

DEFINITY[®] Communications System Generic 2.2

World Class Routing

Implementation

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About This Document

Overview of World Class Routing

The World Class Routing (WCR) feature replaces and enhances the earlier Automatic Route Selection (ARS) and Automatic Alternate Routing (AAR) features. WCR analyzes digit streams and routes calls in a more general manner that eliminates the routing software's preconceptions either about the structure of the dialing plan being used or the correct method of routing certain types of calls.

These more general routing algorithms offered by the WCR feature present both opportunities and challenges for both switch administrators and network designers. With careful network planning and a thorough understanding of the additional networking parameters that are now fully under the control of switch administrators and network designers, the WCR feature presents an opportunity to resolve routing problems and to create routing applications in unique and elegant ways. However, the WCR feature also challenges switch administrators and network designers to fully understand and plan their activities. For without careful planning or thorough understanding, the WCR feature has the uncontrolled power to break routing capabilities that were automatically provided by the ARS and AAR features and that may have been taken for granted by the same switch administrators and network designers.

This implementation manual, as a partial response to this challenge, presents networking information in a way that correlates a specific routing concept, application, or process with a specific set of administration procedures.

Purpose of This Document

This manual provides supplemental reference, applications, and procedural information for networking administration of the Definity® Generic 2.2 telecommunications system. This information can be used by various audiences from on-site switch administrators and local systems consultants to technical-marketing personnel and voice/data network engineers.

This manual is not intended to stand alone as a single reference source for the WCR feature. Rather, this manual should be used in conjunction with the following documents:

- *Definity Generic 2.2 — Feature Descriptions* (555-105-301)

Provides a topical description of the WCR feature that also includes user operating procedures, considerations, interactions with other features, and an administration table organized by Manager II procedures.

- *Definity Generic 2.2 — Administration Procedures* (555-105-506)

Presents an ordered Manager II procedure-by-procedure administration process for either implementing or changing the assigned attributes of WCR.

- *Definity Generic 2.2 — Administration of Features and Hardware* (555-105-507).

Presents the valid entries and ranges for each Manager II field involved in the WCR administration process. This manual also provides help messages for many of the fields to facilitate the administration process.

The WCR Implementation manual concentrates on the concept of “circuit-switched routing” — the ability to deliver calls from an origination point “A” to the specified destination point “B.” This manual is much less concerned with detailed trunk-group translations (usually residing in procedures such as Procedure 100, 101, 116, 260, or 262) covering the physical, signaling, and/or error-detection/correction attributes that may be assigned to the physical facilities delivering the calls. For general information about the physical and signaling aspects of trunk-group connectivity, refer to documents such as:

- *Network and Data Connectivity Reference* (555-025-201)
- *AT&T Product Interfaces Reference* (555-037-232)
- *DS1/PRI Reference* (555-025-104)

How to Use This Document

Although the author of this manual assumes that its readers have some background in circuit-switched routing, an extensive background is by no means required to benefit from this manual’s reference, applications, and procedural contents. However, the author assumes that users of this manual have first obtained a basic *conceptual* understanding of the World Class Routing feature by examining Section 134, *World Class Routing*, in the Feature Descriptions manual.

Once a reader understands some basic WCR concepts such as:

- The modular structure of the WCR software
- The purpose of the network digit analysis (NDA) module
- The role of a “digit string” in digit analysis
- The role of a virtual nodepoint identifier (VNI) in route selection
- The dual roles of the digit modification module — during digit analysis and after preference selection

the reader should be able to understand, use, and quickly access the material in this manual.

Organization of This Document

Different readers of this manual will have different backgrounds and, therefore, different expectations from the manual. For example, some readers will be quite familiar with the pre-G2.2 routing capabilities. Other readers, although comfortable with the concept of circuit-switched routing, may be unfamiliar with any of the previous AT&T offerings.

The organization chosen for this manual is only one of many that could have been developed for a topic as complex as WCR, and no single organization is likely to be ideal for every reader. Given these assumptions, the manual provides contents, chapter tabs, section tabs, and an extensive index to increase the usability of this manual for readers. These tools should facilitate access to this manual and enable a variety of readers to acquire the WCR information they need — when and as the information is needed.

The following is the high-level organization of this manual.

Chapters 1 through 4 discuss circuit-switched routing with a focus on the new WCR routing concepts and capabilities.

- Chapter 1, *Essential WCR Concepts*, introduces the modular WCR software architecture and begins to show the adaptive flexibility of this modular architecture.
- Chapter 2, *Guidelines for Assigning WCR Networks*, provides a detailed description of the digit-analysis module and presents a variety of considerations to help administrators implement and maintain the WCR feature.
- Chapter 3, *Addressing Specific Routing Applications*, presents translation models to help administrators adapt to changes in the routing environment and improve the routing capabilities of the switch.
- Chapter 4, *WCR Feature Flow Diagram*, presents a detailed picture of the flow of calls through the WCR software.

Chapter 5, *Comparative Administration*, focuses on the concepts and capabilities of the previous AAR and ARS features. This chapter describes the previous routing capabilities and how they were translated. Then, for each capability, Chapter 5 shows how the new WCR feature can be translated to emulate it.

With the support of Chapter 5, Chapter 6, *WCR TRACS Upgrade Process*, discusses the WCR feature from the perspective of the G2.2 WCR translations that are generated by the Translations Recovery, Additions, and Conversions System (TRACS) upgrade software. This chapter describes the philosophy and execution of the WCR upgrade by the TRACS software and references other sections of the manual to help administrators adapt and enhance their routing translations.

A list of expanded abbreviations, a glossary, and an index are also provided.

1. Essential WCR Concepts

1.1 Reasons for World Class Routing

The WCR feature replaces the Automatic Alternate Routing (AAR) and the Automatic Route Selection (ARS) features that were available for System 85 during Release 2 and for Definity® Generic 2.1 telecommunications system. AAR and ARS were originally developed for the Dimension® system product line during the 1970's when the structure and content of the North American numbering plan (NANP) were concrete and when international routing needs were limited. Because the structure of the numbering plan was so explicit and seemed so enduring, the basic software architecture of the AAR and ARS features depended on that structure to provide speed and simplicity (at the expense of flexibility) to the switch's routing algorithms.

However, the older AAR/ARS architecture has struggled to adapt to the rapid and accelerating changes in the numbering plan, especially since the divestiture of the Bell System. During the same period, American international routing needs have exploded and the price of international long distance has declined. More American corporations have divisions, subsidiaries, and joint ventures abroad, and more users have a frequent need for international service.

Future demands for routing flexibility are sure to increase. Corporate switches must have the routing flexibility to readily adjust to continuing changes in existing numbering plans or to the adoption of new numbering plans.

1.2 Digit Streams, Strings, and String Identifiers

As an introduction to WCR implementation, this section explains the terms “digit stream,” “string,” and “string identifier” to provide a basic understanding of the way the WCR routing software recognizes the digits (especially address digits) that it uses to route calls.

Suppose that a user of a Generic 2.2 dials the digits:

9 - 10288 - 415 - 766 - 1675

to place a call to San Francisco using the facilities of a specific interexchange carrier (IXC).

The leading digit “9,” which provides access to WCR's public-network routing capabilities, is strictly not a part of the incoming digit stream. From WCR's perspective, an incoming digit stream contains every received digit (either dialed or sent over a trunk group) except the

digit(s) used to access the software (that is, the access code).^{*} Therefore, in the previous example, the digit contents of the incoming digit stream are as follows:

102884157661675

since the WCR software doesn't see the '-' sign delimiters.

According to typical Generic 2.2 routing translations, the WCR software is likely to logically divide this 15-digit incoming digit stream into a 5-digit IXC string (in this case, "10288") and a 10-digit address string (in this case, "4157661675"). The resulting string content of the incoming digit stream would therefore be:

10288 4157661675

However, as shown in the rest of this manual, there is frequently no need for the WCR routing software to see the entire digit contents of a string in order to identify and appropriately respond to the string. In fact, the WCR software can often identify a string by:

- Collecting the digit contents of the string's assigned string identifier (in Fields 1 through 6 of Procedure 314 Word 1)
- Knowing the assigned final length (in Field 9 of Procedure 314 Word 1) of the string corresponding to the previous string identifier

Therefore, the WCR software could define the previous strings accordingly.

10288	Using "1028" as the 4-digit string identifier of the 5-digit string
4157661675	Using "415" as the 3-digit string identifier of the 10-digit string

1.3 WCR Software Modules

As shown in the following figure, WCR's four modules comprise a fairly simple software architecture. At an overview level of understanding, this modular structure limits the number of paths that a call can traverse through the WCR software and thereby simplifies maintenance of the software.

^{*} An access code is never seen by the WCR routing software. The G2.2's internal dial plan is the software function that recognizes and responds to the access digit(s).

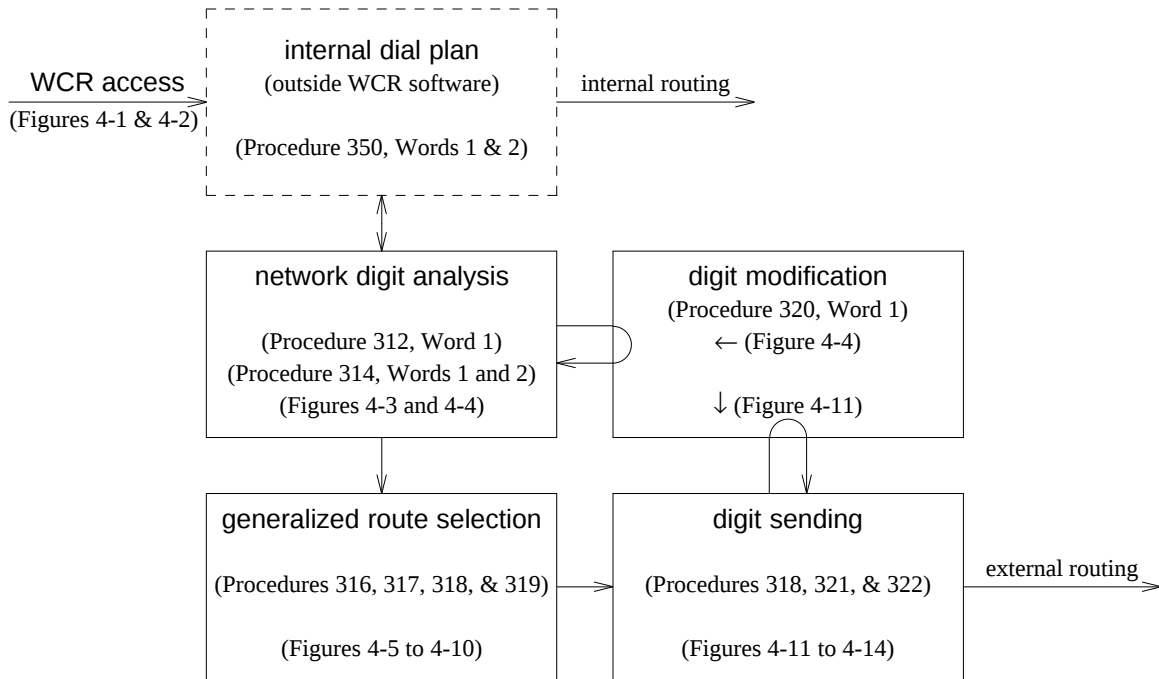


Figure 1-1. Structure of WCR Routing Modules

The four modules include:

- Network digit analysis

The NDA module identifies and analyzes received digits to derive a virtual nodepoint identifier (VNI) for subsequent use in pattern selection, and hands off the VNI to the generalized route selection (GRS) module.

The routing parameters of the NDA module are assigned for each network in Procedure 312 Word 1 and for each string in Procedure 314 Words 1 and 2. Figures 4-3 and 4-4 show the details of a call's flow through the NDA module. Also, Section 2.1 provides a detailed description of the rules used by the NDA module to identify digit strings.

- Generalized route selection

The GRS module selects the best preference (or if unavailable, at least an appropriate preference) within the pattern assigned to route each call to the destination usually specified by the call's address digits.

The routing parameters of the GRS module are assigned in Word 1 of Procedure 316, Words 1 and 2 of Procedure 317, Word 1 of Procedure 318, and Word 1 of Procedure 319. Figures 4-5 through 4-10 (roughly) show the details of call flow through the GRS module.

- Digit sending

The digit-sending module formats an outgoing digit stream, appropriately sends the digit stream during call setup, and establishes a stable talking connection.

The attributes of the digit-sending module are assigned in Word 1 of Procedure 318, Words 1 and 2 of Procedure 321, and Word 1 of Procedure 322. Figures 4-11 through 4-14 (roughly) show the details of a call's flow through the digit-sending module.

- Digit modification

The digit-modification module alters the contents of the digit stream for the NDA and/or the digit-sending module.

The attributes of the digit-modification module are assigned in Word 1 of Procedure 320. These attributes can be invoked (using an index) from the NDA module (in Procedure 314) and/or the digit-sending module (in Procedure 318). Figures 4-4 and 4-11 show where the digit-modification module can be invoked.

1.3.1 Access to the WCR Software

First, the internal dial plan (assigned in Words 1 and 2 of Procedure 350) operates on *every* locally dialed outgoing, tandem, and incoming call. The internal dial plan can hand off calls to WCR for subsequent routing in several ways:

- Recognizing a WCR network access code (either locally dialed or received over an incoming or 2-way trunk group) and sending the call to the specified network for digit analysis
- Inferring the WCR network access code assigned to an incoming or 2-way trunk group (in Procedure 101 Word 3) and sending the call to the assigned network for digit analysis
- Recognizing an extension number, either locally dialed or received over an incoming [usually Direct Inward Dialing (DID) or 2-way trunk group, as a number requiring Extension Number Portability (ENP) or uniform dial plan (UDP) routing and sending the call to Network 0 for digit analysis.

1.3.2 Flow of Outgoing and Tandem Calls

Once an outgoing or tandem call has accessed and flows through the WCR software, three of the four WCR modules including:

- Network digit analysis
- Generalized route selection
- Digit sending

always operate on the call. In addition, an outgoing or tandem call can make either one or two side trips to the digit-modification module. This allows the destination digits to be manipulated either during digit analysis or before the digits are sent over the outgoing trunk or both.

1.3.3 Flow of Incoming Calls

Once an incoming call has accessed and flows through the WCR software, one of the modules, network digit analysis, *always* operates on the call. In addition, incoming calls can make a side trip to the digit-modification module. This allows the received digits to be manipulated during digit analysis and before the call is sent back to the internal dial plan for local routing.

1.4 WCR Routing Flexibility

The network digit analysis (NDA) module is an important component of the more general routing algorithms provided by the WCR feature. Using the NDA module (in Procedure 314), a switch administrator can literally define (or *redefine*) the G2.2's understanding of the structure of a numbering plan (including the public-network numbering plan) so that the G2.2 routing software can readily adapt to the rapidly changing principles and applications of circuit-switched routing.

1.4.1 Decay of the Strict Interpretation of the NANP

During the 1950's, when the direct distance dialing (DDD) long-distance format was first established by the Bell System, the newly established format was expected to serve North American telecommunications needs into the foreseeable future. Now, with what were then unforeseen changes in the demands placed on the numbering plan such as the:

- Increasing population density of metropolitan areas
- Rapid expansion of data communications
- Increasing demand for cellular-telephone numbers

the NANP is running out of the capacity to provide an address for all of the lines being demanded by consumers.

Most readers are probably already aware that the NANP is quickly running out of area codes. By the year 1994, Bellcore will have expanded the capacity of the "NIX" area-code format.* The revised area-code format will contain digits other than "0" or "1" as the middle digit. But, this clearly was not the only possible solution,† and few (if any) solutions, in this era of rapid telecommunications growth, should ever be taken as a final solution.

In the following examples, as initial evidence of the flexibility of the NDA module, Procedure 314 Word 1 can be assigned to recognize and handle [in this case, resolve the assigned strings to virtual nodepoint identifiers (VNIs)] interlata calls with the revised area-code formats, "NXX," and the hypothetical format "NIIX."

* According to the 3-digit "NIX" area-code format: N = 2 through 9, I = 0 or 1, and X = 0 through 9.

† Perhaps, Bellcore could have elected to establish 4-digit area codes with an "NIIX" format.

Example 1: Suppose that Bellcore announces that the NANP will begin using the first area code in the expanded “NXX” format (allowing the digits “0” through “9” as the middle digit).

Then, as the first area code (for example, “858”) and each new area code is established, a switch administrator need only define the new code for the switch.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	8
2. Digit 2:	5
3. Digit 3:	8 (New Area Code in “NXX” Format)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	10
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	1 Virtual Nodepoint Identifier
13. Action Attribute:	1 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥	
MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 8 5 8 ;;1 1 10 6 0 1 1 1 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cnds	

NOTE

Throughout this manual, Manager II screens, like the previous screen, are shown in the context of the material being discussed.

Off to the right side of many field entries within each screen, text appears that describes the meaning of the value entered in the corresponding field(s). If a line of text is enclosed in parenthesis, then the text is provided by the author to aid the reader’s understanding. (Meanings enclosed in parenthesis do not actually appear on the Manager II screen during administration.) If a line of textual meaning is not enclosed in parenthesis, then the text resembles the actual content of the Manager II screen during administration.

NOTE

The previous screen shows a very powerful procedure, Procedure 314 Word 1, for the first time in this manual. For the present time, don’t be too concerned about the details of its assignment. By the time that you have reviewed Chapters 2, 3, and 5, this procedure will seem quite familiar.

Example 2: Suppose that Bellcore had instead changed the 3-digit “NIX” area-code format into an expanded “NIIX” format and that every existing 3-digit area code (for example, “212”) were converted into the new format by repeating the second digit as the new third digit (that is, “2112”).

Then, to adjust the routing software to this hypothetical format change, a switch administrator could redefine every 10-digit string (using an old 3-digit area code as the string identifier) as an 11-digit string (using the new 4-digit area code as the new string identifier).

ENHANCED MODE - PROCEDURE: 314, WORD: 1
 NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION

STRING IDENTIFIER

1. Digit 1:

2. Digit 2:

3. Digit 3:

4. Digit 4: (Revised NYC Area Code in “NIIX” Format)

5. Digit 5:

6. Digit 6:

7. Segment:

8. Last Segment: Last Segment - Add to Standard Network

9. String Length:

10. String Type: Address

11. Action: Resolve

12. Action Object: Virtual Nodepoint Identifier

13. Action Attribute: Facility Restriction Level

14. Network Number:

Connected to CC0 ON-LINE ♥

enter command: p314w1 2 1 1 2 ;;1 1 11 6 0 1023 1 1 axdx_

1.4.2 Evolution of the IXC Access-Code Format

Possibly, fewer readers are aware that the dialing plan is also running out of 5-digit IXC codes. This code shortage, in a telecommunications environment characterized by wide-open long-distance competition, has already caused Bellcore to consider changing the structure of IXC codes to allow both 5- and 7-digit codes*.

Although, no 7-digit IXC codes are planned before the year 1996, the advent of an expanded format for IXC codes is fairly inevitable.

* The structure of a 5-digit IXC code (allowing up to 1,000 codes) is: “10” + 3-digit carrier identification code (CIC). The proposed structure of a 7-digit IXC code (allowing up to 10,000 codes) is: “101” + 4-digit CIC.

According to the proposal, every IXC with an assigned 5-digit code will, at first, also be assigned a 7-digit code. During this transition period, calling parties will be allowed to place calls via their chosen carrier using either code. Also, during the transition, new carriers will only be assigned 7-digit codes. Eventually, after sufficient user acceptance, the 5-digit IXC codes will be eliminated and only the 7-digit codes will remain.

Coexisting 5- and 7-Digit IXC Codes

Given the previous discussion about the evolving IXC-code format, switch administrators would like to have routing software that can gracefully span whatever transition may occur. The general routing algorithms of the WCR software will take the proposed transition in stride.

As further evidence of the flexibility of the NDA module, Procedure 314 Word 1 can be assigned to recognize both a 5-digit IXC code and its corresponding 7-digit code and handle the calls in the same way [in this case, resolve the analyzed IXC codes to the same VNI and continue digit analysis (to validate the address digits) in the same network after freezing the VNI].

Example: Suppose that, during the proposed transition to 7-digit IXC codes, users want to be allowed to dial either the 5- or the 7-digit code to reach their chosen carrier.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	1
2. Digit 2:	0
3. Digit 3:	2
4. Digit 4:	8
5. Digit 5:	8 (User-Requested Carrier in 5-Digit Format)
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	5
10. String Type:	2 IXC (Interexchange Carrier)
11. Action:	0 Resolve
12. Action Object:	12 Virtual Nodepoint Identifier
13. Action Attribute:	4 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 1 0 2 8 8 ;1 1 5 2 0 12 4 1 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cnds

* The concept of a “frozen VNI” is discussed in Section 2.2.1.

ENHANCED MODE - PROCEDURE: 314, WORD: 2
 NETWORK DIGIT ANALYSIS - STRING ATTRIBUTE SPECIFICATION

1. Continue: Continue Digit Analysis
2. Restart Analysis:
3. VNI Operation:
4. Freeze VNI: Freeze
5. Maximum Length:
6. Tone: No Dial Tone Added

Connected to CC0 ON-LINE ♥

enter command: w2 1 ;;1 cxdx_

ENHANCED MODE - PROCEDURE: 314, WORD: 1
 NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION

STRING IDENTIFIER

1. Digit 1:
2. Digit 2:
3. Digit 3:
4. Digit 4:
5. Digit 5:
6. Digit 6: (First 6 Digits of User-Requested Carrier)
7. Segment:
8. Last Segment: Segment is not the last for this SI
9. String Length:
10. String Type:
11. Action:
12. Action Object:
13. Action Attribute:
14. Network Number:

Connected to CC0 ON-LINE ♥

enter command: p314w1 1 0 1 0 2 8 1 0 axdx_

ENHANCED MODE - PROCEDURE: 314, WORD: 1
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION

STRING IDENTIFIER

1. Digit 1: (User-Requested Carrier in 7-Digit Format)
2. Digit 2:
3. Digit 3:
4. Digit 4:
5. Digit 5:
6. Digit 6:

7. Segment:
8. Last Segment: Last Segment - Add to Standard Network
9. String Length:
10. String Type: IXC (Interexchange Carrier)
11. Action: Resolve
12. Action Object: Virtual Nodepoint Identifier
13. Action Attribute: Facility Restriction Level
14. Network Number:

Connected to CC0 ON-LINE ♥

enter command: p314w1 8 ;;;;2 1 7 2 0 12 4 1 axdx_

ENHANCED MODE - PROCEDURE: 314, WORD: 2
NETWORK DIGIT ANALYSIS - STRING ATTRIBUTE SPECIFICATION

1. Continue: Continue Digit Analysis
2. Restart Analysis:
3. VNI Operation:
4. Freeze VNI: Freeze
5. Maximum Length:
6. Tone: No Dial Tone Added

Connected to CC0 ON-LINE ♥

enter command: w2 1 ;;1 cxdx_

7-Digit IXC Codes

Then, after the proposed transition is finished, the switch administrator can remove the 5-digit IXC codes so that the rules of the switch's public-network dialing plan match the rules outside the switch.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	1
2. Digit 2:	0
3. Digit 3:	2
4. Digit 4:	8
5. Digit 5:	8 (User-Requested Carrier in 5-Digit Format)
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	5
10. String Type:	2 IXC (Interexchange Carrier)
11. Action:	0 Resolve
12. Action Object:	12 Virtual Nodepoint Identifier
13. Action Attribute:	4 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 1 0 2 8 8 ;;;;;;;;;1 dxrx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

Operator Assistance and 7-Digit IXC Codes

Should the 7-digit IXC-code format be accepted, the NDA module of the WCR feature can also easily route operator-assisted calls to a specific carrier's operator.

After the 7-digit IXC has frozen the VNI and continues digit analysis in the same digit-analysis network, the NDA module can be assigned to accept and route operator-assisted calls with string lengths of from 1 to 31 digits.

Example: After the NDA module resolves a 7-digit IXC to a VNI and freezes it. The NDA module allows a 1- to 31-digit operator assisted call to route over the frozen VNI.

Suppose that a caller dials an operator-assisted call using the address digits:

9 - 1010288 - 0 - 415 - 276 - 8710

First, as already shown, Network 1 resolves the 7-digit string with the string identifier "1010288" to VNI 12, freezes the VNI, and continues digit analysis in Network 1.

1-12 Essential WCR Concepts

Then, Network 1 validates the 1- to 31-digit string with the string identifier “0” thus allowing the call to route using the frozen VNI.

ENHANCED MODE - PROCEDURE: 314, WORD: 1

NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION

STRING IDENTIFIER

1. Digit 1: 0 (Public-Network Operator)

2. Digit 2: --

3. Digit 3: --

4. Digit 4: --

5. Digit 5: --

6. Digit 6: --

7. Segment: 1

8. Last Segment: 1 Last Segment - Add to Standard Network

9. String Length: 1

10. String Type: 5 Operator Assistance

11. Action: 0 Resolve

12. Action Object: 17 Virtual Nodepoint Identifier

13. Action Attribute: 2 Facility Restriction Level

14. Network Number: 1

Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT

enter command: p314w1 0 ;;;;1 1 1 5 0 17 2 1 axdx_

2 Repeat3 Form5 Help6 Field7 Input8 Cnds

ENHANCED MODE - PROCEDURE: 314, WORD: 2

NETWORK DIGIT ANALYSIS - STRING ATTRIBUTE SPECIFICATION

1. Continue: 0 Terminate Digit Analysis

2. Restart Analysis: 0

3. VNI Operation: 0

4. Freeze VNI: 0 Do Not Freeze

5. Maximum Length: 31

6. Tone: 0 No Dial Tone Added

Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT

enter command: w2 cf5 31 cxdx_

2 Repeat3 Form5 Help6 Field7 Input8 Cnds

1.4.3 Expanded IDDD Numbering Plan

The International Telephone and Telegraph Consultative Committee (CCITT) has expressed concern that the international direct distance dialing (IDDD) plan is also running out of capacity. As a result, the CCITT is considering the addition of either one or two digits to the maximum string length of international addresses.

Currently, the maximum length of an international address is 15 digits with the following components.

3-digit country code - 4-digit city code - 8-digit local number

Even if the CCITT decides to add both digits to this format, probably one to the country code and one to the local number, the WCR feature is already prepared to completely analyze international addresses with the resulting new maximum of 17 digits. This is because the NDA module, in Procedure 314 Word 1, can be assigned to analyze an address with up to 18 address digits (that is, up to three 6-digit segments).

2. Guidelines for Assigning WCR Networks

2.1 Understanding the Rules of NDA

The overriding object of the network digit analysis (NDA) module of the WCR feature is to correlate a digit stream (either locally dialed or received over an incoming trunk group) with a virtual nodepoint identifier (VNI) that is passed on to the generalized route selection (GRS) module for subsequent route selection. However, before this correlation can be made, a portion of the NDA module must correctly identify the digit stream.

The NDA module identifies each digit stream, one string at a time, according to translations in Procedure 314 Words 1 and 2.

As an example, the 7-digit string with the string identifier “538” is assigned in the following Manager II screens. Within these screens, the specific fields (or groups of fields) that the NDA module uses to identify strings are marked with arrows.

ENHANCED MODE - PROCEDURE: 314, WORD: 1
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION

STRING IDENTIFIER ←

1. Digit 1: 5
2. Digit 2: 3
3. Digit 3: 8 (Local Office Code)
4. Digit 4: --
5. Digit 5: --
6. Digit 6: --

7. Segment: 1
8. Last Segment: 1 Last Segment - Add to Standard Network
9. String Length: 7 ←
10. String Type: 6 Address ←
11. Action: 0 Resolve ←
12. Action Object: 3 Virtual Nodepoint Identifier
13. Action Attribute: 0 Facility Restriction Level
14. Network Number: 1

Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT

enter command: p314w1 5 3 8 ;;1 1 7 6 0 3 0 1 axdx_

2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds

ENHANCED MODE - PROCEDURE: 314, WORD: 2
 NETWORK DIGIT ANALYSIS - STRING ATTRIBUTE SPECIFICATION

1. Continue: Terminate Digit Analysis <—
2. Restart Analysis: <—
3. VNI Operation: Reset VNI to '0'
4. Freeze VNI: Do Not Freeze
5. Maximum Length: <—
6. Tone: No Dial Tone Added

Connected to CC0 ON-LINE ♥

enter command: p314w2 dx_

Since Procedure 314 places few restrictions on the content of string identifiers, the lengths of strings, and the types of strings that can be assigned, correctly identifying each string is a difficult process.

For a given set of string translations in Procedure 314 and for each set of collected digits, the WCR digit-analysis software must first compare the collected digits with the string translations to find one or more “candidates” for selection. Then, as more of the string’s digits are collected, the digit-analysis software gradually eliminates all except one of the candidates, which becomes an identified string.

The NDA module identifies strings using a “best match” algorithm with the following concepts in the following order:

1. The digit-analysis software compares the received digits against the assigned string identifiers in the order the digits are collected. A string remains a *candidate* while every digit in its string identifier is an ordered match with the collected digits.
2. As the collected digits are compared to a network’s strings, more than one candidate (having the same or similar string identifiers but different string lengths) could be an acceptable match. When this happens, the NDA software collects additional digits and applies the string-length criterion to make the best match.
3. As the digits are compared to string identifiers, a longer string identifier is a better match than a shorter string identifier.
4. As the digits are compared with string identifiers, the NDA software eliminates string identifiers with string *types* that are not allowed to follow the previous string in sequence.

5. After the best match is made in a standard network, the NDA software checks for another match (with the same string length and string type) in the corresponding exception network. If found, any exception match takes precedence over the standard match.
6. As the collected digits are compared to an exception network's string identifiers, an explicit string identifier is a better match than a "wild-card" string identifier.

NOTE

Since wild-card strings cannot be assigned to a *standard* network in Procedure 314 Word 1, this rule does not apply to digit analysis within standard networks.

Although the previous set of concepts may seem tenuous, the following examples will clarify these six concepts, restate the concepts as *rules* in the appropriate context, present two corollaries to the rules for some special contexts, and present the rules and corollaries in a summary list for future reference.

2.1.1 Digit-Collection Timers

In preface to the examples, two timers used by the switch to assist in digit collection should be defined. If the appropriate timer elapses during digit collection, then the switch assumes that every digit has been collected and, if possible, begins responding to the caller's request.

Ordinarily, the switch invokes the *standard* 10-second timer between consecutive digits to decide when every digit is collected. However, during WCR digit analysis, the NDA software can also invoke the *assigned* timer (in Field 3 of Procedure 285 Word 1) to select the candidate with the correct string length. Whenever the WCR software does not invoke the assigned timer to distinguish between strings with different lengths, the switch invokes the standard timer between consecutive digits to decide when every digit is collected.

2.1.2 Analyzing Strings that Terminate Digit Analysis

Strings with Fixed String Lengths

Example 1: Assume that the following strings are assigned in Network 1.

String Identifier	String Length	Digit-Collection Attribute
538	7 digits	Terminate
539	7 digits	Terminate
547	7 digits	Terminate
638	7 digits	Terminate

Also, assume that a caller is beginning to dial the digits:

9 (network-1 DAC) - 539 - 2397

As the switch collects the first digit “9,” the internal dial plan recognizes the “9” as the WCR Network-1 access code and passes control to Network 1 for subsequent analysis. At this point in time, the switch has not collected any digits for Network 1 to analyze. So, none of the assigned Network-1 strings have been eliminated as candidates.

As the switch collects the digit “5,” the string identifier “638” is no longer a possible candidate (because the string identifier’s leading digit “6” does not match the first dialed digit).

As the switch collects the following digits “39,” the complete set of collected digits is now “539.” At this point, the NDA software compares the assigned strings with the collected digits and finds only one remaining candidate — the string with the string identifier “539.” Then, NDA selects this string, prepares to use the string’s assigned characteristics (in Procedure 314 Words 1 and 2) to derive a VNI, and prepares to collect the string’s remaining four digits.

Rule 1: A string remains a candidate while every digit in its string identifier is an ordered match with the collected digits. (Conversely, a string is eliminated as a candidate when a digit in its string identifier does not match the corresponding collected digit.)

Example 2: Assume that the following strings are assigned in Network 1.

String Identifier	String Length	Digit-Collection Attribute
538	7 digits	Terminate
538	10 digits	Terminate

Also, assume that a caller is beginning to dial the digits:

9 - 538 - X ... X

As the switch collects the digits “538,” the NDA software compares the assigned strings with the received digits and cannot eliminate either string as a candidate. Since the two strings differ by their *lengths*, the NDA software can only identify the correct string after enough digits are collected.

So the switch collects the remaining digits in the shorter string (in this case, four more digits for a total of seven) and then sets the assigned interdigit timer (with the duration specified in Field 3 of Procedure 285 Word 1).

If the switch collects another digit before the assigned timing interval elapses, the NDA software selects the longer string. If not, the NDA software selects the shorter string.

Rule 2: When multiple candidates differ by their string lengths, the switch uses the string-length criterion to select the best candidate by applying the assigned interdigit timing interval to the collection of additional digits.

If, in the previous example, the *standard* 10-second timing interval elapsed after the switch collected eight digits (for example, “538 - 1234 - 9”) the call would fail. Since the switch collected the eighth digit before the *assigned* timing interval elapsed, the 7-digit string would have been eliminated as a candidate. However, since the switch received too few digits to select the 10-digit string before the standard interval elapsed, the switch would deny the call.

If the WCR feature should route 7-, 8-, and 9-digit strings with the string identifier “538” in the same manner, then the following strings should be assigned.

String Identifier	String Length	Digit-Collection Attribute	Action Object
538	7 digits	Terminate	Resolve to VNI 50
538	8 digits	Terminate	Resolve to VNI 50
538	9 digits	Terminate	Resolve to VNI 50
538	10 digits	Terminate	Resolve to VNI 88

Due to a data-structure limitation, Procedure 314 Word 1 does not allow a fixed-length string to have a longer string length than a variable-length string with the same string identifier. Therefore, the following string assignments are not allowed to serve as equivalent translations.

String Identifier	String Length	Digit-Collection Attribute
538	7 to 9 digits	Terminate
538	10 digits	Terminate

However, if the WCR feature should route 8-, 9-, and 10-digit strings with the string identifier “538” in the same manner, then the following strings assignments are allowed.

