial point code routeset added in step 1.
- 3 On node A, add datafill to Table C7NETSSN to use the new partial point code routeset to node H added in step 1 (if required).
- 4 On node A, at the SCCPRPC MAP level, busy and return to service the remote point code for the partial point code routeset added in step 1 (if required).
- 5 On node A, busy, deactivate, and offline linkset AH.
- 6 On node A, busy and offline the remote point code for routeset H at the SCCPRPC MAP level and delete Table C7NETSSN datafill for routeset H.

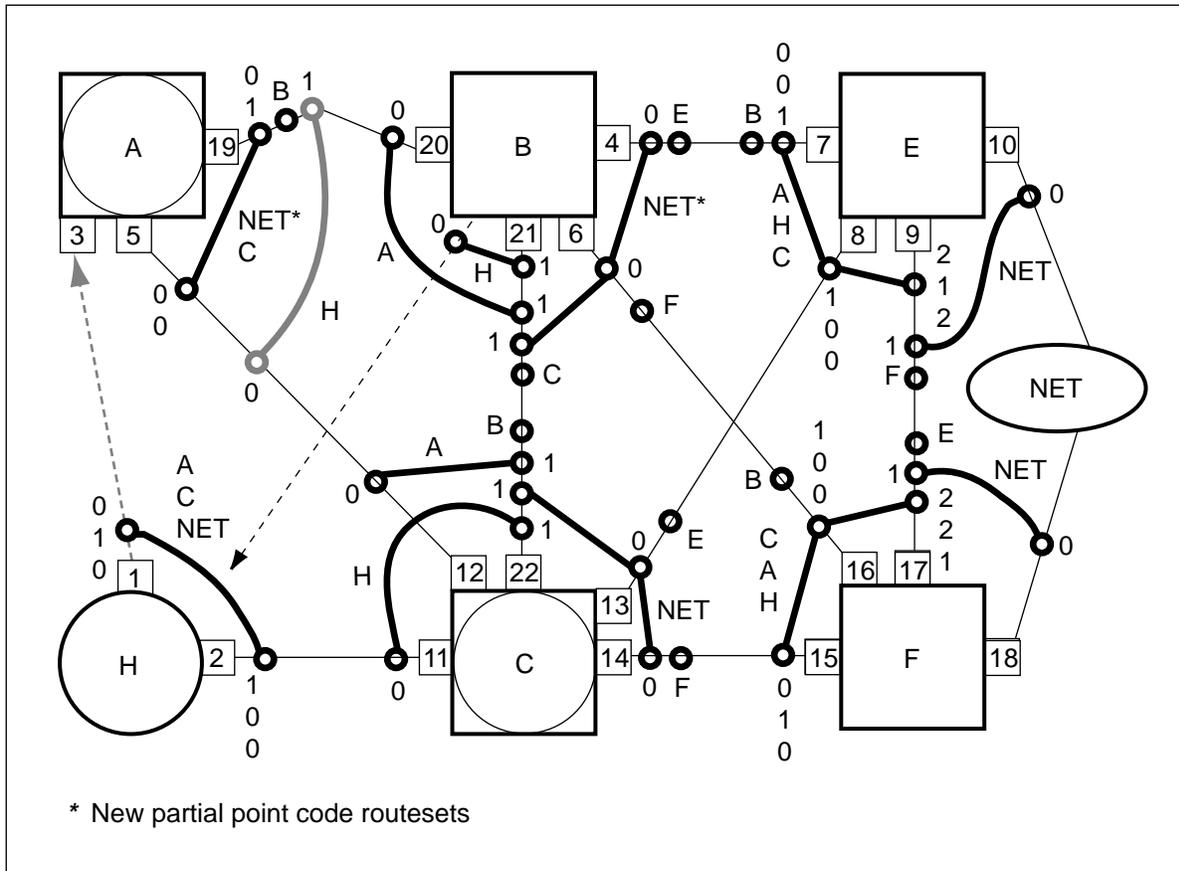
- 7 On node A, busy, offline, and delete routeset H (if required).
- 8 On node A, add a new routeset H using linkset AB and the new linkset AC (same cost).
- 9 On node A, busy and return to service the new routeset H.
- 10 On node A, busy, offline, and delete the partial point code routeset added in step 1.

If the system can tolerate a very brief service outage between nodes A and H, use the following method as an alternative to the partial point code method described above:

- 1 Busy routeset H.
- 2 Offline routeset H.
- 3 Create a new routeset H to using linksets AB and AC.
- 4 Busy the new routeset H.
- 5 Return the new routeset H to service.

Figure 4-11 shows the network configuration after repositioning the local INode to SSP routes.

Figure 4-11 Configuration after repositioning the INode to local SSP routes



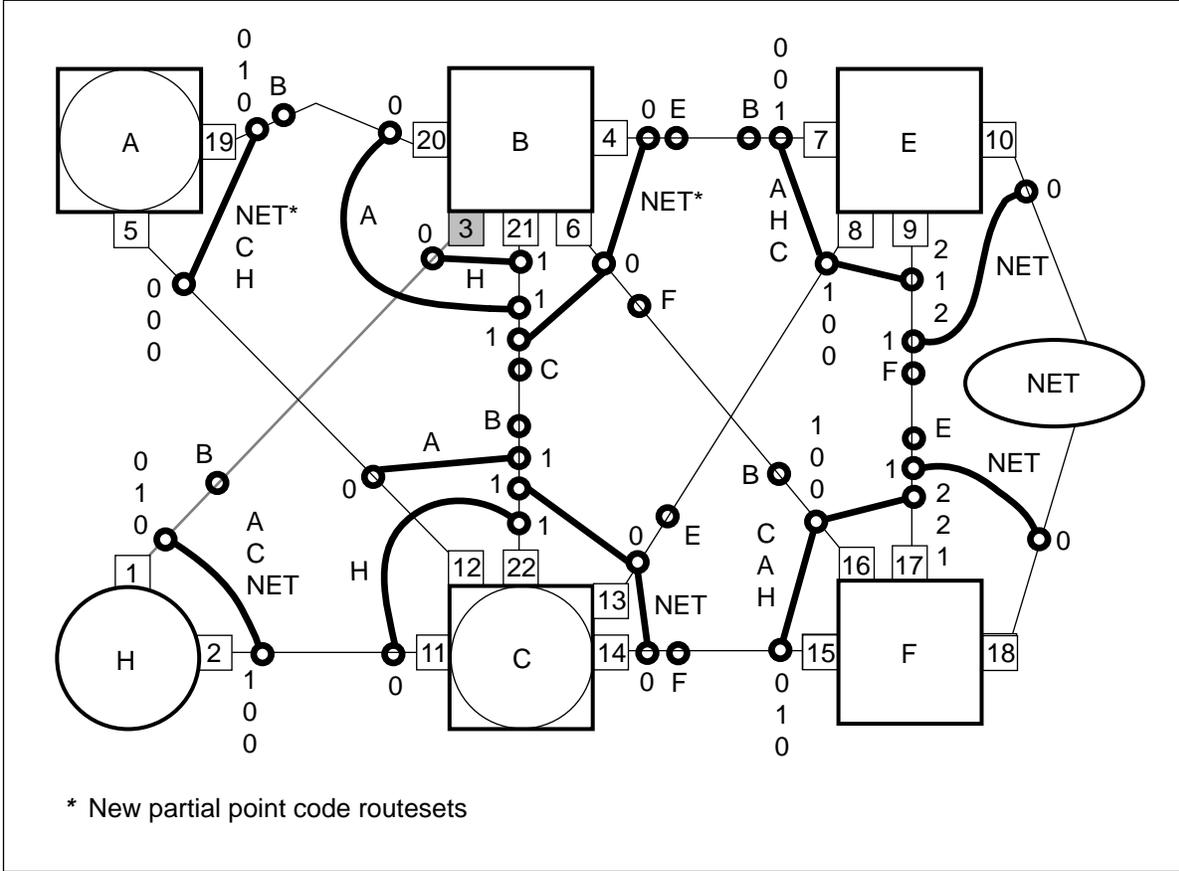
Redirect the SSP to INode A-links

Note: Alternate routing takes place on route HC during the following procedure.

- 1 On node A, remove Table C7LINK datafill for linkset AH and add the removed link to linkset BH on node B.
- 2 On node H, busy, deactivate, and offline linkset HA. Change the FEPC of linkset HA from node A to node B.
- 3 On node H, add Table C7RTESET datafill for routeset B using linkset HB.
- 4 On node H, busy, activate, and return to service linkset HB.
- 5 On node H, busy and return to service routeset B.
- 6 On node B, busy and return to service linkset BH.

Figure 4-12 shows the network configuration after redirecting the SSP to INode A-links.

Figure 4-12 Configuration after redirecting the SSP to INode A-links



Stopping point

The network can be left in this state with minimal risk.

Backing out

To back out at this point refer to Appendix C “Backing out.”

Convert the node type

This procedure converts the SNA7 INode to a logical SSP node.