String Identifier	String Length	Digit-Collection Attribute	Action Object
538	7 digits	Terminate	Resolve to VNI 50
538	8 to 10 digits	Terminate	Resolve to VNI 88

Example 3: Assume that the following strings are assigned in Network 1.

String Identifier	String Length	Digit-Collection Attribute
303	7 digits	Terminate
303538	10 digits	Terminate

Also, assume that the switch is beginning to receive the following digits over an incoming trunk group:

9 - 303 - 538 - X ... X

Finally, assume that Network 1 is beginning to analyze the digits after receiving the digits via appropriate translations. (Some of these will be discussed in Section 3.2.)

As the switch collects the three digits “303,” the NDA software cannot eliminate either string as a candidate. But after the switch collects the three additional digits “538,” the NDA software still has two candidates. Therefore, just as is done for like string identifiers with different string lengths, the NDA software collects the remaining digits in the shorter string (in this case one more digit for a total of seven) and then sets the assigned interdigit timer.

If the switch collects another digit before the assigned timing interval elapses, the NDA software selects the longer string. If not, the NDA software selects the shorter string.

Strings with Variable String Lengths

Example 4: Assume that the following strings are assigned in Network 1.

String Identifier	String Length	Digit-Collection Attribute
303538	10 digits	Terminate
303	7 to 15 digits	Terminate

Also, assume that a caller is beginning to dial the digits:

9 - 303 - 538 - X ... X

As with fixed-length strings with different string identifiers, the NDA software still has two candidates after the switch collects the six digits “303538.” Since the length of the fixed-length string is contained within the range of lengths in the variable-length string and the fixed-length string’s identifier is longer, the NDA software prepares to collect the remaining digits in the fixed-length string (in this case, 4 more digits for a total of 10) and then sets the assigned interdigit timer.

If the switch collects from seven to nine digits and then the standard interdigit timer elapses, the NDA software selects the variable-length string. If the switch collects 10 digits and then the assigned timer elapses, the switch selects the fixed-length string. Otherwise, the switch has collected more than 10 digits and the NDA software returns to the variable-length string.

Example 5: Assume that the following strings are assigned in Network 1.

String Identifier	String Length	Digit-Collection Attribute
303538	7 to 15 digits	Terminate
303	10 digits	Terminate

Also, assume that a caller is beginning to dial the digits:

9 - 303 - 538 - X ... X

After the switch collects the six digits “303538,” the NDA software has only one remaining candidate — the variable-length string. This is because for the variable-length string, the actually dialed digits match a longer string identifier, and because the variable-length string is no less valid for a potential 10-digit call than the fixed-length string.

2.1.3 Analyzing Strings that Continue Digit Analysis

So far, every string in the examples has been assigned to terminate digit analysis. Analyzing strings that continue digit collection is somewhat less straightforward. With continuing strings, the NDA software cannot know how many digits the switch will finally collect before selecting the best candidate.

Example 6: Assume that the following strings are assigned in Network 1.

String Identifier	String Length	Digit-Collection Attribute
1	1 digit	Continue
10	5 digits	Continue

Also, assume that a caller is beginning to dial the digits:

9 - 10 X ... X

As the switch collects the two digits “10,” both of the assigned strings remain qualified as candidates. However, since these continuing strings have undefined final string lengths, setting the assigned timer would not determine the better candidate.

Therefore, lacking a conclusive method of candidate selection, the NDA software consistently selects the candidate with the longest string-identifier match to the dialed digits. In this example, the NDA software selects the string with the string identifier “10” and collects the 3 remaining digits before continuing digit analysis.

Rule 3: When choosing between multiple candidates assigned to continue digit analysis, the NDA software selects the string with the longest string-identifier match.

2.1.4 Analyzing a Mixture of Terminating and Continuing Strings

Example 7: Assume that the following strings are assigned in Network 1.

String Identifier	String Length	Digit-Collection Attribute
10	10 digits	Terminate
10288	5 digits	Continue
1028830	12 digits	Terminate
10288303	15 digits	Terminate

Also, assume that a caller is beginning to dial the digits:

9 - 10288 - 303 - 1234

As the switch collects the two digits “10,” none of the strings can be eliminated as candidates.

As the switch collects the next three digits “288,” the first string is eliminated as a candidate while the rest of the strings remain as candidates. Since the second string is a continuing string, the NDA software cannot know the final digit count for this continuing string. So, the NDA software keeps the candidate with the longer string identifier.

As the switch collects the next two digits “30,” the second string is eliminated as a candidate while the third string (with the longer string identifier) match and the fourth string cannot be eliminated as candidates.

As the switch collects the next digit “3,” the third and fourth strings still cannot be eliminated as candidates since both strings are terminating strings. Therefore, following the algorithm for two terminating candidates with different string lengths, the NDA software collects the remaining digits in the shorter string (in this case four more digits for a total of twelve) and then sets the assigned interdigit timer.

If the switch collects another digit before the assigned timing interval elapses, the NDA software selects the longer string. If not, the NDA software selects the shorter string.

Corollary 1: When choosing between a terminating string and a continuing string, the NDA software selects the string with the longer string-identifier match. If more than one terminating candidate has a longer string-identifier match than a continuing candidate, the NDA software applies the assigned interdigit timer to select the best terminating candidate based on the string-length criterion.

2.1.5 Analyzing Terminating Strings that Restart Digit Analysis

If a terminating string’s action is assigned as *restart* (Field 11 of Procedure 314 Word 1 = “1”) and the string’s digits are assigned to be *reanalyzed* (Field 2 of Procedure 314 Word 2 = “0”), then the NDA software cannot know the final digit count for this string before restarting digit analysis. (The subsequent reanalysis of the string will reveal the string’s length, but that information is not available to the NDA software before the restart occurs.)

Example 8: Assume that the following strings are assigned in Network 1.

String Identifier	String Length	Digit-Collection Attribute		
41	10 digits	Terminate		
String Identifier	String Length	Digit-Collection Attribute	Action Object	Restart Analysis
414	3 digits	Terminate	Restart to Network 2	Reanalyze

NOTE

If the second string “414” were assigned to *continue* digit analysis, this example would *not* apply. Instead, the appropriate example would be Example 7, *Analyzing a Mixture of Terminating and Continuing Strings*.

Also, assume that Network 2 has both 7- and 10-digit strings with the string identifier “414.”

Finally, assume that a caller is beginning to dial the digits:

9 - 414 - 538 - 1234

As the switch collects the two digits “41,” neither string can be eliminated as a candidate.

As the switch collects the next digit “4,” both strings still qualify as candidates. (However, the NDA software now treats the second string as a terminating string because the number of dialed digits has not yet exceeded the string length of the second string.)

As the switch collects the next digit “5,” the NDA software *now treats* the second string as a *continuing* string. Therefore, according to Rule 3, the terminating first string is now eliminated as a candidate because the continuing second string has a longer string-identifier match. (If the second string were not reconsidered as a continuing string, then the NDA software would have selected the first string based on its 10-digit string length according to Rule 2.)

Corollary 2: The NDA software treats a terminating string that restarts digit analysis and reanalyzes the digits as a terminating string as long as the number of collected digits does not exceed the string’s length. Once the restarting string’s length is exceeded, the NDA software treats the string as a continuing string.

2.1.6 Elimination of Incompatible String Types

For switches with account-code dialing, users normally dial an account code before dialing a network access code. This is still a strongly recommended practice. However, to provide full compatibility with pre-G2.2 switches, the WCR feature allows users to dial an account code after a network access code.

Based on the pre-G2.2 concept of the account-code prefix digit, a typical string assignment for an account code would be:

String Identifier	String Length	String Type	Digit-Collection Attribute
5	5 digits	Account Code	Continue, give tone

However, this account-code translation would effectively preclude the assignment of any AAR location codes beginning with the digit “5” in the same routing network. (If location codes beginning with the digit “5” were also assigned to Network 2, the NDA software would frequently match the location code when an account code had actually been dialed.)

Example 9: Assume that the AAR routing network (usually Network 2) were assigned to collect and analyze account codes *after* collecting a network dial access code. (That is, strings with the account-code string type were assigned to the network in Procedure 314 Words 1 and 2.)

Also, assume that the following strings were assigned in Network 2.

String Identifier	String Length	String Type	Digit-Collection Attribute
5	5 digits	Account Code	Continue, give tone
515	7 digits	Address	Terminate

Also, assume that a caller were beginning to dial the digits:

8 (network-2 DAC) - 51523 - 515 - 4567

According to Corollary 1 of Rule 3, as the switch collected the digits “515,” the NDA software would always recognize the digits as an address because the address would have a longer string-identifier match. As a result, the call would almost certainly route to an address that was not intended by the caller.

However, after assigning account codes with *longer* string identifiers than the private network’s string identifiers for addresses, Rule 4 circumvents this limitation by only recognizing an account-code string identifier (that matches the dialed digits) as a valid string type when the dialed digits immediately follow the dialed network access code.

Example 10: Assume that the AAR routing network (usually Network 2) is assigned to collect and analyze account codes *after* collecting a network dial access code. (That is, strings with the account-code string type are assigned to the network in Procedure 314 Words 1 and 2.)

Also, assume that the following strings are assigned in Network 2.

String Identifier	String Length	String Type	Digit-Collection Attribute
511	7 digits	Address	Terminate
51123	5 digits	Account Code	Continue, give tone

Also, assume that a caller is beginning to dial the digits:

8 - 51123 - 511 - 2345

According to Corollary 1 of Rule 3, as the switch collects the digits “51123,” the NDA software recognizes the digits as an account code because the account code has a longer string-identifier match.

As the switch collects the next five digits “511-23,” the NDA software eliminates the same account-code candidate (leaving only the location code “511”) because the account-code string type cannot follow another account code.

Rule 4: As the digits are compared with string identifiers, the NDA software eliminates string identifiers with string *types* that are not allowed to follow the previous string in the digit stream.

The following table shows which string types can follow each string type within a digit stream.

Table 2-1. Order of String Types within a Digit Stream

Last Identified String Type	Permissible Following String Types				
	IXC Code	Toll Prefix	International Access	Operator Assistance	Address
Account Code*	Yes	Yes	Yes	Yes	Yes
IXC Code	No	Yes	Yes	Yes	Yes
Toll Prefix	No	No	No	No	Yes
International Access	No	No	No	No	Yes
Operator Assistance	No	No	No	No	Yes
Address†	No	No	No	No	Yes
* If an account code is collected after a network DAC, it must be the first string in the digit stream (immediately following the network DAC).					
† An address string can follow any type of string (including another address string).					

2.1.7 Precedence of Exception Strings

Example 11: Assume that the following strings are assigned in Standard Network 1.

String Identifier	String Length	String Type	Digit-Collection Attribute
303	10 digits	Address	Terminate
212	10 digits	Address	Terminate

Also, assume that the following 10-digit address strings are assigned in Exception Network 1.

String Identifier	String Length	String Type	Digit-Collection Attribute
***555	10 digits	Address	Terminate
***976	10 digits	Address	Terminate

Also, assume that a caller is beginning to dial the digits:

9 - 303 - 976 - X ... X

As the switch collects the digits “303,” the NDA software compares the assigned strings in the standard network with the dialed digits and finds that the first string is the only remaining candidate. Then, the NDA software compares the assigned strings in the exception network with the dialed digits and cannot eliminate either string as a candidate.

As the switch collects the next three digits “976,” the first exception string is eliminated while the second exception string remains qualified as a candidate. Since an exception match (even a wild-card exception match) takes precedence over a standard match, the NDA software eliminates the standard string as a candidate.

Rule 5: After the best match is made in a standard network, the NDA software checks for another match (with the same string length and string type) in the corresponding exception network. If found, *any* exception match takes precedence over the standard match.

Example 12: Assume that the following strings are assigned in Standard Network 1.

String Identifier	String Length	Digit-Collection Attribute
800	10 digits	Terminate
303	10 digits	Terminate

Also, assume that the following strings are assigned in Exception Network 1.

String Identifier	String Length	Digit-Collection Attribute
***555	10 digits	Terminate
800555	10 digits	Terminate

Also, assume that a caller is beginning to dial the digits:

9 - 800 - 555 - X ... X

As the switch collects the digits “800,” the NDA software compares the assigned strings in the standard network with the dialed digits and finds that the first string is the only remaining candidate. Then, the NDA software compares the assigned strings in the exception network with the dialed digits and cannot eliminate either string as a candidate.

As the switch collects the next three digits “555,” both exception strings remain qualified candidates, and, based on Rule 5, the standard string is eliminated as a candidate. However, since the second exception string “800555” has an explicit string-identifier match, the NDA software chooses this string as the best candidate.

Rule 6: As the collected digits are compared to an exception network’s string identifiers, a string identifier with the correctly ordered specific digits is a better match than a string identifier with wild-card entries.

2.1.8 Summary List of Digit-Analysis Rules

For reference purposes, the following list collects the ordered set of digit-analysis rules and corollaries (that were previously defined in context) into a single location.

1. A string remains a candidate while every digit in its string identifier is an ordered match with the collected digits. (Conversely, a string is eliminated as a candidate when a digit in its string identifier does not match the corresponding collected digit.)
2. When multiple candidates differ by their string lengths, the switch uses the string-length criterion to select the best candidate by applying the assigned interdigit timing interval to the collection of additional digits.

3. When choosing between multiple candidates assigned to continue digit analysis, the NDA software selects the string with the longest string-identifier match.

Corollary 1: When choosing between a terminating string and a continuing string, the NDA software selects the string with the longer string-identifier match. If more than one terminating candidate has a longer string-identifier match than a continuing candidate, the NDA software applies the assigned interdigit timer to select the best terminating candidate based on the string-length criterion.

Corollary 2: The NDA software treats a terminating string that restarts digit analysis and reanalyzes the digits as a terminating string as long as the collected digits do not exceed the string's length. Once the restarting string's length is exceeded, the NDA software treats the string as a continuing string.

4. As the digits are compared with string identifiers, the NDA software eliminates string identifiers with string *types* that are not allowed to follow the previous string in the digit stream.
5. After the best match is made in a standard network, the NDA software checks for another match (with the same string length and string type) in the corresponding exception network. If found, *any* exception match takes precedence over the standard match.
6. As the collected digits are compared to an exception network's string identifiers, a string identifier with the correctly ordered specific digits is a better match than a string identifier with wild-card entries.

2.2 Resolving String Identifiers to VNIs

Once the NDA software has matched the received digits with the correct string, the NDA software responds to the string's specified translations according to one of two possible "actions" assigned in Field 11 of Procedure 314 Word 1:

- "0" (resolve to the designated VNI), or
- "1" (restart digit analysis in the designated network)

2.2.1 Deriving a Pattern from a VNI

When the resolve action (that is, "0") is assigned to a string in Field 11, the assigned content of the following field "12" is a VNI. For nonzero VNIs* in Field 12, assuming that the call's VNI was not already frozen during the NDA module's response to a previous string, the VNI in Field 12 correlates with the WCR pattern that the switch will use to route the call.

* Assigning the VNI "0" in Field 12 is a method of unauthorized call control.

If call categories are assigned in Procedure 317, then the resulting pattern number corresponding to a specific VNI resides in Field 3 of Procedure 317 Word 2. If not, then the resulting pattern number is equal to the value of the VNI.

Once the NDA module resolves to the assigned VNI for the current string, two operations are possible to “establish” the call’s current VNI (assuming that the call’s VNI was not already frozen):

- Accept the Current String’s VNI as the Call’s Current VNI

The NDA module can replace the call’s current VNI value with the value of the current string’s VNI.

- Combine the Current String’s VNI with the Call’s Current VNI

The NDA module can add the value of the current string’s VNI to the call’s current VNI value (which reflects the end result of whatever VNI operations were performed for previous strings).

Once the NDA module has established the VNI for a string, the NDA module can “freeze” the VNI so that new VNIs that the NDA module may resolve to in later strings of the digit stream do not change the current value of the VNI by either of the previous methods.

Once the NDA module freezes a VNI, two possibly unexpected side effects arise.

- No restarts after VNI is frozen

After the NDA module has already frozen a previous string’s VNI, the NDA module will not perform a restart action (that is, restart digit analysis in the specified network) during digit analysis for a later string in the digit stream.

- Exception match takes precedence over frozen VNI

Even after the NDA module has already frozen a previous string’s VNI, a later string (in the same digit stream) that matches a string identifier in the current network’s exception network has the effect of overriding the previously frozen VNI. That is, the VNI that the exception match resolves to is the VNI that the NDA module will pass to the generalized route selection (GRS) module for pattern selection.

2.2.2 Recommended Practice for VNI Translations

As a general translation practice, every digit string that resolves to the *same* VNI (and subsequently selects the same WCR pattern) should have the same string length (Field 9 of Procedure 314 Word 1).

Although this precaution may cause some additional translations for an initial implementation, this practice will simplify the maintenance of WCR translations as either the routing needs of the switch or the addressing rules of the public network change.

Two reasons for this practice include:

1. Any digit modification done at the preference level (just prior to digit sending) requires a *consistent* digit format so that the digit modification performs as expected and the correct digits are sent over the preference.
2. Toll-free tables (Procedure 319 Word 1) only match on the leading 1 to 7 digits of the address. Therefore, the toll-free table cannot distinguish between address strings of different lengths with the same leading digits.

For example, if 7- and 10-digit strings resolved to the same VNI, the toll-free table could not distinguish between digits (for example, “818”) used as both an area code and as an office code.

Even though some switches do not currently need preference-level digit modification or toll-free tables, this situation can also change with the routing needs of the switch and addressing rules of the network. If this situation should change, a little foresight can save many hours of tedious retranslations.

2.3 Avoiding the Risks of WCR Routing Flexibility

2.3.1 Determining and Analyzing the Dial-Plan Requirements

If WCR routing is to succeed for each received digit stream (either dialed by the user or received over a trunk group), a string entry must be assigned (in Procedure 314 Word 1) for every possible digit stream in the corresponding routing network. That is, the *entire* dial plan for *each* physical switching network must be translated in the appropriate WCR digit-analysis network.

To assist in this task, the following considerations are provided:

Use of Network 0

WCR Network 0 provides an interface to the internal dial plan of the switch. The WCR feature only uses strings assigned in Network 0 for routing outgoing calls. Network-0 string translations specify any digit modification required to convert Extension Number Portability (ENP) and uniform dial plan (UDP) extension numbers into the format of the network numbering plan used to route them. Network 0 also specifies the routing network (from Network 1 to 7) to be used for the subsequent analysis of the modified digit streams for outgoing UDP-routed calls.

Network 0, when specified as the receiving network of a restart action (in Word 1 of Procedure 314), directs the switch to analyze the (usually modified) digits using the internal dialing plan of the switch as defined by Words 1 and 2 of Procedures 354 and 350. The strings assigned in Network 0 never analyze incoming WCR calls.

North American Numbering Plan

Many of the examples in Chapters 3 and 5 address common issues relating to the North American numbering plan. At the time WCR is implemented on a G2.2 switch, give consideration to concepts such as:

- “0” versus “00” routing
- Use of the digit “1” both by users and as required by the local exchange carriers (LECs)
- Allowing or denying users the ability to dial IXC codes
- Service codes that users are allowed to dial (if any)
- Emergency codes that users are allowed to dial (and their treatment)

Remember that 3-digit area codes and 6-digit area/office codes can, but need not be, assigned as string identifiers in their full 3-digit form. For example, resolving the 10-digit string with the string identifier “41” to a VNI has the effect of resolving calls destined for 10 area codes to that same VNI. Meanwhile, a particular area code (for example, “414”) from within the previous range of 10 can receive different routing by explicitly assigning a longer string identifier for that area code. Or, a particular office code within the “414” area code (for example, “414-555”) can receive different routing by explicitly assigning a 10-digit string with the longer string identifier “414555.”

With the cautions discussed in Section 2.4.2, this capability can considerably simplify administration.

Numbering-plan maintenance can be made easier using multiple networks. The use of multiple networks can match *your* concept of clarity rather than the predetermined concept of software developers who may not understand your situation and needs.

For example, if multiple networks are being used, they can be used to separate toll calls from nontoll calls, intralata calls from interlata calls, or domestic calls from international calls.

Private-Network Numbering Plans

With WCR, the concept of a uniform numbering plan (that is, all network numbers are of the same length) is no longer a prerequisite of private networks. This liberalization of private-network numbering simplifies the Generic 2 interface to international private networks and enables the use of special dialing practices.

Federal Telephone System (FTS) Numbering Plans

Other numbering plans can be analyzed and provided with alternate routing capabilities as needed. Digit analysis in any routing network can “crossover” to any other network. A common numbering plan used by the government and supporting vendors is for the FTS.

With appropriate administration, you could even send FTS calls over your private network for tail-end hop off. Although not specifically shown as an example in this document, the principles are the same as the common routing for other private/public networks for which examples are given.

2.3.2 Using the “#” Digit Appropriately

Using the more general WCR feature (instead of the hard-coded pre-G2.2 AAR and ARS features) to route calls has the effect of increasing both a switch administrator’s and a caller’s need to understand and to use the “#” (pound) digit as effectively as possible.

Since the WCR feature makes no assumptions about the structure of either public- or private-network numbering plans, the network digit analysis (NDA) module of the WCR feature can have no preconceived assumptions about the length of a received and analyzed digit string until the NDA software (often using interdigit timers) eliminates every candidate except the best candidate for routing.*

On the other hand, carefully structuring private-network numbering plans and assigning ambiguous public-network strings (for example, international address strings) to separate digit-analysis networks can help to minimize the NDA module’s reliance on the WCR interdigit timing intervals.

By the Calling Party

From the perspective of a caller, routinely dialing the “#” digit as an end-of-dialing digit will never impede digit analysis and can only facilitate it. For a locally dialed call, the sooner that the NDA module can be certain of the length of the dialed number, the sooner routing will occur. If some users object to routinely dialing the “#” digit, these users should be forewarned that they must either:

- Become adept at only dialing the “#” digit after ambiguous addresses, or
- Be willing to accept a longer response interval after dialing an ambiguous address

By the Switch Administrator

From the perspective of a switch administrator, routinely sending the “#” digit as an end-of-sending digit (for outgoing or tandem calls) in the selected preference’s digit-sending index can sometimes cause problems.

First, never send the “#” digit as a digit-sending attribute for Integrated Systems Digital Network (ISDN) calls. At best, since an ISDN sending switch always populates the *entire* address in the called-number information element (IE), sending the “#” digit never yields a reduction in call-setup time. At worst, sending the “#” digit will cause some ISDN calls (usually to adjacent public-network switches) to fail.

Second, some older electromechanical PBXs and central offices (usually in rural areas) may not understand the “#” end-of-sending digit. Therefore, these switches would be unable to respond appropriately to a received “#” digit.

* The rules that the NDA module uses to select the best candidate are described in Section 2.1.

Switch administrators should realize that the “#” digit is never analyzed as *part of* a string by the NDA module of WCR. As soon as the WCR software encounters a “#” digit, the NDA module infers that the final digit has already arrived. Apart from its use as an end-of-dialing or end-of-sending digit, the only valid role for the “#” digit within a digit stream (either dialed or sent) is as the first digit of a dial access code (DAC) — defined in Procedure 350 Words 1 and 2 and analyzed by the internal dial plan (not the WCR feature).

Switch administrators should also realize that the “#” end-of-dialing digit and the “#” end-of-sending digit operate *independently* and *separately*. The receipt of a “#” digit (either dialed or received over a trunk group) by the NDA module does *not* cause the WCR feature to automatically send a reciprocal “#” digit on the outgoing side of the call. On the contrary, whether or not a “#” digit is received, the WCR feature will *only* send a “#” digit when instructed to do so in the selected preference’s digit-sending index.

2.3.3 Using Overlapped Sending Appropriately

Overlapped sending is a routing process whereby the switch sends portions of a digit stream over an outgoing trunk as soon as the switch knows the specific trunk group to use and the digits to send.

While this digit-sending process might, at first, seem indispensable for its ability to reduce call-setup time, this is actually not the case for the faster digit-sending formats. In the era of touch-tone and digital trunk signaling, the significant reductions in call-setup time that overlapped sending once provided have been greatly reduced. In fact, with the exception of digit sending over dial-pulse trunks, one could assert that overlapped sending presents more liability than benefit to the whole routing process.

For an average 7-digit call sent over a rotary trunk group, overlapped sending reduces the call-setup time by about 2 seconds. (Calls with longer addresses would experience greater savings.) For an average 7-digit call sent over a touch-tone trunk group, the reduction in call-setup time provided by overlapped sending is small enough to be difficult to measure (and almost certainly unnoticeable by the human user). For any call where the address digits are sent in a digital format, overlapped sending provides no reduction in call-setup time.

However, using any digit-sending format, overlapped sending increases the processor occupancy of the switch. (Overlapped sending can easily increase the duration of call processing for each call by 2 milliseconds.) Overlapped sending also reduces the efficiency of the routing software. (In the context of WCR, overlapped sending reduces the efficiency of the NDA module.)

Therefore, it is recommended that overlapped sending only be used for dial-pulse trunks where user requirements dictate that call-setup times must be as short as possible.

2.3.4 Sending TCMs Appropriately

As shown in the digit-sending portions of the WCR flow diagram, the WCR feature can send zero, one, or two traveling class marks (TCMs) for *any* call. After sending the address digits, the WCR feature will *unconditionally* append the TCM(s) to the outgoing digit stream according to the assignment in Field 3 of Procedure 103 Word 1. The legal values for this field are:

Encode	Meaning
0	Do not send or expect to receive any TCMs
1	Send and expect to receive the FRL TCM
2	Send and expect to receive both TCMs

Private-Network Calls

Uniform Dialing Plan Calls: At the originating switch for a UDP call, the switch sets the call's FRL to "7" before analyzing the dialed extension number in Network 0. Then, the Network-0 translations (for the dialed extension number) convert the extension to a private-network number and restart digit analysis in the routing network for private-network calls (usually Network 2). In turn, the private-network routing network selects a route and sends the private-network address digits over the selected outgoing trunk group.

If the selected outgoing trunk group is not assigned (in Field 3 of Procedure 103 Word 1) to send an FRL TCM, then the value of the UDP call's FRL (that is, "7") *is likely to change* as the call tandems through the private network. Without an FRL TCM, each tandem switch that receives the call (enroute to its final destination) must infer the value of the call's FRL according to the default FRL of the incoming trunk group (Field 2 of Procedure 103 Word 1) over which the call arrives. Also, if the same tandem switch were assigned to send an FRL TCM on the outgoing side of the tandem connection, the incoming trunk group's default FRL would now determine the value of the outgoing FRL TCM.

Extension Number Portability Calls: At the originating switch for a ENP call, the switch sets the call's FRL to "7" before analyzing the dialed extension number in Network 0. Then, the Network-0 translations (for the dialed extension number) convert the extension to a private-network number and restart digit analysis in the routing network for private-network calls (usually Network 2). In turn, the private-network routing network selects a route and sends the private-network address digits over the selected outgoing trunk group.

If the selected outgoing trunk group is not assigned (in Field 3 of Procedure 103 Word 1) to send an FRL TCM, then the value of the ENP call's FRL (that is, "7") *does not change* as the call tandems through the private network. Even without an FRL TCM, each tandem switch that receives the call (enroute to its final destination) recognizes the call as destined for a "home RNX" of the tandem switch. Therefore, the private-network routing network (usually, Network 2) converts the private-network number to an extension number, resets the call's FRL to "7," and restarts digit analysis in Network 0 as an ENP call.

Distributed Communications System (DCS) Calls: Either of the previous methods can be used to route DCS calls. The FRL of the call behaves accordingly.

Software Defined Network Calls: TCMs will not always traverse a Software Defined Network (SDN) network although they may be usable to determine routing permissions at the access SDN switch. TCMs will traverse an SDN network if end-to-end ISDN and Signaling System 7 (SS7) route the call through the SDN network.

NOTE

Refer to Section 2.3.6 for information about connecting a G2.2 to an SDN point of presence.

Public-Network Calls

The WCR feature provides the capability of sending TCMs for various kinds of public-network calls including:

- Direct Outward Dialing (DOD) calls
- Wide Area Telecommunications Service (WATS) calls
- Megacom® Access calls

However, none of these public-network services currently support the use of TCMs. Therefore, do not send TCMs for public-network calls since a TCM could reach an endpoint and then be used by the endpoint to initiate call redirection (for example, if the endpoint were a voice response unit).

2.3.5 Assigning Prefix Digits

For situations where calls with address formats (that conform to multiple dial plans) are routed over common trunk facilities, Section 3.2 describes a variety of ways to prefix the address digits. These types of prefixing allow the receiving switch to determine which dial-plan format applies to the analysis of the received address digits.

The receiving switch can use one or some of five basic methods to determine the correct dial-plan format:

1. The receiving switch can infer the dial access code (DAC) of the “routing software” (in the terminology of a G2.2 receiving switch, “digit-analysis network” or “routing network”) that determines the correct format by examining the *leading* address digits of each incoming call. Then, for each call, the inferred routing software “crosses over” control of the call to the routing software that should actually route a call with the address format determined.
2. The sending switch can prepend a preindicator digit (for example, the digit “1”) for addresses in a certain format to simplify the format-discrimination process for the inferred routing software at the receiving switch.
3. For each address sent, the sending switch can prepend the specific DAC (for example, “8” or “9”) of the actual routing software that the receiving switch should use to analyze the address digits.
4. For each ISDN call sent, the sending switch can populate the type-of-address octet in the called-number information element (IE) so that the receiving switch can precisely infer the DAC of the routing software that should analyze the address digits (without preanalysis or crossover).

5. The receiving switch can infer the DAC of the routing software that determines the correct format by examining *many* (or all) address digits of each incoming call. Then, for each call, the inferred routing software crosses over control of the call to the routing software that should actually route a call with the address format determined.

Relative Desirability of Prefixing Methods

From the perspective of using the most desirable prefixing method, as discussed within context of Section 3.2, any method that precisely specifies which routing software to use for the receiving switch is more desirable than a method that forces the receiving switch to make that determination on its own. These methods (including Methods 3 and 4) are faster, more direct, and more robust.

Method 4 is superior to Method 3 in that Method 4 allows the receiving switch to *precisely infer* the correct routing software. To use Method 3, a local switch administrator must be aware of the specific routing DACs at each adjacent switch. Whereas, to use Method 4, the local switch administrator need only be aware of a network-wide agreement that relates the various address types to ISDN types of addresses.

Also, although not specifically described in Section 3.2, the WCR feature can also use a prefixing method that combines Methods 3 and 4. For connectivity to partially ISDN-capable switches (that cannot precisely infer the correct routing software from the type-of-address octet), the WCR feature can prepend the correct DAC (for the routing software at the receiving switch) to the address digits populated in the called-number IE. Preferably, like Method 3, the sending switch should do this as a digit-sending attribute. However, the digits can also be prepended as a digit-modification attribute.

Method 2 is probably the next most desirable method since even an indirect prefix gives the receiving switch's inferred routing software a fast and simple algorithm to crossover to the correct routing software.

Methods 1 and 5 are probably the least desirable methods since they rely on digit analysis within the receiving switch's inferred routing software to enable crossover to the correct routing software. However, to the extent that the inferred routing software can reliably discriminate the multiple numbering-plan formats from the leading address digits, Method 1 is faster and more desirable than Method 5.

The switch administrator should also realize that, although the various prefixing methods are ranked by desirability, the relative routing intelligence of each adjacent switch (and sometimes even the least intelligent switch in the wider network environment) can dictate that one or more of the less desirable prefixing methods would have to be used. (Some of the specific routing-intelligence considerations are discussed in context within Section 3.2.)

2.3.6 Connecting to Adjacent Switches in a Network

The general routing algorithms provided by the WCR feature serve to expand the Generic 2.2's capabilities for communicating with each adjacent *private*-network switch according to its own level of routing intelligence and with each adjacent *public*-network switch according to its own routing expectations and norms.

As mentioned in Sections 2.3.5 and 3.2, an ideal network-routing environment (where every switch is equally intelligent and uses all of the same routing protocols) is the exception not the norm.

The following list discusses the various considerations involved in connecting the Generic 2.2 (with WCR software) to various adjacent switches performing various kinds of network roles. An adjacent switch could be serving as a:

1. Tandem node with WCR routing capabilities

In a situation where a G2.2 is connected to an adjacent G2.2 (or another switch with routing capabilities that are fully equivalent to WCR), neither the routing intelligence nor the expectations of the receiving switch places any limitations on the mode of connectivity. Therefore, unless constrained by an external factor in the larger network environment, every routing capability described in this document can potentially be used.

2. Tandem switch with AAR/ARS routing capabilities

- In a situation where a G2.2 switch is connected to an adjacent Dimension® Feature Package 8 (FP8), System 75, System 85, Generic 1.1, or Generic 2.1, the G2.2 switch should only send public-network numbers (over a private-network trunk group) that conform to the traditional “NIX” area-code format. (That is, since the routing software within these switches only understands the traditional area-code format, the G2.2 switch should only send these switches area codes with either “0” or “1” as the second digit.)

Also, the G2.2 switch should only send traditional location codes to these switches. The G2.2 switch should never send these switches location codes (RNXs) in the NIX format. (That is, the G2.2 switch should never send these switches location codes with “0” or “1” as the second digit.)

- In a situation where a G2.2 switch is connected to an adjacent Dimension FP8, System 75, System 85 (prior to R2 V3), Generic 1, or Generic 3, the G2.2 switch should not send the conditional routing TCM (that is, the second TCM) to these switches. (Conditional routing is not provided by the routing software within these switches.)

3. Dumb main

In a situation where a G2.2 switch is connected to an adjacent switch without private-network routing software, the G2.2 switch should only send digits to these switches in two formats.

- Extension numbers translated in the main’s internal dial plan
- Public-network numbers

These public-network numbers must be prefixed by the DAC of the main’s outgoing trunk group and should be made to conform with the digit-format expectations of the receiving public-network switch (in the digit-sending index at the sending G2.2).

Also, the G2.2 switch should never send either TCM to an adjacent dumb main.

4. Point of Presence (POP) to the public network

- 4 ESS™ switch

- Digital Service 1 (DS1) or analog (non-ISDN) access

In a situation where a G2.2 switch is connected by DS1 or analog (non-ISDN) facilities to a 4 ESS switch, the G2.2 switch should not send either TCM (except during SDN calls, described below) to this switch.

In this situation (non-ISDN access), sending the “#” digit as an end-of-sending digit is an acceptable practice.

- ISDN access

In a situation where a G2.2 switch is connected by ISDN facilities to a 4 ESS switch, the G2.2 switch should not send either TCM (except during SDN calls, described below) to this switch.

In this situation (ISDN access), sending the “#” digit as an end-of-sending digit is *not* an acceptable practice.

NOTE

The manual that most pertains to the connection of a G2.2 to a 4 ESS is entitled “*G2.1-to-4 ESS via ISDN—PRI Access*” (555-037-235). This manual provides connectivity information at the physical and signaling levels.

- 5ESS® switch

In a situation where a G2.2 switch is connected to a 5ESS switch, the G2.2 switch should not send either TCM to this switch unless the local exchange carrier provides virtual private-network service.

5. A point of presence (POP) for the AT&T SDN

- DS1 or analog (non-ISDN) access

In a situation where a G2.2 switch is connected by DS1 or analog (non-ISDN) facilities to a 4 ESS switch (beginning with Generic 6) for SDN service, sending the FRL TCM is an acceptable practice. As part of SDN’s Station Group Identification feature, the 4 ESS switch on the access side of the SDN network accepts the TCM. Then, the SDN network applies the value of the FRL TCM to its routing decisions. However, the SDN network does not preserve the value of the TCM. Instead, the 4 ESS switch on the egress side of the SDN network always sends an FRL TCM with the value “7” to the receiving private-network switch.

In a situation where a G2.2 switch is connected by DS1 or analog (non-ISDN) facilities to a 4 ESS switch for SDN service, the G2.2 switch should never send the conditional routing TCM to this switch.

- ISDN access

In a situation where a G2.2 switch is connected by ISDN facilities to a 4 ESS switch for SDN service, sending one or both TCMs is an acceptable practice. When this is done, the 4 ESS switch on the access side of the SDN network accepts the TCM. However, the SDN network does not apply the value of either TCM to its routing decisions. But, the SDN network preserves the value of both TCMs and, on the egress side of the SDN network, always returns the TCM(s) with unchanged values to the receiving private-network switch.

As for any ISDN access to a 4 ESS switch, sending the “#” digit as an end-of-sending digit is *not* an acceptable practice.

NOTE

The manual that most pertains to the connection of a G2.2 to a 4 ESS is entitled “*G2.1-to-4 ESS via ISDN—PRI Access*” (555-037-235). This manual provides connectivity information at the physical and signaling levels.

2.3.7 Coordinating ISDN Type of Address and Numbering-Plan ID

For outgoing ISDN—PRI calls, WCR populates the type-of-address and numbering-plan octets in the called-number IE (according to the entries in Fields 3 and 4 of Procedure 322 Word 1). Since preference-level WCR translations populate these octets, the G2.2 switch can flexibly send *any* type-of-address and numbering-plan values that the receiving ISDN switch will either understand or expect.

At the present time, the following are fairly reliable guidelines for populating these octets in outgoing called-number IEs.

- For international public-network calls, enter “1” (international number) in Field 3 and “1” (ISDN/telephony numbering plan) in Field 4.
- For SDN calls and domestic public-network calls, enter “2” (national number) in Field 3 and “1” (ISDN/telephony numbering plan) in Field 4.
- For private-network calls, enter “0” (unknown) in Field 3 and “9” (private numbering plan) in Field 4.

However, the norms behind these current guidelines are likely to change since the ISDN—PRI standard provides other alternatives and since PBXs are only gradually acquiring full PRI conformance. Therefore, whenever these guidelines fail to provide adequate connectivity between a G2.2 and an adjacent ISDN-capable switch, the G2.2 switch administrator should determine the appropriate octet values by coordinating with the administrator of the adjacent switch.

Also, since WCR populates the octets in the called-number IE with translated values, adequate connectivity can always be provided between two adjacent G2.2 switches using *any* values, as long as both administrators agree as to what the values should be.

2.4 Setting Specific Goals for a WCR Implementation

The WCR feature provides one digit-analysis network (Network 1) in the standard offering of the G2.2, and up to eight digit-analysis networks (Networks 0 through 7) when Field 1 of Procedure 276, the “Standard Network” field, is enabled. In the standard offering, Network 1 provides all of the functions and more routing flexibility than the previously available ARS feature. Using the optional configuration of eight digit-analysis networks, Networks 0 through 7 provide all of the functions and considerably more routing flexibility than the previous combination of ARS and AAR.

Of the optional eight digit-analysis networks, Network 0 serves as the WCR interface to the internal dial plan, while Networks 1 through 7 serve as external routing networks.

2.4.1 Using the Multiple WCR Networks

Although the complete set of AAR/ARS routing capabilities can actually be emulated using only:

- Network 0 to interface the internal dial plan
- Network 1 (usually to provide ARS routing)*
- Network 2 (usually to provide AAR routing)

the additional networks can be quite useful for:

- Increasing the clarity of Procedure 314 string translations for the switch administrator
- Reducing the complexity of digit analysis by the NDA module
- Increasing the speed of digit analysis by the NDA module

As discussed in the context of Sections 2.1 and 3.6, separating international addresses and account codes into their own digit-analysis networks is a fairly simple method of approaching these goals.

However, these gains cannot usually be realized without the effort of initially planning and then appropriately retranslating the existing digit-string translations. For upgrades to G2.2 from System 85 or G2.1, the Translation, Recovery, Additions, and Conversions System (TRACS) upgrade process automatically converts the existing ARS translations to Network-1 string translations and any existing AAR translations to Network-2 string translations.

* To provide complete ARS routing capabilities, Network 1 is the only WCR network that can be accessed by either a toll or a nontoll DAC.

2.4.2 Modifying Explicit Translations Provided by TRACS Upgrade

The TRACS upgrade process also emulates the explicit one-by-one routing translations of the ARS and AAR features (for example, area code-by-area code, office code-by-office code, and location code-by-location code), during the conversion of ARS and AAR translations into the WCR translation format of Procedure 314 Word 1.

This explicit TRACS conversion of routing translations offers a type of clarity to the WCR digit-string translations. Also, for those who are familiar with explicit one-by-one routing-table entries, this approach has the advantage of emulating a table structure with which they are comfortable.

On the other hand, a switch administrator can elect to deviate from the explicit one-by-one table entries, for example, by assigning 7-digit strings with shorter string identifiers such as “46” (to analyze up to 10 office codes in the same manner). This practice, although entirely valid, may tend to reduce the clarity of the translations for those who maintain them.

In addition to the potential reduction of clarity, assigning shorter string identifiers minimizes the ability of the NDA module to validate strings (especially address strings). With fewer digits (of a dialed or received digit stream) contained in the translated string identifiers, the NDA module uses fewer specific digits to analyze and potentially validate (or invalidate) the digit stream. Therefore, this practice will increase the likelihood of the switch allowing and attempting to route calls destined for invalid addresses. Then, these calls will only receive intercept treatment somewhere enroute to the destination.

However, assigning shorter string identifiers does have the advantage of populating the routing tables with fewer strings containing shorter string identifiers. Translating the WCR digit-analysis tables with this goal in mind should minimize the translation effort and to some extent increase the speed of digit analysis by reducing the initial number of candidates and the average number of collected digits the NDA module would need to select the best candidate.

3. Addressing Specific Routing Applications

3.1 Applications Overview

Chapter 3 presents implementation examples to address a wide variety of real-world routing problems. The sample implementations within this chapter have several purposes.

- To provide real-world routing models that are fairly easy to emulate
- To show the flexibility with which WCR can consistently and gracefully respond to the changing routing needs of callers and to the changing networking environment
- To foster both thoughtful transformations and creative reapplications of the presented models so that customers can fully use the flexibility of WCR to tailor the switch to their specific routing needs

The examples cover the following topics:

- Routing multiple dial plans over common facilities
- Using a single DAC to access the public and private network
- Assigning home NPA-NXX[-X]s at the receiving switch
- Improving public-network routing in urban areas
- Improving international routing
- Improving service-code routing
- Improving operator-assistance routing
- Improving IXC routing
- Routing “911” calls to local security
- Routing “9 - 0” calls to local attendant
- Blocking “***976” calls on a wild-card basis
- Routing special AAR calls (including UDP and ENP calls)
- Routing CallVisor™ Adjunct/Switch Application Interface (ASAI) gateway calls

The focal point of the sample applications within this chapter is a G2.2 switch in New York city. This venue provides a believable (if not always accurate) model to display many of the increasing uncertainties in North American telecommunications.

Some plausible characteristics of this calling environment include:

- Look-alike area codes and office codes
- Local 10-digit telephone numbers

3-2 Addressing Specific Routing Applications

- Frequent international calling
- Satellite access to support international routing
- Heavy domestic calling to branch locations
- Multiple IXCs

To understand the following applications, the reader should be familiar with some attributes of this New York PBX and two of the adjacent PBXs in Boston, Massachusetts and Bonn, Germany within its electronic tandem network (ETN). The following figure, lists, and table show these specifications.

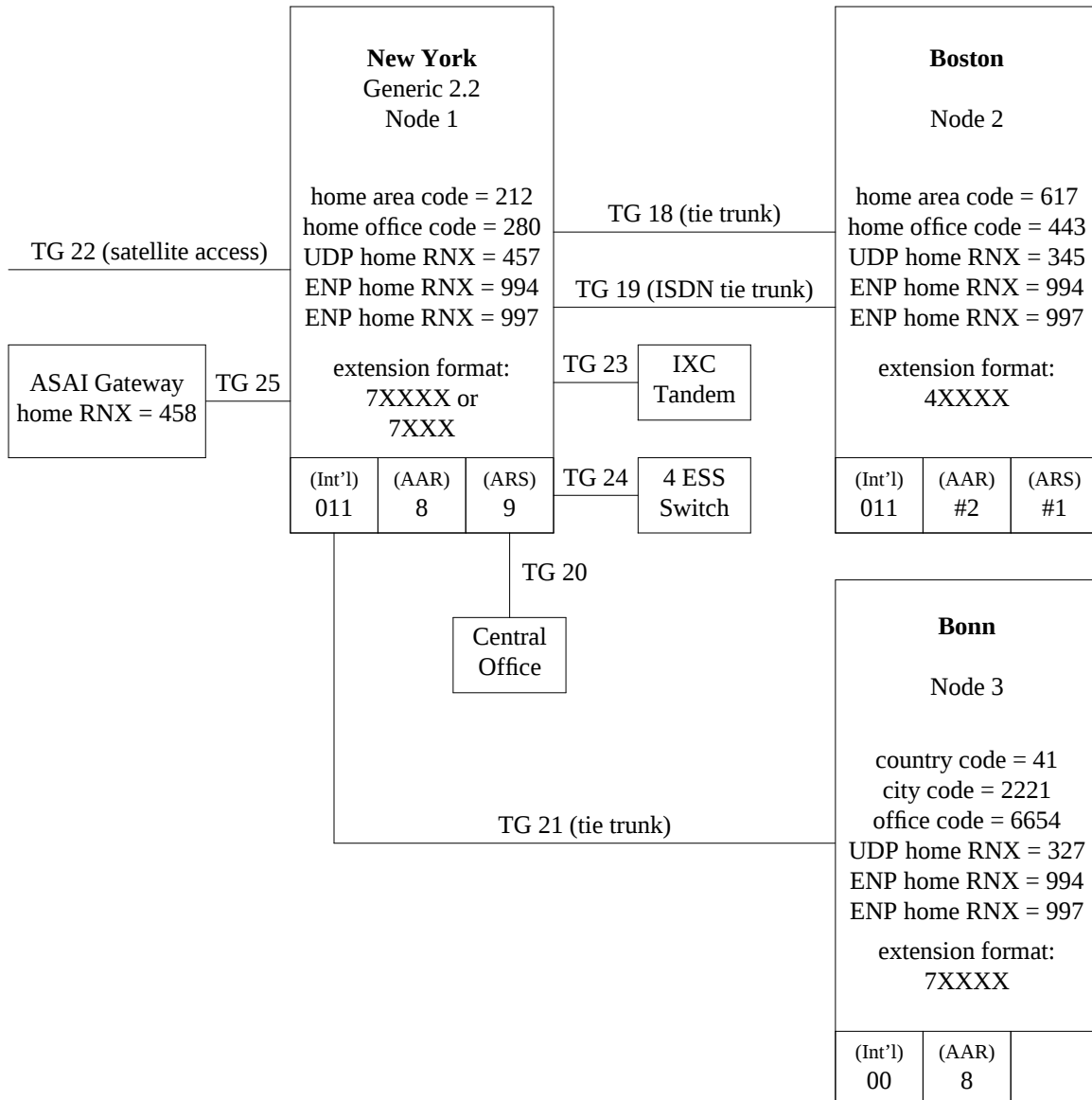


Figure 3-1. Model of the Applications Environment

Node 1 — Primary New York switch:

- Home area code = 212
- Home office code = 280
- UDP Home location code (RNX) = 457
- ENP Home RNXs = 994 and 997
- AAR access code = 8
- ARS access code = 9
- Extension numbers = 4 or 5 digits (depending on the example) with leading digit “7”
- International access code = 011

Node 2 — Adjacent Boston switch:

- Home area code = 617
- Home office code = 443
- UDP Home RNX = 345
- ENP Home RNXs = 994 and 997
- AAR access code = #2
- ARS access code = #1
- Extension numbers = 5 digits with leading digit “4”

Node 3 — Adjacent Bonn switch:

- Country code = 41
- City code = 2221
- Home office code = 6654
- UDP Home RNX = 327
- ENP Home RNXs = 994 and 997
- AAR access code = 8
- Extension numbers = 5 digits with leading digit “7”
- International access code = 00

Table 3-1. Network Specifications for Routing Applications

Item	#	Attributes
VNI/Pattern	1	NY: 2 preferences; Trunk Groups 18, FRL 2, DMI 1, DSI 1, Toll-Free Trunk Group 19, FRL 2, DMI 1, DSI 1, Toll-Free
	2	NY: 2 preferences; Trunk Group 18, FRL 0, DMI 0, DSI 2, Toll-Free Trunk Group 19, FRL 0, DMI 0, DSI 2, Toll-Free
	3	NY: 1 preference; Trunk Group 20, FRL 0, DMI 0, DSI 0, Toll-Free
	4	NY: 1 preference; Trunk Group 20, FRL 2, DMI 0, DSI 0, Toll
	5	NY: 1 preference; Undefined
	6	NY: 2 preferences; Trunk Group 21, FRL 3, DMI 6, DSI 0, Toll-Free Trunk Group 20, FRL 5, DMI 0, DSI 3, Toll
	7	NY: 1 preference; Trunk Group 22, FRL 3, DMI 7, DSI 0, Toll-Free
	8	NY: 1 preference; Trunk Group 22, FRL 3, DMI 8, DSI 0, Toll
	9	NY: 1 preference; Trunk Group 20, FRL 0, DMI 0, DSI 0, Toll
	10	NY: 2 preferences; Trunk Group 23, FRL 0, DMI 9, DSI 0, Toll-Free Trunk Group 20, FRL 0, DMI 0, DSI 0, Toll-Free
	11	NY: 1 preference; Undefined
	12	NY: 2 preferences; Trunk Group 24, FRL 2, DMI 0, DSI 0, Toll Trunk Group 20, FRL 2, DMI 0, DSI 4, Toll
	13	NY: 1 preference; Trunk Group 20, FRL 2, DMI 0, DSI 5, Toll
	14	NY: 1 preference; Trunk Group 21, FRL 4, DMI 0, DSI 0, Toll-Free
	15	NY: 1 preference; Trunk Group 25, FRL 0, DMI 0, DSI 0, Toll-Free
	97	Boston: 1 preference; Trunk Group 99, FRL 4, DMI 0, DSI 0, Toll-Free
	98	Boston: Could have one preference with ISDN trunk group
	99	Boston: Could have one preference with DOD trunk group
DMI	0	Default attributes
	1	New York: Varies by method of routing multiple dial plans
	2	New York: Delete 6 digits, insert digit "7"
	3	New York: Delete 9 digits, insert no digits
	4	New York: Delete 3 digits, insert no digits
	5	New York: Delete 13 digits, insert digits "774"
	6	New York: Delete 9 digits, insert no digits
	7	New York: Delete 3 digits, insert digits "00"
	8	New York: Delete 1 digit, insert no digits
	9	New York: Delete all digits, insert digits "72323"
	10	New York: Delete all digits, insert digits "71300"
	11	New York: Delete 2 digits, insert no digits
	12	New York: Delete 0 digits, insert digits "99"
	51	Bonn: Delete 2 digits, insert no digits
	96	Boston: Delete 0 digits, insert digits "99"
	97	Boston: Delete 0 digits, insert digits "32"
	98	Boston: Delete 3 digits, insert digit "4"
	99	Boston: Delete 1 digit, insert no digits
DSI	0	Default attributes
	1	New York: Varies by method of routing multiple dial plans
	2	New York: Varies by method of routing multiple dial plans
	3	New York: Send "#" as the last digit
	4	New York: Send dialed IXC or else no IXC
	5	New York: Send assigned IXC with CIC "288"

(continued)

Table 3-1. Network Specifications for Routing Applications (*continued*)

Item	#	Attributes
Trunk Group	18	New York: Tie-trunk group to Boston
	19	New York: ISDN tie-trunk group to Boston
	20	New York: DOD trunk group to local central office
	21	New York: Tie-trunk group to Bonn
	22	New York: Tie-trunk group to satellite access
	23	New York: Trunk group to IXC tandem switch
	24	New York: MEGACOM DS1 trunk group to serving 4 ESS
	25	New York: ISDN tie-trunk group to ASAI host
	51	Bonn: Distant end of trunk group 21
	98	Boston: Distant end of trunk group 19
	99	Boston: Distant end of trunk group 18

As reflected in the previous table where the VNIs and pattern numbers are the same, the call-category portion of the WCR generalized route selection (GRS) module is not covered in this chapter. Allowing the number of a selected pattern to match the number of a resolved VNI is intended to eliminate unnecessary abstraction from the discussion.

NOTE

Refer to Section 5.4 for examples where call categories are involved in WCR pattern selection.

3.2 Routing Multiple Dial Plans over Common Facilities

Before G2.2, the AAR feature sent 5- to 7-digit* private-network numbers and the ARS feature sent 10-digit public-network numbers across an intertandem tie trunk. The receiving (or tandem) switch examined the first and/or second digits of the incoming digit stream to quickly decide whether AAR or ARS should handle the incoming call.

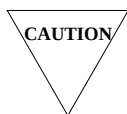
Beginning with G2.2, the WCR feature can send any number of digits across a tie trunk for either type of call, and a G2.2 switch at the receiving end of the trunk can use one of several methods to distinguish between private- and public-network calls.

In an ideal private network, every switch in the network would have highly-intelligent and equivalent routing capabilities. In this ideal environment, a single network-wide method for discriminating public- and private-network addresses being sent and received over private-network trunks could be devised. However, in practice, each switch within the network probably communicates differently with each adjacent switch (across the direct tie-trunk connection) depending on the specific capabilities and needs of the two adjacent switches.

Therefore, any digit modification done by a sending switch (to allow the receiving switch to discriminate incoming public- and private-network addresses) is ordinarily performed at the *preference* level.

Various methods for routing an ARS call and an AAR call over the same tie trunk to an adjacent switch are shown. These methods include:

- Examining the leading digits at receiving switch
- Sending a “1” prefix digit for ARS calls
- Sending different DAC prefixes for ARS and AAR calls
- Populating the ISDN type-of-address field
- Examining the address digits and string length at receiving switch



In this section, some preliminary translations (for example, “Digit-analysis translations at sending switch”) are shown once and not repeated in subsequent examples until some aspect of the translations changes. Therefore, some of the later examples cannot be used as implementation models without first retrieving the preliminary translations from earlier examples.

* Depending on the length of location codes and extension numbers in the uniform dial plan.

Example 1: A public-network number routes through and hops off the private network.

Assume that a user of the New York switch dials the ARS access code (usually the Network-1 access code) followed by a Boston telephone number:

9 - 617 - 443 - 0338

Trunk-group options

For every incoming (or 2-way) tie-trunk group (at every G2.2 switch in the private network) that relies on the WCR feature for digit analysis, Field 5 of Procedure 103 Word 1 must be set to “1.”

Also, for every incoming, outgoing, and 2-way trunk group, the TCM parameter in Field 3 must be assigned to match the assigned value at the opposite end of the tie-trunk group.

As an example, the network trunk-group options are shown for the 2-way tie-trunk group “18.”

ENHANCED MODE - PROCEDURE: 103, WORD: 1	
NETWORK TRUNK GROUP TRANSLATION	
1.	Trunk Group: 18
2.	Facility Restriction Level: 0
3.	Traveling Class Marks: 1 Send and Receive the FRL TCM
4.	Symmetrical Route: 0 No
5.	Incoming Tie/APLT Access to WCR: 1 Enabled
6.	Authorization Code Required: 0 No
7.	Bridge-On Allowed: 0 No
8.	Trunk Reservation Limit: 0
9.	Dial Tone Detect Ignore: 0 Dial Tone Detection Active
10.	Data Protection (Permanent): 0 Disabled
11.	Remote Access Echo Suppressor: - Dial Tone
12.	Conditional Routing: 0 Not a Satellite Facility
13.	Route Selection Method: 0 Select After All Digits Collected
14.	Outgoing Overlapped Sending: 0 Collect All Digits Before Sending
15.	Suppress Dial Tone: 0 Apply Dial Tone

Connected to CC0 ON-LINE ▼

enter command: p103w1 18 ;1 ;1 axdx_

[Assume, for the purposes of this chapter, that every tie-trunk group within this network (except the ASAI Gateway trunk group) is assigned to send and expect to receive the FRL TCM (encode “1”).]

ARS Call:**Digit-analysis translations at sending switch**

At the sending switch, Network 1 resolves the 10-digit string with the string identifier “617” to VNI 1. Neglecting call categories, the WCR software derives Pattern 1 from VNI 1 and selects an outgoing preference from Pattern 1.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	6
2. Digit 2:	1
3. Digit 3:	7 (Boston Area Code)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	10
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	1 Virtual Nodepoint Identifier
13. Action Attribute:	2 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ▼	
MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 6 1 7 ;;;1 1 10 6 0 1 2 1 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

.....

Preference-1 translations at sending switch

The first preference in Pattern 1 contains a tie-trunk group (number 18) that connects the local New York switch with an adjacent private-network switch in Boston.

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ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number: 1
2.	Preference Number: 1
3.	Trunk Group: 18 (Private-Network Tie Facility)
4.	Facility Restriction Level: 2
5.	Warning Tone: 0 Not Given
6.	Toll-Free Index: -- All Numbers are Toll-Free Calls
7.	Digit Modification Index: 1 Index Number
8.	Digit Sending Index: 1 Index Number
9.	ISDN Sending Index: ----

Connected to CC0 ON-LINE ♥

enter command: p318w1 1 1 18 2 0 ce;1 1 axdx_

DAC translation at receiving switch

Although the digit “9” serves as the Network 1 access code (used for ARS routing) at the New York switch, the equivalent access code in Boston has the separate value “#1.”

ENHANCED MODE - PROCEDURE: 350, WORD: 2	
DIALING PLAN - FEATURE DIAL ACCESS CODES	
1.	Feature: 33 WCR Network-1 Toll Access
DIAL ACCESS CODE	
2.	Digit 1: #
3.	Digit 2: 1
4.	Digit 3: -
5.	Digit 4: -

Connected to CC0 ON-LINE ♥

enter command: p350w2 33 12 1 axdx_

(Depending on the method chosen for routing public-network calls to Boston over private-network facilities, the switch administrator in New York may need to know the specific ARS access code in Boston. However, the G2.2 switch in New York is capable of routing these calls to Boston regardless of the actual value of the Boston code.)

Example 2: An on-net call routes to the Boston switch.

Assume that a user of the New York switch dials the AAR access code (usually the Network-2 access code) followed by the private-network address of a switch in Boston:

8 - 345 - 7333

AAR Call:

Digit-analysis translations at sending switch

At the sending switch, Network 2 resolves the 7-digit string with the string identifier “345” to VNI 2. Neglecting call categories, the WCR software derives Pattern 2 from VNI 2 and selects an outgoing preference from Pattern 2.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	3
2. Digit 2:	4
3. Digit 3:	5 (Home RNX of Boston PBX)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	2 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 3 4 5 ;;1 1 7 6 0 2 0 2 axdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

Preference-1 translations at sending switch

The first preference in Pattern 2 contains the same tie-trunk group (number 18) that connects the local New York switch with the adjacent private-network switch in Boston.

3-12 Addressing Specific Routing Applications

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number: 2
2.	Preference Number: 1
3.	Trunk Group: 18 (Private-Network Tie Facility)
4.	Facility Restriction Level: 0
5.	Warning Tone: 0 Not Given
6.	Toll-Free Index: -- All Numbers are Toll-Free Calls
7.	Digit Modification Index: 0 Index Number
8.	Digit Sending Index: 2 Index Number
9.	ISDN Sending Index: ----

Connected to CC0 ON-LINE ♥

enter command: p318w1 2 1 18 0 0 ce;0 2 axdx_

DAC translations at receiving switch

Although the digit “8” serves as the Network 2 access code (used for AAR routing) at the New York switch, the equivalent access code in Boston has the separate value “#2.”

ENHANCED MODE - PROCEDURE: 350, WORD: 2	
DIALING PLAN - FEATURE DIAL ACCESS CODES	
1.	Feature: 61 WCR Network-2 Access
DIAL ACCESS CODE	
2.	Digit 1: #
3.	Digit 2: 2
4.	Digit 3: -
5.	Digit 4: -

Connected to CC0 ON-LINE ♥

enter command: p350w2 61 12 2 axdx_

(Depending on the method chosen for routing private-network calls to Boston over private-network facilities, the switch administrator in New York may need to know the specific AAR access code in Boston. However, the G2.2 switch in New York is capable of routing these calls to Boston regardless of the actual value of the Boston code.)

3.2.1 Examining the Leading Digits at Receiving Switch

Before G2.2, the switch automatically used this method to discriminate ARS calls from AAR calls arriving over an incoming tie trunk. This automatic process was viable because ARS calls contained 10 digits with the digit “0” or “1” as the second digit and AAR calls contained 7 digits with a different second digit. (System 85 and G2.1 preferred the quicker method of examining the second digit over the alternative possibility of counting the address digits.)

From the perspective of the receiving switch, the translations to fully translate this previously automatic function in the WCR translation format are described in Section 5.2.6, *AAR-to-ARS Crossover*. In fact, this is the same discrimination method that the TRACS software uses during the G2.2 upgrade process to convert existing ARS and AAR translations into the WCR translation format.

This default method is a reasonably simple and speedy method of discrimination. However, the reliability of this method will degrade as soon as area codes contain second digits other than “0” or “1” or whenever a location code is implemented with “0” or “1” as the second digit.

Throughout this section, the focus is on the end-to-end call-flow processes for ARS calls and AAR calls that use the same tie-trunk facilities — beginning with digit analysis and routing decisions at the sending switch through any digit analysis that may occur at the receiving switch.

ARS Call:

Digit-modification translations at sending switch

Preferably at the preference level, the WCR feature can modify the digits sent for the public-network call to Boston. No modification of the dialed digits is necessary for this example. Therefore, the following screen shows the *default* attributes for DMI 1.

ENHANCED MODE - PROCEDURE: 320, WORD: 1

WCR - NETWORK DIGIT MODIFICATION

1. Digit Modification Index:

2. Digits To Delete:

3. Segment Number: No Digits to Insert

INSERTION DIGITS

4. Digit 1, 9, 17, or 25:

5. Digit 2, 10, 18, or 26:

6. Digit 3, 11, 19, or 27:

7. Digit 4, 12, 20, or 28:

8. Digit 5, 13, 21, or 29:

9. Digit 6, 14, 22, or 30:

10. Digit 7, 15, 23, or 31:

11. Digit 8, 16, 24:

Connected to CC0 ON-LINE ♥

enter command: p320w1 1 dx_

(For this example, DMI 0 could just as well have been used to provide no digit modification. However, within this chapter, DMI 1 will always provide digit modification for Preference 1 of Pattern 1, and real digit modification using DMI 1 will be needed for some of the subsequent methods.)

Digit-prefixing translations at receiving switch

Since the routing software at the receiving (or tandem) switch will analyze the leading *address* digits of the incoming digit stream prior to subsequent routing, there was no need for the sending switch to prepend a routing access code to the address digits so that the receiving switch could begin its analysis. Instead, trunk-group translations at the receiving switch need only correlate an appropriate access code (usually the AAR or the WCR Network-2 access code) with the incoming digit stream.

ENHANCED MODE - PROCEDURE: 101, WORD: 3 TRUNK GROUP CHARACTERISTICS - PREFIXING	
1. Trunk Group: 99 (Incoming Tie Trunk from New York) 2. Type of Address: -	
PREFIX	
3. Digit 1: 12 4. Digit 2: 2 (Inferred Network-2 DAC) 5. Digit 3: - 6. Digit 4: -	
DISPLAY ONLY	
7. Signaling Type: 26 (E&M Wink Start In, Wink/Delay Dial Out)	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p101w3 99 ce;12 2 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

Digit-analysis translations at receiving switch

After the receiving switch correlates the incoming trunk group with the access code, the internal dial plan sends the call to Network 2 which restarts the 2-digit string with the string identifier “61” to Network 1 for subsequent ARS-type analysis and routing.

ENHANCED MODE - PROCEDURE: 314, WORD: 1
 NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION

STRING IDENTIFIER

1. Digit 1:

2. Digit 2: (First 2 Digits of Area Code)

3. Digit 3:

4. Digit 4:

5. Digit 5:

6. Digit 6:

7. Segment:

8. Last Segment: Last Segment - Add to Standard Network

9. String Length:

10. String Type: Address

11. Action: Restart

12. Action Object: Digit Modification Index

13. Action Attribute: Network Number

14. Network Number:

Connected to CC0 ON-LINE ♥

enter command: p314w1 6 1 ;;;;1 1 2 6 1 0 1 2 axdx_

2 Repeat
 3 Form
 5 Help
 6 Field
 7 Input
 8 Cmds

AAR Call:**Digit-modification translations at sending switch**

Preferably at the preference level, the WCR feature can modify the digits sent for the private-network call to the Boston switch. However, using any of the methods in this chapter, no modification of the dialed digits is necessary for Preference 1 of Pattern 2. Therefore, the following screen shows the attributes of Digit Modification Index 0.

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index:	0
2. Digits To Delete:	0
3. Segment Number:	0 No Digits to Insert
INSERTION DIGITS	
4. Digit 1, 9, 17, or 25:	--
5. Digit 2, 10, 18, or 26:	--
6. Digit 3, 11, 19, or 27:	--
7. Digit 4, 12, 20, or 28:	--
8. Digit 5, 13, 21, or 29:	--
9. Digit 6, 14, 22, or 30:	--
10. Digit 7, 15, 23, or 31:	--
11. Digit 8, 16, 24:	--
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 0 dx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

Digit-prefixing translations at receiving switch

Since the routing software at the receiving (or tandem) switch will analyze the leading *address* digits of the incoming digit stream prior to subsequent routing, there was no need for the sending switch to prepend a routing access code to the address digits so that the receiving switch could begin its analysis. Instead, trunk-group translations at the receiving switch need only correlate an appropriate access code (usually the AAR or the WCR Network-2 access code) with the incoming digit stream.

ENHANCED MODE - PROCEDURE: 101, WORD: 3	
TRUNK GROUP CHARACTERISTICS - PREFIXING	
1. Trunk Group:	99 (Incoming Tie Trunk from New York)
2. Type of Address:	-
PREFIX	
3. Digit 1:	12
4. Digit 2:	2 (Inferred Network-2 DAC)
5. Digit 3:	-
6. Digit 4:	-
DISPLAY ONLY	
7. Signaling Type:	26 (E&M Wink Start In, Wink/Delay Dial Out)
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p101w3 99 ce;12 2 cxdx_	
2 Repeat	3 Form
5 Help	6 Field 7 Input 8 Cmds

Digit-analysis translations at receiving switch

At the receiving switch, the internal dial plan sends the call to Network 2 which restarts the 7-digit string with the string identifier “345” to Network 0 (the WCR interface back to the internal dial plan) after DMI 98 deletes 3 digits (the home RNX) and inserts the digit “4.”

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	3
2. Digit 2:	4
3. Digit 3:	5 (Home RNX of Boston PBX)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	98 Digit Modification Index
13. Action Attribute:	0 Network Number
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 3 4 5 ;;1 1 7 6 1 98 0 2 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cnds

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index:	98
2. Digits To Delete:	3
3. Segment Number:	1 Digits 1 to 8
INSERTION DIGITS	
4. Digit 1, 9, 17, or 25:	4 (First Digit of 5-Digit Extension Numbers)
5. Digit 2, 10, 18, or 26:	--
6. Digit 3, 11, 19, or 27:	--
7. Digit 4, 12, 20, or 28:	--
8. Digit 5, 13, 21, or 29:	--
9. Digit 6, 14, 22, or 30:	--
10. Digit 7, 15, 23, or 31:	--
11. Digit 8, 16, 24:	--
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 98 3 1 4 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cnds

3.2.2 Sending “1” Prefix

Some methods of discriminating ARS calls from AAR calls (that arrive over the same tie-trunk group) rely on the sending switch to operate on the outgoing digit stream so that subsequent discrimination at the receiving switch may be as simple, fast, and reliable as possible.

One reliable and quite simple method relies on the sending switch to prefix ARS calls sent over a tie-trunk group with a special prefix, in this example the digit “1,” and to perform no operation for AAR calls sent over the same tie-trunk group. Using this method, the receiving switch need only examine the leading digit of the incoming digit stream to separate ARS calls from AAR calls. However, the reliability of this method will degrade whenever a location code is implemented with the leading digit “1.”

This is the preferred method of discrimination for System 75s and Generic 1s that serve as ETN nodes. Therefore, for outgoing (or tandem) calls from a G2.2 to a System 75 or G1, this method should be considered a good candidate. Also, for incoming calls from adjacent ETN nodes to the G2.2, this method is a viable discriminator if *every* adjacent node is capable of prefixing ARS tie-trunk calls sent to the G2.2 with the “1” prefix.

ARS Call:

Digit-modification translations at sending switch

Preferably at the preference level, the WCR feature needs to modify the digits sent for the public-network call to Boston. In this example, DMI 1 deletes the dialed area code and inserts the digit “1.”