Convert the SNA7 INode to a logical SSP node



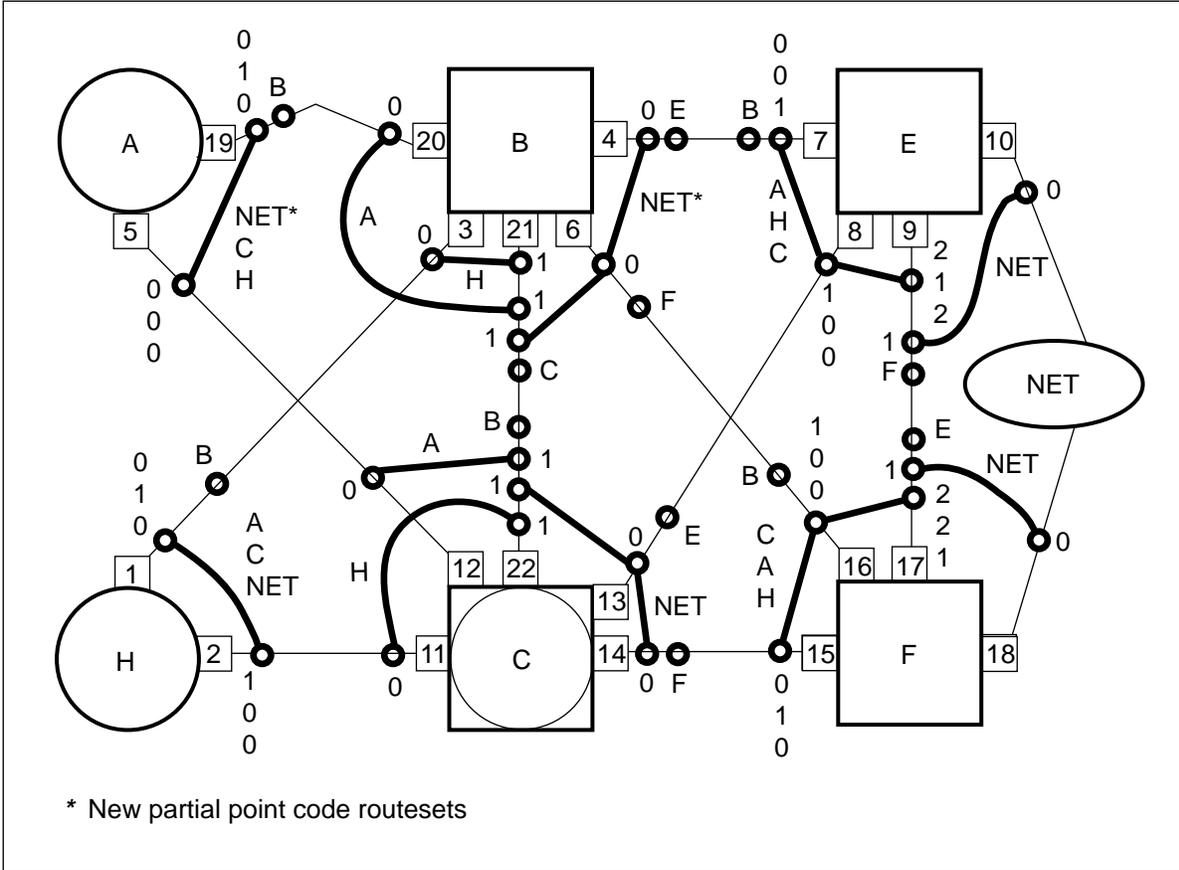
CAUTION **Possible loss of service**

This step converts node A into an SSP node. SSP nodes cannot perform STP routing functions. Ensure that node A is not performing STP routing functions before the node type is modified. Refer to Appendix D “Use of gateway screening to monitor for STP routing” before converting the node to SSP type.

On node A, change Table C7NETWRK node type datafill for node A from SSP_STP to SSP.

Figure 4-13 shows the network configuration after converting the SPC INode to a logical SSP node.

Figure 4-13 Configuration after converting the SNA7 INode to a logical SSP node



Backing out

To back out at this point refer to Appendix C, “Backing out.”

Enable LIU7 external routing and add full point code routesets

After completing the SNA7 to MNA7 conversion procedure, replace partial point code routesets with full point code routesets if desired. If more than 255 routesets are required it will be necessary to activate LIU7 external routing and routeset expansion.

Note: The following steps are optional.

The LIU7s from the external A-link may be removed temporarily and used as external routers while partial point code routesets are converted to full point code routesets. The total number of routesets must not exceed 255 if the LIU7s are to be returned to service in the external A-link.

If more than 255 routesets are required, at least two additional LIU7s are needed to activate external routing.

- 1** On node A, enable LIU7 external routing if more than 255 routesets are required at any time. See Appendix B "Activating routeset expansion and LIU7 external routing" for more information.
- 2** On node A, add full point code routesets for each partial point code routeset that contains the old, unused AC linksets. Add one partial point code routeset at a time.
- 3** On node A, busy and return to service each full point code routeset.
- 4** On node A, busy, offline, and delete the partial point code routesets.
- 5** Repeat steps 2 to 4 for each partial point code routeset that you wish to convert to a full point code routeset.

Chapter 5: Mated SNA7 INode to MNA7 INode conversion procedure

This chapter provides the procedures for converting the second SNA7 INode in a mated pair to an MNA7 INode. The mate INode office has already been upgraded using the single INode upgrade procedure described in Chapter 4.

The diagrams in this chapter have been simplified by eliminating node H. In Chapter 4 “Single SNA7 INode to MNA7 INode conversion procedure” SSP H undergoes change during the conversion procedure. In Chapter 5, the SSP node that undergoes change is node A. Node A is the SSP portion of the newly created MNA7 INode. Because SSP H does not undergo any change during the procedures described in this chapter, it is not shown in the diagrams. The positions of logical nodes A and B have been switched with node C to maintain a layout similar to the diagrams shown in Chapter 4.

This chapter contains the following procedures:

- Enter datafill into the logical STP node
- Add new CCS7 linkset and routeset datafill
- Establish SCCP and C7ALIAS provisioning and connectivity
- Establish network connectivity
- Establish full STP quad connections
- Remove unnecessary network connections
- Convert the node type

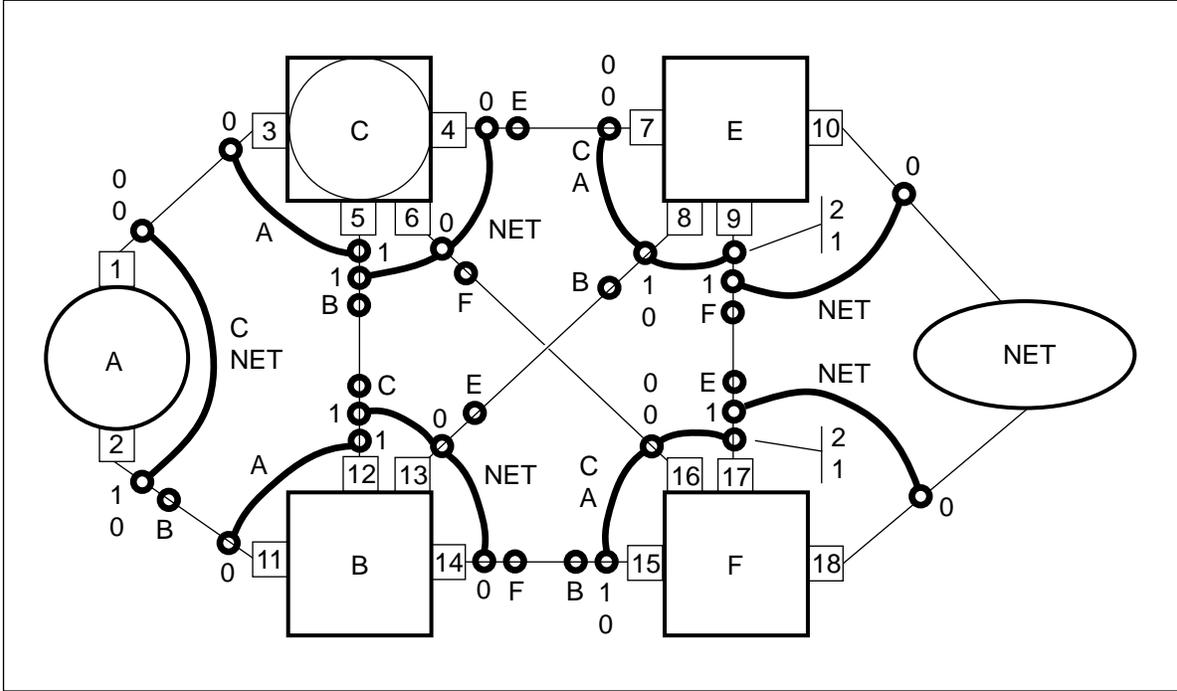
Initial network configuration

Before you start the conversion procedure, the network configuration is in the following state:

- Node C is a single point code INode office that has been upgraded to software release STPI06 or greater.
- All routesets, linksets and link hardware connected to the STP quad are in service.

Figure 5-1 shows the office configuration at the start of the conversion process.

Figure 5-1 Initial network configuration



Determine new hardware requirements

Determine any new hardware requirements before starting the conversion procedure.

Note: All hardware used during the conversion procedure remains in service after the procedure is finished. The procedure requires no additional temporary hardware.

Enter datafill for logical STP node D

Change full point code routesets to partial point code routesets in Table C7RTESET. You can restore full code routesets, if desired, after the conversion is completed.

Note: See Appendix A for a more detailed explanation of partial point codes.

Reduce routeset count and remove CB linksets



CAUTION **Possible loss of service**

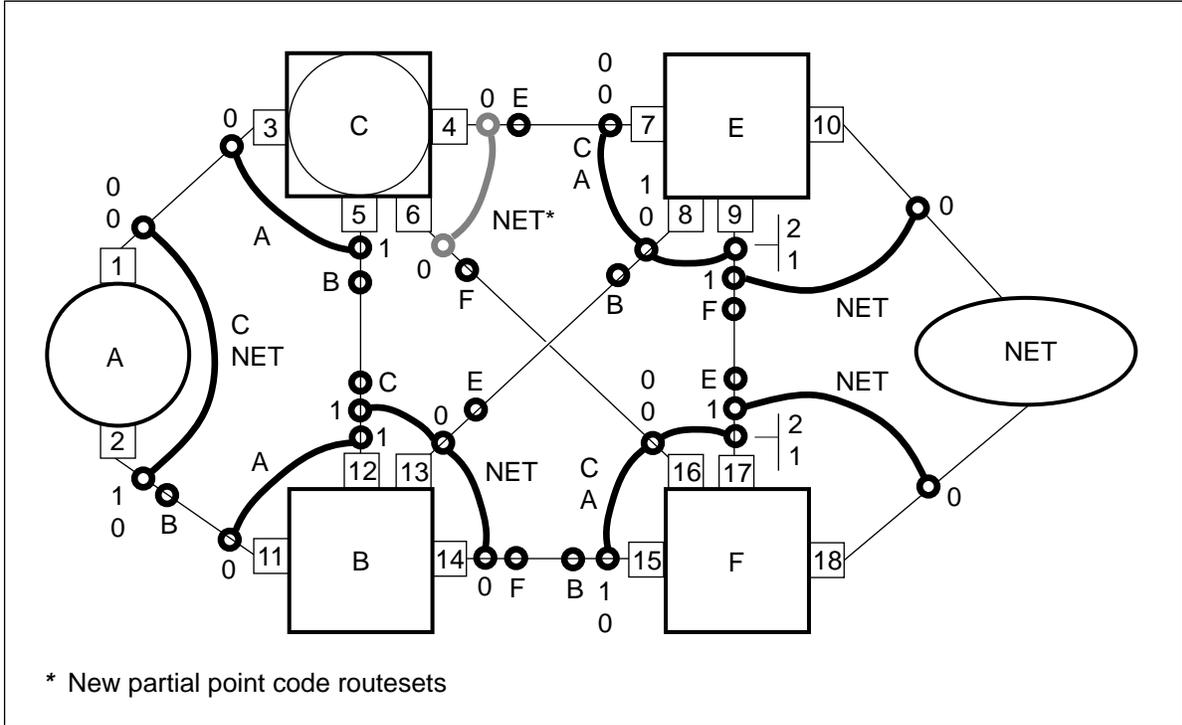
If partial point code routesets exist for the NET routesets on node C, you can temporarily add full point code routesets while the partial point code routesets are modified. If this is not possible because of the maximum routeset limit of 255, do not take linkset CB offline until the entire conversion is complete. After the conversion is complete you can increase the routeset limit and add full point code routesets.