ENHANCED MODE - PROCEDURE: 320, WORD: 1
 WCR - NETWORK DIGIT MODIFICATION

1. Digit Modification Index:
 2. Digits To Delete:
 3. Segment Number: Digits 1 to 8

INSERTION DIGITS

4. Digit 1, 9, 17, or 25:
 5. Digit 2, 10, 18, or 26:
 6. Digit 3, 11, 19, or 27:
 7. Digit 4, 12, 20, or 28:
 8. Digit 5, 13, 21, or 29:
 9. Digit 6, 14, 22, or 30:
 10. Digit 7, 15, 23, or 31:
 11. Digit 8, 16, 24:

Connected to CC0 ON-LINE ♥

enter command: p320w1 1 3 1 1 cxdx_

[For this example, DMI 1 could have inserted the “1” without first deleting the home area code of the Boston switch. However, since the “1” prefix (not the specific address digits or the string

length) denotes a public-network call for the receiving switch, deleting the area code should not cause an invalid digit analysis at the receiving switch.

Also for this example, *inserting* the “1” digit using a digit-modification index is an acceptable but not a failure-proof method of tie-trunk prefixing. A more robust method is to assign the digit “1” as a DAC in Procedure 321 Word 1. When this is done, the digit “1” is certain to be the leading digit of the outgoing digit stream regardless of any other prefixes (for example, IXC digits) that might apply to calls over the preference.]

Digit-analysis translations at receiving switch

At the receiving switch, the internal dial plan sends the call to Network 2 which restarts the 1-digit string with the string identifier “1” to Network 1 (the ARS routing network) after DMI 99 deletes the leading digit “1.”

ENHANCED MODE - PROCEDURE: 314, WORD: 1
 NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION

STRING IDENTIFIER

1. Digit 1:	1	(Preindicator of Public-Network Address)
2. Digit 2:	--	
3. Digit 3:	--	
4. Digit 4:	--	
5. Digit 5:	--	
6. Digit 6:	--	

7. Segment:	1	
8. Last Segment:	1	Last Segment - Add to Standard Network
9. String Length:	1	
10. String Type:	6	Address
11. Action:	1	Restart
12. Action Object:	99	Digit Modification Index
13. Action Attribute:	1	Network Number
14. Network Number:	2	

Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT

enter command: p314w1 1 ;;;;1 1 1 6 1 99 1 2 axdx_

2 Repeat	3 Form	5 Help	6 Field	7 Input	8 Cmds
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ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index:	99
2. Digits To Delete:	1
3. Segment Number:	0 No Digits to Insert
 INSERTION DIGITS	
4. Digit 1, 9, 17, or 25:	--
5. Digit 2, 10, 18, or 26:	--
6. Digit 3, 11, 19, or 27:	--
7. Digit 4, 12, 20, or 28:	--
8. Digit 5, 13, 21, or 29:	--
9. Digit 6, 14, 22, or 30:	--
10. Digit 7, 15, 23, or 31:	--
11. Digit 8, 16, 24:	--
 Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 99 1 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

AAR Call:

Digit-analysis translations at receiving switch

At the receiving switch, the internal dial plan sends the call to Network 2 which restarts the 7-digit string with the string identifier "345" to Network 0 (the WCR interface back to the internal dial plan) after DMI 98 deletes three digits (the home RNX) and inserts the digit "4."

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
 STRING IDENTIFIER	
1. Digit 1:	3
2. Digit 2:	4
3. Digit 3:	5 (Home RNX of Boston PBX)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	98 Digit Modification Index
13. Action Attribute:	0 Network Number
14. Network Number:	2
 Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 3 4 5 ;;1 1 7 6 1 98 0 2 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index: 98	
2. Digits To Delete: 3	
3. Segment Number: 1 Digits 1 to 8	
INSERTION DIGITS	
4. Digit 1, 9, 17, or 25: 4 (First Digit of 5-Digit Extension Numbers)	
5. Digit 2, 10, 18, or 26: --	
6. Digit 3, 11, 19, or 27: --	
7. Digit 4, 12, 20, or 28: --	
8. Digit 5, 13, 21, or 29: --	
9. Digit 6, 14, 22, or 30: --	
10. Digit 7, 15, 23, or 31: --	
11. Digit 8, 16, 24: --	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 98 3 1 4 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

3.2.3 Sending Network DAC Prefixes

Another fast and reliable digit-sending method relies on the sending switch to prefix ARS calls (sent over a tie-trunk group) with the receiving switch's ARS dial access code (DAC) and to prefix AAR calls (sent over the same tie-trunk group) with the receiving switch's AAR DAC. Using this method, the internal dial plan (at the receiving switch) need only examine the leading digit(s) of the incoming digit stream to separate ARS calls from AAR calls. Also, since the correct DAC is always sent with the digit stream, this method eliminates the need for AAR-to-ARS crossover of incoming tie-trunk calls at the receiving switch.

This is probably the best (non-ISDN) discrimination method for switches within an ETN network. However, this method requires highly intelligent switches at both the sending and receiving ends of a tie-trunk group. Also, this method does not allow a switch administrator to change the local AAR and ARS access codes without coordinating the change with the administrators of adjacent switches.

This is a viable method of sending tie-trunk calls to a G1 or to another G2.2 switch. This is also a viable method of receiving calls from G1 or other G2.2 switches. (However, an alternate method of incoming discrimination would be necessary for the less intelligent adjacent switches.)

ARS Call:

Digit-sending translations at sending switch

At the preference level, a digit-sending index needs to apply a DAC prefix to the address digits being sent for the public-network call to Boston. In this example, the DAC prefix is the Boston Network-1 access code "#1."

ENHANCED MODE - PROCEDURE: 321, WORD: 1					
WCR - DIGIT SENDING TRANSLATION					
1. Digit Sending Index: 1					
DIAL ACCESS CODE (DAC)					
2. Send DAC Flag: 3 Send Assigned DAC					
DAC DIGITS					
3. Digit 1: #	4. Digit 2: 1	5. Digit 3: -	6. Digit 4: -		
INTEREXCHANGE CARRIER (IXC)					
7. Send IXC Flag: 0					
CIC DIGITS					
8. Digit 1: -	9. Digit 2: -	10. Digit 3: -	11. Digit 4: -		
TOLL PREFIX					
12. Send Toll Prefix Flag: 0					
TOLL PREFIX DIGITS					
13. Digit 1: -	14. Digit 2: -	15. Digit 3: -			
16. Send Pound Sign Flag: 0					
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT					
enter command: p321w1 1 3 12 1 cxdx_					
2 Repeat	3 Form	5 Help	6 Field	7 Input	8 Cmds

Digit-prefixing translations at receiving switch

Since the internal dial plan at the receiving (or tandem) switch will analyze the leading *DAC prefix* digits of the incoming digit stream prior to subsequent routing, trunk-group translations at the receiving switch should *not* correlate an access code with the incoming digit stream.

ENHANCED MODE - PROCEDURE: 101, WORD: 3	
TRUNK GROUP CHARACTERISTICS - PREFIXING	
1. Trunk Group:	99 (Incoming Tie Trunk from New York)
2. Type of Address:	-
PREFIX	
3. Digit 1:	--
4. Digit 2:	-
5. Digit 3:	-
6. Digit 4:	- (Trunk-Group DAC Not Inferred)
DISPLAY ONLY	
7. Signaling Type:	26 (E&M Wink Start In, Wink/Delay Dial Out)
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p101w3 99 dx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

(If trunk-group translations also correlated an access code with the incoming digit stream, the receiving switch's internal dial plan would analyze the *assigned* DAC and then pass the *received* DAC to the routing network specified by the assigned DAC for digit analysis. This operation would cause the incoming call to fail.)

.....

Digit-analysis translations at receiving switch

At the receiving switch, Network 1 resolves the 3-digit string with the string identifier “443” to VNI 99 (which correlates with the pattern that the Boston switch uses for local public-network routing).

ENHANCED MODE - PROCEDURE: 314, WORD: 1

NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION

STRING IDENTIFIER

1. Digit 1: 4

2. Digit 2: 4

3. Digit 3: 3 (Local Boston Office Code)

4. Digit 4: --

5. Digit 5: --

6. Digit 6: --

7. Segment: 1

8. Last Segment: 1 Last Segment - Add to Standard Network

9. String Length: 7

10. String Type: 6 Address

11. Action: 0 Resolve

12. Action Object: 99 Virtual Nodepoint Identifier

13. Action Attribute: 0 Facility Restriction Level

14. Network Number: 1

Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT

enter command: p314w1 4 4 3 ;;1 1 7 6 0 99 0 1 axdx_

2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds

AAR Call:**Digit-sending translations at sending switch**

At the preference level, a digit-sending index needs to apply a DAC prefix to the address digits being sent for the private-network call to the Boston switch. In this example, the DAC prefix is the Boston Network-2 access code “#2.”

ENHANCED MODE - PROCEDURE: 321, WORD: 1			
WCR - DIGIT SENDING TRANSLATION			
1. Digit Sending Index: 2			
DIAL ACCESS CODE (DAC)			
2. Send DAC Flag: 3 Send Assigned DAC			
DAC DIGITS			
3. Digit 1: #	4. Digit 2: 2	5. Digit 3: -	6. Digit 4: -
INTEREXCHANGE CARRIER (IXC)			
7. Send IXC Flag: 0			
CIC DIGITS			
8. Digit 1: -	9. Digit 2: -	10. Digit 3: -	11. Digit 4: -
TOLL PREFIX			
12. Send Toll Prefix Flag: 0			
TOLL PREFIX DIGITS			
13. Digit 1: -	14. Digit 2: -	15. Digit 3: -	
16. Send Pound Sign Flag: 0			
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT			
enter command: p321w1 2 3 12 2 cxdx_			
	2 Repeat 3 Form	5 Help	6 Field 7 Input 8 Cmds

Digit-prefixing translations at receiving switch

Since the internal dial plan at the receiving (or tandem) switch will analyze the leading *DAC prefix* digits of the incoming digit stream prior to subsequent routing, trunk-group translations at the receiving switch should *not* correlate an access code with the incoming digit stream.

ENHANCED MODE - PROCEDURE: 101, WORD: 3	
TRUNK GROUP CHARACTERISTICS - PREFIXING	
1. Trunk Group:	99 (Incoming Tie Trunk from New York)
2. Type of Address:	-
PREFIX	
3. Digit 1:	--
4. Digit 2:	-
5. Digit 3:	-
6. Digit 4:	- (Trunk-Group DAC Not Inferred)
DISPLAY ONLY	
7. Signaling Type:	26 (E&M Wink Start In, Wink/Delay Dial Out)
Connected to CC0 ON-LINE ♥	
MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p101w3 99 dx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

(If trunk-group translations also correlated an access code with the incoming digit stream, the receiving switch's internal dial plan would analyze the *assigned* DAC and then pass the *received* DAC to the routing network specified by the assigned DAC for digit analysis. This operation would be, at best, redundant and could cause the incoming call to fail.)

.....

Digit-analysis translations at receiving switch

At the receiving switch, the internal dial plan sends the call to Network 2 which restarts the 7-digit string with the string identifier “345” to Network 0 (the WCR interface back to the internal dial plan) after DMI 98 deletes three digits (the home RNX) and inserts the digit “4.”

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	3
2. Digit 2:	4
3. Digit 3:	5 (Boston Location Code)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	98 Digit Modification Index
13. Action Attribute:	0 Network Number
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 3 4 5 ;;;1 1 7 6 1 98 0 2 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

3.2.4 Populating the ISDN—PRI Type-of-Address Field

An Integrated Systems Digital Network (ISDN)-oriented discrimination method relies on the sending switch to differentiate ARS and AAR calls by appropriately populating the type-of-address field in the called-number information element (IE) of every call sent over an ISDN—Primary Rate Interface (PRI) tie-trunk group. Using this method, the corresponding ISDN—PRI software (at the receiving switch) would decode the incoming called-number IE and then correlate the decoded information with the correct routing DAC (at the local switch) to separate ARS calls from AAR calls. Since the receiving switch can derive the correct DAC from the contents of the called-number IE, this method eliminates the need for AAR-to-ARS crossover of incoming tie-trunk calls at the receiving switch.

Overall, this may be the best discrimination method for switches within an ETN network. However, this method requires ISDN-capable digital switches (that strictly conform with the PRI type-of-address specifications) at both the sending and receiving ends of a tie-trunk group. Therefore, this is a viable method of sending tie-trunk calls to another G2.2 or another fully ISDN-capable switch. This is also a viable method of receiving calls from the same set of switches. (However, an alternate method of incoming discrimination would be necessary for the less intelligent adjacent switches.)

ARS Call:

Preference-2 translations at sending switch

The second preference in Pattern 1 contains an ISDN tie-trunk group (number 19) that also connects the local New York switch with the adjacent private-network switch in Boston.

ENHANCED MODE - PROCEDURE: 318, WORD: 1
 WCR - NETWORK ROUTE TRANSLATION

1.	Pattern Number:	1	
2.	Preference Number:	2	
3.	Trunk Group:	19	(Private-Network ISDN Facility)
4.	Facility Restriction Level:	2	
5.	Warning Tone:	0	Not Given
6.	Toll-Free Index:	--	All Numbers are Toll-Free Calls
7.	Digit Modification Index:	1	Index Number
8.	Digit Sending Index:	1	Index Number
9.	ISDN Sending Index:	1	

Connected to CC0 ON-LINE ♥

MAJOR

MINOR

RUN TAPE

BUSY OUT

IN USE

WAIT

enter command: p318w1 1 2 19 2 0 ce;1 1 1 axdx_

2 Repeat

3 Form

5 Help

6 Field

7 Input

8 Cmds

ISDN sending translations at sending switch

At the preference level, an ISDN sending index needs to specify the attributes of the ISDN call so that the switch correctly populates the call's IEs (information elements). The following screen shows a possible choice of entries for a domestic public-network address sent through an AT&T-provided private network.

ENHANCED MODE - PROCEDURE: 322, WORD: 1

WCR - OUTGOING ISDN FEATURE PARAMETERS

1.

ISDN Sending Index:

1

2.

ISDN Network Service Value:

3.

Type of Address:

2

National Number

4.

Numbering Plan Identification:

1

ISDN/Telephony Numbering Plan

5.

IXC Option:

0

Code IXC in NSF IE or TNS IE

Connected to CC0 ON-LINE ♥

MAJOR

MINOR

RUN TAPE

BUSY OUT

IN USE

WAIT

enter command: p322w1 1 ce;2 1 0 cxdx_

2 Repeat

3 Form

5 Help

6 Field

7 Input

8 Cnds

ISDN DAC-prefixing translations at receiving switch

At the receiving switch, trunk-group translations prepend the desired routing access code to the address digits so that the receiving switch can begin digit analysis. In this example, these translations correlate the Network-1 access code “#1” with domestic public-network addresses (in ISDN terminology, “national numbers”) arriving over ISDN trunk group 98.

ENHANCED MODE - PROCEDURE: 101, WORD: 3	
TRUNK GROUP CHARACTERISTICS - PREFIXING	
1. Trunk Group:	98 (Incoming ISDN Tie Trunk from New York)
2. Type of Address:	2
PREFIX	
3. Digit 1:	12
4. Digit 2:	1 (WCR Network-1 Toll Access)
5. Digit 3:	-
6. Digit 4:	-
DISPLAY ONLY	
7. Signaling Type:	20 (ISDN)
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p101w3 98 2 12 1 cxdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cnds

Digit-analysis translations at receiving switch

At the receiving switch, Network 1 resolves the 3-digit string with the string identifier “443” to VNI 98 (which correlates with the pattern that the Boston switch uses for local ISDN public-network routing).

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	4
2. Digit 2:	4
3. Digit 3:	3 (Local Boston Office Code)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	98 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 4 4 3 ;;1 1 7 6 0 98 0 1 axdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

AAR Call:

Preference-2 translations at sending switch

The second preference in Pattern 2 contains the same ISDN tie-trunk group (number 19) that also connects the local New York switch with the adjacent private-network switch in Boston.

ENHANCED MODE - PROCEDURE: 318, WORD: 1
 WCR - NETWORK ROUTE TRANSLATION

1.	Pattern Number:	2	
2.	Preference Number:	2	
3.	Trunk Group:	19	(Private-Network ISDN Facility)
4.	Facility Restriction Level:	0	
5.	Warning Tone:	0	Not Given
6.	Toll-Free Index:	--	All Numbers are Toll-Free Calls
7.	Digit Modification Index:	0	Index Number
8.	Digit Sending Index:	2	Index Number
9.	ISDN Sending Index:	2	

Connected to CC0 ON-LINE ♥
 MAJOR
MINOR
RUN TAPE
BUSY OUT
IN USE
WAIT

enter command: p318w1 2 2 19 0 0 ce;0 2 2 axdx_

2 Repeat
3 Form
5 Help
6 Field
7 Input
8 Cmds

ISDN sending translations at sending switch

At the preference level, an ISDN sending index needs to specify the attributes of the ISDN call so that the switch correctly populates the call's IEs (information elements). The following screen shows a possible choice of entries for a private-network address being sent through an AT&T-provided private network.

ENHANCED MODE - PROCEDURE: 322, WORD: 1

WCR - OUTGOING ISDN FEATURE PARAMETERS

1.

ISDN Sending Index:

2

2.

ISDN Network Service Value:

3.

Type of Address:

2

National Number

4.

Numbering Plan Identification:

1

ISDN/Telephony Numbering Plan

5.

IXC Option:

0

Code IXC in NSF IE or TNS IE

Connected to CC0 ON-LINE ♥

MAJOR

MINOR

RUN TAPE

BUSY OUT

IN USE

WAIT

enter command: p322w1 2 ce;2 1 0 cxdx_

2 Repeat

3 Form

5 Help

6 Field

7 Input

8 Cnds

ISDN DAC-prefixing translations at receiving switch

At the receiving switch, trunk-group translations prepend the desired routing access code to the address digits so that the receiving switch can begin digit analysis. In this example, these translations correlate the Network-2 access code “#2” with private-network addresses (coded as “network specific number”) arriving over ISDN trunk group 98.

ENHANCED MODE - PROCEDURE: 101, WORD: 3	
TRUNK GROUP CHARACTERISTICS - PREFIXING	
1. Trunk Group:	98 (Incoming ISDN Tie Trunk from New York)
2. Type of Address:	3
PREFIX	
3. Digit 1:	12
4. Digit 2:	2 (WCR Network-2 Access)
5. Digit 3:	-
6. Digit 4:	-
DISPLAY ONLY	
7. Signaling Type:	20 (ISDN)
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p101w3 98 3 12 2 cxdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cnds

Digit-analysis translations at receiving switch

At the receiving switch, the internal dial plan sends the call to Network 2 which restarts the 7-digit string with the string identifier “345” to Network 0 (the WCR interface back to the internal dial plan) after DMI 98 deletes three digits (the home RNX) and inserts the digit “4.”

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	3
2. Digit 2:	4
3. Digit 3:	5 (Home RNX of Boston PBX)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	98 Digit Modification Index
13. Action Attribute:	0 Network Number
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 3 4 5 ;;1 1 7 6 1 98 0 2 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index:	98
2. Digits To Delete:	3
3. Segment Number:	1 Digits 1 to 8
INSERTION DIGITS	
4. Digit 1, 9, 17, or 25:	4 (First Digit of 5-Digit Extension Numbers)
5. Digit 2, 10, 18, or 26:	--
6. Digit 3, 11, 19, or 27:	--
7. Digit 4, 12, 20, or 28:	--
8. Digit 5, 13, 21, or 29:	--
9. Digit 6, 14, 22, or 30:	--
10. Digit 7, 15, 23, or 31:	--
11. Digit 8, 16, 24:	--
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 98 3 1 4 cxdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

3.2.5 Examining Address Digits and String Length at Receiving Switch

This discrimination method relies on the AAR routing network (usually Network 2) at the receiving switch to examine the specific digit content and/or string length of each digit stream that arrives over a tie-trunk group. This method is nearest to the method that System 85 and Generic 2.1 rejected as the automatic method and that the G2.2 TRACS upgrade process rejected as the default method of discrimination. The primary reason for this rejection is the relative slowness of the process.

Even if the sending switch is always responsible to send 7 digits for AAR calls and 10 digits for ARS calls to minimize digit-content analysis, the receiving switch may have to rely on an interdigit timer to distinguish 7-digit from 10-digit calls. However, this method is substantially faster either when every adjacent sending switch reliably sends the “#” end-of-dialing digit for tie-trunk calls or when an adjacent switch is connected with ISDN facilities.

For a G2.2 switch at the receiving end of a tie-trunk call, the duplication of ARS (usually Network 1) digit-analysis translations in the AAR routing network (usually Network 2) can present another drawback to this discrimination method. Digit-analysis translations that reside in more than one routing network present additional implementation and software-maintenance effort for the switch administrator. And duplicate translations that disagree are likely to cause routing errors.

Another potential pitfall is that internal conflicts within Network-2 digit analysis can seriously degrade the viability of this discrimination method. Whenever Routing Network 2 cannot determine (according to the value of the string identifier and the string's length) whether an incoming address is a public- or private-network number, then routing errors will result. (As an example, suppose that a sending switch is allowed to send 7-digit public- and private-network numbers across a private-network facility. Also, suppose that one location code in the private network has the *same value* as a local office code of the receiving switch. Then, both the private- and public-network addresses can be 7-digit strings with the same string identifier. But, Network 2 can only be assigned to respond to an address with specific characteristics in one way — not in one of multiple ways.)

Although the need for this method is uncommon in the era of electronic switches, this method is most useful when a sending switch can do little to facilitate numbering-plan discrimination for the receiving switch.

ARS Call:**Digit-analysis translations at sending switch**

At the sending switch, Network 1 resolves the 10-digit string with the string identifier “617” to VNI 1. Neglecting call categories, the WCR software derives Pattern 1 from VNI 1 and selects an outgoing preference from Pattern 1.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	6
2. Digit 2:	1
3. Digit 3:	7 (Boston Area Code)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment: 1	
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	10
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	1 Virtual Nodepoint Identifier
13. Action Attribute:	2 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ▼	
MAJOR	MINOR
RUN TAPE	BUSY OUT
IN USE	WAIT
enter command: p314w1 6 1 7 ;;;1 1 10 6 0 1 2 1 axdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

Digit-modification translations at sending switch

At the preference level, the WCR feature can modify the digits sent for the public-network call to Boston. However, in this example, the dialed digits are not modified to facilitate digit analysis at the receiving switch so that every public-network call has a consistent 10-digit length and can be distinguished from 7-digit private-network calls. Therefore, the following screen shows the *default* attributes of DMI 1.

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index:	1
2. Digits To Delete:	0
3. Segment Number:	0 No Digits to Insert
INSERTION DIGITS	
4. Digit 1, 9, 17, or 25:	--
5. Digit 2, 10, 18, or 26:	--
6. Digit 3, 11, 19, or 27:	--
7. Digit 4, 12, 20, or 28:	--
8. Digit 5, 13, 21, or 29:	--
9. Digit 6, 14, 22, or 30:	--
10. Digit 7, 15, 23, or 31:	--
11. Digit 8, 16, 24:	--
Connected to CC0 ON-LINE ♥	
MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 1 dx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

(Using this method, digit modification of public-network addresses should be performed with caution. In this example, deleting the home area code of the Boston switch would give this ARS address and the following AAR address *equal* string lengths. Then, the receiving switch can only discriminate the strings according to the *values* of the string identifiers. But, in situations where public-network location codes and private-network office codes can have like values, an accurate discrimination is not always possible.)

(For this example, DMI 0 could just as well have been used to provide no digit modification.)

.....

Digit-sending translation at sending switch

At the preference level, a digit-sending index should append the “#” digit to the address digits being sent to Boston. Using this method, the length of the incoming digit stream is important to the receiving switch. Therefore, sending the “#” digit declares the final address digit and minimizes the use of timers at the receiving switch to discriminate strings.

ENHANCED MODE - PROCEDURE: 321, WORD: 1
 WCR - DIGIT SENDING TRANSLATION

1. Digit Sending Index:

DIAL ACCESS CODE (DAC)

2. Send DAC Flag:

DAC DIGITS

3. Digit 1: 4. Digit 2: 5. Digit 3: 6. Digit 4:

INTEREXCHANGE CARRIER (IXC)

7. Send IXC Flag:

CIC DIGITS

8. Digit 1: 9. Digit 2: 10. Digit 3: 11. Digit 4:

TOLL PREFIX

12. Send Toll Prefix Flag:

TOLL PREFIX DIGITS

13. Digit 1: 14. Digit 2: 15. Digit 3:

16. Send Pound Sign Flag: Send “#” as the Last Digit

Connected to CC0 ON-LINE ♥

enter command: p321w1 3 cf16 1 cxdx_

NOTE

If 10-digit strings are the longest strings sent across this trunk group, then the “#” digit should not be sent. Since timers are never required for the longest strings, sending the “#” digit with these strings offers no string-discrimination advantage to the receiving switch. However, if sent, the unnecessary “#” digit could be misinterpreted by subsequent processing at the receiving switch.

Digit-prefixing translations at receiving switch

Since the routing software at the receiving (or tandem) switch will analyze the content and length of the incoming digit stream prior to subsequent routing, there was no need for the sending switch to prepend a routing access code to the address digits so that the receiving switch could begin its analysis. Instead, trunk-group translations at the receiving switch need only correlate an appropriate access code (usually the AAR or the WCR Network-2 access code) with the incoming digit stream.

ENHANCED MODE - PROCEDURE: 101, WORD: 3	
TRUNK GROUP CHARACTERISTICS - PREFIXING	
1. Trunk Group:	99 (Incoming Tie Trunk from New York)
2. Type of Address:	-
PREFIX	
3. Digit 1:	12
4. Digit 2:	2 (Network 2 DAC)
5. Digit 3:	-
6. Digit 4:	-
DISPLAY ONLY	
7. Signaling Type:	26 (E&M Wink Start In, Wink/Delay Dial Out)
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p101w3 99 ce;12 2 cxdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

Digit-analysis translations at receiving switch

At the receiving switch, Network 2 restarts the 10-digit string with the string identifier “617” to Network 1 (for public-network routing) without prior digit modification.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	6
2. Digit 2:	1
3. Digit 3:	7 (Boston Area Code)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	10
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	0 Digit Modification Index
13. Action Attribute:	1 Network Number
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 6 1 7 ;;;1 1 10 6 1 0 1 2 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

(Before restarting the call to Network 1, Network 2 could have deleted the home area code without adverse effects. However, when correctly assigned, Network 1 is already fully capable of performing these same operations with little or no effective delay in call-processing time. Therefore, providing this intelligence for Network 2 would only produce redundant translations both to implement and maintain.)

AAR Call:**Digit-analysis translations at sending switch**

At the sending switch, Network 2 resolves the 7-digit string with the string identifier “345” to VNI 2. Neglecting call categories, the WCR software derives Pattern 2 from VNI 2 and selects an outgoing preference from Pattern 2.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	3
2. Digit 2:	4
3. Digit 3:	5 (Home RNX of Boston PBX)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment: 1	
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	2 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	2
Connected to CC0 ON-LINE ♥	
MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 3 4 5 ;;;1 1 7 6 0 2 0 2 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

Digit-sending translation at sending switch

At the preference level, a digit-sending index should append the “#” digit to the address digits being sent to Boston. Using this method, the length of the incoming digit stream is important to the receiving switch. Therefore, sending the “#” digit declares the final address digit and minimizes the use of timers at the receiving switch to discriminate strings.

ENHANCED MODE - PROCEDURE: 321, WORD: 1
 WCR - DIGIT SENDING TRANSLATION

1. Digit Sending Index:

DIAL ACCESS CODE (DAC)

2. Send DAC Flag:

DAC DIGITS

3. Digit 1: 4. Digit 2: 5. Digit 3: 6. Digit 4:

INTEREXCHANGE CARRIER (IXC)

7. Send IXC Flag:

CIC DIGITS

8. Digit 1: 9. Digit 2: 10. Digit 3: 11. Digit 4:

TOLL PREFIX

12. Send Toll Prefix Flag:

TOLL PREFIX DIGITS

13. Digit 1: 14. Digit 2: 15. Digit 3:

16. Send Pound Sign Flag: Send “#” as the Last Digit

Connected to CC0 ON-LINE ♥

enter command: p321w1 3 cf16 1 cxdx_

Digit-prefixing translations at receiving switch

Since the routing software at the receiving (or tandem) switch will analyze the content and length of the incoming digit stream prior to subsequent routing, there was no need for the sending switch to prepend a routing access code to the address digits so that the receiving switch could begin its analysis. Instead, trunk-group translations at the receiving switch need only correlate an appropriate access code (usually the AAR or the WCR Network-2 access code) with the incoming digit stream.

ENHANCED MODE - PROCEDURE: 101, WORD: 3	
TRUNK GROUP CHARACTERISTICS - PREFIXING	
1. Trunk Group:	99 (Incoming Tie Trunk from New York)
2. Type of Address:	-
PREFIX	
3. Digit 1:	12
4. Digit 2:	2 (Network 2 DAC)
5. Digit 3:	-
6. Digit 4:	-
DISPLAY ONLY	
7. Signaling Type:	26 (E&M Wink Start In, Wink/Delay Dial Out)
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p101w3 99 ce;12 2 cxdx_	
2 Repeat	3 Form
5 Help	6 Field 7 Input 8 Cmds

Digit-analysis translations at receiving switch

At the receiving switch, Network 2 restarts the 7-digit string with the string identifier “345” to Network 0 (the WCR interface to the internal dial plan) after DMI 98 deletes three digits (the home RNX) and inserts the digit “4.”

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	3
2. Digit 2:	4
3. Digit 3:	5 (Home RNX of Boston PBX)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	98 Digit Modification Index
13. Action Attribute:	0 Network Number
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 3 4 5 ;;1 1 7 6 1 98 0 2 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index:	98
2. Digits To Delete:	3
3. Segment Number:	1 Digits 1 to 8
INSERTION DIGITS	
4. Digit 1, 9, 17, or 25:	4 (First Digit of 5-Digit Extension Numbers)
5. Digit 2, 10, 18, or 26:	--
6. Digit 3, 11, 19, or 27:	--
7. Digit 4, 12, 20, or 28:	--
8. Digit 5, 13, 21, or 29:	--
9. Digit 6, 14, 22, or 30:	--
10. Digit 7, 15, 23, or 31:	--
11. Digit 8, 16, 24:	--
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 98 3 1 4 cxdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

3.3 Using Single DAC to Access Public and Private Network

In Section 3.2, several methods of crossing over digit analysis from the AAR network (Network 2) to the ARS network (Network 1) were shown. This section reiterates two of the same methods:

- Examining the leading digits of the address*
- Examining the digit content and length of the address

to allow cross-over of locally dialed calls.

If either of these two methods was chosen to route multiple dial plans over common facilities, then the *same* method should be used to provide a single routing access code. (This practice will serve to minimize the redundancy of routing translations and the confusion of apparent routing conflicts.) If one of the other methods was chosen to route multiple dial plans, then either of the following methods can be used to provide a single routing access code for locally dialed calls.

Before G2.2, the switch automatically used the first crossover method to allow access to both the AAR and ARS features with a single dial access code.

Beginning with G2.2, neither crossover method is automatically provided by the WCR software. However, either method can be acceptably implemented (given that the simultaneous use of both methods is avoided). As discussed in Section 3.2, the second method has more drawbacks and should be implemented with caution.

During the G2.2 upgrade process, the TRACS upgrade software emulates the first method in the WCR translation format.

* Automatically provided by the G2.2 TRACS upgrade.

3.3.1 Examining Leading Digits of Dialed Number

Example 1: AAR and ARS dial plans reside in separate networks.

Assume that a user dials the AAR (usually the Network-2) access code followed by the Boston telephone number:

8 - 617 - 443 - 0338

At the originating switch, Network 2 restarts the 2-digit string with the string identifier “61” to Network 1 (for public-network routing) without digit modification.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	6
2. Digit 2:	1 (First 2 Digits of Area Code)
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	2
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	0 Digit Modification Index
13. Action Attribute:	1 Network Number
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 6 1 ;;;;1 1 2 6 1 0 1 2 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

In turn, Network 1 resolves the 10-digit string with the string identifier “617” to VNI 1. Neglecting call categories, the WCR software derives Pattern 1 from VNI 1 and selects an outgoing preference from Pattern 1.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	6
2. Digit 2:	1
3. Digit 3:	7 (Boston Area Code)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7.	Segment: 1
8.	Last Segment: 1 Last Segment - Add to Standard Network
9.	String Length: 10
10.	String Type: 6 Address
11.	Action: 0 Resolve
12.	Action Object: 1 Virtual Nodepoint Identifier
13.	Action Attribute: 2 Facility Restriction Level
14.	Network Number: 1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 6 1 7 ;;;1 1 10 6 0 1 2 1 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

Example 2: Users dial prefix as an ARS indicator.

Assume that a user dials the AAR (usually the Network-2) access code, the ARS preindicator “1,” and the Boston telephone number:

8 - 1 - 617 - 443 - 0338

At the originating switch, Network 2 restarts the 1-digit string with the string identifier “1” to Network 1 (for public-network routing) without digit modification.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	1 (Preindicator for public-network call)
2. Digit 2:	--
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment: 1	
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	1
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	0 Digit Modification Index
13. Action Attribute:	1 Network Number
14. Network Number:	2
Connected to CC0 ON-LINE ♥	
MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 1 ;;;;1 1 1 6 1 0 1 2 axdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

In turn, Network 1 resolves the 11-digit string with the string identifier “1617” to VNI 1. Neglecting call categories, the WCR software derives Pattern 1 from VNI 1 and selects an outgoing preference from Pattern 1.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	1 (Preindicator for 10-Digit Number)
2. Digit 2:	6
3. Digit 3:	1
4. Digit 4:	7 (Boston Area Code)
5. Digit 5:	--
6. Digit 6:	--
7. Segment: 1	
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	11
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	1 Virtual Nodepoint Identifier
13. Action Attribute:	2 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥	
MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 1 6 1 7 ;;1 1 11 6 0 1 2 1 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cnds	

Example 3: Both dial plans reside in the same routing network.

Assume that a user dials the ARS (usually the Network-1) access code, the 10-digit preindicator “1,” and the Boston telephone number:

9 - 1 - 617 - 443 - 0338

At the originating switch, every ARS address is assigned to Network 1 with the leading digit “1” and every AAR address is assigned to Network 1 without the leading digit “1.”