- 1 On node C, enter partial point code network or cluster datafill for routesets NET*. Ensure that the new routesets contain only linksets CF and CE for the same network or cluster as each routeset that contains linksets CB, CF, and CE.
- 2 On node C, busy and return to service the new partial point code routesets.
- 3 On node C, force busy, offline, and delete the original NET routesets that contain the CB, CF and CE linksets.
- 4 Repeat steps 1 to 3 for each routeset as required.

Note: Later in the conversion procedure INode C will become two logical nodes, C and D, that must share the resources in the office. Substituting partial point code routesets for full point code routesets increases the number of routesets available for logical nodes C and D. The new partial point code routesets are also used to carry network traffic while some of the existing routesets are taken out of service and modified.

Figure 5-2 shows the configuration after reducing the routeset count and removing CB NET linksets.

Figure 5-2 Configuration after reducing the routeset count and removing extra routesets



Add the new logical STP node

On office C, add datafill to Table C7NETWRK for the MNA7 logical STP node D.

Note: The MNA SOC option TEL00010 must be enabled to activate both SSP and STP links. See Appendix G for more information.

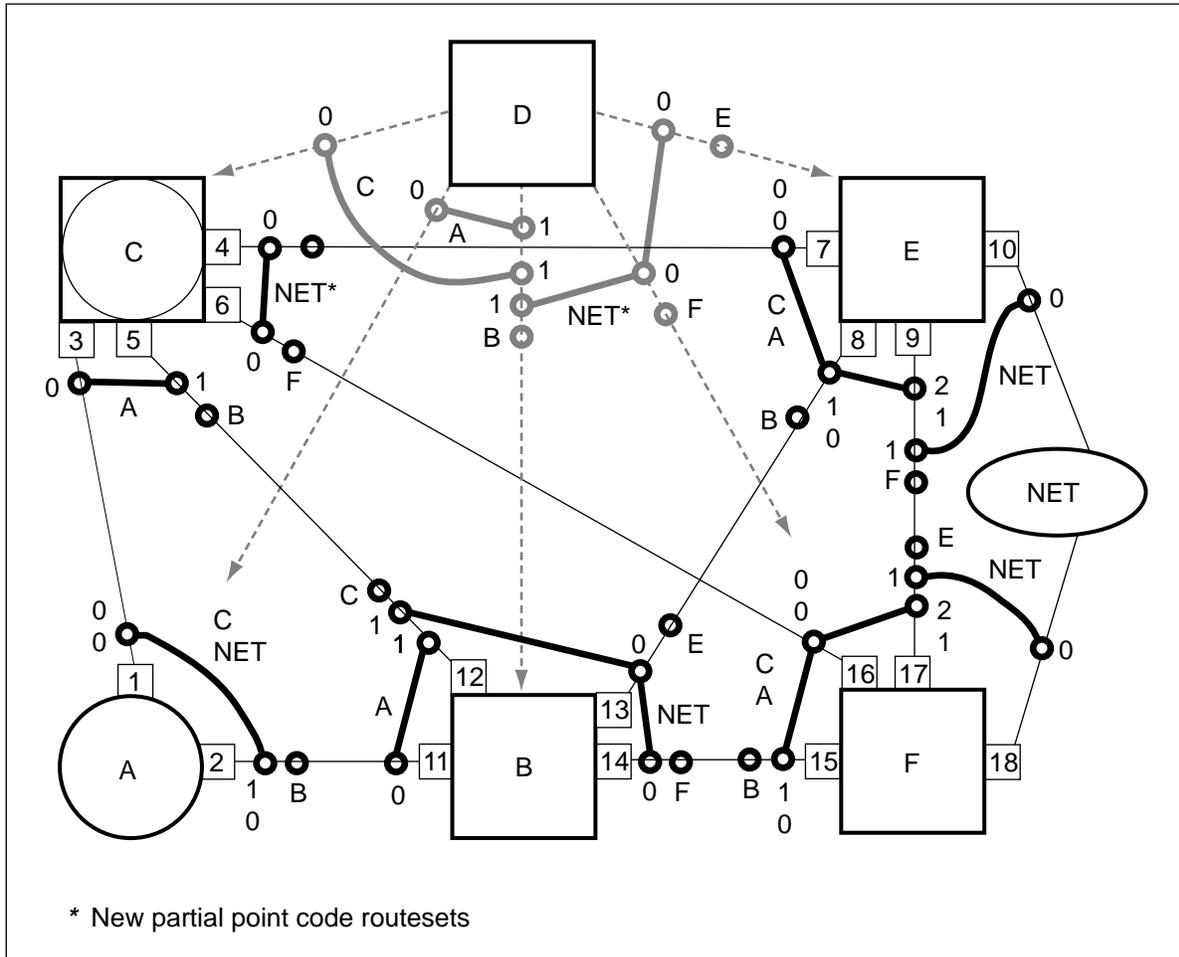
Add new linkset and routeset data to logical STP node D

This procedure adds new linkset and routeset data to the new logical STP node D.

- 1** On node D, add C7LKSET datafill for linksets DC (A-link), DB (C-link), DA (A-link), DE (B-link) and DF (B-link).
- 2** On node D, add C7RTESET datafill to node C for linksets DC (lower cost) and DB (higher cost).
- 3** On node D, add C7RTESET data to node A for linksets DA (lower cost) and DB (higher cost).
- 4** On node D, add C7RTESET data to node B for linkset DB.
- 5** On node D, add C7RTESET data to the NET nodes (both full and partial point code routesets, similar to node C) for linksets DF and DE (equal cost) and linkset DB (higher cost).
- 6** On node D, add C7RTESET datafill to node E for linkset DE.
- 7** On node D, add C7RTESET datafill to node F for linkset DF.

Figure 5-4 shows the configuration after adding linkset and routeset data to the logical STP node D.

Figure 5-4 Configuration after adding linkset and routeset data to logical STP



Backing out

To back out at this point, refer to Appendix C “Backing out.”

Establish SCCP and C7ALIAS provisioning and connectivity

When completing this section ensure that the following conditions are met:

- The number of tuples in Table C7NETSSN must be less than half of the total allowable SSN tuples.
- The SSP/STP and STP subsystem data in Table C7NETSSN must be identical to support SCCP alternate routing functionality.

Note: The subsystems for node D remain system busy until node D is connected to the network and begins routing messages.

The steps in the following sections describe how to provision the SCCP Tables and Table C7ALIAS.

Provision Table C7NETSSN

- 1 On node D, duplicate all current C7NETSSN tuples using node D STP routesets. Ensure that the node D routesets are similar to the SSP/STP routesets used for node C.
- 2 On node D, at the SCCPRC MAP level, post each remote point code (C7NETSSN tuple).
- 3 Busy and return each remote point code to service.
- 4 On node D, for each remote point code, enter the SCCPRSS MAP level and post all subsystems.
- 5 Busy and return each subsystem to service.

Provision Table C7LOCSSN

- 6 Ensure that only the SSP and SSP_STP nodes contain datafill for Table C7LOCSSN.
Note: Table C7LOCSSN tuples must be present and the local subsystems must be in service before the remote point codes on the new logical STP node can be put in service. The remote point code subsystems display INI if the remote subsystem is not in service on the adjacent node.

Provision Table C7RSSCRN

- 7 Ensure that only STP nodes contain datafill for Table C7RSSCRN.
- 8 On node D, replace all SSP/STP routesets in Table C7RSSCRN with their corresponding STP routesets.

Provision Table C7RPLSSN

- 9 On node D, replace all SSP/STP routesets in Table C7RPLSSN with their corresponding STP routesets.
Note: This step moves the replicated subsystem load balancing function to the STP node. The network routes GTT messages on the corresponding internal SSP routesets until the STP routesets in Table C7RPLSSN are in-service.

Provision Table C7GTTYPE

- 10 No changes are necessary.

Provision Table C7ALIAS

- 11 If Table C7ALIAS on node C contained datafill before the conversion, copy the datafill into Table C7ALIAS on node D. Do not remove the datafill from node C.

Backing out

To back out at this point, refer to Appendix C “Backing out.”

Establish network connectivity

Attention

Co-ordinate all steps in this section with the remote offices.