In turn, Network 1 resolves the 11-digit string with the string identifier “1617” to VNI 1. Neglecting call categories, the WCR software derives Pattern 1 from VNI 1 and selects an outgoing preference from Pattern 1.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	1 (Preindicator for 10-Digit Number)
2. Digit 2:	6
3. Digit 3:	1
4. Digit 4:	7 (Boston Area Code)
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	11
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	1 Virtual Nodepoint Identifier
13. Action Attribute:	2 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 1 6 1 7 ;;1 1 11 6 0 1 2 1 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

(For this example, the switch recognizes the leading digit “1” as one of the dialed address digits. Therefore, the leading digit may need to be deleted by preference-level digit modification.)

3.3.2 Examining Address Digits and String Length of Dialed Number

Example 1: Assume that a user dials the AAR (usually the Network-2) access code followed by the Boston telephone number:

8 - 617 - 443 - 0338

At the originating switch, Network 2 restarts the 10-digit string with the string identifier “617” to Network 1 (for public-network routing) without digit modification.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	6
2. Digit 2:	1
3. Digit 3:	7 (Boston Area Code)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	10
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	0 Digit Modification Index
13. Action Attribute:	1 Network Number
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 6 1 7 ;;;1 1 10 6 1 0 1 2 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

NOTE

If the string identifier “617” is also assigned in Network 2 with a string length of “7,” users should be instructed to dial the “#” end-of-dialing digit after the private-network address.

3.4 Assigning Home NPA-NXX[-X]s at Receiving Switch

In Sections 3.2 and 3.3, several methods of crossing over digit analysis from the AAR network (Network 2) to the ARS network (Network 1) were shown. One recommendation in these sections was that Network 2 should not redundantly perform digit analysis or digit manipulation for Network 1 before crossing over to Network 1. Instead, Network 1 should be allowed to operate on its own public-network addresses after crossover.

Under the assumption that this recommendation was accepted, the following examples about home-NPA analysis and any resulting digit deletion are performed in Network 1. In fact, with the exception of two international addresses, Network 1 analyzes all of the remaining application examples in this chapter since public-network addresses are involved.

Besides minimizing redundant translations, accepting this recommendation simplifies the discussion of the following applications. For public-network routing, we need not be concerned with *how* Network 1 received a call's digits for analysis and subsequent routing — only that it did.

Before G2.2, a receiving switch used a somewhat circuitous process to recognize an incoming public-network call to the home office code over private-network facilities.

Since public-network addresses on incoming tie trunks always contained 10 digits, the 10- to 7-digit translation-table structure (Procedure 312 Word 2) provided a convenient beginning for digit manipulation.

Assuming 4-digit extensions in the New York switch, the following ARS translations would execute the appropriate 10- to 7-digit conversion.

FLIPCHART ISSUE 8				TEN - DIGIT CONVERSION										845552223			
INPUT FIELDS:				SPECIAL ERROR CODES:						NOTES:							
DISPLAY: 1-3, 1-4, 1-5, 1-6				81-NUMBER IS ASSIGNED AS A CONTROLLED NUMBER IN PROC 313						1. YOU CANNOT HAVE A RNX WITH A FIRST DIGIT THE SAME AS THE							
ADD: 1-3, 1-4, 1-5, 1-6 & 7				WORD 1.						CDR ACCOUNT CODE PREFIX OR RESERVED DIGIT ADMINISTERED IN							
REMOVE: 1-3, 1-4, 1-5, 1-6				82-PART OF THIS BLOCK IS CURRENTLY TRANSLATED.						PROC 285 WORD 1.							
CHANGE: 1-3, 1-4, 1-5, 1-6 & 7				83-THE 6-DIGIT TABLE IS FULL						FIELD LIMITS:							
NEXT DATA: DISPLAYS ALL THE CONVERSION				84-THE 7-DIGIT TABLE IS FULL						FIELD 1: 220-299, 320-399..920-999							
NUMBERS ASSIGNED TO BE CONVERTED				85-THE 8-DIGIT TABLE IS FULL						FIELD 2: 200-999							
TO A RNX LOCATION CODE.				86-THE 9-DIGIT TABLE IS FULL						FIELD 3: 0-9							
				87-THE 10-DIGIT TABLE IS FULL						FIELDS 4-6: -, 0-9							
										FIELD 7: 221-999							
WORD 2	AREA CODE (NPA)		OFFICE CODE (NXX)		D I G I T	D I G I T	D I G I T	D I G I T	RNX (LOCATION CODE)		10-DIGIT CONVERSION						
	2	1 2	2 8 0	7	7	8	9	10	4 5 7	312							
		1		2	3	4	5	6									

[If the New York switch owned the entire office code, 10 entries (“0” through “9” in Field 3) were required in this procedure.]

Once the home NPA and office code were replaced by the home RNX, the home-RNX translations (in Procedure 354 Word 2) converted the private-network number to a local extension number.

The following AAR translations executed this conversion for a switch with 3- or 4-digit extensions.

FLIPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - ROUTING					845552223	
INPUT FIELDS: DISPLAY: SEE TABLE ON WORD 4B ADD: 1-5, SEE ERROR CODE 81 REMOVE: 1-5 CHANGE: 1-5 (AFTER DISPLAY ONLY) NEXT DATA: SEE TABLE ON WORD 4B		SPECIAL ERROR CODES: 81-AN ADD OR CHANGE ROUTINE CANNOT BE DONE TO A LOCATION CODE THAT BEGINS WITH THE CHARGE CODE PREFIX OR RESERVED DIGIT. (SEE PROC 285 WORD 1). 82-THIS CODE IS ALREADY ASSIGNED, USE THE CHANGE ROUTINE. 83-TO USE THE DISPLAY OR NEXT DATA ROUTINES. SEE WORD 4B. 84-FIRST DIGIT FIELD MUST BE SUPPLIED FOR FIVE-DIGIT DIALING PLANS ONLY IF IT IS A HOME RNX (PATTERN 641). 85-THE ENTERED LOCATION CODE (RNX) DOES NOT MAP TO THE ENTERED PATTERN NUMBER.					86-FIRST DIGIT FIELD MUST BE DASHED. YOU CANNOT ADMINISTER A PATTERN AND A FIRST DIGIT TO ONE RNX. 87-THE NODE NUMBER HAS PREVIOUSLY BEEN ASSIGNED TO A DIFFERENT PATTERN NUMBER. USE THE CHANGE ROUTINE. 88-A FIRST DIGIT CAN ONLY BE TRANSLATED IN A FIVE DIGIT DIALING PLAN. 89-THE NUMBER OF DIGITS IN THE LOCATION CODE HAS NOT BEEN SET IN PROC 285 WORD 1.	
WORD 4	LOCATION CODE (RNX)	NODE NUMBER	CALL CATEGORY	PATTERN NUMBER	F D I R G S I T	AAR-ROUTING		
	4 5 7	4 5 7	0	6 4 1	—	321		
	1	2	3	4	5			

The following AAR translations executed the same conversion for a switch with 5-digit extensions.

FLIPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - ROUTING					845552223	
INPUT FIELDS: DISPLAY: SEE TABLE ON WORD 4B ADD: 1-5, SEE ERROR CODE 81 REMOVE: 1-5 CHANGE: 1-5 (AFTER DISPLAY ONLY) NEXT DATA: SEE TABLE ON WORD 4B		SPECIAL ERROR CODES: 81-AN ADD OR CHANGE ROUTINE CANNOT BE DONE TO A LOCATION CODE THAT BEGINS WITH THE CHARGE CODE PREFIX OR RESERVED DIGIT. (SEE PROC 285 WORD 1). 82-THIS CODE IS ALREADY ASSIGNED, USE THE CHANGE ROUTINE. 83-TO USE THE DISPLAY OR NEXT DATA ROUTINES. SEE WORD 4B. 84-FIRST DIGIT FIELD MUST BE SUPPLIED FOR FIVE-DIGIT DIALING PLANS ONLY IF IT IS A HOME RNX (PATTERN 641). 85-THE ENTERED LOCATION CODE (RNX) DOES NOT MAP TO THE ENTERED PATTERN NUMBER.					86-FIRST DIGIT FIELD MUST BE DASHED. YOU CANNOT ADMINISTER A PATTERN AND A FIRST DIGIT TO ONE RNX. 87-THE NODE NUMBER HAS PREVIOUSLY BEEN ASSIGNED TO A DIFFERENT PATTERN NUMBER. USE THE CHANGE ROUTINE. 88-A FIRST DIGIT CAN ONLY BE TRANSLATED IN A FIVE DIGIT DIALING PLAN. 89-THE NUMBER OF DIGITS IN THE LOCATION CODE HAS NOT BEEN SET IN PROC 285 WORD 1.	
WORD 4	LOCATION CODE (RNX)	NODE NUMBER	CALL CATEGORY	PATTERN NUMBER	F D I R G S I T	AAR-ROUTING		
	4 5 7 — — —	— — —	— — —	— — —	7	321		
	1	2	3	4	5			

Once the AAR feature derived an extension number, the AAR software passed control of the call to the internal dial plan for routing to the called station.

Beginning with G2.2, the WCR feature is translated to recognize the home area code and office code in a more direct manner. The home area code and office code, like any other public-network string, are analyzed by translations in Procedure 314 Word 1.

Receiving switch owns *entire* office code.

At the receiving switch with 5-digit extension numbers, Network 1 restarts the 10-digit string with the string identifier "212280" to Network 0 (the WCR interface to the internal dial plan) after DMI 2 deletes 6 digits (the home area code and office code) and inserts the digit "7."

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	2
2. Digit 2:	1
3. Digit 3:	2 (Home Area Code)
4. Digit 4:	2
5. Digit 5:	8
6. Digit 6:	0 (Home Office Code)
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	10
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	2 Digit Modification Index
13. Action Attribute:	0 Network Number
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 2 1 2 2 8 0 1 1 10 6 1 2 0 1 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index:	2
2. Digits To Delete:	6
3. Segment Number:	1 Digits 1 to 8
INSERTION DIGITS	
4. Digit 1, 9, 17, or 25:	7 (First Digit of 5-Digit Extension Numbers)
5. Digit 2, 10, 18, or 26:	--
6. Digit 3, 11, 19, or 27:	--
7. Digit 4, 12, 20, or 28:	--
8. Digit 5, 13, 21, or 29:	--
9. Digit 6, 14, 22, or 30:	--
10. Digit 7, 15, 23, or 31:	--
11. Digit 8, 16, 24:	--
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 2 6 1 7 cxdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

Receiving switch owns *only part* of office code.

At the receiving switch with 4-digit extension numbers, Network 1 restarts the 10-digit string with the string identifier “2122807” to Network 0 (the WCR interface to the internal dial plan) after DMI 3 deletes 6 digits (the home area code and office code).

NOTE

The 7-digit string identifier “2122807” must be assigned in two segments since this string identifier contains more than six digits.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	2
2. Digit 2:	1
3. Digit 3:	2 (Home Area Code)
4. Digit 4:	2
5. Digit 5:	8
6. Digit 6:	0 (Home Office Code)
7. Segment:	1
8. Last Segment:	0 Segment is not the last for this SI
9. String Length:	--
10. String Type:	-
11. Action:	-
12. Action Object:	----
13. Action Attribute:	-
14. Network Number:	-
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 2 1 2 2 8 0 1 0 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cnds

ENHANCED MODE - PROCEDURE: 314, WORD: 1
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION

STRING IDENTIFIER

1. Digit 1: (First Digit of 4-Digit Extension Numbers)
2. Digit 2:
3. Digit 3:
4. Digit 4:
5. Digit 5:
6. Digit 6:
7. Segment:
8. Last Segment: Last Segment - Add to Standard Network
9. String Length:
10. String Type: Address
11. Action: Restart
12. Action Object: Digit Modification Index
13. Action Attribute: Network Number
14. Network Number:

Connected to CC0 ON-LINE ♥

enter command: p314w1 7 ;;;;2 1 10 6 1 3 0 1 axdx_

ENHANCED MODE - PROCEDURE: 320, WORD: 1
WCR - NETWORK DIGIT MODIFICATION

1. Digit Modification Index:
2. Digits To Delete:
3. Segment Number: No Digits to Insert

INSERTION DIGITS

4. Digit 1, 9, 17, or 25:
5. Digit 2, 10, 18, or 26:
6. Digit 3, 11, 19, or 27:
7. Digit 4, 12, 20, or 28:
8. Digit 5, 13, 21, or 29:
9. Digit 6, 14, 22, or 30:
10. Digit 7, 15, 23, or 31:
11. Digit 8, 16, 24:

Connected to CC0 ON-LINE ♥

enter command: p320w1 3 6 0 cxdx_

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Receiving switch hops off calls to remainder of office code.

At the receiving switch with 4-digit extension numbers, Network 1 restarts the 10-digit string with the string identifier “212” to the same network (Network 1 — for public-network routing) after DMI 4 deletes 3 digits (the home area code).

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	2
2. Digit 2:	1
3. Digit 3:	2 (Home Area Code)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	10
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	4 Digit Modification Index
13. Action Attribute:	1 Network Number
14. Network Number:	1
Connected to CC0 ON-LINE ▼ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 2 1 2 ;;;1 1 10 6 1 4 1 1 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index:	4
2. Digits To Delete:	3
3. Segment Number:	0 No Digits to Insert
INSERTION DIGITS	
4. Digit 1, 9, 17, or 25:	--
5. Digit 2, 10, 18, or 26:	--
6. Digit 3, 11, 19, or 27:	--
7. Digit 4, 12, 20, or 28:	--
8. Digit 5, 13, 21, or 29:	--
9. Digit 6, 14, 22, or 30:	--
10. Digit 7, 15, 23, or 31:	--
11. Digit 8, 16, 24:	--
Connected to CC0 ON-LINE ▼ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 4 3 0 cxdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

In turn, Network 1 resolves the 7-digit string with the string identifier “280” to VNI 3. Neglecting call categories, the WCR software derives Pattern 3 from VNI 3 and selects an outgoing preference from Pattern 3.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	2
2. Digit 2:	8
3. Digit 3:	0 (Home Office Code)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment: 1	
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	3 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥	
MAJOR	MINOR
RUN TAPE	BUSY OUT
IN USE	WAIT
enter command: p314w1 2 8 0 ;;;1 1 7 6 0 3 0 1 axdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

3.5 Improving Public-Network Routing in Urban Areas

3.5.1 NPAs (Area Codes) and NXXs (Office Codes) with the Same Values

Before G2.2, the ARS feature relied on the concreteness of the NANP to discriminate between area codes and office codes, relying on the rule that the middle digit of an area code was always a “0” or a “1” and that these same digits were never the middle digit of an office code.

As the growth of the telecommunications network placed increasing demands on the numbering plan, the early numbering-plan rules were relaxed. At first, office codes were allowed to look like area codes with the digit “0” or “1” as the middle digit. Soon, area codes will look like office codes with the digits “2” through “9” as the middle digit.

To compensate for the increasingly relaxed rules of the numbering plan, another discrimination method was provided for the System 85. This method required that the caller dial the digit “1” as the preindicator of a 10-digit call. Then, the switch could quickly infer that a leading “1” digit was followed by an area code and that other leading digits were part of an office code.

However, using the digit “1” as a 10-digit preindicator was not an ideal solution. Whenever an ambiguous office code (or area code) was established for a new locale, the only recourse for a switch administrator was to implement 10-digit preindication, and the users of the switch were forced to change their long-distance dialing habits.

Beginning with G2.2, the WCR feature provides alternatives for dealing with ambiguity in the numbering plan. Since WCR can analyze address digits either by the leading digits or by string content and length, 10-digit preindication is no longer required to discriminate office codes and area codes with like values.

Example: Assume that the address digits “818” serve both as an area code in Southern California and as a local office code within the New York area. In this situation, the New York switch would need to distinguish between the dialed digits “818” serving as the leading digits of a 10-digit call and as the leading digits of a 7-digit call.

Prefix required for 10-digit calls

This alternative requires that users dial a prefix, for example “1,” to distinguish 10-digit calls from 7-digit calls. However, since the string identifiers *differ* for calls to area codes and office codes, the WCR software does not invoke the assigned interdigit timing interval (Field 3 of Procedure 285 Word 1) to distinguish the addresses. Therefore, this alternative can result in shorter call-processing intervals for office-code and area-code addresses.

If the ARS network (usually Network 1) requires users to dial the prefix “1” for 10-digit calls, then Network 1 resolves the 11-digit string with the string identifier “1818” to VNI 4. Neglecting call categories, the WCR software derives Pattern 4 from VNI 4 and selects an outgoing preference from Pattern 4.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	1 (Preindicator for 10-Digit Number)
2. Digit 2:	8
3. Digit 3:	1
4. Digit 4:	8 (Southern California Area Code)
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	11
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	4 Virtual Nodepoint Identifier
13. Action Attribute:	1 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 1 8 1 8 ;;1 1 11 6 0 4 1 1 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cnds

For 7-digit calls, Network 1 resolves the 7-digit string with the string identifier “818” to the separate VNI 3. Neglecting call categories, the WCR software derives Pattern 3 from VNI 3 and selects an outgoing preference from Pattern 3.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	8
2. Digit 2:	1
3. Digit 3:	8 (Local Office Code)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	3 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 8 1 8 ;;1 1 7 6 0 3 0 1 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cnds

[In this example, Patterns 3 and 4 use the same Direct Outward Dialing (DOD) trunk group “20” for routing. The primary differences between the patterns are the minimum FRL required for access and the toll status of calls that use the patterns.]

Prefix not required for 10-digit calls

This alternative does not require that users dial a prefix (for example, “1”) to distinguish 10-digit calls from 7-digit calls. However, since the string identifiers *match* for calls to area codes and office codes, the WCR software invokes the assigned interdigit timing interval (Field 3 of Procedure 285 Word 1) between the seventh and the potential eighth digit to distinguish the addresses. Therefore, this alternative can result in longer call-processing intervals for office-code and area-code addresses. (However, this effect can be minimized by encouraging users to dial the “#” end-of-dialing digit after 7-digit office-code addresses.)

If the ARS network (usually Network 1) does not require users to dial a prefix for 10-digit calls, then Network 1 resolves the 10-digit string with the string identifier “818” to VNI 4. Neglecting call categories, the WCR software derives Pattern 4 from VNI 4 and selects an outgoing preference from Pattern 4.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	8
2. Digit 2:	1
3. Digit 3:	8 (Southern California Area Code)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	10
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	4 Virtual Nodepoint Identifier
13. Action Attribute:	1 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 8 1 8 ;;;1 1 10 6 0 4 1 1 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

For 7-digit calls, Network 1 resolves the 7-digit string with the string identifier “818” to the separate VNI 3. Neglecting call categories, the WCR software derives Pattern 3 from VNI 3 and selects an outgoing preference from Pattern 3.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	8
2. Digit 2:	1
3. Digit 3:	8 (Local Office Code)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment: 1	
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	3 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 8 1 8 ;;;1 1 7 6 0 3 0 1 axdx_	
2 Repeat	3 Form
5 Help	6 Field 7 Input 8 Cmds

(In this example, Patterns 3 and 4 use the same DOD trunk group “20” for routing. The primary differences between the patterns are the minimum FRL required for access and the toll status of calls that use the patterns.)

3.5.2 10-Digit Numbers Are Local Calls

Before G2.2, the ARS feature relied on the concreteness of the North American numbering plan to determine which calls were toll calls. One method of determination relied on the rule that calls to a foreign area code were always toll calls.

As the growth of the telecommunications network placed increasing demands on the numbering plan, the early numbering-plan rules were relaxed. Eventually, calls from certain urban area codes to an adjacent area code in the same metropolitan area were considered local (or toll-free) calls.

However, pre-G2.2 switches could not easily adjust to this change in the North American numbering plan. Therefore, toll-restricted users or users who dialed the nontoll ARS access code were not able to complete 10-digit nontoll calls to foreign area codes.

Beginning with G2.2, the WCR software determines the toll status of a call solely by the selected pattern's toll-free index (Field 6 of Procedure 314 Word 1), not by the length of a dialed telephone number. Therefore, the toll status of any call is an assigned (not an inferred) attribute.

Example: Assume that calls from the New York switch in Manhattan to Brooklyn are 10-digit local calls. The following translations would route these 10-digit local calls to Brooklyn using the preference in the same local pattern “3.”

Network 1 resolves the 10-digit string with the string identifier “718” to VNI 3. Neglecting call categories, the WCR software derives Pattern 3 from VNI 3 and selects an outgoing preference from Pattern 3.

ENHANCED MODE - PROCEDURE: 314, WORD: 1
 NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION

STRING IDENTIFIER

1. Digit 1:	7	
2. Digit 2:	1	
3. Digit 3:	8	(Brooklyn Area Code)
4. Digit 4:	--	
5. Digit 5:	--	
6. Digit 6:	--	

7. Segment:	1	
8. Last Segment:	1	Last Segment - Add to Standard Network
9. String Length:	10	
10. String Type:	6	Address
11. Action:	0	Resolve
12. Action Object:	3	Virtual Nodepoint Identifier
13. Action Attribute:	0	Facility Restriction Level
14. Network Number:	1	

Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT

enter command: p314w1 7 1 8 ;;;1 1 10 6 0 3 0 1 axdx_

2 Repeat
3 Form
5 Help
6 Field
7 Input
8 Cmds

The preference in Pattern 3 contains a DOD trunk group (number 20) that connects the local New York switch with the local central office.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number: 3
2.	Preference Number: 1
3.	Trunk Group: 20 (Central Office DOD Facility)
4.	Facility Restriction Level: 0
5.	Warning Tone: 0 Not Given
6.	Toll-Free Index: -- All Numbers are Toll-Free Calls
7.	Digit Modification Index: 0 No Digit Modification
8.	Digit Sending Index: 0 Use Default Sending Attributes
9.	ISDN Sending Index: ----

Connected to CC0 ON-LINE ♥	MAJOR	MINOR	RUN TAPE	BUSY OUT	IN USE	WAIT
----------------------------	------------------------------------	------------------------------------	---------------------------------------	---------------------------------------	-------------------------------------	-----------------------------------

enter command: p318w1 3 1 20 0 0 ce;0 0 axdx_					
2 Repeat	3 Form	5 Help	6 Field	7 Input	8 Cmds

(The previous assignment assumes that toll calls and local calls use separate patterns. If the same pattern is being used for both toll and local calls, enter a value for the toll-free index (Field 6). Then assign “718” as a toll-free string identifier for the index in Procedure 319 Word 1.)

3.5.3 7-Digit Calls Cross Area-Code Boundaries

Before G2.2, the ARS feature relied on the concreteness of the North American numbering plan to determine which calls were local calls. One method of determination relied on the rule that calls to a foreign area code were always 10-digit calls.

With the continued population growth of urban areas located near area-code boundaries, the early numbering-plan rules were relaxed. Eventually, calls from one area code to another area code overlapped by the same urban area could be placed as 7-digit nontoll calls.

NOTE

The following discussion and example, in preference to the usual New York venue, focus on a single switch in Kansas City, Missouri. Since metropolitan Kansas City overlaps an area code boundary, this focus should provide a more appropriate model to display 7-digit interlata calling.

Pre-G2.2 switches could not easily adjust to this change in the North American numbering plan. Therefore, pre-G2.2 users who called these numbers were forced to dial the traditional 10-digit address (for example, “913 - 772 -2345”). Otherwise, the switch could not distinguish the foreign office code (in this case, “772”) from the office code with the same value in the home area code and would misroute calls. Then, once the correct pattern was selected, the unnecessary area code (in this case, “913”) had to be deleted at the preference level.

As a side effect of the required and dialed 10-digit address, toll-restricted users or users who dialed the nontoll ARS access code were not able to complete these 10-digit nontoll calls.

Beginning with G2.2, the WCR software does not presume that 7-digit calls must route to the home area code or that 10-digit calls must route to a foreign area code. The WCR software merely responds to explicit string translations in Procedure 314.

Example: Assume that calls placed to a certain office code (for example, “772”) in Kansas City, Kansas (with the area code “913”) from a switch in Kansas City, Missouri (with the area code “816”) are 7-digit nontoll *interlata* calls.

Also, assume that calls placed (with a “1” prefix) to the same office code (“772”) within the “816” area code are toll *intralata* calls to Saint Joseph, Missouri.

The following translations would route the 7-digit interlata calls to Kansas City, Kansas using Pattern 1 and the 8-digit intralata calls to Saint Joseph, Missouri using the separate Pattern 2.

Network 1 resolves the 7-digit string with the string identifier “772” to VNI 1. Neglecting call categories, the WCR software derives Pattern 1 from VNI 1 and selects an outgoing preference from Pattern 1.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	7
2. Digit 2:	7
3. Digit 3:	2 (Kansas City, Kansas Office Code)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	1 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 7 7 2 ;;;1 1 7 6 0 1 0 1 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

The preference in Pattern 1 contains a DOD trunk group (number 18) that connects the local Kansas City, Missouri switch with the local central office.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1. Pattern Number:	1
2. Preference Number:	1
3. Trunk Group:	18 (Central Office DOD Facility)
4. Facility Restriction Level:	0
5. Warning Tone:	0 Not Given
6. Toll-Free Index:	-- All Numbers are Toll-Free Calls
7. Digit Modification Index:	0 No Digit Modification
8. Digit Sending Index:	0 Use Default Sending Attributes
9. ISDN Sending Index:	----
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p318w1 1 1 18 0 0 ce;0 0 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

Also, Network 1 resolves the 8-digit string with the string identifier “1772” to VNI 2. Neglecting call categories, the WCR software derives Pattern 2 from VNI 2 and selects an outgoing preference from Pattern 2.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	1 (Preindicator for 7-Digit Toll Number)
2. Digit 2:	7
3. Digit 3:	7
4. Digit 4:	2 (St. Joseph, Missouri Office Code)
5. Digit 5:	--
6. Digit 6:	--
7. Segment: 1	
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	8
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	2 Virtual Nodepoint Identifier
13. Action Attribute:	1 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥	
MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 1 7 7 2 ;;1 1 8 6 0 2 1 1 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

NOTE

Within the previous assignment, the first digit “1” of the string identifier “1772” is actually part of an 8-digit address string. (The digit “1” is not assigned as a separate 1-digit string with the toll-prefix string type.)

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The preference in Pattern 2 contains the same DOD trunk group (number 18) that connects the local Kansas City, Missouri switch with the local central office.

ENHANCED MODE - PROCEDURE: 318, WORD: 1

WCR - NETWORK ROUTE TRANSLATION

1.

Pattern Number:

2

2.

Preference Number:

1

3.

Trunk Group:

18

(Central Office DOD Facility)

4.

Facility Restriction Level:

0

5.

Warning Tone:

0

Not Given

6.

Toll-Free Index:

0

All Numbers are Toll Calls

7.

Digit Modification Index:

0

No Digit Modification

8.

Digit Sending Index:

0

Use Default Sending Attributes

9.

ISDN Sending Index:

Connected to CC0 ON-LINE ♥

MAJOR

MINOR

RUN TAPE

BUSY OUT

IN USE

WAIT

enter command: p318w1 2 1 18 0 0 0 0 0 axdx_

2 Repeat

3 Form

5 Help

6 Field

7 Input

8 Cmds

3.6 Improving International Routing

Before R2V4 Issue 2.0 and G2.1, Issue 2.0, the ARS feature could only route international calls using a single routing designator's pattern. The routing designator used for international routing was assigned in Procedure 311 Word 1 in the following manner.

FLTPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION OFFICE AND SERVICE CODES FOR HOME NPA		845552223
INPUT FIELDS: DISPLAY: 1 ADD: 1-2 REMOVE: 1-2 CHANGE: 2 NEXT DATA: DISPLAY ALL OFFICE CODES WITH ASSIGNED ROUTING DESIGNATORS OTHER THAN 1.		NOTES: 1. A REMOVE ROUTING CAUSES DESIGNATOR 1 (INTERCEPT) TO BE PUT IN TRANSLATION FOR THE OFFICE CODE OR SERVICE CODE. 2. WHEN THE OFFICE CODE FIELD IS LESS THAN 200 AND THE MIDDLE DIGIT IS 0 OR 1, THE NPA TRANSLATION IS UPDATED. WHEN GREATER THAN 199 THE HOME NPA TRANSLATION IS UPDATED. 3. TO ASSIGN A ROUTING DESIGNATOR FOR '01X' CALLS, ENTER 1 IN FIELD 1.		FIELD LIMITS: FIELD 1 = 0-9, 10-19, 100-109, 110, 119, 200-999 FIELD 2 = 1-64
WORD 1	OFFICE CODE	ROUTING DESIGNATOR FOR ALL PLANS	ARS - HOME NPA	
	1	6 4	311	
	1	2		

This simplistic approach to international routing had various shortcomings.

- Since a single ARS pattern was responsible for routing every international call, the preference(s) in this pattern were commonly assigned to provide LEC access to the IDDD network so that a wide variety of international destinations could be served.
- Since a single ARS pattern was responsible for routing every international call, calls with the international prefix "01" could not be routed differently than calls with the prefix "011."
- Since only 7- or 10-digit addresses could be sent over private-network trunk groups and since only one pattern routed international calls, international tail-end hop off was not a viable alternative.
- Moreover, an international equivalent of 10- to 7-digit conversion was not provided. As a result, IDDD calls to private-network numbers could not be converted to the private-network numbering plan and routed as private-network calls by the AAR feature.

Beginning with R2V4 Issue 2.0 and G2.1, Issue 2.0, the international routing assignment in Procedure 311 Word 1 still provided the *default* routing for international addresses. However, a “01X” *exception list* of 7- to 18-digit international addresses (with the leading digits “01X”) could be associated with other ARS patterns using the 10- to 7-digit conversion translation-table structure (Procedure 312 Word 3).

FLIPCHART ISSUE 8				INTERNATIONAL ROUTING														845552223			
INPUT FIELDS:				SPECIAL ERROR CODES: 81-THE NUMBER IS ASSIGNED AS A CONTROLLED NUMBER IN PROC 313 WORD 1. 82-ALL OR PART OF THIS NUMBER IS CURRENTLY TRANSLATED. 83-THE SIX-DIGIT TABLE IS FULL. 84-THE SEVEN-DIGIT TABLE IS FULL. 85-THE EIGHT-DIGIT TABLE IS FULL. 86-THE NINE-DIGIT TABLE IS FULL. 87-THE TEN-DIGIT TABLE IS FULL.										88-THE ELEVEN-DIGIT TABLE IS FULL. 89-THE TWELVE-DIGIT TABLE IS FULL. 90-THE THIRTEEN-DIGIT TABLE IS FULL. 91-THE FOURTEEN-DIGIT TABLE IS FULL. 92-THE FIFTEEN-DIGIT TABLE IS FULL. 93-THE SIXTEEN-DIGIT TABLE IS FULL. 94-THE SEVENTEEN-DIGIT TABLE IS FULL. 95-THE EIGHTEEN-DIGIT TABLE IS FULL.							
DISPLAY: 1-16 ADD: 1-17 REMOVE: 1-1 CHANGE: 1-17 NEXT DATA: DISPLAYS ALL THE INTERNATIONAL ROUTING NUMBERS.																					
WORD 3	INTERNATIONAL ACCESS CODE	D I G I T 4	D I G I T 5	D I G I T 6	D I G I T 7	D I G I T 8	D I G I T 9	D I G I T 10	D I G I T 11	D I G I T 12	D I G I T 13	D I G I T 14	D I G I T 15	D I G I T 16	D I G I T 17	D I G I T 18	ROUTING DESIGNATOR TO ALL PLANS	5	INTERNATIONAL ROUTING 312		
	0 1 1 4 9 2 2 2 1 6 6 5 4																				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				

Also, the rules governing lengths of address strings sent over private-network trunk groups were relaxed so that international tail-end hop off could become (within the limits of ARS preference-level digit manipulation) a more viable alternative.

However, an international equivalent of 10- to 7-digit conversion was *still* not provided. So, whenever a user dialed an IDDD address to reach a private-network switch outside the national boundaries, the ARS feature had to route the call. Therefore, any digit manipulation needed (so that the receiving switch could recognize the incoming public-network digits on a private-network trunk group) had to be performed on the level of the outgoing preference.

Beginning with G2.2, the complete routing flexibility of the WCR feature may be applied to international calls. The WCR feature can apply the following capabilities to international routing.

1. The WCR software can analyze international addresses in a separate routing network to increase the clarity of international routing translations and the speed of international digit analysis.
2. A G2.2 switch can send any IDDD number over a private-network trunk group.
3. The WCR m-to-n conversion function can provide an international equivalent of 10- to 7-digit conversion (allowing the switch to route dialed IDDD numbers using the address format of the private-network numbering plan).
4. The WCR software has greater digit-modification capabilities at the preference level to facilitate international tail-end hop off.

WCR administration for international routing, which does not treat individual international addresses as exceptions (with at least 7 digits), is also less tedious to implement and simpler to maintain.

Some of the possibilities are shown in the following examples.

3.6.1 M-to-N Conversion of International Calls

Example 1: Using network crossover, an international call routes through the private network as a 7-digit number.

Suppose that a user of the New York switch dials the IDDD number:

9 - 011 - 49 - 2221 - 66545377

to reach an employee at an adjacent corporate facility in Bonn, Germany.

As an overview, the following figure describes the flow of network digit analysis for the first example. The ARS network (Network 1) receives the dialed digits, recognizes the digits as an IDDD number, and crosses over digit analysis to the optional network for international routing (Network 3). In turn, Network 3 recognizes the specific IDDD number as a private-network address and crosses over digit analysis to the AAR network (Network 2). Then, Network 2 selects a pattern and sends the digits “7745377” over the selected preference.

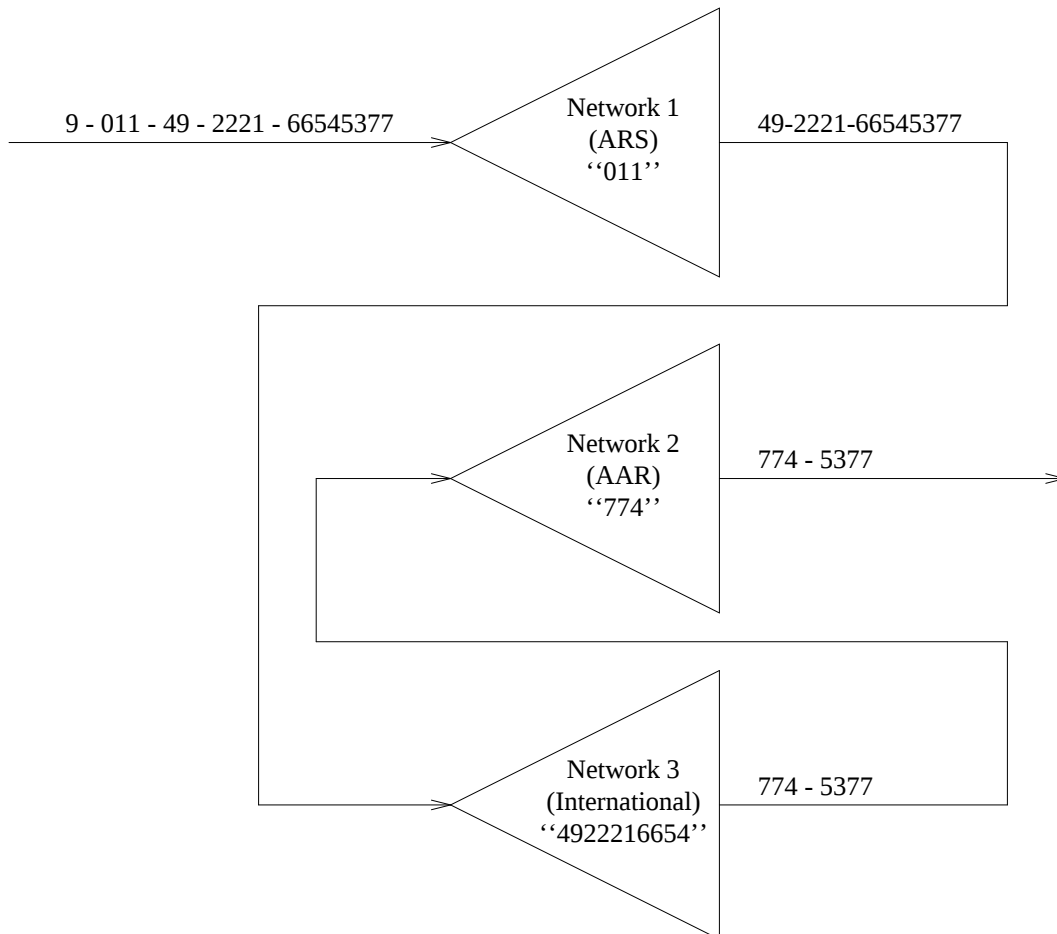


Figure 3-2. Network Digit Analysis for International Call to ETN Switch

3-78 Addressing Specific Routing Applications

At the originating switch, Network 1 restarts the 3-digit string with the string identifier “011” to Network 3 (for international routing) while continuing digit collection and without reanalyzing the current string or without modifying digits.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	0
2. Digit 2:	1
3. Digit 3:	1 (U.S. International Access Code)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	3
10. String Type:	4 International
11. Action:	1 Restart
12. Action Object:	0 Digit Modification Index
13. Action Attribute:	3 Network Number
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 0 1 1 ;;1 1 3 4 1 0 3 1 axdx_	
	2 Repeat 3 Form
5 Help	6 Field 7 Input 8 Cnds

ENHANCED MODE - PROCEDURE: 314, WORD: 2	
NETWORK DIGIT ANALYSIS - STRING ATTRIBUTE SPECIFICATION	
1. Continue:	1 Continue Digit Collection
2. Restart Analysis:	1 Do Not Reanalyze String After Restart
3. VNI Operation:	0 Reset VNI to ''0''
4. Freeze VNI:	0 Do not Freeze
5. Maximum Length:	0
6. Tone:	0 No Dial Tone Added
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: w2 1 1 cxdx_	
2 Repeat	3 Form
5 Help	6 Field 7 Input 8 Cnds

In turn, Network 3 restarts the 14-digit string with the string identifier “4922216654” to Network 2 (for private-network routing) after DMI 5 deletes the 13 digits “0114922216654” and inserts the digits “774” (the Bonn location code).

NOTE

The 10-digit string identifier “4922216654” must be assigned in two segments since this string identifier contains more than six digits.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	4
2. Digit 2:	9 (Germany Country Code)
3. Digit 3:	2
4. Digit 4:	2
5. Digit 5:	2
6. Digit 6:	1 (Bonn City Code)
7. Segment:	1
8. Last Segment:	0 Segment is not the last for this SI
9. String Length:	--
10. String Type:	-
11. Action:	-
12. Action Object:	----
13. Action Attribute:	-
14. Network Number:	-
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 4 9 2 2 2 1 1 0 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	6
2. Digit 2:	6
3. Digit 3:	5
4. Digit 4:	4 (Subsequent Digits Used for Routing)
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	2
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	14
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	5 Digit Modification Index (for M-to-N conversion)
13. Action Attribute:	2 Network Number
14. Network Number:	3
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 6 6 5 4 ;;2 1 14 6 1 5 2 3 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

[The WCR feature could have allowed Network 1 (after recognizing the string identifier “011”) to restart analysis in the same network (Network 1) and to route the call according to the same 14-digit string. However, if this had been done, digit analysis and subsequent route selection would likely have been slower for this call.

Consider that the three leading digits of the previous string are “492” and that these digits are commonly used as an office code. If Network 1 were used to analyze the previous string and the leading digits “492” were also the string identifier of a 7-digit local number, then Network 1 would have to invoke the assigned interdigit timing interval (Field 3 of Procedure 285 Word 1) between the seventh and potential eighth digits to distinguish the addresses. Also, the problem of slower route selection could only be compounded if the digits “492” ever became an area code.]

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index:	5
2. Digits To Delete:	13
3. Segment Number:	1 Digits 1 to 8
INSERTION DIGITS	
4. Digit 1, 9, 17, or 25:	7
5. Digit 2, 10, 18, or 26:	7
6. Digit 3, 11, 19, or 27:	4 (Location Code of Bonn PBX)
7. Digit 4, 12, 20, or 28:	--
8. Digit 5, 13, 21, or 29:	--
9. Digit 6, 14, 22, or 30:	--
10. Digit 7, 15, 23, or 31:	--
11. Digit 8, 16, 24:	--
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT enter command: p320w1 5 13 1 7 7 4 cxdx_ 2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

Then, Network 2 resolves the 7-digit string with the string identifier “774” to VNI 5.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	7
2. Digit 2:	7
3. Digit 3:	4 (Location Code of Bonn PBX)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment: 1	
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	5 Virtual Nodepoint Identifier
13. Action Attribute:	4 Facility Restriction Level
14. Network Number:	2
Connected to CC0 ON-LINE ♥	
MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 7 7 4 ;;;1 1 7 6 0 5 4 2 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

Example 2: Using preference-level digit modification, an international call routes through the private network as a 7-digit number.

Suppose that a user of the same New York switch dials the same IDDD number:

9 - 011 - 49 - 2221 - 66545377

to reach an employee at the same affiliated corporate facility in Bonn, Germany. Also, assume that Network 1 of the WCR feature is assigned to analyze international addresses.

At the originating switch, Network 1 resolves the 17-digit string with the string identifier “0114922216654” to VNI 6. Neglecting call categories, the WCR software derives Pattern 6 from VNI 6 and selects an outgoing preference from Pattern 6.

NOTE

The 13-digit string identifier “0114922216654” must be assigned in three segments since this string identifier contains more than twelve digits.

ENHANCED MODE - PROCEDURE: 314, WORD: 1 NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	0
2. Digit 2:	1
3. Digit 3:	1 (U.S. International Access Code)
4. Digit 4:	4
5. Digit 5:	9 (Germany Country Code)
6. Digit 6:	2
7. Segment:	1
8. Last Segment:	0 Segment is not the last for this SI
9. String Length:	--
10. String Type:	-
11. Action:	-
12. Action Object:	----
13. Action Attribute:	-
14. Network Number:	-
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 0 1 1 4 9 2 1 0 axdx_	
2 Repeat	3 Form
5 Help	6 Field 7 Input 8 Cnds

ENHANCED MODE - PROCEDURE: 314, WORD: 1 NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	2
2. Digit 2:	2
3. Digit 3:	1 (Bonn City Code)
4. Digit 4:	6
5. Digit 5:	6
6. Digit 6:	5 (Subsequent Digits Used for Routing)
7. Segment:	2
8. Last Segment:	0 Segment is not the last for this SI
9. String Length:	--
10. String Type:	-
11. Action:	-
12. Action Object:	----
13. Action Attribute:	-
14. Network Number:	-
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 2 2 1 6 6 5 2 0 axdx_	
2 Repeat	3 Form
5 Help	6 Field 7 Input 8 Cnds

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER 1. Digit 1: 4 (Last Digit Used for Routing) 2. Digit 2: -- 3. Digit 3: -- 4. Digit 4: -- 5. Digit 5: -- 6. Digit 6: -- 7. Segment: 3 8. Last Segment: 1 Last Segment - Add to Standard Network 9. String Length: 17 10. String Type: 4 International 11. Action: 0 Resolve 12. Action Object: 6 Virtual Nodepoint Identifier 13. Action Attribute: 4 Facility Restriction Level 14. Network Number: 1 Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT enter command: p314w1 4 ;;;;3 1 17 4 0 6 4 1 axdx_ 2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

Preference 1 is a private-network trunk group.

The first preference in Pattern 6 contains a tie-trunk group (number 21) that connects the local New York switch with the adjacent private-network switch in Bonn.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1. Pattern Number: 6 2. Preference Number: 1 3. Trunk Group: 21 (Private-Network Tie Facility) 4. Facility Restriction Level: 3 5. Warning Tone: 0 Not Given 6. Toll-Free Index: -- All Numbers are Toll-Free Calls 7. Digit Modification Index: 5 Index Number 8. Digit Sending Index: 0 Use Default Sending Attributes 9. ISDN Sending Index: ---- Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT enter command: p318w1 6 1 21 3 0 ce;5 0 axdx_ 2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

This preference also uses DMI 5 to delete 13 digits and insert the digits “774.”

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index:	5
2. Digits To Delete:	13
3. Segment Number:	1 Digits 1 to 8
INSERTION DIGITS	
4. Digit 1, 9, 17, or 25:	7
5. Digit 2, 10, 18, or 26:	7
6. Digit 3, 11, 19, or 27:	4 (Location Code of Bonn PBX)
7. Digit 4, 12, 20, or 28:	--
8. Digit 5, 13, 21, or 29:	--
9. Digit 6, 14, 22, or 30:	--
10. Digit 7, 15, 23, or 31:	--
11. Digit 8, 16, 24:	--
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 5 13 1 7 7 4 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

Preference 2 is an IDDD trunk group.

The second preference in Pattern 6 contains a DOD trunk group (number 20) that connects the local New York switch with the local central office.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1. Pattern Number:	6
2. Preference Number:	2
3. Trunk Group:	20 (Central Office DOD Facility)
4. Facility Restriction Level:	5
5. Warning Tone:	2 Warning for All Calls
6. Toll-Free Index:	0 All Numbers are Toll Calls
7. Digit Modification Index:	0 No Digit Modification
8. Digit Sending Index:	3 Index Number
9. ISDN Sending Index:	----
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p318w1 6 2 20 5 2 0 0 3 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

This preference uses DSI 3 to send the “#” digit as the final digit of the outgoing digit stream.

ENHANCED MODE - PROCEDURE: 321, WORD: 1					
WCR - DIGIT SENDING TRANSLATION					
1. Digit Sending Index: 3					
DIAL ACCESS CODE (DAC)					
2. Send DAC Flag: 0					
DAC DIGITS					
3. Digit 1: --	4. Digit 2: -	5. Digit 3: -	6. Digit 4: -		
INTEREXCHANGE CARRIER (IXC)					
7. Send IXC Flag: 0					
CIC DIGITS					
8. Digit 1: -	9. Digit 2: -	10. Digit 3: -	11. Digit 4: -		
TOLL PREFIX					
12. Send Toll Prefix Flag: 0					
TOLL PREFIX DIGITS					
13. Digit 1: -	14. Digit 2: -	15. Digit 3: -			
16. Send Pound Sign Flag: 1 Send “#” as the Last Digit					
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT					
enter command: p321w1 3 cf16 1 cxdx_					
	2 Repeat	3 Form		5 Help	6 Field
		7 Input	8 Cmds		

3.6.2 Tail-End Hop Off for International Calls

Example 1: An international call routes through and hops off the private network as a local call for the distant switch.

Suppose that a user of the New York switch dials the IDDD number:

9 - 011 - 49 - 2221 - 3374067

to reach a client in Bonn, Germany. Also, assume that Network 3 of the WCR feature is assigned to analyze international addresses.

The following translations will route the call over tie facilities to the Bonn switch where tail-end hop off would finish routing the call to the local DDD network.

Assumptions: The following translations assume that Trunk Group 22 is a direct (that is, no intervening switches) tie facility between New York and Bonn.

The following translations assume that the digits, after modification, are meaningful over an incoming tie-trunk group to the switch in Bonn. In this case, the receiving switch must be able to recognize local public-network digits over an incoming private-network trunk.

The following translations assume that all calls within the city of Bonn are local calls.

At the originating switch, Network 1 restarts the 3-digit string with the string identifier “011” to Network 3 (for international routing) while continuing digit collection and without reanalyzing the current string or without modifying digits.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	0
2. Digit 2:	1
3. Digit 3:	1 (U.S. International Access Code)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment: 1	
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	3
10. String Type:	4 International
11. Action:	1 Restart
12. Action Object:	0 Digit Modification Index
13. Action Attribute:	3 Network Number
14. Network Number:	1
Connected to CC0 ON-LINE ♥	
MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 0 1 1 ;;;1 1 3 4 1 0 3 1 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

ENHANCED MODE - PROCEDURE: 314, WORD: 2	
NETWORK DIGIT ANALYSIS - STRING ATTRIBUTE SPECIFICATION	
1. Continue:	1 Continue Digit Collection
2. Restart Analysis:	1 Do Not Reanalyze String After Restart
3. VNI Operation:	0 Reset VNI to ''0''
4. Freeze VNI:	0 Do not Freeze
5. Maximum Length:	0
6. Tone:	0 No Dial Tone Added
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: w2 1 1 cxdx_	
2 Repeat	3 Form
5 Help	6 Field 7 Input 8 Cmds

In turn, Network 3 resolves the 14-digit string with the string identifier "492221" to VNI 7. Neglecting call categories, the WCR software derives Pattern 7 from VNI 7 and selects an outgoing preference from Pattern 7.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	4
2. Digit 2:	9 (Germany Country Code)
3. Digit 3:	2
4. Digit 4:	2
5. Digit 5:	2
6. Digit 6:	1 (Bonn City Code)
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	14
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	7 Virtual Nodepoint Identifier
13. Action Attribute:	4 Facility Restriction Level
14. Network Number:	3
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 4 9 2 2 2 1 1 1 14 6 0 7 4 3 axdx_	
2 Repeat	3 Form
5 Help	6 Field 7 Input 8 Cmds

The preference in Pattern 7 contains a satellite-access trunk group (number 22) that connects the local New York switch with the adjacent private-network switch in Bonn.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number: 7
2.	Preference Number: 1
3.	Trunk Group: 22 (Private-Network Satellite Access)
4.	Facility Restriction Level: 3
5.	Warning Tone: 0 Not Given
6.	Toll-Free Index: -- All Numbers are Toll-Free Calls
7.	Digit Modification Index: 6 Index Number
8.	Digit Sending Index: 0 Use Default Sending Attributes
9.	ISDN Sending Index: ----
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p318w1 7 1 22 3 0 ce;6 0 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

This preference uses DMI 6 to delete the 9 digits “011492221” and insert no digits.

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1.	Digit Modification Index: 6
2.	Digits To Delete: 9
3.	Segment Number: 0 No Digits to Insert
INSERTION DIGITS	
4.	Digit 1, 9, 17, or 25: --
5.	Digit 2, 10, 18, or 26: --
6.	Digit 3, 11, 19, or 27: --
7.	Digit 4, 12, 20, or 28: --
8.	Digit 5, 13, 21, or 29: --
9.	Digit 6, 14, 22, or 30: --
10.	Digit 7, 15, 23, or 31: --
11.	Digit 8, 16, 24: --
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 6 9 0 cxdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

(Before G2.2, the ARS feature could not have deleted 9 digits for this preference in Field 10 of Procedure 309 Word 1. The pre-G2.2 limit for preference-level digit deletion was 7 digits, the corresponding WCR limit is 31 digits.)

Example 2: An international call routes through and hops off the private network as an international call for the distant switch.

Suppose that a user of the New York switch dials the IDDD number:

9 - 011 - 33 - 1 - 4663197

to reach a client in Paris, France. Also, assume that Network 1 of the WCR feature is assigned to analyze international addresses.

The following translations will route the call over tie facilities to the Bonn switch where tail-end hop off would finish routing the call to Paris through the IDDD network.

Assumptions: The following translations assume that Trunk Group 22 is a direct (that is, no intervening switches) tie facility between New York and Bonn.

The following translations assume that the digits, after modification, are meaningful over an incoming tie-trunk group to the PBX in Bonn. In this case, the receiving switch must be able to recognize international public-network digits, including the German international access code “00,” over an incoming private-network trunk.

The following translations assume that all calls from Bonn to Paris are international toll calls.

At the originating switch, Network 1 resolves the 11- to 14-digit string with the string identifier “011331” to VNI 8. Neglecting call categories, the WCR software derives Pattern 8 from VNI 8 and selects an outgoing preference from Pattern 8.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	0
2. Digit 2:	1
3. Digit 3:	1 (U.S. International Access Code)
4. Digit 4:	3
5. Digit 5:	3 (France Country Code)
6. Digit 6:	1 (Paris City Code)
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	11
10. String Type:	4 International
11. Action:	0 Resolve
12. Action Object:	8 Virtual Nodepoint Identifier
13. Action Attribute:	5 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 0 1 1 3 3 1 1 1 11 4 0 8 5 1 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

(Before G2.2, ten entries, “0113310” through “0113319,” would have been required to achieve the same result in the 7-digit exception-oriented format of Procedure 312 Word 3. If tail-end hop off were assigned to all of France, 100 entries would have been required.)

ENHANCED MODE - PROCEDURE: 314, WORD: 2	
NETWORK DIGIT ANALYSIS - STRING ATTRIBUTE SPECIFICATION	
1. Continue:	0 Terminate Digit Collection
2. Restart Analysis:	0
3. VNI Operation:	0 Reset VNI to ''0''
4. Freeze VNI:	0 Do not Freeze
5. Maximum Length:	14 Digits
6. Tone:	0 No Dial Tone Added
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: w2 cf5 14 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

The preference in Pattern 8 contains a satellite-access trunk group (number 22) that connects the local New York switch with the adjacent private-network switch in Bonn.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1. Pattern Number:	8
2. Preference Number:	1
3. Trunk Group:	22 (Private-Network Satellite Access)
4. Facility Restriction Level:	3
5. Warning Tone:	0 Not Given
6. Toll-Free Index:	0 All Numbers are Toll Calls
7. Digit Modification Index:	7 Index Number
8. Digit Sending Index:	3 Index Number
9. ISDN Sending Index:	----
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p318w1 8 1 22 3 0 0 7 3 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

This preference uses DMI 7 to delete the 3 digits “011” and insert the digits “00.”

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index:	7
2. Digits To Delete:	3
3. Segment Number:	1 Digits 1 to 8
INSERTION DIGITS	
4. Digit 1, 9, 17, or 25:	0
5. Digit 2, 10, 18, or 26:	0 (German International Access Code)
6. Digit 3, 11, 19, or 27:	--
7. Digit 4, 12, 20, or 28:	--
8. Digit 5, 13, 21, or 29:	--
9. Digit 6, 14, 22, or 30:	--
10. Digit 7, 15, 23, or 31:	--
11. Digit 8, 16, 24:	--
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 7 3 1 0 0 cxdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

This preference also uses DSI 3 to send the “#” digit as the final digit of the outgoing digit stream.

ENHANCED MODE - PROCEDURE: 321, WORD: 1	
WCR - DIGIT SENDING TRANSLATION	
1. Digit Sending Index:	3
DIAL ACCESS CODE (DAC)	
2. Send DAC Flag:	0
DAC DIGITS	
3. Digit 1:	--
4. Digit 2:	--
5. Digit 3:	--
6. Digit 4:	--
INTEREXCHANGE CARRIER (IXC)	
7. Send IXC Flag:	0
CIC DIGITS	
8. Digit 1:	--
9. Digit 2:	--
10. Digit 3:	--
11. Digit 4:	--
TOLL PREFIX	
12. Send Toll Prefix Flag:	0
TOLL PREFIX DIGITS	
13. Digit 1:	--
14. Digit 2:	--
15. Digit 3:	--
16. Send Pound Sign Flag: 1 Send “#” as the Last Digit	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p321w1 3 cf16 1 cxdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

3.6.3 International Credit-Card Calls

Before G2.2, every international call using either international prefix (“01” or “011”) routed over a single pattern. This single pattern precluded direct-access (for example, Megacom® service) trunk groups to the international network from conveniently acting as preferences in the pattern. This is because direct-access offerings do not provide for “01” credit-card or operator-assisted access to the international network.

Beginning with G2.2, the WCR feature can route international calls with the “01” prefix over a separate pattern than international calls with the “011” prefix. In a basic scenario, general “011” calls (with addresses that are not better served by tie trunks or satellite access) can route using direct access (for example, Megacom service access) to the IDDD network, while “01” calls can route using LEC access to the international network.

Example: An international credit-card call routes through the LEC network for subsequent routing by an IXC.

Suppose that a user of the New York switch dials the international credit-card address:

9 - 01 - 81 - 75 - 3443383 #

to reach a friend in Kyoto, Japan. Also, assume that Network 1 of the WCR feature is assigned to analyze international credit-card calls.

NOTE

For international credit-card calls, users should be encouraged to dial the “#” end-of-dialing digit after the international address. This procedure will minimize call-processing intervals for these variable-length addresses.

The following translations will route the call over a DOD trunk group to the default IXC which finishes routing the call to Kyoto, Japan.

At the originating switch, Network 1 resolves the 7- to 31-digit string with the string identifier “01” to VNI 3 and selects an outgoing preference from Pattern 3.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	0
2. Digit 2:	1 (U.S. International Credit-Card Access Code)
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	4 International
11. Action:	0 Resolve
12. Action Object:	3 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 0 1 ;;;;1 1 7 4 0 3 0 1 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

ENHANCED MODE - PROCEDURE: 314, WORD: 2	
NETWORK DIGIT ANALYSIS - STRING ATTRIBUTE SPECIFICATION	
1. Continue:	0
2. Restart Analysis:	0
3. VNI Operation:	0
4. Freeze VNI:	0 Do not Freeze
5. Maximum Length:	31
6. Tone:	0 No Dial Tone Added
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: w2 cf5 31 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

The preference in Pattern 3 contains a DOD trunk group (number 20) that connects the local New York switch with the local central office.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number: 3
2.	Preference Number: 1
3.	Trunk Group: 20 (Central Office DOD Facility)
4.	Facility Restriction Level: 0
5.	Warning Tone: 0 Not Given
6.	Toll-Free Index: -- All Numbers are Toll-Free Calls
7.	Digit Modification Index: 0 No Digit Modification
8.	Digit Sending Index: 3 Index Number
9.	ISDN Sending Index: ----
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p318w1 3 1 20 0 0 0 0 3 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

This preference uses DSI 3 to send the “#” digit as the final digit of the outgoing digit stream.

ENHANCED MODE - PROCEDURE: 321, WORD: 1	
WCR - DIGIT SENDING TRANSLATION	
1. Digit Sending Index: 3	
DIAL ACCESS CODE (DAC)	
2. Send DAC Flag: 0	
DAC DIGITS	
3. Digit 1: --	4. Digit 2: -
5. Digit 3: -	6. Digit 4: -
INTEREXCHANGE CARRIER (IXC)	
7. Send IXC Flag: 0	
CIC DIGITS	
8. Digit 1: -	9. Digit 2: -
10. Digit 3: -	11. Digit 4: -
TOLL PREFIX	
12. Send Toll Prefix Flag: 0	
TOLL PREFIX DIGITS	
13. Digit 1: -	14. Digit 2: -
15. Digit 3: -	
16. Send Pound Sign Flag: 1 Send “#” as the Last Digit	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p321w1 3 cf16 1 cxdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

3.7 Improving Service-Code Routing

Before G2.2, the ARS feature relied on the concreteness of the NANP for service-code routing, assuming that dialed addresses with the format “X11” always contained three digits.

As the growth of the telecommunications network placed increasing demands on the numbering plan, the early numbering-plan rules were relaxed. Eventually, the service-code format allowed service codes to contain seven digits with the leading digits “X11.”

However, pre-G2.2 switches could not easily adapt to this change in the numbering plan. Since routing designators were assigned to 3-digit service codes in Procedure 311 Word 1, the ARS software did not analyze and route on optional 7-digit service codes. Therefore, in order to dial a 7-digit service code (for example, “811-3456”), pre-G2.2 users needed to:

- Dial the leading digits “811”
- Wait for cut through to the serving central office (CO)
- Dial the remaining digits “3456” for routing by the CO

Beginning with G2.2, the WCR software analyzes service-code addresses by an *assigned*, rather than an assumed, string length. Therefore, the WCR feature can easily adapt to changes in the service-code format.

Example 1: A call routes to the LEC's (local exchange carrier's) directory assistance.

Suppose that a user of the New York switch dials the number:

9 - 411

to reach directory assistance in the public network.

At the originating switch, Network 1 resolves the 3-digit string with the string identifier "411" to VNI 3. Neglecting call categories, the WCR software derives Pattern 3 from VNI 3 and selects an outgoing preference from Pattern 3.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	4
2. Digit 2:	1
3. Digit 3:	1 (Information)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	3
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	3 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 4 1 1 ;;1 1 3 6 0 3 0 1 axdx_	
2 Repeat	3 Form
5 Help	6 Field 7 Input 8 Cnds

Example 2: A call routes to the LEC's repair service.

Suppose that a user of the New York switch dials the number:

9 - 611

to request a repair service from the public network.

At the originating switch, Network 1 resolves the 3-digit string with the string identifier "611" to VNI 3. Neglecting call categories, the WCR software derives Pattern 3 from VNI 3 and selects an outgoing preference from Pattern 3.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	6
2. Digit 2:	1
3. Digit 3:	1 (Repair)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	3
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	3 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 6 1 1 ;;1 1 3 6 0 3 0 1 axdx_	
2 Repeat	3 Form
5 Help	6 Field 7 Input 8 Cnds

Example 3: A call routes to an LEC business office.

Suppose that a user of the New York switch dials the number:

9 - 811 - 3456

to reach a business office in the public network.

At the originating switch, Network 1 resolves the 7-digit string with the string identifier “811” to VNI 3. Neglecting call categories, the WCR software derives Pattern 3 from VNI 3 and selects an outgoing preference from Pattern 3.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	8
2. Digit 2:	1
3. Digit 3:	1 (Business Office)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	3 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 8 1 1 ;;;1 1 7 6 0 3 0 1 axdx_	
2 Repeat	3 Form
5 Help	6 Field 7 Input 8 Cnds

NOTE

In the previous translations, all three of the service-code strings resolve to the same VNI for subsequent routing by the same pattern. For service codes, this is a often a common and practical routing solution. However, should the need arise to route different service codes using different patterns, the WCR feature (like the previous ARS feature) provides this flexibility.

3.8 Improving Operator-Assistance Routing

3.8.1 Routing “0” and “00” over Separate Patterns

Before G2.2, the ARS feature relied on the concreteness of the NANP for operator-assistance routing, assuming that calls to a public-network operator always used the dialed digit “0.”

With the increasing number of IXC (interexchange carriers) after the Bell-System divestiture, the early numbering-plan rules were relaxed. The operator-assistance format was changed to allow a user to dial “00” to reach the user’s primary IXC operator.

However, pre-G2.2 switches could not easily adapt to this change in the numbering plan. Since a routing designator was assigned to the 1-digit string “0” in Field 1 of Procedure 311 Word 1 and since this field of the MAAP/Manager II procedure suppressed entry of additional leading zeros, the ARS software did not provide separate routing for the string “00.” Instead, calls to an IXC operator were routed using the same pattern as calls to an LEC operator.

Beginning with G2.2, the WCR feature allows each digit of an analyzed string to be entered in a separate field of Procedure 314 Word 1. Therefore, the WCR feature can easily provide separate routing for addresses such as “0” and “00.”

Example 1: A call routes to an LEC operator.

Suppose that a user of the New York switch dials the number:

9 - 0

to reach an LEC operator in the public network.

At the originating switch, Network 1 resolves the 1-digit string with the string identifier “0” to VNI 9. Neglecting call categories, the WCR software derives Pattern 9 from VNI 9 and selects an outgoing preference from Pattern 9.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	0 (Local Exchange Carrier Operator)
2. Digit 2:	--
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	1
10. String Type:	5 Operator Assistance
11. Action:	0 Resolve
12. Action Object:	9 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 0 ;;;;1 1 1 5 0 9 0 1 axdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cnds

The preference in Pattern 9 contains a DOD trunk group (number 20) that connects the local New York switch with the local central office.

ENHANCED MODE - PROCEDURE: 318, WORD: 1
 WCR - NETWORK ROUTE TRANSLATION

1.	Pattern Number:	9	
2.	Preference Number:	1	
3.	Trunk Group:	20	(Central Office DOD Facility)
4.	Facility Restriction Level:	0	
5.	Warning Tone:	0	Not Given
6.	Toll-Free Index:	0	All Numbers are Toll Calls
7.	Digit Modification Index:	0	No Digit Modification
8.	Digit Sending Index:	0	Use Default Sending Attributes
9.	ISDN Sending Index:	----	

Connected to CC0 ON-LINE ♥
 MAJOR
MINOR
RUN TAPE
BUSY OUT
IN USE
WAIT

enter command: p318w1 9 1 20 0 0 0 0 0 axdx_

2 Repeat
3 Form
5 Help
6 Field
7 Input
8 Cmds

[Depending on the local public utilities commission regulations governing tariffs, calls to LEC operators may not be toll calls.

When this is the case, the preference's toll-free index (in Field 6 of Procedure 318 Word 1) can be assigned as toll-free by entering a “—” in Field 6. Or, working in the context of the network specifications within our model, the string identifier “0” could resolve to VNI 3 (the toll-free pattern to the LEC).]

Example 2: A call routes to the default IXC's operator using a direct trunk group with overflow through the LEC's network.

Suppose that a user of the New York switch dials the number:

9 - 00

to reach an IXC operator in the public network.

At the originating switch, Network 1 resolves the 2-digit string with the string identifier "00" to VNI 10. Neglecting call categories, the WCR software derives Pattern 10 from VNI 10 and selects an outgoing preference from Pattern 10.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	0
2. Digit 2:	0 [IXC (Interexchange Carrier) Operator]
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	2
10. String Type:	5 Operator Assistance
11. Action:	0 Resolve
12. Action Object:	10 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥	
MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 0 0 ;;;;1 1 2 5 0 10 0 1 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cnds	

Preference 1 is an access trunk group to an IXC tandem.

The first preference in Pattern 10 contains an access trunk group (number 23) that connects the local New York switch with an interexchange carrier (IXC) tandem switch.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number: 10
2.	Preference Number: 1
3.	Trunk Group: 23 (Trunk Group to IXC Tandem Switch)
4.	Facility Restriction Level: 0
5.	Warning Tone: 0 Not Given
6.	Toll-Free Index: -- All Numbers are Toll-Free Calls
7.	Digit Modification Index: 8 Index Number
8.	Digit Sending Index: 0 Use Default Sending Attributes
9.	ISDN Sending Index: ----
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p318w1 10 1 23 0 0 ce;8 0 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

[Depending on the billing practices of the default interexchange carrier, an operator-assistance call to that IXC's operator may be a toll call.

When this is the case, the preference's toll-free index (in Field 6 of Procedure 318 Word 1) can be assigned as toll by entering a '0' in Field 6.]

This preference uses DMI 8 to delete 1 digit and insert no digits.

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index:	8
2. Digits To Delete:	1
3. Segment Number:	0 No Digits to Insert
INSERTION DIGITS	
4. Digit 1, 9, 17, or 25:	--
5. Digit 2, 10, 18, or 26:	--
6. Digit 3, 11, 19, or 27:	--
7. Digit 4, 12, 20, or 28:	--
8. Digit 5, 13, 21, or 29:	--
9. Digit 6, 14, 22, or 30:	--
10. Digit 7, 15, 23, or 31:	--
11. Digit 8, 16, 24:	--
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 8 1 0 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

Preference 2 is a DOD trunk group.

The second preference in Pattern 10 contains a DOD trunk group (number 20) that connects the local New York switch with the local central office.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1. Pattern Number:	10
2. Preference Number:	2
3. Trunk Group:	20 (Central Office DOD Facility)
4. Facility Restriction Level:	0
5. Warning Tone:	0 Not Given
6. Toll-Free Index:	-- All Numbers are Toll-Free Calls
7. Digit Modification Index:	0 No Digit Modification
8. Digit Sending Index:	0 Use Default Sending Attributes
9. ISDN Sending Index:	----
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p318w1 10 2 20 0 0 ce;0 0 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

3.8.2 Routing Operator-Assistance Calls to Requested Carrier

Before G2.2, the ARS feature did not allow users to call a specific IXC operator by dialing an IXC code before the operator-assistance code “0.” Instead, the ability to select a specific IXC operator was reserved for the switch administrator who could insert the desired IXC on a per-preference basis in Procedure 309 Word 4.

However, using preference-level digit modification as the only method of routing calls to an IXC operator was not a generally ideal solution for every user of a System 85s or G2.1 switch. Perhaps a user wanted to place an interlata call with an IXC-issued credit card and needed assistance that was best provided by that IXC’s operator.

Beginning with G2.2, the WCR feature can allow users to dial a specific IXC for an operator-assistance call and can route the call according to the dialed IXC (not according to the subsequent operator-assistance code).

Example: Suppose that a user of the New York switch dials the number:

9 - 10288 - 0

to reach an operator in a specific interexchange network.