Add new LIU7 hardware

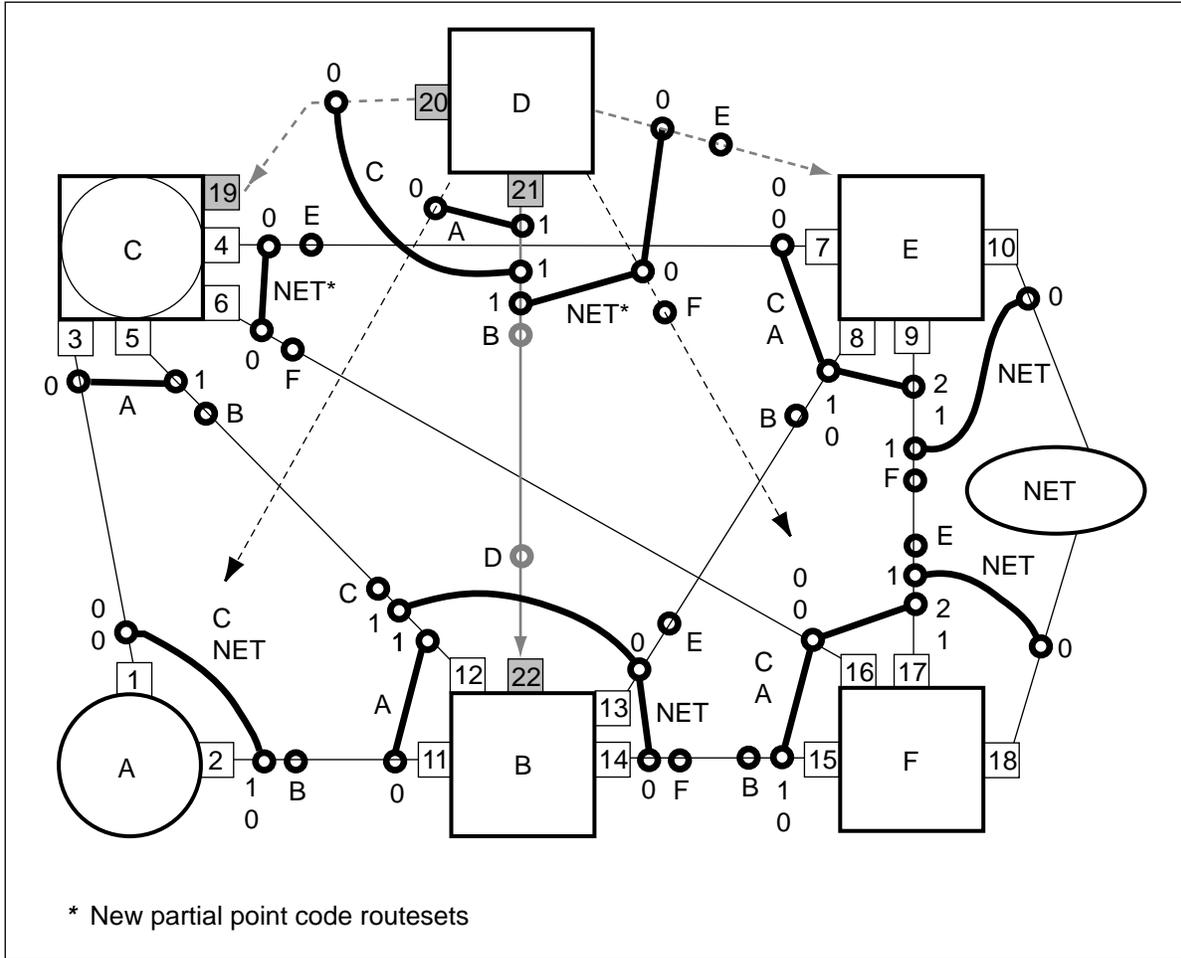
The INode office undergoing conversion requires three new LIU7s and the mate STP requires one new LIU7.

After the following steps are completed, node D is physically connected to the network. No network traffic will be routed through node D until you add network routesets to the adjacent nodes.

- 1 Add one new LIU7 to node C and one to node D. Connect nodes C and D together to form an external A-link.
- 2 On nodes C and D, busy and return each new LIU7 to service.
- 3 On node D, add new datafill for linkset DC to Table C7LINK.
- 4 Add another new LIU7 to node D and one to node B. Connect them together to form a new C-link.
- 5 On nodes D and B, busy and return both C-link LIU7s to service.
- 6 On node D, add new datafill for linkset DB to Table C7LINK.
- 7 On node B, add datafill for linkset BD to Table C7LKSET. The linkset type is C-link.
- 8 On node B, add new datafill for linkset BD to Table C7LINK.
- 9 On node B, add datafill to Table C7RTESET for a routeset to node D using linkset BD.
- 10 On node D, busy, activate, and return linkset DB to service.
- 11 On node B, busy, activate, and return linkset BD to service.
- 12 On node D, busy and return routeset B to service.
- 13 On node B, busy and return routeset D to service.

Figure 5-5 shows the configuration after adding new LIU7 hardware.

Figure 5-5 Configuration after adding new LIU7 hardware



Stopping point

The network can be left in this state with minimal risk.

Network routing through node D

After this section is completed, network traffic begins routing through the logical node D. Alternate routing takes place on the CF and EB links while the CE path is brought out of service.

The following conditions exist until node D begins routing network traffic:

- The C-link, DB, routes traffic to node B until routes DC and DE are in service.
- The subsystem on node C remains system busy until node D is in service and routing messages.

When the following steps are completed network traffic will begin routing through node D.

- 1 On node C, busy, deactivate, and offline the linkset CE.
- 2 On node E, busy, deactivate, and offline the linkset EC.
- 3 On node C, busy, offline, and delete Table C7RTESET datafill for routeset E.
- 4 On node C, remove Table C7LINK datafill for linkset CE and replace it with the CD link datafill.
- 5 On node C, change the far-end point code (FEPC) for linkset CE from node E to node D and change the link type to A-link.
- 6 On node C, add Table C7RTESET datafill for routeset D using linkset CD, formerly CE.
- 7 On node C, add a tuple to Table C7NETSSN using routeset D. Enter \$ in the SSNAME field (if required).
- 8 On node C, busy and return to service the remote point code for routeset D at the SCCPRPC MAP level (if required).
- 9 On node E, busy and offline routeset C.
- 10 On node E, change the FEPC for linkset EC from node C to node D.
- 11 On node E, add Table C7RTESET data for a routeset to node D using linkset ED.
- 12 On node E, add a tuple to Table C7NETSSN using routeset D. Enter \$ in the SSNAME field (if required).
- 13 On node E, busy and return to service the remote point code for routeset D at the SCCPRPC MAP level (if required).
- 14 On node D, add Table C7LINK datafill that was previously used for the CE linkset to linkset DE.
- 15 On node C, busy, activate, and return to service linkset CD (formerly CE).
- 16 On node C, busy and return to service routeset D.
- 17 On node D, busy, activate, and return to service linkset DC.
- 18 On node D, busy, activate, and return to service linkset DE.
- 19 On node D, busy and return to service routesets C, E, A, and NET.
- 20 On node E, busy, activate, and return to service linkset ED (former EC).
- 21 On node E, busy and return to service routeset D.

Figure 5-6 shows the configuration after routing network traffic through logical STP node D.

Establish full STP quad connections

The steps in the following sections establish full network connections to the new logical STP.

Attention

Remote offices require datafill changes. Co-ordinate all steps in this section with the remote offices.

Redirect traffic on the STP B-link

The following conditions exist during this procedure:

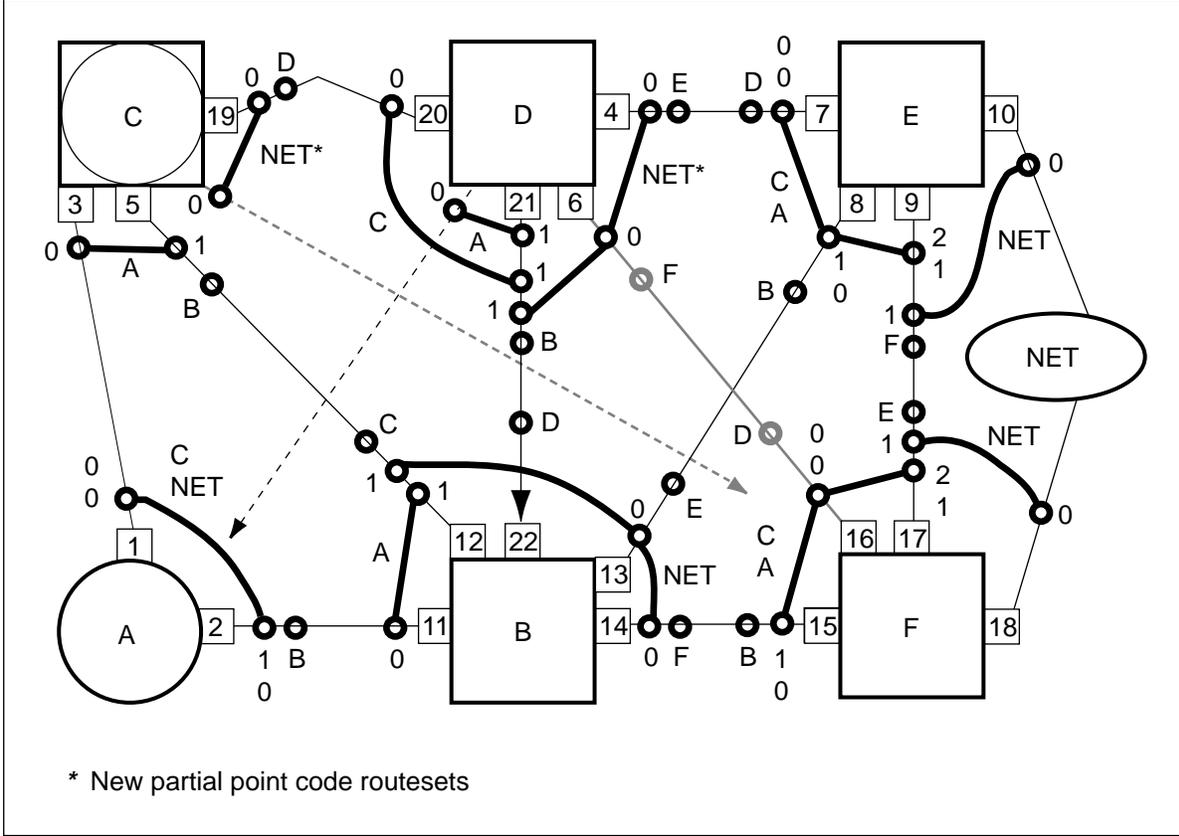
- Alternate routing takes place on the DE and FB routesets.
- Linkset CF on node C remains offline until a later step in the conversion when the CF link is connected to node B.

The following steps redirect traffic on the STP B-link.

- 1 On node C, busy, deactivate, and offline linkset CF.
- 2 On node F, busy and offline linkset FC.
- 3 On node C, busy, offline, and delete the C7RTESET datafill for routeset F.
- 4 On node C, remove Table C7LINK datafill for linkset CF.
- 5 On node D, add Table C7LINK datafill previously used for linkset CF to linkset DF.
- 6 On node F, modify the FEPC for linkset FC from node C to node D.
- 7 On node F, add datafill for Table C7RTESET for routeset D using linkset FD.
- 8 On node F, add a tuple in Table C7NETSSN using routeset D. Enter \$ in the SSNAME field (if required).
- 9 On node F, busy and return to service the remote point code for routeset D at the SCCPRPC MAP level (if required).
- 10 On node F, busy and return to service routeset D.
- 11 On node F, busy and return to service linkset FD (formerly linkset FC).
- 12 On node D, busy, activate, and return to service linkset DF.
- 13 On node D, busy and return to service routeset F.

Figure 5-7 shows the network configuration after redirecting network traffic on the logical STP B-link.

Figure 5-7 Configuration after redirecting traffic on the STP B-link



Stopping point

The network can be left in this state with minimal risk.

Off-line the INode C-link

The following procedure takes the INode C-link offline.

Attention

Complete the steps in the next section “Repositioning and returning the INode C-link to service” immediately after completing the steps in this section.



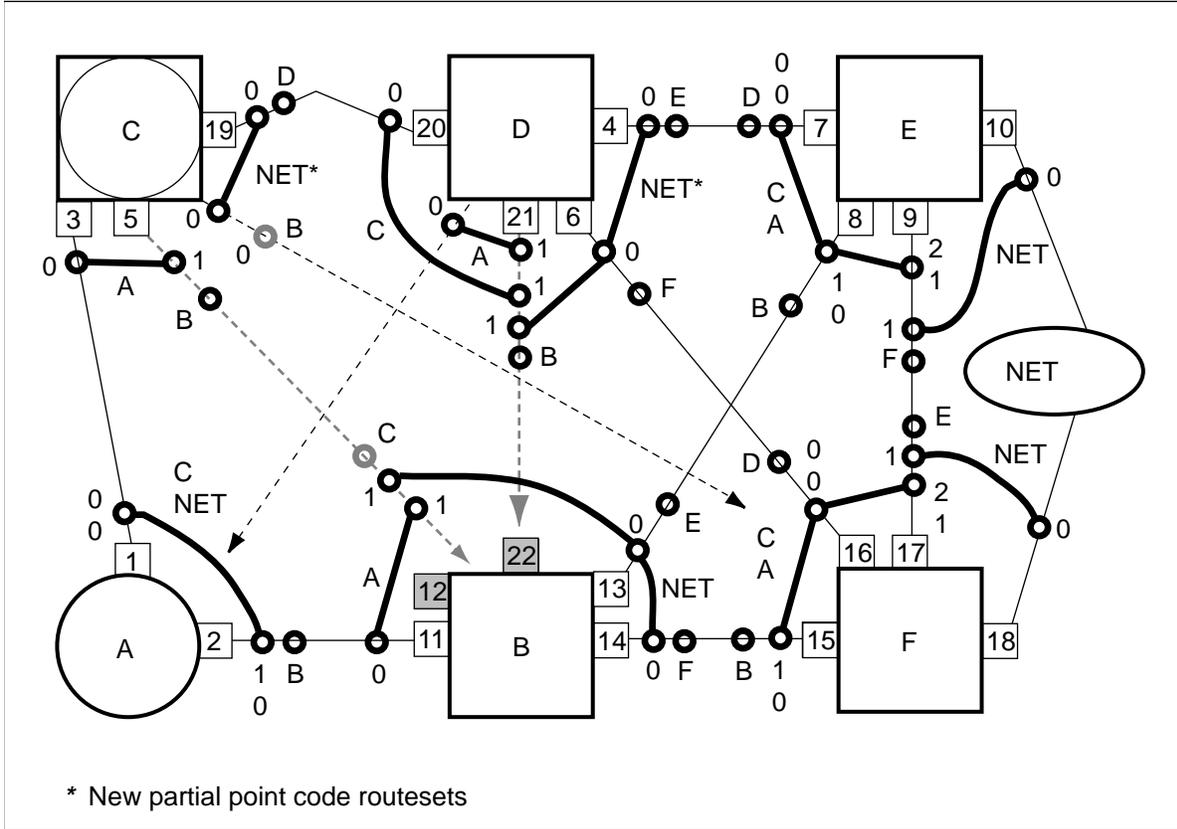
CAUTION Loss of service

No call processing takes place between nodes B and C while routesets B and C are out of service.

- 1 On node C, busy and offline routeset B.
- 2 On node C, busy, deactivate, and offline linkset CB.
- 3 On node B, busy and offline linkset BC.
- 4 On node B, busy and offline routeset C.
- 5 On node C, modify routeset B by deleting route CB and adding linkset CF.
- 6 On node C, busy and return routeset B to service.
- 7 On node B, remove Table C7LINK datafill for linkset BC.
- 8 On node B, busy, offline, and delete routeset D.
- 9 On node B, busy, deactivate, and offline linkset BD.
- 10 On node B, remove Table C7LINK datafill for linkset BD.
- 11 On node B, delete linkset BD.

Figure 5-8 shows the configuration after taking the INode C-link offline.

Figure 5-8 Configuration after offlining the INode C-link



Reposition and return the INode C-link to service



CAUTION
Call processing service outage

No call processing takes place between node B and node C while routesets B and C are out of service.

- 1 On node B, change the FEPC of linkset BC from node C to node D, and the link type to C-link.
- 2 On node B, add Table C7LINK datafill for link BD to linkset BD (formerly linkset BC).
- 3 On node B, add a new data tuple to Table C7LKSET for a linkset BC to node C of type A-link.

Remove unnecessary network connections

Attention

Co-ordinate all steps in this section with the remote office.

Connect the INode A-link

The following procedure removes the existing CB C-link and converts the existing CF C-link to a new CB A-link. If the CB C-link is not changed to an A-link, the node type of node C cannot be changed at the end of the conversion procedure. Alternate routing takes place on route CD while the A-link is being added.

- 1 On node B, add Table C7LINK datafill for linkset BC.
- 2 On node C, change the FEPC of linkset CB to NIL or to an unused value and change the link type to A-link.
- 3 On node C, delete Table C7LINK datafill for linkset CB.
- 4 On node C, change the FEPC of linkset CF from node F to node B and change the link type to A-link.
- 5 On node C, add Table C7LINK datafill to the new CB linkset, formerly linkset CF.
- 6 On node C, busy, activate, and return to service linkset CB.
- 7 On node B, busy, activate, and return to service linkset BC.

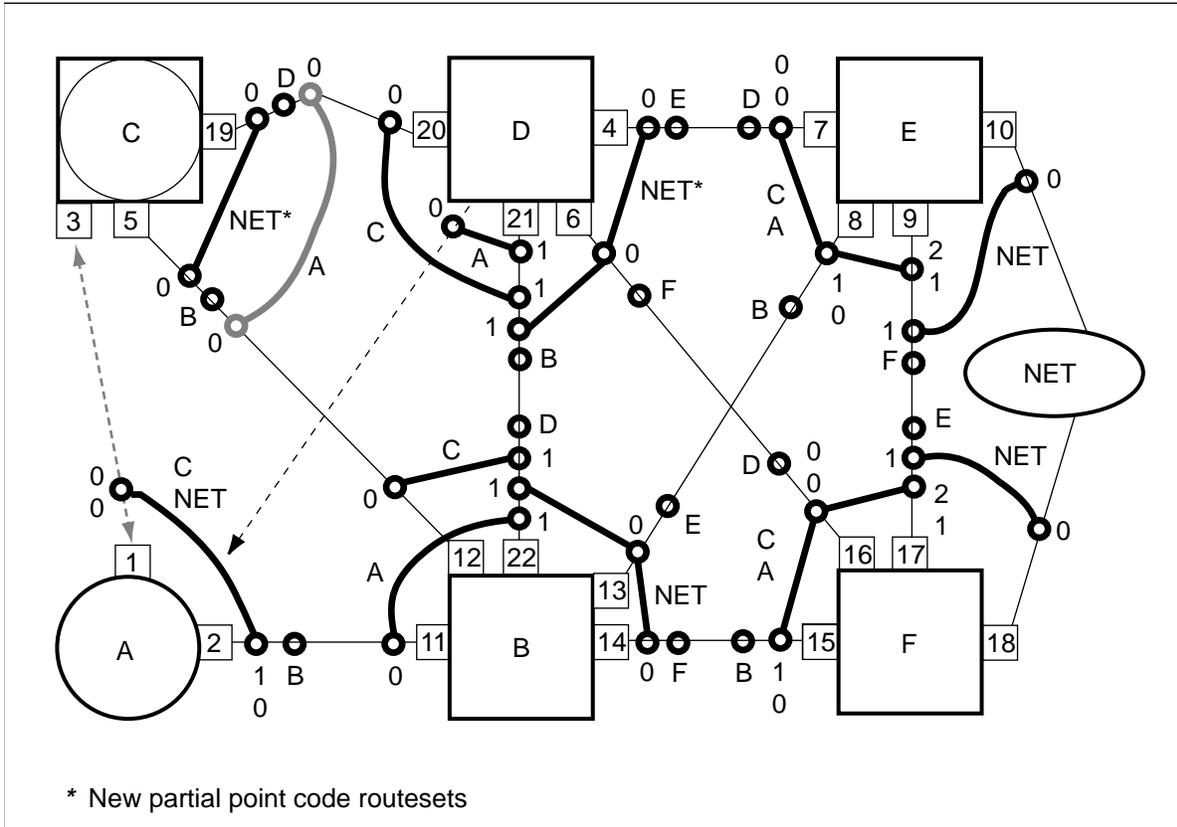
- 7 On node C, busy, offline, and delete routeset A (if required).
- 8 On node C, add routeset A using linkset CD and the new linkset CB.
- 9 On node C, busy and return to service routeset A.
- 10 On node C, busy, offline, and delete the partial point code routeset A*.

If the system can tolerate a very brief service outage between nodes C and A, use the following method as an alternative to the partial point code method described above:

- 1 Busy routeset A.
- 2 Offline routeset A.
- 3 Create a new routeset A using linksets CD and CB.
- 4 Busy routeset A.
- 5 Return routeset A to service.

Figure 5-11 shows the configuration after repositioning the INode to local SSP routes.