At the originating switch, Network 1 resolves the 5-digit string with the string identifier “10288” to VNI 11 and continues digit analysis after freezing the VNI. Neglecting call categories, the WCR software will derive Pattern 11 from the frozen VNI 11 and will select an outgoing preference from Pattern 11.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	1
2. Digit 2:	0
3. Digit 3:	2
4. Digit 4:	8
5. Digit 5:	8 (User-Requested Carrier)
6. Digit 6:	--
7. Segment: 1	
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	5
10. String Type:	2 IXC (Interexchange Carrier)
11. Action:	0 Resolve
12. Action Object:	11 Virtual Nodepoint Identifier
13. Action Attribute:	3 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 1 0 2 8 8 ;1 1 5 2 0 11 3 1 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

ENHANCED MODE - PROCEDURE: 314, WORD: 2	
NETWORK DIGIT ANALYSIS - STRING ATTRIBUTE SPECIFICATION	
1. Continue:	1 Continue Digit Analysis
2. Restart Analysis:	0
3. VNI Operation:	0
4. Freeze VNI:	1 Freeze
5. Maximum Length:	0
6. Tone:	0 No Dial Tone Added
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: w2 1 ;;1 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

In turn, Network 1 resolves the 1-digit string with the string identifier “0” to VNI 9.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	0 (IXC Operator with Direct Access)
2. Digit 2:	--
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	1
10. String Type:	5 Operator Assistance
11. Action:	0 Resolve
12. Action Object:	9 Virtual Nodepoint Identifier (Ignored)
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 0 ;;;;1 1 1 5 0 9 0 1 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

(This portion of digit analysis helps verify that the user dialed a valid address. However, since the VNI was already frozen in the previous string, VNI 9 has no effect on subsequent routing.)

3.9 Improving IXC (“10XXX”) Routing

In Section 3.8, the ability to route operator-assistance calls according to the dialed IXC code was shown. While the WCR feature is also fully capable of routing any interlata or international call according to the dialed IXC code, the reader should not infer that users either must dial an IXC code or that calls must route according to the user-specified IXC code.

Indeed, the WCR feature provides considerable flexibility in routing IXC calls. The switch administrator can choose to route IXC calls by one or a combination of the following processes:

- Collect and route according to dialed IXC
- Collect and ignore dialed IXC
- Collect and change dialed IXC
- Reject dialed IXC

Rejecting a dialed IXC is done by not validating an IXC code as a legitimate digit string. This is easily accomplished either implicitly by not assigning (in Procedure 314 Word 1) the IXC code as a string identifier in any routing network or explicitly by assigning the IXC code as a string identifier that resolves to an empty VNI (usually, to VNI 0 in the exception network to Network 1).

The following examples show valid translations for the other processes above.

3.9.1 Routing According to the Dialed IXC

Example: Suppose that a user of the New York switch dials the digits:

9 - 10288 - 415 - 861 - 1591

to request routing by a specific interexchange carrier. The WCR feature allows the call to be routed by the requested carrier.

At the originating switch, Network 1 resolves the 5-digit string with the string identifier “10288” to VNI 12 and continues digit analysis after freezing the VNI. Neglecting call categories, the WCR software will derive Pattern 12 from the frozen VNI 12 and will select an outgoing preference from Pattern 12.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	1
2. Digit 2:	0
3. Digit 3:	2
4. Digit 4:	8
5. Digit 5:	8 (Acceptable User-Requested Carrier)
6. Digit 6:	--
7. Segment: 1	
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	5
10. String Type:	2 IXC (Interexchange Carrier)
11. Action:	0 Resolve
12. Action Object:	12 Virtual Nodepoint Identifier
13. Action Attribute:	6 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥	
MAJOR	MINOR
RUN TAPE	BUSY OUT
IN USE	WAIT
enter command: p314w1 1 0 2 8 8 ;1 1 5 2 0 12 6 1 axdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

ENHANCED MODE - PROCEDURE: 314, WORD: 2	
NETWORK DIGIT ANALYSIS - STRING ATTRIBUTE SPECIFICATION	
1. Continue:	1 Continue Digit Analysis
2. Restart Analysis:	0
3. VNI Operation:	0
4. Freeze VNI:	1 Freeze
5. Maximum Length:	0
6. Tone:	0 No Dial Tone Added
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: w2 1 ;;1 cxdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

In turn, Network 1 resolves the 10-digit string with the string identifier “415” to VNI 4.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	4
2. Digit 2:	1
3. Digit 3:	5 (Foreign Area Code)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	10
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	4 Virtual Nodepoint Identifier (Ignored)
13. Action Attribute:	2 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 4 1 5 ;;1 1 10 6 0 4 2 1 axdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

(This portion of digit analysis helps verify that the user dialed a valid address. However, since the VNI was already frozen in the previous string, VNI 4 has no effect on subsequent routing.)

Preference 1 is a Megacom service trunk group.

The first preference in Pattern 12 contains a Megacom service DS1 trunk group (number 24) that connects the local New York switch with the serving 4 ESS™ switch.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number: 12
2.	Preference Number: 1
3.	Trunk Group: 23 (AT&T Megacom DS1 Facility)
4.	Facility Restriction Level: 2
5.	Warning Tone: 0 Not Given
6.	Toll-Free Index: 0 All Numbers are Toll Calls
7.	Digit Modification Index: 0 No Digit Modification
8.	Digit Sending Index: 0 Use Default Sending Attributes
9.	ISDN Sending Index: ----
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p318w1 12 1 23 2 0 0 0 0 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

This preference uses the default DSI 0 to send no IXC digits.

ENHANCED MODE - PROCEDURE: 321, WORD: 1	
WCR - DIGIT SENDING TRANSLATION	
1. Digit Sending Index: 0	
DIAL ACCESS CODE (DAC)	
2. Send DAC Flag: 0	
DAC DIGITS	
3. Digit 1: --	4. Digit 2: -
5. Digit 3: -	6. Digit 4: -
INTEREXCHANGE CARRIER (IXC)	
7. Send IXC Flag: 0 Do Not Send IXC	
CIC DIGITS	
8. Digit 1: -	9. Digit 2: -
10. Digit 3: -	11. Digit 4: -
TOLL PREFIX	
12. Send Toll Prefix Flag: 0	
TOLL PREFIX DIGITS	
13. Digit 1: -	14. Digit 2: -
15. Digit 3: -	
16. Send Pound Sign Flag: 0	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p321w1 0 dx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

Preference 2 is a DOD trunk group.

The second preference in Pattern 12 contains a DOD trunk group (number 20) that connects the local New York switch with the local central office.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number: 12
2.	Preference Number: 2
3.	Trunk Group: 20 (Central Office DOD Facility)
4.	Facility Restriction Level: 2
5.	Warning Tone: 0 Not Given
6.	Toll-Free Index: 0 All Numbers are Toll Calls
7.	Digit Modification Index: 0 No Digit Modification
8.	Digit Sending Index: 4 Index Number
9.	ISDN Sending Index: ----
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p318w1 12 2 20 2 0 0 0 4 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

This preference uses DSI 4 to send the dialed IXC digits.

ENHANCED MODE - PROCEDURE: 321, WORD: 1	
WCR - DIGIT SENDING TRANSLATION	
1. Digit Sending Index: 4	
DIAL ACCESS CODE (DAC)	
2. Send DAC Flag: 0	
DAC DIGITS	
3. Digit 1: --	4. Digit 2: -
5. Digit 3: -	6. Digit 4: -
INTEREXCHANGE CARRIER (IXC)	
7. Send IXC Flag: 1 Send dialed IXC or else no IXC	
CIC DIGITS	
8. Digit 1: -	9. Digit 2: -
10. Digit 3: -	11. Digit 4: -
TOLL PREFIX	
12. Send Toll Prefix Flag: 0	
TOLL PREFIX DIGITS	
13. Digit 1: -	14. Digit 2: -
15. Digit 3: -	
16. Send Pound Sign Flag: 0	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p321w1 4 cf7 1 cxdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

3.9.2 Collecting and Ignoring the Dialed IXC

Example: Suppose that a user of the New York switch dials the digits:

9 - 10199 - 415 - 861 - 1591

to request routing by a specific interexchange carrier. The WCR feature allows the routing software to ignore the requested carrier.

At the originating switch, Network 1 resolves the 5-digit string with the string identifier “10199” to VNI 0 and continues digit analysis without freezing the VNI.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	1
2. Digit 2:	0
3. Digit 3:	1
4. Digit 4:	9
5. Digit 5:	9 (Unacceptable User-Requested Carrier)
6. Digit 6:	--
7. Segment: 1	
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	5
10. String Type:	2 IXC (Interexchange Carrier)
11. Action:	0 Resolve
12. Action Object:	0 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥	
MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 1 0 1 9 9 ;1 1 5 2 0 0 0 1 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

ENHANCED MODE - PROCEDURE: 314, WORD: 2	
NETWORK DIGIT ANALYSIS - STRING ATTRIBUTE SPECIFICATION	
1. Continue:	1 Continue Digit Analysis
2. Restart Analysis:	0
3. VNI Operation:	0
4. Freeze VNI:	0 Do not Freeze
5. Maximum Length:	0
6. Tone:	0 No Dial Tone Added
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: w2 1 cxdx_	
2 Repeat	3 Form
5 Help 6 Field 7 Input 8 Cmds	

(Since digit analysis continues without freezing or combining the VNI, the VNI used could have any value. However, for these purposes the value “0” works as well as any other.)

In turn, Network 1 resolves the 10-digit string with the string identifier “415” to VNI 4. Neglecting call categories, the WCR software derives Pattern 4 from VNI 4 and selects an outgoing preference from Pattern 4.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	4
2. Digit 2:	1
3. Digit 3:	5 (Foreign Area Code)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	10
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	4 Virtual Nodepoint Identifier
13. Action Attribute:	2 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 4 1 5 ;;1 1 10 6 0 4 2 1 axdx_	
2 Repeat	3 Form
5 Help 6 Field 7 Input 8 Cmds	

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The preference in Pattern 4 contains a DOD trunk group (number 20) that connects the local New York switch with the local central office.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number: 4
2.	Preference Number: 1
3.	Trunk Group: 20 (Central Office DOD Facility)
4.	Facility Restriction Level: 2
5.	Warning Tone: 0 Not Given
6.	Toll-Free Index: 0 All Numbers are Toll Calls
7.	Digit Modification Index: 0 No Digit Modification
8.	Digit Sending Index: 0 Use Default Sending Attributes
9.	ISDN Sending Index: ----

Connected to CC0 ON-LINE ♥	MAJOR	MINOR	RUN TAPE	BUSY OUT	IN USE	WAIT
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enter command: p318w1 4 1 20 2 0 0 0 0 axdx_					
2 Repeat	3 Form	5 Help	6 Field	7 Input	8 Cmds

3.9.3 Collecting and Changing the Dialed IXC

Example: Suppose that a user of the New York switch dials the digits:

9 - 10199 - 415 - 861 - 1591

to request routing by a specific interexchange carrier. The WCR feature allows the routing software to change the requested carrier.

At the originating switch, Network 1 resolves the 5-digit string with the string identifier “10199” to VNI 0 and continues digit analysis without freezing the VNI.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	1
2. Digit 2:	0
3. Digit 3:	1
4. Digit 4:	9
5. Digit 5:	9
(Unacceptable User-Requested Carrier)	
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1
Last Segment - Add to Standard Network	
9. String Length:	5
10. String Type:	2
IXC (Interexchange Carrier)	
11. Action:	0
Resolve	
12. Action Object:	0
Virtual Nodepoint Identifier	
13. Action Attribute:	0
Facility Restriction Level	
14. Network Number:	1
Connected to CC0 ON-LINE ♥	
MAJOR	MINOR
RUN TAPE	BUSY OUT
IN USE	WAIT
enter command: p314w1 1 0 1 9 9 ;1 1 5 2 0 0 0 1 axdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

ENHANCED MODE - PROCEDURE: 314, WORD: 2	
NETWORK DIGIT ANALYSIS - STRING ATTRIBUTE SPECIFICATION	
1. Continue:	1 Continue Digit Analysis
2. Restart Analysis:	0
3. VNI Operation:	0
4. Freeze VNI:	0 Do Not Freeze
5. Maximum Length:	0
6. Tone:	0 No Dial Tone Added
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: w2 1 cxdx_	
2 Repeat	3 Form
5 Help 6 Field 7 Input 8 Cmds	

(Since digit analysis continues without freezing or combining the VNI, the VNI used could have any value. However, for these purposes the value “0” works as well as any other.)

In turn, Network 1 resolves the 10-digit string with the string identifier “415” to VNI 13. Neglecting call categories, the WCR software derives Pattern 13 from VNI 13 and selects an outgoing preference from Pattern 13.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	4
2. Digit 2:	1
3. Digit 3:	5 (Foreign Area Code)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	10
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	13 Virtual Nodepoint Identifier
13. Action Attribute:	2 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 4 1 5 ;;1 1 10 6 0 13 2 1 axdx_	
2 Repeat	3 Form
5 Help 6 Field 7 Input 8 Cmds	

The preference in Pattern 13 contains a DOD trunk group (number 20) that connects the local New York switch with the local central office.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number: 13
2.	Preference Number: 1
3.	Trunk Group: 20 (Central Office DOD Facility)
4.	Facility Restriction Level: 2
5.	Warning Tone: 0 Not Given
6.	Toll-Free Index: 0 All Numbers are Toll Calls
7.	Digit Modification Index: 0 No Digit Modification
8.	Digit Sending Index: 5 Index Number
9.	ISDN Sending Index: ----
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p318w1 13 1 20 2 0 0 0 5 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

This preference uses DSI 5 to send the assigned IXC digits “10288.”

ENHANCED MODE - PROCEDURE: 321, WORD: 1	
WCR - DIGIT SENDING TRANSLATION	
1. Digit Sending Index: 5	
DIAL ACCESS CODE (DAC)	
2. Send DAC Flag: 0	
DAC DIGITS	
3. Digit 1: --	4. Digit 2: -
5. Digit 3: -	6. Digit 4: -
INTEREXCHANGE CARRIER (IXC)	
7. Send IXC Flag: 3 Send Assigned IXC	
CIC DIGITS	
8. Digit 1: 2	9. Digit 2: 8
10. Digit 3: 8	11. Digit 4: -
TOLL PREFIX	
12. Send Toll Prefix Flag: 0	
TOLL PREFIX DIGITS	
13. Digit 1: -	14. Digit 2: -
15. Digit 3: -	
16. Send Pound Sign Flag: 0	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p321w1 5 cf7 3 2 8 8 cxdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

3.10 Routing “911” Calls to Local Security

Before G2.2, the ARS software could not route “911” emergency calls to a local extension number (for example, the security number) without a special hardware configuration such as loop-around trunking.

However, using loop-around trunking to route an ARS call back to the local switch was not an ideal method of implementing this application. These implementations were expensive. (Two physical trunk circuits were required to implement each end-to-end trunk facility in the loop-around configuration.) Also, call processing for these calls was sluggish and traffic sensitive. (Using this type of configuration, the switch had to place an outside call (which the outgoing facility returned to the switch as an incoming call) for subsequent completion to a local extension.

Beginning with G2.2, the WCR software can route “911” emergency numbers to a local extension without the intervention of special hardware. Before a route is selected, digit modification can change the dialed digits to the desired extension and hand off the call to the internal dial plan for local routing.

Example 1: Emergency calls are redirected to a local extension number.

Suppose that a user of the New York switch dials the digits:

9 - 911

to request public-network routing for an emergency. The WCR feature allows the routing software to change the requested destination.

At the originating switch, Network 1 restarts the 3-digit string with the string identifier “911” to Network 0 (the WCR interface to the internal dial plan) after DMI 9 deletes every digit and inserts the digits “72323” (the security extension number).

NOTE

Since this application requires the Network-0 interface to the internal dial plan and since Network 0 is not provided without assigning the extra-cost Standard Network (ETN) option, this local routing application cannot be implemented without assigning the Standard Network option.

ENHANCED MODE - PROCEDURE: 314, WORD: 1
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION

STRING IDENTIFIER

1. Digit 1:
2. Digit 2:
3. Digit 3: (Emergency Service Code)
4. Digit 4:
5. Digit 5:
6. Digit 6:
7. Segment:
8. Last Segment: Last Segment - Add to Standard Network
9. String Length:
10. String Type: Address
11. Action: Restart
12. Action Object: Digit Modification Index
13. Action Attribute: Network Number
14. Network Number:

Connected to CC0 ON-LINE ♥

enter command: p314w1 9 1 1 1 ;;1 1 3 6 1 9 0 1 axdx_

ENHANCED MODE - PROCEDURE: 320, WORD: 1
WCR - NETWORK DIGIT MODIFICATION

1. Digit Modification Index:
2. Digits To Delete: Delete All Digits
3. Segment Number: Digits 1 to 8

INSERTION DIGITS

4. Digit 1, 9, 17, or 25:
5. Digit 2, 10, 18, or 26:
6. Digit 3, 11, 19, or 27:
7. Digit 4, 12, 20, or 28:
8. Digit 5, 13, 21, or 29: (Security Extension Number)
9. Digit 6, 14, 22, or 30:
10. Digit 7, 15, 23, or 31:
11. Digit 8, 16, 24:

Connected to CC0 ON-LINE ♥

enter command: p320w1 9 99 1 7 2 3 2 3 cxdx_

Example 2: Suppose that an anxious user forgets to dial the access code and instead dials the digits:

911

(which the switch recognizes as “9 - 11”) to request public-network routing for an emergency. The WCR feature allows the routing software to compensate for the dialing mistake and change the requested destination.

At the originating switch, Network 1 restarts the 2-digit string with the string identifier “11” to Network 0 after DMI 9 deletes every digit and inserts the digits “72323” (the security extension number).

NOTE

Since this application requires the Network-0 interface to the internal dial plan and since Network 0 is not provided without assigning the extra-cost Standard Network (ETN) option, this local routing application cannot be implemented without assigning the Standard Network option.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	1
2. Digit 2:	1 (Emergency Service Code w/o First Digit)
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment: 1	
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	2
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	9 Digit Modification Index
13. Action Attribute:	0 Network Number
14. Network Number:	1
Connected to CC0 ON-LINE ♥	
MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 1 1 ;;;1 1 2 6 1 9 0 1 axdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index: 9	
2. Digits To Delete: 99 Delete All Digits	
3. Segment Number: 1 Digits 1 to 8	
INSERTION DIGITS	
4. Digit 1, 9, 17, or 25: 7	
5. Digit 2, 10, 18, or 26: 2	
6. Digit 3, 11, 19, or 27: 3	
7. Digit 4, 12, 20, or 28: 2	
8. Digit 5, 13, 21, or 29: 3 (Security Extension Number)	
9. Digit 6, 14, 22, or 30: --	
10. Digit 7, 15, 23, or 31: --	
11. Digit 8, 16, 24: --	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT enter command: p320w1 9 99 1 7 2 3 2 3 cxdx_ 2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

3.11 Routing “9 - 0 (1 digit)” Calls to Local Attendant

Before G2.2, the ARS software could not route operator-assistance calls to a local attendant (via an attendant access code or a listed directory number) without a special hardware configuration such as loop-around trunking.

However, using loop-around trunking to route an ARS call back to the local switch was not an ideal method of implementing this application. These implementations were expensive. (Two physical trunk circuits were required to implement each end-to-end trunk facility in the loop-around configuration.) Also, call processing for these calls was sluggish and traffic sensitive. (Using this type of configuration, the switch had to place an outside call (which the outgoing facility returned to the switch as an incoming call) for subsequent completion to a local attendant.

Beginning with G2.2, the WCR software can route “9 - 0” operator-assistance numbers to either an access code or a local extension without the intervention of special hardware. Before a route is selected, digit modification can change the dialed digits to the desired extension and hand off the call to the internal dial plan for local routing.

Example 1: Suppose that a user of the New York switch dials the digits:

9 - 0

to reach a public-network operator. The WCR feature allows the routing software to change the requested destination.

At the originating switch, Network 1 restarts the 1-digit string with the string identifier “0” to Network 0 (the WCR interface to the internal dial plan) after DMI 10 deletes every digit and inserts the digits “71300” (a listed directory number).

NOTE

Since this application requires the Network-0 interface to the internal dial plan and since Network 0 is not provided without assigning the extra-cost Standard Network (ETN) option, this local routing application cannot be implemented without assigning the Standard Network option.

ENHANCED MODE - PROCEDURE: 314, WORD: 1
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION

STRING IDENTIFIER

1. Digit 1: (Local Exchange Carrier Operator)
2. Digit 2:
3. Digit 3:
4. Digit 4:
5. Digit 5:
6. Digit 6:
7. Segment:
8. Last Segment: Last Segment - Add to Standard Network
9. String Length:
10. String Type: Operator Assistance
11. Action: Restart
12. Action Object: Digit Modification Index
13. Action Attribute: Network Number
14. Network Number:

Connected to CC0 ON-LINE ♥

enter command: p314w1 0 ;;;;1 1 1 5 1 10 0 1 axdx_

2 Repeat Form 5 Help Field Input Cmds

ENHANCED MODE - PROCEDURE: 320, WORD: 1
WCR - NETWORK DIGIT MODIFICATION

1. Digit Modification Index:
2. Digits To Delete: Delete All Digits
3. Segment Number: Digits 1 to 8

INSERTION DIGITS

4. Digit 1, 9, 17, or 25:
5. Digit 2, 10, 18, or 26:
6. Digit 3, 11, 19, or 27:
7. Digit 4, 12, 20, or 28:
8. Digit 5, 13, 21, or 29: (Listed Directory Number)
9. Digit 6, 14, 22, or 30:
10. Digit 7, 15, 23, or 31:
11. Digit 8, 16, 24:

Connected to CC0 ON-LINE ♥

enter command: p320w1 10 99 1 7 1 3 0 0 cxdx_

2 Repeat Form 5 Help Field Input Cmds

Also, the listed directory number (LDN) “71300” can be assigned to provide a different attendant display for calls dialed to the public-network operator.

ENHANCED MODE - PROCEDURE: 204, WORD: 1 CONSOLE MESSAGES AND LISTED DIRECTORY NUMBERS	
1. Trunk Group/Call Type: 1999 2. Message Number or CAS Branch: --	
ICI MESSAGE	
3. Character 1: 25	'0'
4. Character 2: 26	'P'
5. Character 3: 15	'E'
6. Character 4: 28	'R'
7. Listed Directory Number: 71300	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p204w1 1999 ce;25 26 15 28 71300 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

(The recommended display for calls to the local attendant is “ATND.”)

3.12 Blocking “***976” Calls on a Wild-Card Basis

Before G2.2, the ARS software could block calls to extra-charge telephone numbers in either Procedure 311 or Procedure 313. In Procedure 311 Word 1, the switch administrator could correlate an area code with the intercept pattern (usually Pattern 1). In Procedure 311 Word 2, the switch administrator could correlate both an area code and an office code with the intercept pattern. Or, in Procedure 313 Word 1, the switch administrator could correlate a 7- to 10-digit string with a high call-control FRL.

However, these two procedures provided no convenient method for blocking calls destined for the same office code (for example, “976”) in every area code. Even in the best case, the administrator had to translate “976” blocking one area code at a time. Under certain circumstances, multiple translations would be required for each area code.

Beginning with G2.2, the WCR software can conveniently block calls destined for the same office code in every area code. By translating a string identifier with a “wild-card” area code followed by the “976” office code that resolves to the exception routing network with a high call-control FRL, these calls are conveniently and globally restricted.

Example: Calls to the “976” exchange in every area code are blocked.

Suppose that a user of the New York switch dials the digits:

9 - 908 - 976 - 3847

to reach an extra-charge number in New Jersey. The WCR feature allows the routing software to globally apply unauthorized call control to “976” calls destined for any area code.

At the originating switch, Network 1 resolves the 10-digit exception string with the string identifier “****976” to VNI 4 while the action attribute (Field 13) applies an FRL of “7” for access.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	*
2. Digit 2:	*
3. Digit 3:	* (Wild-Card Area Code)
4. Digit 4:	9
5. Digit 5:	7
6. Digit 6:	6 (Extra-Charge Office Code)
7.	Segment: 1
8.	Last Segment: 2 Last Segment - Add to Exception Network
9.	String Length: 10
10.	String Type: 6 Address
11.	Action: 0 Resolve
12.	Action Object: 4 Virtual Nodepoint Identifier
13.	Action Attribute: 7 Facility Restriction Level
14.	Network Number: 1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 11 11 11 9 7 6 1 2 10 6 0 4 7 1 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

NOTE

Calling other less familiar office codes can also result in additional charges. For a complete list of these office codes, contact an LEC service representative.

Alternatively, at the originating switch, Network 1 resolves the 10-digit exception string with the string identifier “***976” to VNI 0 (the null VNI).

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	*
2. Digit 2:	*
3. Digit 3:	* (Wild-Card Area Code)
4. Digit 4:	9
5. Digit 5:	7
6. Digit 6:	6 (Extra-Charge Office Code)
7. Segment: 1	
8. Last Segment: 2 Last Segment - Add to Exception Network	
9. String Length: 10	
10. String Type: 6 Address	
11. Action: 0 Resolve	
12. Action Object: 0 Virtual Nodepoint Identifier	
13. Action Attribute: 0 Facility Restriction Level	
14. Network Number: 1	
Connected to CC0 ON-LINE ♥	
MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 11 11 11 9 7 6 1 2 10 6 0 0 0 1 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cnds	

NOTE

Calling other less familiar office codes can also result in additional charges. For a complete list of these office codes, contact an LEC service representative.

3.13 Routing Special AAR Calls

3.13.1 Routing UDP Calls through the Private Network

Before G2.2, the AAR feature was involved in routing uniform dial plan (UDP) calls. The following is an overview of the routing sequence. (The details of pre-G2.2 UDP administration can be found in Section 5.14.)

- In Procedure 354 Word 2, the first one or two digits of an extension number (from within the private network) was associated with a location code (RNX) used to route the call.
- In Procedure 321 Word 4, a pattern number was assigned to a location code. The pattern number identified the specific AAR pattern that the switch would select to route UDP calls destined for each location code.

Beginning with G2.2, the high-level UDP routing scenario is very different from pre-G2.2 switches. First, the WCR (not the AAR feature) routes these calls, so digits are analyzed and correlated with patterns in different procedures. Second, in Word 2 of Procedure 354, an entire extension number (from within the private network), not just the first one or two digits, can be designated as UDP extension number that receives special analysis in Procedure 314. Moreover, the details of the UDP routing process differ at the originating, tandem, and receiving nodes of a UDP call.

Therefore, the translations required to route UDP calls from the originating node through a tandem node to the receiving node are shown in the following screens.

Example: A UDP call from Boston to Bonn tandems through the New York switch.

Assume that a user of the Boston switch dials the UDP number:

78348

to reach an employee at the corporate facility in Bonn, Germany.

At the originating Boston node, Word 2 of Procedure 354 recognizes the extension as a UDP call, sets the call's FRL to "7," and sends the call to Network 0 to analyze the dialed extension number.

NOTE

Although an entire 3-, 4-, or 5-digit extension number can now be designated as a UDP extension number in Word 2 of Procedure 354, the following example still only steers the first two digits of this network's 5-digit extensions to a location code. In this way, this sample tandem call will reflect what is likely to remain the normal practice.

ENHANCED MODE - PROCEDURE: 354, WORD: 2	
EXTENSION DESTINATION	
1. Extension or Steering Code:	78
2. Use: 2 Extension Assigned for UDP Routing	
DAC	
3. Digit 1:	--
4. Digit 2:	-
5. Digit 3:	-
6. Digit 4:	-
7. Node Number: ---	
DISPLAY ONLY	
8. Trunk Group, Feature, or Partition:	---
9. Code In Field 1 Conflicts:	---
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p354w2 78 2 axdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

Network 0 restarts the 5-digit string with the string identifier “78” to Network 2 (for private-network routing) after DMI 97 inserts the digits “32.”

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	7
2. Digit 2:	8 (Extension Number at Bonn Switch)
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment: 1	
8. Last Segment: 1 Last Segment - Add to Standard Network	
9. String Length: 5	
10. String Type: 6 Address	
11. Action: 1 Restart	
12. Action Object: 97 Digit Modification Index	
13. Action Attribute: 2 Network Number	
14. Network Number: 0	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 7 8 ;;;1 1 5 6 1 97 2 0 axdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index:	97
2. Digits To Delete:	0
3. Segment Number:	1 Digits 1 to 8
INSERTION DIGITS	
4. Digit 1, 9, 17, or 25:	3
5. Digit 2, 10, 18, or 26:	2 (First 2 Digits of Bonn's UDP Location Code)
6. Digit 3, 11, 19, or 27:	--
7. Digit 4, 12, 20, or 28:	--
8. Digit 5, 13, 21, or 29:	--
9. Digit 6, 14, 22, or 30:	--
10. Digit 7, 15, 23, or 31:	--
11. Digit 8, 16, 24:	--
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 97 0 1 3 2 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

In turn, Network 2 resolves the 7-digit string with the string identifier "327" to VNI 97. Neglecting call categories, the WCR software derives Pattern 97 from VNI 97 and selects an outgoing preference from Pattern 97.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	3
2. Digit 2:	2
3. Digit 3:	7 (UDP Location Code of Bonn Switch)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	97 Virtual Nodepoint Identifier
13. Action Attribute:	4 Facility Restriction Level
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 3 2 7 ;;;1 1 7 6 0 97 4 2 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

The preference in Pattern 97 contains a tie-trunk group (number 99) that connects the local Boston switch with the tandem private-network switch in New York.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number: 97
2.	Preference Number: 1
3.	Trunk Group: 99 (Private-Network Tie Facility)
4.	Facility Restriction Level: 2
5.	Warning Tone: 0 Not Given
6.	Toll-Free Index: -- All Numbers are Toll-Free Calls
7.	Digit Modification Index: 0 No Digit Modification
8.	Digit Sending Index: 0 Use Default Sending Attributes
9.	ISDN Sending Index: ----
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p318w1 97 1 99 2 0 ce;0 0 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

Tandem switch analyzes 7-digit incoming address

At the tandem New York node, trunk-group translations prepend the desired routing access code to the address digits so that the tandem switch can begin digit analysis.

ENHANCED MODE - PROCEDURE: 101, WORD: 3	
TRUNK GROUP CHARACTERISTICS - PREFIXING	
1.	Trunk Group: 18 (Incoming Tie Trunk from Boston)
2.	Type of Address: -
PREFIX	
3.	Digit 1: 8 (Inferred Network-2 DAC)
4.	Digit 2: -
5.	Digit 3: -
6.	Digit 4: -
DISPLAY ONLY	
7.	Signaling Type: 26 (E&M Wink Start In, Wink/Delay Dial Out)
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p101w3 18 ce;8 cxdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

In turn, Network 2 resolves the 7-digit string with the string identifier “327” to VNI 14. Neglecting call categories, the WCR software derives Pattern 14 from VNI 14 and selects an outgoing preference from Pattern 14.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	3
2. Digit 2:	2
3. Digit 3:	7 (UDP Location Code of Bonn Switch)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	14 Virtual Nodepoint Identifier
13. Action Attribute:	4 Facility Restriction Level
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 3 2 7 ;;;1 1 7 6 0 14 4 2 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

The preference in Pattern 14 contains a tie-trunk group (number 21) that connects the tandem New York node with the receiving UDP node in Bonn.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1. Pattern Number:	14
2. Preference Number:	1
3. Trunk Group:	21 (Private-Network Tie Facility)
4. Facility Restriction Level:	4
5. Warning Tone:	0 Not Given
6. Toll-Free Index:	-- All Numbers are Toll-Free Calls
7. Digit Modification Index:	0 No Digit Modification
8. Digit Sending Index:	0 Use Default Sending Attributes
9. ISDN Sending Index:	----
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p318w1 14 1 21 4 0 ce;0 0 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

Receiving node analyzes 7-digit incoming address

At the receiving Bonn node, trunk-group translations prepend the desired routing access code to the address digits so that the tandem switch can begin digit analysis.

ENHANCED MODE - PROCEDURE: 101, WORD: 3	
TRUNK GROUP CHARACTERISTICS - PREFIXING	
1. Trunk Group:	51 (Incoming Tie Trunk from Boston)
2. Type of Address:	-
PREFIX	
3. Digit 1:	8 (Inferred Network-2 DAC)
4. Digit 2:	-
5. Digit 3:	-
6. Digit 4:	-
DISPLAY ONLY	
7. Signaling Type:	26 (E&M Wink Start In, Wink/Delay Dial Out)
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p101w3 51 ce;8 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cnds

In turn, Network 2 restarts the 7-digit string with the string identifier ‘‘327’’ to Network 0 (the WCR interface to the internal dial plan) after DMI 51 deletes 2 digits and inserts no digits.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	3
2. Digit 2:	2
3. Digit 3:	7 (UDP Home Location Code)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	51 Digit Modification Index
13. Action Attribute:	0 Network Number
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 3 2 7 ;;;1 1 7 6 1 51 0 2 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cnds

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index:	51
2. Digits To Delete:	2
3. Segment Number:	0 No Digits to Insert
INSERTION DIGITS	
4. Digit 1, 9, 17, or 25:	--
5. Digit 2, 10, 18, or 26:	--
6. Digit 3, 11, 19, or 27:	--
7. Digit 4, 12, 20, or 28:	--
8. Digit 5, 13, 21, or 29:	--
9. Digit 6, 14, 22, or 30:	--
10. Digit 7, 15, 23, or 31:	--
11. Digit 8, 16, 24:	--
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 51 2 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

Internal dial plan recognizes extension as local call

After the previous digit modification in Network 2, the restart to Network 0, and the subsequent hand-off to the internal dial plan, the Bonn node recognizes the extension as local extension and routes the call to the called station.

ENHANCED MODE - PROCEDURE: 354, WORD: 2	
EXTENSION DESTINATION	
1. Extension or Steering Code:	78348
2. Use:	1 Single Extension on Local Switch
DAC	
3. Digit 1:	--
4. Digit 2:	--
5. Digit 3:	--
6. Digit 4:	--
7. Node Number:	---
DISPLAY ONLY	
8. Trunk Group, Feature, or Partition:	---
9. Code In Field 1 Conflicts:	---
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p354w2 78348 dx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

3.13.2 Routing ENP Calls through the Private Network

Before G2.2, the AAR feature was involved in routing Extension Number Portability (ENP) calls. The following is an overview of the routing sequence. (The details of pre-G2.2 ENP administration can be found in Section 5.13.)

- In Procedure 354 Word 1 or 2, an extension number (from within the portability subnetwork) was assigned to the node number where the extension resided.
- In Procedure 321 Word 4, a pattern number was assigned to a node number. The pattern number identified the specific AAR pattern that the switch would select to route ENP calls destined for each specific node.
- In Procedure 322 Word 1, a location code was assigned to the first one or two digits of extension numbers (from within the portability subnetwork). The switch used this assigned location code to convert the dialed extension number into a private-network number.