Figure 5-11 Configuration after repositioning the INode to local SSP routes



Redirect the SSP to INode A-links

Alternate routing takes place on route AB during the following steps.

Note: Alternate routing takes place on route AB during the following procedure.

- 1 On node C, remove the Table C7LINK datafill for linkset CA and add the removed link to linkset DA on node D.
- 2 On node A, busy, deactivate, and offline linkset AC. Change the FEPC of linkset AC from node C to node D.
- 3 On node A, add Table C7RTESET datafill for routeset D using linkset AD.
- 4 On node A, busy, activate, and return to service linkset AD, formerly AC.
- 5 On node A, busy and return routeset D to service.
- 6 On node D, busy and return linkset DA to service.

Convert the SPC INode to a logical SSP node



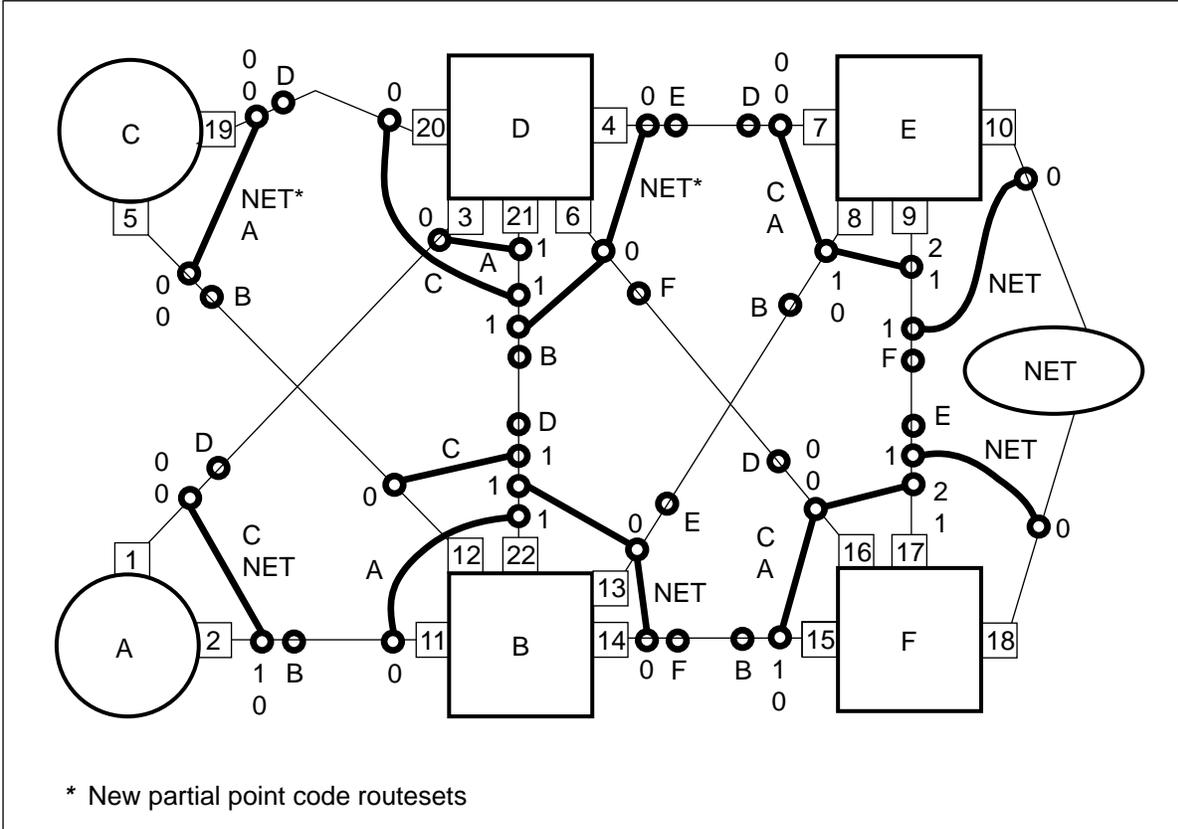
CAUTION **Possible loss of service**

This step converts node C into an SSP node. SSP nodes cannot perform STP routing functions. Ensure that node A is not performing STP routing functions before the node type is modified.

On node C, change the Table C7NETWRK node type datafill for node C from SSP_STP to SSP.

Figure 5-13 shows the configuration after converting the SNA7 INode to a logical SSP node.

Figure 5-13 Configuration after converting the SNA7 INode to a logical SSP node



Backing out

To back out at this point refer to Appendix C, "Backing out."

Enable LIU7 routing and add full point code routesets

This optional procedure enables LIU7 routing if more than 255 routesets are required. It also replaces partial point code routesets with full point code routesets.

Note: The following steps are optional.

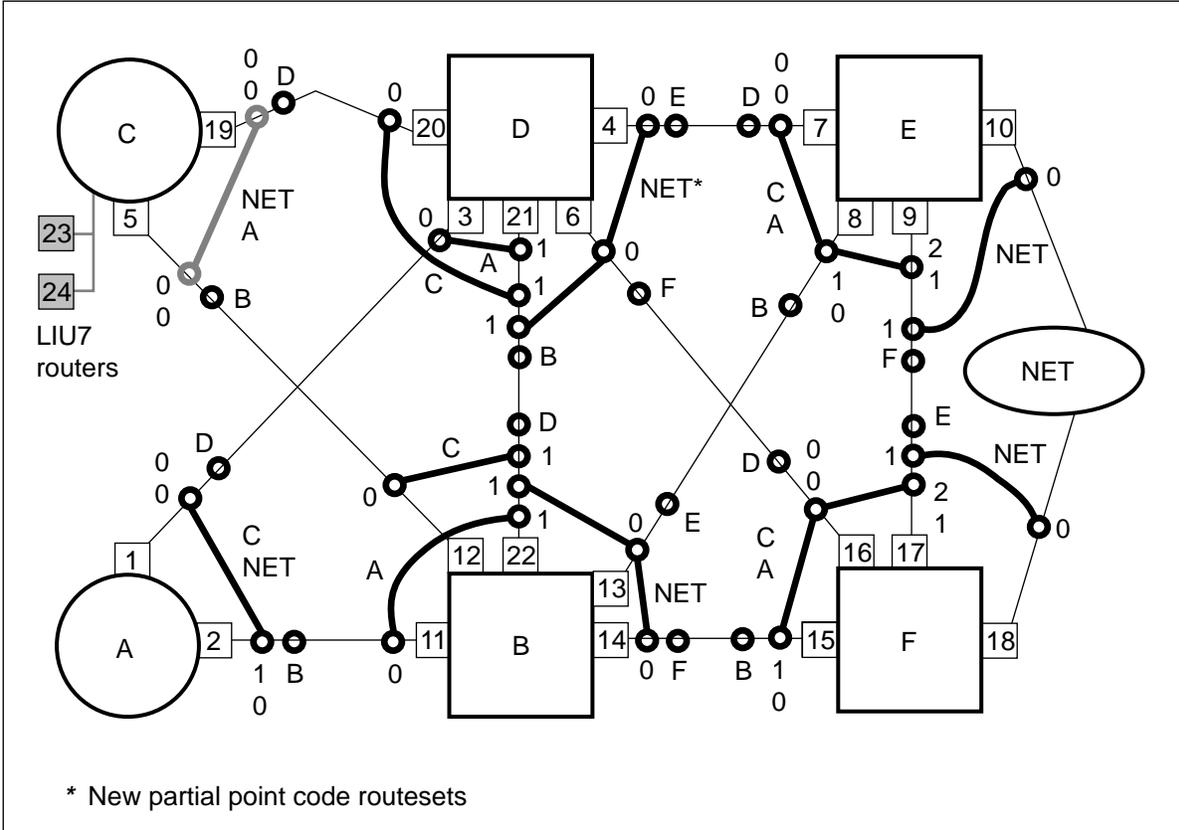
If more than 255 routesets are required, at least two extra LIU7s are required for external routing.

The LIU7s from the external A-link can be temporarily used as routers while partial point codes are converted to full point codes. The final number of routesets must not exceed 255 if the LIU7s are to be returned to the external A-link.

- 1 On node C, enable LIU7 routing if more than 255 routesets are required.
- 2 On node C, if desired, add full point code routesets for each partial point code routeset using the same linkset information as the original routeset.
- 3 On node C, if required, busy and return to service each full point code routeset. Busy, offline, and delete the redundant partial point code routesets.
- 4 On node C, add full point code routesets for each partial point code routeset that contains the old, unused CB linksets.
- 5 On node C, busy and return to service each full point code routeset.
- 6 On node C, busy, offline, and delete the partial point code routeset.
- 7 On node C, disable external routing.

Figure 5-14 shows the configuration after enabling LIU7 routing and adding full point code routesets.

Figure 5-14 Configuration after enabling LIU7 routing and adding full point code routesets



List of terms

A-link

See access links

access links

CCS7 network signaling links that allow SSPs, SCPs, and SPs to connect to STP nodes.

C-link

See cross links.

CCS7

See Common Channel Signaling 7.

CCS7 link interface unit (LIU7)

A peripheral module (PM) that processes messages entering and leaving a link peripheral processor (LPP) through an individual signaling data link. Each LIU7 consists of a set of cards and a paddle board provisioned in one of the link interface shelves of the LPP.

Common Channel Signaling 7 (CCS7)

A digital message-based network signaling standard, defined by the CCITT, that separates call signaling information from voice channels so that interoffice signaling is exchanged over a separate signaling link.

cross links

CCS7 network signaling links that are used to join STPs together to form mated pairs.

Digital Multiplex System (DMS)

A central office (CO) switching system in which all external signals are converted to digital data and stored in assigned time slots. Switching is performed by reassigning the original time slots.

Digital Trunk Controller (DTC)

A peripheral module (PM) that connects DS30 links from the network with digital trunk circuits.

DMS

See Digital Multiplex System.

DTC

See Digital Trunk Controller.

FEPC

Far-end point code.

GTT

See Global Title Translation.

Global Title Translation

The process that translates an application-specific address (such as a dialed 800 number) into the CCS7 address, usually that of the appropriate SCP.

INode

See integrated node.

integrated node (INode)

A DMS-100 product that combines the functionality of an SSP and an STP in a single node.

link interface shelf

One of the shelves in an LPP cabinet. Each link interface shelf houses 8 or 12 LIU7s.

link peripheral processor (LPP)

The DMS equipment frame or cabinet that contains two types of peripheral modules (PM): a link interface module (LIM) and one or more application-specific units (ASU).

LIS

See link interface shelf.

LIU7

See CCS7 link interface unit.

LPP

See link peripheral processor.

maintenance and administration position (MAP)

A group of components that provides a user interface between operating company personnel and the DMS-100 Family switches. The interface consists

of a video display unit (VDU) and a keyboard, a voice communications module, test facilities, and special furniture.

MAP

See maintenance and administration position.

message transfer part (MTP)

A CCITT no. 7 signaling (N7) protocol that provides a connectionless transport system for carrying common channel interoffice signaling no. 6 (CCIS6) and Common Channel Signaling 7 (CCS7) signaling messages between user locations or applications functions. Also known as message transport part.

method of procedure

A detailed step-by-step procedure used by operating company personal when installing new hardware or software.

MNA7

See multiple CCS7 network address (MNA7).

MOP

See method of procedure.

MPC

see multiple point code.

MTP

See message transfer part.

multiple CCS7 network address (MNA7)

A feature for DMS-INode that allows for one CCS7 point code to be assigned for the service switching point (SSP) and one point code for the signal transfer point (STP).

multiple point code

A type of INode in which the SSP and STP portions of the node have separate point codes.

ONP

See one-night process.

one-night process (ONP)

A process for upgrading software on DMS-100 Family switches. Refer to the "One-Night Process Software Delivery Procedure", 297-8991-303.

PRESWACT

A set of procedures performed prior to the switch of activity when completing an ONP.

right-to-use

A state-enabled password for a SOC option that must be obtained by the operating company before the state of a SOC option can be changed. The RTU is obtained by entering a password for the SOC option. The password is supplied by Nortel Networks.

RTU

See right-to-use.

SCCP

See signaling connection control part.

SCP

See service control point.

signaling connection control part (SCCP)

A level of Common Channel Signaling 7 (CCS7) layered protocol. It supports advanced services such as E800 and service switching point (SSP) and the Automatic Calling Card Service (ACCS) feature. The main functions of the SCCP include the transfer of signaling units with or without the use of a logical signaling connection and the provisioning of flexible global title translations (GTT) for different applications.

service control point

A node in a CCS7 network that supports application databases. The function of an SCP is to accept a query for information, retrieve the requested information from one of its application databases, and send a response message to the originator of the request.

service switching point (SSP)

A Common Channel Signaling 7 (CCS7) signaling node that interacts with the service control point (SCP) to implement special service code features.

signaling transfer point (STP)

A node in the Common Channel Signaling 7 (CCS7) network that routes messages between nodes. Signaling transfer points transfer messages between incoming and outgoing signaling links but, with the exception of network management (NWM) information, do not originate or terminate messages. Signaling transfer points are deployed in pairs. If one STP fails, the mate takes over, ensuring that service continues without interruption.

single CCS7 network address (SNA7)

A feature on a DMS-INode that allows an SSP and STP to function together with a single point code.

single point code

A type of INode in which the SSP and STP portions of the node share the same point code.

SNA7

See single CCS7 network address (SNA7).

SOC

See software optionality control.

software optionality control (SOC)

A tool used to deliver the optional functionality available in a product computing module load (PCL). Refer to the “*Software Optionality Control User Manual*,” 297-8991-901.

SPC

See single point code.

SSN

See subsystem number.

SSP

See service switching point.

STP

See signaling transfer point.

subsystem number (SSN)

The identification of a subsystem located at a Common Channel Signaling 7 (CCS7) point code that can supply data.

SWACT

See switch of activity.

switch of activity (SWACT)

In a DMS fault-tolerant system, a reversal of the states of two identical devices devoted to the same function. A SWACT makes an active device inactive and an inactive device active.

Appendix A: Partial point codes

This Appendix provides an overview of the function, benefits, and precautions regarding the use of partial point codes during the conversion procedure.

Overview

All nodes in a CCS7 network have individual addresses known as point codes. In ANSI networks, the point codes consist of the following three fields:

- network field, used to identify the network that a node belongs to
- cluster field, used to identify a group of nodes that are connected to the same STP pair
- member field, used to identify an individual node within a cluster

An example of a point code is 1-2-3. This point code represents network 1, cluster 2, and member 3.

Each node also has a list of all the point codes to which it can route messages. This list exists in Table C7RTESET. The point codes defined in Table C7RTESET can either be full point codes or partial point codes.

Full point code addresses contain one numerical value for each field in the address. For example, 1-2-3 is a full point code. A full point code represents the exact address of a node. If Table C7RTESET contains only full point code addresses, it contains one address for every node to which it can route messages.

Partial point code addresses contain values for only the network field, cluster field, or both. The fields that do not contain numerical data contain the symbol \$ (dollar sign). The \$ symbol is a wildcard value, representing all valid numerical values. An example of a partial point code is 1-1-\$. If this point code appears in table C7RTESET, it means that the node can route messages to any node that

- has the same partial point code defined in table C7RTESET (1-1-\$).
- has any full point code defined in table C7RTESET that begins with 1-1 (for example, 1-1-1, or 1-1-25).

Benefits

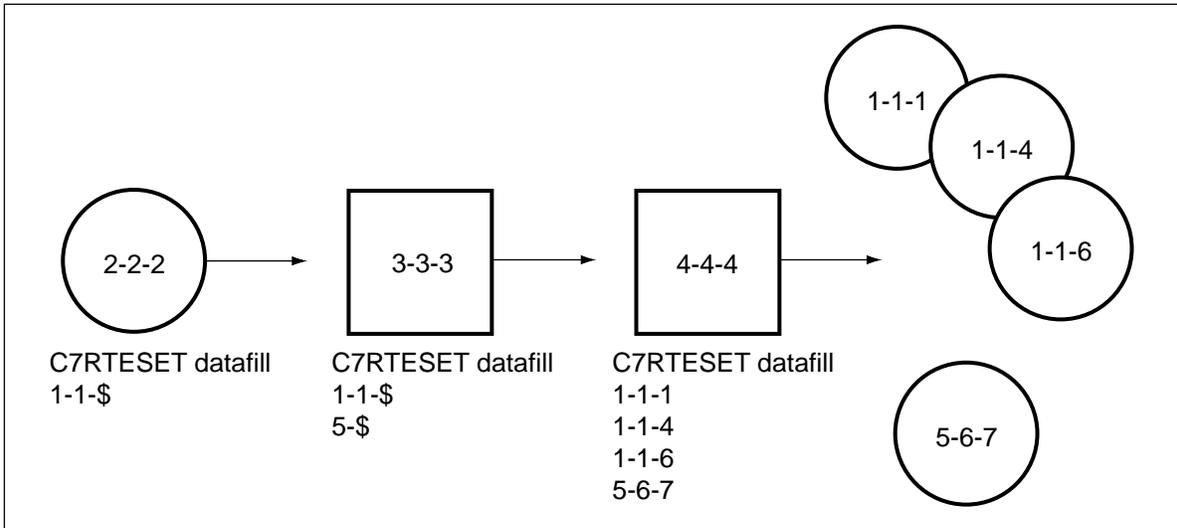
The benefits of partial point codes are:

- the conservation of space in table C7RTESET, by allowing one tuple to represent multiple point codes.
- the prevention of service outage when modifying the point codes of nodes. Partial point code routesets provide an alternate route while the original routeset is modified.

Example

Figure A-1 shows an example of how partial point codes are used by a CCS7 network.

Figure A-1 Partial point code example



The above diagram shows the process of sending a message from originating node 2-2-2 to destination node 1-1-1, using partial point codes. The process uses the following steps:

- 1 Node 2-2-2 has the partial point code 1-1-\$ entered in Table C7RTESET. This means that node 2-2-2 can route messages to any adjacent node that has the partial point code 1-1-\$, partial point code 1-\$-\$, or the full point code 1-1-1 defined in its Table C7RTESET datafill.
- 2 Node 2-2-2 sends the message to node 3-3-3 because node 3-3-3 has partial point code 1-1-\$ in its C7RTESET datafill.
- 3 Node 3-3-3 sends the message on to adjacent node 4-4-4, because node 4-4-4 has the full destination point code 1-1-1 defined in its Table C7RTESET datafill.
- 4 Because node 4-4-4 has the full destination point code defined in Table C7RTESET, it routes the message to the destination node 1-1-1.

Precautions

Before converting full point code routesets to partial point code routesets, ensure that:

- the full point code of each node exists in the Table C7RTESET datafill of at least one adjacent node.
- your application has some method for obtaining a full point code address if partial points routesets are used in Table C7RTESET.

Most applications do not support originating CCS7 messages that use partial point code addresses.

Appendix B: Activating routeset expansion and LIU7 external routing

After completing the conversion of both INode offices to logical SSPs and logical STPs, activate external routing and routeset expansion if desired. External routing and routeset expansion are required if the number of entries in Table C7ROUTER exceeds 255.

Appendix B provides a summary of the procedure for activating LIU7 external routing and routeset expansion. Refer to the *LIU7 External Routing Activation Guide*, 297-8991-030 for more information.

Before activating external routing, complete the following steps:

- 1 Provide at least two LIU7s for the external routing function.
- 2 Enter datafill into Table C7ROUTER for the new LIU7s.
- 3 Remove all of the single point code node type data from Table C7NETWRK.
- 4 Follow the placement rules for links and routers as described in the LIU7 External Routing Activation Guide, 297-8991-030.

Set routeset expansion SOC usage limit

Set the routeset expansion SOC usage limit before enabling external routing.

Set the routeset expansion SOC usage limit as follows:

- 1 Access SOC by typing
> SOC
- 2 View the current status of the routeset expansion option by typing
SOC>SELECT OPTION TEL00004
- 3 Change the SOC usage limit by typing
SOC>ASSIGN LIMIT limit keycode TO TEL00004
where
limit is the maximum number of routesets
keycode is the password used to enable the right-to-use (RTU) for the SOC option

- 4 Exit SOC by typing
SOC> **QUIT**

Enable external routing

Enable external routing as follows:

- 1 Access tools support by typing
CI> **TOOLSUP**
- 2 Access Table C7ROUTER by typing
CI> **ACCESS ON C7RTR**
- 3 Activate access to C7RTR by typing the passcode of the day. Obtain the passcode by contacting your next level of support.
- 4 Add datafill for the LIU7s to Table C7ROUTER.
- 5 Enable external routing using the C7RTR utility by typing
CI> **C7RTR**
- 6 Activate external routing by typing
C7RTR> **ACTIVATE**
- 7 Remove MTP databases from CCS7 DTCs by typing
C7RTR> **REMOVE MTP**
- 8 Query the state of external routing by typing
C7RTR> **QUERY_EXT_ROUTING**

After activating external routing and setting the maximum routeset limit, it is possible to add datafill for up to 2047 routesets in Table C7RTESET.

Disable external routing

This procedure disables the external routing functionality.

Disable external routing as follows:

- 1 Type
C7RTR> **REMOVE MTP**
- 2 Download the MTP databases to the DTCs by typing
C7RTR> **DOWNLOAD MTP**
- 3 Deactivate external routing by typing
C7RTR> **DEACTIVATE**
- 4 Query the state of external routing by typing
C7RTR> **QUERY_EXT_ROUTING**
- 5 Delete LIU7s from Table C7ROUTER.

Appendix C: Backing out

You can reverse the conversion procedure at any time.

Back out of the procedure by following all steps in the reverse order. Begin with the last part of the procedure that has been completed and work backwards to the first part. Within each section, follow the steps in reverse order.

For each step, replace each command with its opposite. Table 1 lists commands used in this conversion procedure and their opposites.

Table 1 Commands and their opposites used for backing out of the conversion procedure

Command	Opposite
activate (ACT)	deactivate (DEACT)
deactivate (DEACT)	activate (ACT)
delete (DEL)	add (ADD)
offline (OFFL)	return to service (RTS)
return to service (RTS)	offline (OFFL)

Note: The BUSY and POST commands do not have opposites.

For example, to back out of the step

busy, deactivate, and offline linksets JK and KL.

do the following:

busy, activate, and return to service linksets KL and JK.

Appendix D: Use of gateway screening to monitor for STP routing

The final step in the conversion process changes the new logical SSP node, A or C, from type SSP_STP to SSP in Table C7NETWRK. This step removes all STP routing functionality from the node. All messages sent to the node with destination point codes other than that of the node itself will be discarded.

Note: A service loss will occur when the new logical SSP node is changed from type SSP_STP to SSP unless all STP routing functionality has been removed from the node.

Gateway screening can be used to determine if all STP routing functionality has been removed from the new logical SSP node before changing the type from SSP_STP to SSP.

Gateway screening performs the following functions:

- blocks messages arriving on specific linksets that are destined for point codes other than the node performing the gateway screening
- uses logs to report when messages have been discarded

Gateway screening provides a way of determining if the SSP_STP node is still performing STP functions. If gateway screening indicates that the logical SSP_STP is still performing STP functions, investigate and correct the problem before changing the logical node type to SSP.

Set the allowed destination point code

Table C7ALWDPC datafill identifies which destination point codes are allowed on a node. Only SS7 messages destined for the local SSP node are to be accepted. The following gateway screening procedure enters point code datafill for the local node.

- 1 Access Table C7ALWDPC by typing
CI> **TABLE C7ALWDPC**
- 2 List the field headings for Table C7ALWDPC by typing
CI> **HEADING**

- 3 Set the range of allowed destination point codes (DPC) by typing
Cl> ADD REF1 0 ANS17 start_of_dpc_range end_of_dpc_range STOP \$
\$
where
start_of_dpc_range is the first DPC in a range of DPCs
end_of_dpc_range is the last DPC in a range of DPCs

Select linksets for screening

The following steps select the linksets that will be screened.

- 1 Access Table C7GTWLKS by typing
Cl> TABLE C7GTWLKS
- 2 List the field headings for Table C7GTWLKS by typing
Cl> HEADING
- 3 Select the linksets that will be screened by typing
Cl> ADD linkset Y C7ALWDPC REF1 \$ Y 1 5 Y 1 5 N N \$ \$

Gateway screening takes place on selected linksets for any destination point code that does not match the logical SSP point code. Using LOGUTIL, monitor logs CCS500 and CCS501 to determine if messages are arriving on the specified links and if any messages are being discarded.

If messages are being discarded, disable the screening function by changing the value of field ENABLED in Table C7GTWLKS to N. Correct the routing datafill on the logical SSP before changing the node datafill in Table C7NETWRK from type SSP_STP to type SSP.

You may remove the gateway screening data in Tables C7ALWDPC and C7GTWLKS after changing the node type from SSP_STP to SSP.

Appendix E: Addition of new link hardware

Verify that all new links and hardware are installed and working correctly before beginning the actual conversion procedure.

Much of the verification work can be completed with no impact on network traffic. The following steps show how to add new link hardware and verify the correct operation of the new hardware.

Attention

Co-ordinate these steps with the remote offices.

- 1 Add the required hardware for the link between nodes A and B.
- 2 On node A, add a new tuple to Table C7LKSET for link AB. The link type is B-link.
- 3 On node A, add a new tuple to Table C7LINK for linkset AB. Ensure that the hardware settings are correct for the link protocol.
- 4 On node A, add a new tuple to Table C7RTESET for route B using linkset AB.
- 5 On node B, add a new tuple to Table C7LKSET for link BA. The link type is B-link.
- 6 On node B, add a new tuple to Table C7LINK for linkset BA. Ensure that the hardware settings are correct for the physical link protocol. For example, if the protocol is V.35, one LIU7 must be set to DTE and the LIU7 connected to it must be set to DCE.
- 7 On node B, add a new tuple to Table C7RTESET for route A using linkset BA.
- 8 On nodes A and B, busy, activate, and return to service the new LIU7s, linksets, and routesets.

E-2 Appendix E: Addition of new link hardware

- 9** Inspect the C7RTESET MAP level to ensure that the new routesets are in service. Ensure that the linksets are aligned.
- 10** Record the data in Table C7LINK for the new links.
- 11** Confirm the connection. Busy, deactivate, offline, and delete all routesets, linksets, and link data.

Appendix F: Useful utilities

This section describes several useful utilities used during the conversion procedure.

List table tuples based on field entries

To list table tuples based on field entries use the following process:

- 1 Select a table by typing
Cl> **TABLE table_name**
where
table_name is the name of the table to be selected
- 2 List tuples by field name by typing
Cl> **LIST ALL (field_name EQ search_string)**
where
field_name is the name of the field to be displayed
search_string are the characters to search for within the field name

Create an alias for frequently used CI commands

To minimize retyping and to reduce errors, assign an alias to frequently-used CI command sequences. Create an alias for a command sequence by typing:

```
Cl> COMMAND new_name (command_sequence)  
where  
new_name is the name of the alias  
command_sequence is the sequence of commands assigned to the alias
```

The following steps show examples of several utilities along with sample output displays.

List routesets associated with a logical node

To list all routesets associated with a logical node, use the following process:

- 1 Select Table C7NETWRK by typing
Cl> **TABLE C7NETWRK**
and pressing the Enter key

- 2 List all nodes in Table C7NETWRK by typing
CI> LIST ALL
and pressing the Enter key

Figure 1 shows a sample MAP display of routesets associated with a logical node.

Figure F-1 Sample C7NETWRK node listing

NETNAME	NODETYPE	PTCODE	NI	SLSROT	TFR	MCS	CLUSTERS	RCTEST
MTPRES								
PALMER_COLUMBUS	SSP	ANSI7	227	189	254	NATL	Y Y 3 Y Y Y	
PALMER_COL_STP	STP	ANSI7	227	18	0	NATL	Y Y 3 Y Y Y	

- 3 Create an alias for the routeset listing command sequence by typing
CI> COMMAND alias_name (ALL (NETNAME EQ network_name))
where
alias_name is the name given to the alias
network_name is the name of the network in Table C7NETWRK
- 4 Select Table C7RTESET by typing
CI> TABLE C7RTESET
- 5 List all of the routesets associated with a particular logical node by typing
CI> LIST alias_name

Figure 2 shows a sample MAP display routeset listing.

Figure F-2 Sample routeset listing

ROUTESET	NETNAME	TFPBCAST	DPC	ROUTES
COLSPRTE	PALMER_COL_STP	N	ANSI7	(227) (189) (254) \$ (COLSPLK 0) \$
AUSTTXSTTEK_STP	PALMER_COL_STP	N	ANSI7	(227) (8) (0) \$ (AUSTLK 0) \$
NACN227196_STP	PALMER_COL_STP	N	ANSI7	(227) (196) \$ (TULSALK 0) (AUSTLK 0)

Rename routeset, linkset, and network tuples

To change routeset, linkset, and network tuple names without affecting network service, use the **C7RENAME** command. Use the **C7RENAME** command with Tables **C7NETWRK**, **C7RTESET**, or **C7LKSET**.

Change the network tuple name by typing

```
CI> C7RENAME C7NETWRK old_network_name new_network_name
```

where

old_network_name is the old network name in Table **C7NETWRK**

new_network_name is the new network name

Appendix G: ONP and SOC procedure

Use the standard one-night process (ONP) to upgrade the INode software. Refer to the *One Night Process Software Delivery Procedures*, 297-8991-303 for details. When the INode to INode load ONP is finished, the tuples in Table C7NETWRK contain node type SSP/STP. Node type SSP/STP indicates that the internal node provides both SSP and STP functions using a single network address.

After the ONP is finished and the new load is active, activate the MNA7 software optionality control. Links in the SSP and STP nodes can not be activated at the same time if the MNA7 SOC state is IDLE. Refer to the *Software Optionality Control Users Guide*, 297-8991-901 for instructions on changing the SOC option state. The MNA7 SOC order code is TEL00010.

Enable the MNA7 SOC as follows:

- 1 Access SOC by typing
> **SOC**
- 2 Display the current status of the MNA7 option by typing
SOC> **SELECT OPTION TEL00010**
- 3 Change the SOC state by typing
SOC> **ASSIGN RTU keycode TO TEL00010**
SOC> **ASSIGN STATE ON TO TEL00010**
where
keycode is the password used to enable option TEL00010
- 4 Exit SOC by typing
SOC> **QUIT**

DMS SuperNode STP/SSP Integrated Node

SNA7 to MNA7 Conversion Guide

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