Beginning with G2.2, the high-level ENP routing scenario is very different from pre-G2.2 switches. First, the WCR (not the AAR feature) routes these calls, so digits are analyzed and correlated with patterns in different procedures. Moreover, the details of the ENP routing process differ at the originating, tandem, and receiving nodes of an ENP call.

Therefore, the translations required to route ENP calls from the originating node through a tandem node to the receiving node are shown in the following screens.

NOTE

For reasons of practicality, portability subnetworks are normally assigned within a small geographic area. However, there are no technical barriers prohibiting their assignment across a wider geographic area. Therefore, the following example will break from tradition and show a transatlantic ENP call. This is being done so that the example can rely on the same network specifications established at the beginning of this chapter.

Example: An ENP call from Boston to Bonn tandems through the New York switch.

Assume that a user of the Boston switch dials the ENP number:

78348

to reach an employee at the corporate facility in Bonn, Germany.

At the originating Boston node, Word 2 of Procedure 354 recognizes the extension as an ENP call, sets the call's FRL to "7," and sends the call to Network 0 to analyze the dialed extension number.

ENHANCED MODE - PROCEDURE: 354, WORD: 2	
EXTENSION DESTINATION	
1. Extension or Steering Code:	78348
2. Use:	3 Extension Assigned to an ENP Node Number
DAC	
3. Digit 1:	--
4. Digit 2:	-
5. Digit 3:	-
6. Digit 4:	-
7. Node Number:	3
DISPLAY ONLY	
8. Trunk Group, Feature, or Partition:	---
9. Code In Field 1 Conflicts:	---
Connected to CC0 ON-LINE ♥	
MAJOR	MINOR
RUN TAPE	BUSY OUT
IN USE	WAIT
enter command: p354w2 78348 3 ;;;3 axdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

Network 0 restarts the 5-digit string with the string identifier “7” to Network 2 (for private-network routing) after DMI 96 inserts the digits “99.”

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	7 (Extension Number in Portability Subnetwork)
2. Digit 2:	--
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	5
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	96 Digit Modification Index
13. Action Attribute:	2 Network Number
14. Network Number:	0
Connected to CC0 ON-LINE ♥	
MAJOR	MINOR
RUN TAPE	BUSY OUT
IN USE	WAIT
enter command: p314w1 7 ;;;;1 1 5 6 1 96 2 0 axdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index:	96
2. Digits To Delete:	0
3. Segment Number:	1 Digits 1 to 8
INSERTION DIGITS	
4. Digit 1, 9, 17, or 25:	9
5. Digit 2, 10, 18, or 26:	9 (First 2 Digits of ENP Location Code)
6. Digit 3, 11, 19, or 27:	--
7. Digit 4, 12, 20, or 28:	--
8. Digit 5, 13, 21, or 29:	--
9. Digit 6, 14, 22, or 30:	--
10. Digit 7, 15, 23, or 31:	--
11. Digit 8, 16, 24:	--
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 96 0 1 9 9 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

(When Network 0 restarts an ENP call, the ENP call never actually restarts digit analysis in another network. Instead, the NDA module will send the ENP call to the GRS module with the predetermined FRL of "7" and a VNI that is *not* derived from a *resolved* digit analysis.)

NOTE

For strict ENP routing needs, the 5-digit string with the string identifier "7" in Network 0 could have been assigned to restart digit analysis in any routing network. However, since Call Detail Recording (CDR) records the dial access code of the network that Network 0 is assigned to restart to, this practice will ensure accurate CDR records for ENP calls. Also, to simplify the ongoing maintenance of WCR translations for numbers that can potentially either be routed by UDP or ENP, the normal digit-analysis network for private-network calls (usually Network 2) is recommended.

As special treatment for the recognized ENP call, Network 0 derives the call's VNI (in this example, "97") from the VNI assigned to the dialed extension's node number in Procedure 354 Word 4.

ENHANCED MODE - PROCEDURE: 354, WORD: 4	
NODE NUMBER TO VNI MAPPING	
1. Node Number:	3
2. Virtual Nodepoint Identifier:	97
Connected to CC0 ON-LINE ♥	
MAJOR	MINOR
RUN TAPE	BUSY OUT
IN USE	WAIT
enter command: p354w4 3 97 cxdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

(Neglecting call categories, the WCR software derives Pattern 97 from VNI 97 and selects an outgoing preference from Pattern 97.)

The preference in Pattern 97 contains a tie-trunk group (number 99) that connects the local Boston switch with the tandem private-network switch in New York.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number: 97
2.	Preference Number: 1
3.	Trunk Group: 99 (Private-Network Tie Facility)
4.	Facility Restriction Level: 2
5.	Warning Tone: 0 Not Given
6.	Toll-Free Index: -- All Numbers are Toll-Free Calls
7.	Digit Modification Index: 0 No Digit Modification
8.	Digit Sending Index: 0 Use Default Sending Attributes
9.	ISDN Sending Index: ----
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p318w1 97 1 99 2 0 ce;0 0 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

Tandem switch analyzes 7-digit incoming address

At the tandem New York node, trunk-group translations prepend the desired routing access code to the address digits so that the tandem switch can begin digit analysis.

ENHANCED MODE - PROCEDURE: 101, WORD: 3	
TRUNK GROUP CHARACTERISTICS - PREFIXING	
1.	Trunk Group: 18 (Incoming Tie Trunk from Boston)
2.	Type of Address: -
PREFIX	
3.	Digit 1: 8 (Inferred Network-2 DAC)
4.	Digit 2: -
5.	Digit 3: -
6.	Digit 4: -
DISPLAY ONLY	
7.	Signaling Type: 26 (E&M Wink Start In, Wink/Delay Dial Out)
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p101w3 18 ce;8 cxdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

In turn, Network 2 restarts the 7-digit string with the string identifier “997” to Network 0 (the WCR interface to the internal dial plan) after DMI 11 deletes 2 digits and inserts no digits.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	9
2. Digit 2:	9
3. Digit 3:	7 (ENP Home Location Code)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	11 Digit Modification Index
13. Action Attribute:	0 Network Number
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 9 9 7 ;;1 1 7 6 1 11 0 2 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index:	11
2. Digits To Delete:	2
3. Segment Number:	0 No Digits to Insert
INSERTION DIGITS	
4. Digit 1, 9, 17, or 25:	--
5. Digit 2, 10, 18, or 26:	--
6. Digit 3, 11, 19, or 27:	--
7. Digit 4, 12, 20, or 28:	--
8. Digit 5, 13, 21, or 29:	--
9. Digit 6, 14, 22, or 30:	--
10. Digit 7, 15, 23, or 31:	--
11. Digit 8, 16, 24:	--
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 11 2 cxdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

Tandem's analysis digresses to origination process for ENP call

After the previous digit modification in Network 2, the restart to Network 0, and the subsequent hand-off to the internal dial plan, the New York switch recognizes the extension as an ENP call, sets the call's FRL to "7," and sends the call back to Network 0 to analyze the dialed extension number.

ENHANCED MODE - PROCEDURE: 354, WORD: 2	
EXTENSION DESTINATION	
1. Extension or Steering Code:	78348
2. Use: 3	Extension Assigned to an ENP Node Number
DAC	
3. Digit 1:	--
4. Digit 2:	-
5. Digit 3:	-
6. Digit 4:	-
7. Node Number:	3
DISPLAY ONLY	
8. Trunk Group, Feature, or Partition:	---
9. Code In Field 1 Conflicts:	---
Connected to CC0 ON-LINE ♥	
MAJOR	MINOR
RUN TAPE	BUSY OUT
IN USE	WAIT
enter command: p354w2 78348 3 ;;;3 axdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cnds

Network 0 restarts the 5-digit string with the string identifier “7” to Network 2 (for private-network routing) after DMI 12 inserts the digits “99.”

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	7 (Extension Number in Portability Subnetwork)
2. Digit 2:	--
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment: 1	
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	5
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	12 Digit Modification Index
13. Action Attribute:	2 Network Number
14. Network Number:	0
Connected to CC0 ON-LINE ♥	
MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 7 ;;;;1 1 5 6 1 12 2 0 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cnds

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index:	12
2. Digits To Delete:	0
3. Segment Number:	1 Digits 1 to 8
INSERTION DIGITS	
4. Digit 1, 9, 17, or 25:	9
5. Digit 2, 10, 18, or 26:	9 (First 2 Digits of ENP Location Code)
6. Digit 3, 11, 19, or 27:	--
7. Digit 4, 12, 20, or 28:	--
8. Digit 5, 13, 21, or 29:	--
9. Digit 6, 14, 22, or 30:	--
10. Digit 7, 15, 23, or 31:	--
11. Digit 8, 16, 24:	--
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT enter command: p320w1 12 0 1 9 9 cxdx_ 2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

(When Network 0 restarts an ENP call, the ENP call never actually restarts digit analysis in another network. Instead, the NDA module will send the ENP call to the GRS module with the predetermined FRL of "7" and a VNI that is *not* derived from a *resolved* digit analysis.)

NOTE

For strict ENP routing needs, the 5-digit string with the string identifier "7" in Network 0 could have been assigned to restart digit analysis in any routing network. However, since Call Detail Recording (CDR) records the dial access code of the network that Network 0 is assigned to restart to, this practice will ensure accurate CDR records for ENP calls. Also, to simplify the ongoing maintenance of WCR translations for numbers that can potentially either be routed by UDP or ENP, the normal digit-analysis network for private-network calls (usually Network 2) is recommended.

As special treatment for the recognized ENP call, Network 0 derives the call's VNI (in this example, "14") from the VNI assigned to the dialed extension's node number in Procedure 354 Word 4.

ENHANCED MODE - PROCEDURE: 354, WORD: 4	
NODE NUMBER TO VNI MAPPING	
1. Node Number:	3
2. Virtual Nodepoint Identifier:	14
Connected to CC0 ON-LINE ♥	
MAJOR	MINOR
RUN TAPE	BUSY OUT
IN USE	WAIT
enter command: p354w4 3 14 cxdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

(Neglecting call categories, the WCR software derives Pattern 14 from VNI 14 and selects an outgoing preference from Pattern 14.)

The preference in Pattern 14 contains a tie-trunk group (number 21) that connects the tandem New York node with the receiving ENP node in Bonn.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number: 14
2.	Preference Number: 1
3.	Trunk Group: 21 (Private-Network Tie Facility)
4.	Facility Restriction Level: 4
5.	Warning Tone: 0 Not Given
6.	Toll-Free Index: -- All Numbers are Toll-Free Calls
7.	Digit Modification Index: 0 No Digit Modification
8.	Digit Sending Index: 0 Use Default Sending Attributes
9.	ISDN Sending Index: ----
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p318w1 14 1 21 4 0 ce;0 0 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cnds	

Receiving node analyzes 7-digit incoming address

At the receiving Bonn node, trunk-group translations prepend the desired routing access code to the address digits so that the tandem switch can begin digit analysis.

ENHANCED MODE - PROCEDURE: 101, WORD: 3	
TRUNK GROUP CHARACTERISTICS - PREFIXING	
1.	Trunk Group: 51 (Incoming Tie Trunk from Boston)
2.	Type of Address: -
PREFIX	
3.	Digit 1: 8 (Inferred Network-2 DAC)
4.	Digit 2: -
5.	Digit 3: -
6.	Digit 4: -
DISPLAY ONLY	
7.	Signaling Type: 26 (E&M Wink Start In, Wink/Delay Dial Out)
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p101w3 51 ce;8 cxdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cnds	

In turn, Network 2 restarts the 7-digit string with the string identifier “997” to Network 0 (the WCR interface to the internal dial plan) after DMI 51 deletes 2 digits and inserts no digits.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	9
2. Digit 2:	9
3. Digit 3:	7 (ENP Home Location Code)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	51 Digit Modification Index
13. Action Attribute:	0 Network Number
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 9 9 7 ;;1 1 7 6 1 51 0 2 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index:	51
2. Digits To Delete:	2
3. Segment Number:	0 No Digits to Insert
INSERTION DIGITS	
4. Digit 1, 9, 17, or 25:	--
5. Digit 2, 10, 18, or 26:	--
6. Digit 3, 11, 19, or 27:	--
7. Digit 4, 12, 20, or 28:	--
8. Digit 5, 13, 21, or 29:	--
9. Digit 6, 14, 22, or 30:	--
10. Digit 7, 15, 23, or 31:	--
11. Digit 8, 16, 24:	--
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 51 2 cxdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

Internal dial plan recognizes extension as local call

After the previous digit modification in Network 2, the restart to Network 0, and the subsequent hand-off to the internal dial plan, the Bonn node recognizes the extension as local extension and routes the call to the called station.

ENHANCED MODE - PROCEDURE: 354, WORD: 2	
EXTENSION DESTINATION	
1. Extension or Steering Code:	78348
2. Use: 1	Single Extension on Local Switch
DAC	
3. Digit 1:	--
4. Digit 2:	-
5. Digit 3:	-
6. Digit 4:	-
7. Node Number:	---
DISPLAY ONLY	
8. Trunk Group, Feature, or Partition:	---
9. Code In Field 1 Conflicts:	---
Connected to CC0 ON-LINE ♥	
MAJOR	MINOR
RUN TAPE	BUSY OUT
IN USE	WAIT
enter command: p354w2 78348 dx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

3.14 Routing ASAI Gateway Calls

Before G2.2, the AAR feature was involved in routing calls to an Adjunct/Switch Application Interface (ASAI) Gateway computer. The following is an overview of the routing sequence.

- A call to a VDN arrived from the public network.
- The VDN was assigned to a vector with a ‘route to’ command as the only vector step.
- The destination contained in the ‘route to’ step was an Abbreviated Dialing group-list item.
- The address specified by the group-list item was a 7-digit private-network number.
- According to the specified address, the AAR feature selected a pattern with a single ISDN—PRI preference to route the call.
- Once the gateway computer received the call, the computer initiated whatever subsequent call processing was required.

Beginning with G2.2, the high-level perspective of the ASAI routing scenario is quite similar to G2.1 [with the exception that the WCR feature (not the AAR feature) routes these calls]. However, the details of the routing process for ASAI Gateway are somewhat more complex. Moreover, many of the details have changed because the Call Vectoring and ISDN—PRI features have been enhanced.

Therefore, the translations required to route incoming calls from the public-network to the ASAI Gateway computer are shown in the following screens.

Example: The New York switch receives an ASAI Gateway call and routes the call across the assigned ISDN—PRI ASAI Gateway trunk group.

Assume that the New York switch receives the ASAI Gateway extension number:

74000

from the serving CO.

Prerequisite administration for ASAI Gateway Routing

The ASAI Gateway feature must be enabled in Procedure 276 Word 1.

ENHANCED MODE - PROCEDURE: 276, WORD: 1
FEATURE GROUP CLASS OF SERVICE

1.	Standard Network:	1
2.	Multipremise:	1
3.	DCS:	0
4.	AUTOVON:	0
5.	Call Vectoring:	1
6.	Tenant Services:	0
7.	System 85 SE:	0
9.	Look-Ahead Interflow:	0
10.	ASAI Gateway:	1
11.	Expert Agent Selection (EAS):	0
12.	Call Work Codes:	0

DISPLAY ONLY

13. Use Procedure:

Connected to CC0 ON-LINE ♥

MAJORMINORRUN TAPEBUSY OUTIN USEWAIT

enter command: p276w1 1 1 ;;1 ;;1 cxdx_

2 Repeat3 Form5 Help6 Field7 Input8 Cmds

Internal dial plan handles incoming extension number

The internal dial plan at the receiving New York switch recognizes the extension as a local vector directory number (VDN) and routes the call to the dialed VDN.

ENHANCED MODE - PROCEDURE: 354, WORD: 2

EXTENSION DESTINATION

1. Extension or Steering Code: 74000

2. Use: 5 VDN on Local Switch

DAC

3. Digit 1: --

4. Digit 2: -

5. Digit 3: -

6. Digit 4: -

7. Node Number: ---

DISPLAY ONLY

8. Trunk Group, Feature, or Partition: ---

9. Code In Field 1 Conflicts: ---

Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT

enter command: p354w2 74000 dx_

2 Repeat3 Form5 Help6 Field7 Input8 Cmds

Call Vectoring feature handles recognized VDN call

In turn, the New York switch correlates the dialed VDN with the vector that controls the call's subsequent call processing according to the assignment in Procedure 031 Word 1.

ENHANCED MODE - PROCEDURE: 031, WORD: 1	
CALL VECTORING - VDN TERMINATION AND ATTRIBUTES	
1. VDN:	74000
2. Vector:	511
3. Measured:	0 VDN Is Not Measured by CMS
CONSOLE MESSAGE CHARACTER	
4. Character 1:	--
5. Character 2:	--
6. Character 3:	--
7. Character 4:	--
8. Return-Call Indicator:	- Not a Return Call VDN
9. VDN Override Flag:	- Disabled
DISPLAY ONLY	
10. Message Center or AUDIX Machine Number:	-
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p031w1 74000 511 0 cxdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cnds

The controlling vector for the ASAI Gateway call (in this example, Vector 511) contains a single “route to number” step with an item in an Abbreviated Dialing group list used by Call Vectoring as the destination.

ENHANCED MODE - PROCEDURE: 030, WORD: 3	
CALL VECTORING - PROGRAMMING VECTOR STEPS	
1. Step Number:	1
ACTION	
2. Step Type:	3 Route-To Number
3. Destination:	495 Abbreviated Dialing List Member
4. Priority Level:	-
CRITERIA	
5. Condition:	--
6. Threshold:	----
7. Split/Skill:	---
START/END TIME OF DAY	
8. Day:	-
9. Hour:	--
10. Minute:	--
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p030w3 1 3 495 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cnds

ENHANCED MODE - PROCEDURE: 030, WORD: 2 CALL VECTORING - ADMINISTER VECTORS	
1. Vector Number: 511 DISPLAY ONLY 2. See Vector Directory Number: ----- 3. See Vector Number: --- 4. See Step Number: -- 5. AUDIX Machine Number: - 6. Message Center Machine Number: -	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT enter command: w2 511 axdx_ 2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

The group lists used by Call Vectoring are assigned in Procedure 030 Word 1.

ENHANCED MODE - PROCEDURE: 030, WORD: 1 CALL VECTORING - ABBREVIATED DIALING LIST	
ABBREVIATED DIALING GROUP 1. List 0: 9995 2. List 1: 9996 3. List 2: 9997 4. List 3: 9998 5. List 4: 9999 DISPLAY ONLY 6. Vector Number: ---	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT enter command: p030w1 9995 9996 9997 9998 9999 cxdx_ 2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

The AAR (usually Network 2) access code and the 7-digit destination address specified by the group-list item are either assigned in Procedure 059 Word 2 or designated at the controlling extension of the Call Vectoring group list.

In either case, the current destination address can be displayed in Procedure 059 Word 2.

ENHANCED MODE - PROCEDURE: 059, WORD: 2	
ABBREVIATED DIALING - ADMINISTER LIST ITEMS	
TERMINAL EQUIPMENT LOCATION	SEGMENT CHARACTERS
1. Module: --	11. Character 1: 8
2. Cabinet: --	12. Character 2: 4
3. Carrier: --	13. Character 3: 5
4. Slot: --	14. Character 4: 8
5. Circuit: --	
6. List Type: 0 Group List	
7. Group List Number or System List Item: 9999	
8. Group or Personal List Item: 95	
9. Segment: 1	
10. Read/Write Mode: - List Item from Machine Table	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p059w2 ;;;;0 9999 95 1 dx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cnds

ENHANCED MODE - PROCEDURE: 059, WORD: 2	
ABBREVIATED DIALING - ADMINISTER LIST ITEMS	
TERMINAL EQUIPMENT LOCATION	SEGMENT CHARACTERS
1. Module: --	11. Character 1: 4
2. Cabinet: --	12. Character 2: 1
3. Carrier: --	13. Character 3: 2
4. Slot: --	14. Character 4: 3
5. Circuit: --	
6. List Type: 0 Group List	
7. Group List Number or System List Item: 9999	
8. Group or Personal List Item: 95	
9. Segment: 2	
10. Read/Write Mode: - List Item from Machine Table	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: nd_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cnds

(For list items in a Call Vectoring group list, special characters, such as Pause, Wait, and Mark, must not be included in the destination address of a “route to number” step. If special characters are included, the “route to number” step will fail.)

World Class Routing feature routes call over ASAI Gateway trunk group

According to the “route to number” step’s destination address, the Call Vectoring software passes the call to WCR Network 2 for digit analysis and further routing.

Network 2 resolves the 7-digit string with the string identifier “458” to VNI 15. Neglecting call categories, the switch derives Pattern 15 from VNI 15 and selects an outgoing preference from Pattern 15.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	4
2. Digit 2:	5
3. Digit 3:	8 (Location Code of Gateway Computer)
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	15 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 4 5 8 ;;1 1 7 6 0 15 0 2 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

The preference in Pattern 15 contains an ISDN—PRI tie-trunk group (number 25) that connects the New York switch with an ASAI Gateway computer.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number: 15
2.	Preference Number: 1
3.	Trunk Group: 24 (ISDN Tie Facility to Gateway Computer)
4.	Facility Restriction Level: 0
5.	Warning Tone: 0 Not Given
6.	Toll-Free Index: -- All Numbers are Toll-Free Calls
7.	Digit Modification Index: 0 No Digit Modification
8.	Digit Sending Index: 0 Use Default Sending Attributes
9.	ISDN Sending Index: 0 Use Default Sending Attributes
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p318w1 15 1 24 0 0 ce;0 0 0 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cnds	

(Trunk Group 24's physical facility is a DS1 trunk group with only one of the 24 channels, to serve as the ISDN—PRI D channel, assigned.)

Trunk Group 24 must be assigned as Trunk Type 47 in Procedure 100 Word 1.

ENHANCED MODE - PROCEDURE: 100, WORD: 1	
TRUNK GROUP TRANSLATION	
1.	Trunk Group: 24
DIAL ACCESS CODE/TRUNK ID CODE	
2.	Digit 1: --
3.	Digit 2: -
4.	Digit 3: -
5.	Digit 4: - (Unassigned)
6.	Trunk Type: 47 ETN Tie (2-Way Dial Repeating)
7.	Dial Access Restriction: 0 (Not Applicable)
8.	Personal CO Line Appearance: 0 Not Used for CO Line Appearance
9.	Public Network Access/Egress: -
DISPLAY ONLY	
10.	Signaling Type: 20 (ISDN)
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p100w1 24 ;;;;47 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cnds	

Trunk Group 24 must also be assigned as an ASAI Gateway trunk group in Procedure 100 Word 7.

ENHANCED MODE - PROCEDURE: 100, WORD: 7 ASAI GATEWAY TRUNK GROUP ASSOCIATION	
1. Trunk Group: 24	
EQUIPMENT LOCATION	
2. Module:	3
3. Cabinet:	1
4. Carrier:	2
5. Slot:	18
6. ASAI Gateway Records: 600	
DISPLAY ONLY	
7. Free Records: 9900	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p100w7 24 3 1 2 18 600 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cnds

[As a rough record-assigning estimate, from two to four times as many records should be allocated for the switch compared to the amount of Automatic Call Distribution (ACD) agents on the switch who will answer ASAI Gateway calls.

More precise record-assigning estimates depend on the switch's ACD traffic values such as normal and peak ACD queue lengths, average holding times for ASAI calls, etc.]

Do not assign Trunk Group 24 to send or expect to receive either TCM.

ENHANCED MODE - PROCEDURE: 103, WORD: 1	
NETWORK TRUNK GROUP TRANSLATION	
1.	Trunk Group: 24
2.	Facility Restriction Level: 0
3.	Traveling Class Marks: 0 Do Not Send or Receive Any TCMs
4.	Symmetrical Route: 0 No
5.	Incoming Tie/APLT Access to WCR: 1 Enabled
6.	Authorization Code Required: 0 No
7.	Bridge-On Allowed: 0 No
8.	Trunk Reservation Limit: 0
9.	Dial Tone Detect Ignore: 0 Dial Tone Detection Active
10.	Data Protection (Permanent): 0 Disabled
11.	Remote Access Echo Suppressor: - Dial Tone
12.	Conditional Routing: 0 Not a Satellite Facility
13.	Route Selection Method: 0 Select After All Digits Collected
14.	Outgoing Overlapped Sending: 0 Collect All Digits Before Sending
15.	Suppress Dial Tone: 0 Apply Dial Tone

Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT

enter command: p103w1 24 ;;;1 axdx_

2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds

Once the gateway computer has received the ASAI Gateway call, the gateway will initiate any further call routing required. To reach an available agent in the appropriate split, the gateway will generate a 7-digit private-network call back to the appropriate VDN. (From a WCR routing perspective, these subsequent transactions are fairly routine.)

However, as the gateway calls the switch back, the switch must infer the AAR access code in Procedure 101 Word 3.

ISDN DAC-prefixing translations at receiving switch

ENHANCED MODE - PROCEDURE: 101, WORD: 3 TRUNK GROUP CHARACTERISTICS - PREFIXING	
1. Trunk Group:	24 (Incoming ISDN Tie Trunk from ASAI Gateway)
2. Type of Address:	0 Unknown
PREFIX	
3. Digit 1:	8 (WCR Network-2 Access)
4. Digit 2:	-
5. Digit 3:	-
6. Digit 4:	-
DISPLAY ONLY	
7. Signaling Type:	20 (ISDN)
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p101w3 24 0 8 cdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

4. WCR Feature Flow Diagram

Section 1.2 described the flow of calls through the WCR feature from the high-level perspective of the four WCR modules: network digit analysis (NDA), generalized route selection (GRS), digit modification, and digit sending. Meanwhile, Figure 1-1 related the four WCR modules to specific Manager II procedures and to the separate figures contained in this flow diagram.

The contents, format, and level of detail in this flow diagram are similar to call-flow diagrams provided for the earlier routing features, Automatic Route Selection (ARS) and Automatic Alternate Routing (AAR), in the *Generic 2.1 Feature Descriptions* (555-104-301). A duplicate of the following WCR flow diagram is in Section 134 of the *Generic 2.2 Feature Descriptions* (555-105-301).

However, in support of the previously mentioned effort to relate routing process to administrative procedures, the WCR flow diagram relates decisions made and actions taken by the WCR feature with specific Manager II procedures, specific fields within the procedures, and even specific field values.

The flow diagram also provides background information in a dashed box without implying that a decision was made or that an action was taken by the WCR software. These dashed boxes are usually located where a user might not understand the reason for a WCR decision or might follow the wrong path through the diagram for certain types of calls.

New users of this manual should browse through this flow diagram to gain familiarity with the structure and content of both the flow diagram and the WCR feature. Experienced users are encouraged to study this diagram and test its validity. One benefit of WCR's more general and modular routing software, is a more consistent and reliable flow diagram than allowed by the earlier ARS and AAR features.

4-2 WCR Feature Flow Diagram

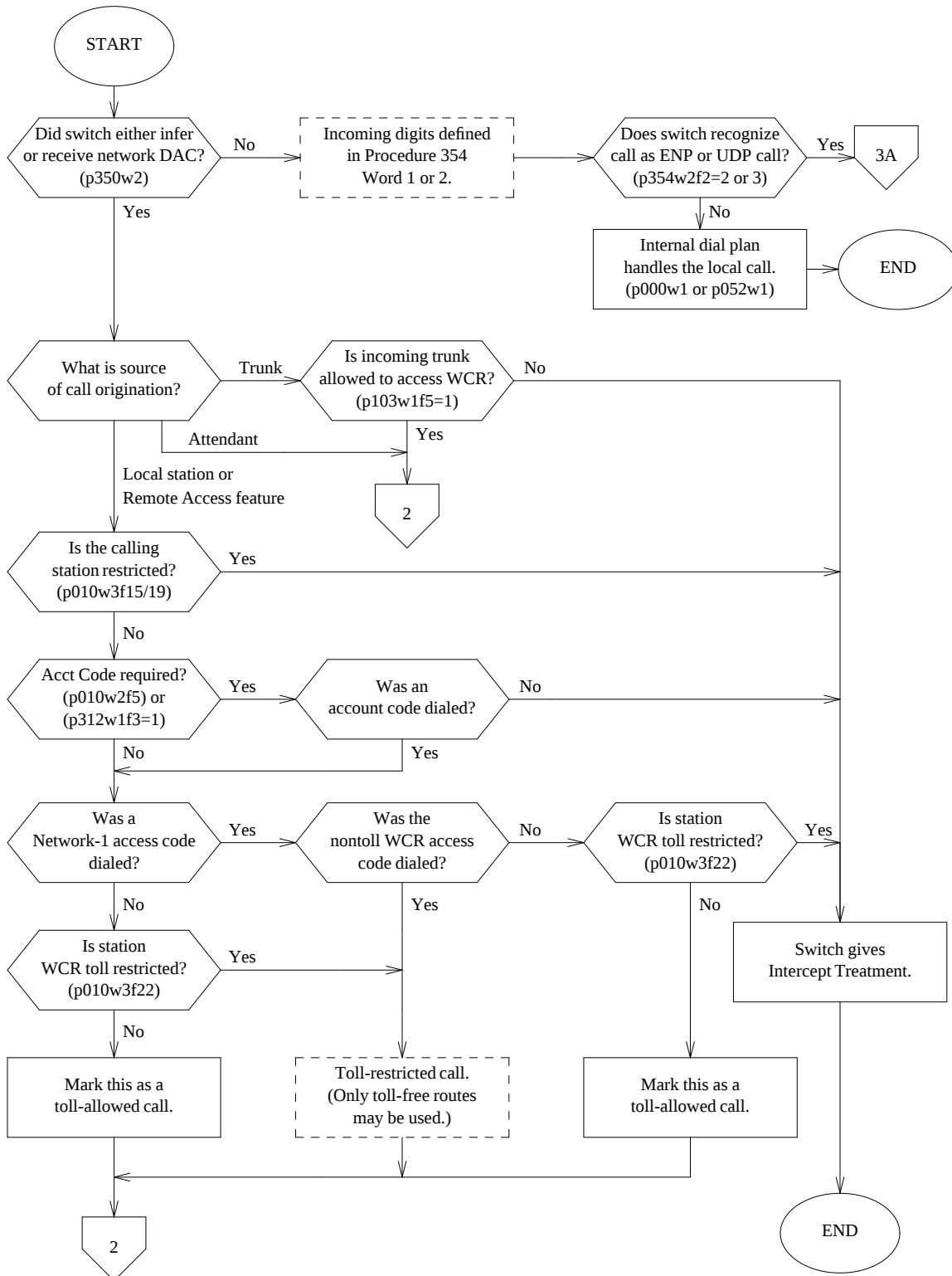
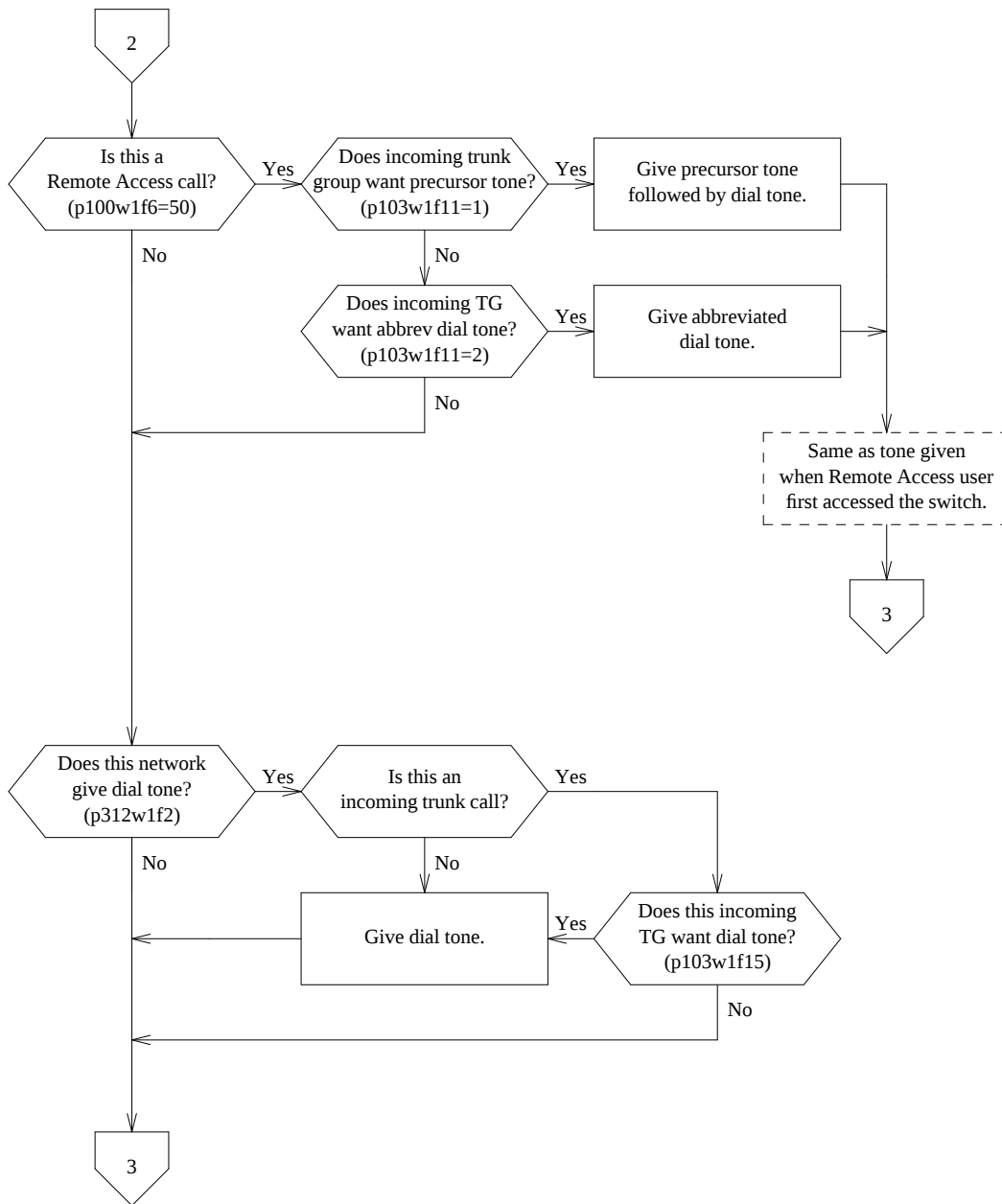


Figure 4-1. Access to World Class Routing

**Figure 4-2.** Add Network Call-Progress Tones

4-4 WCR Feature Flow Diagram

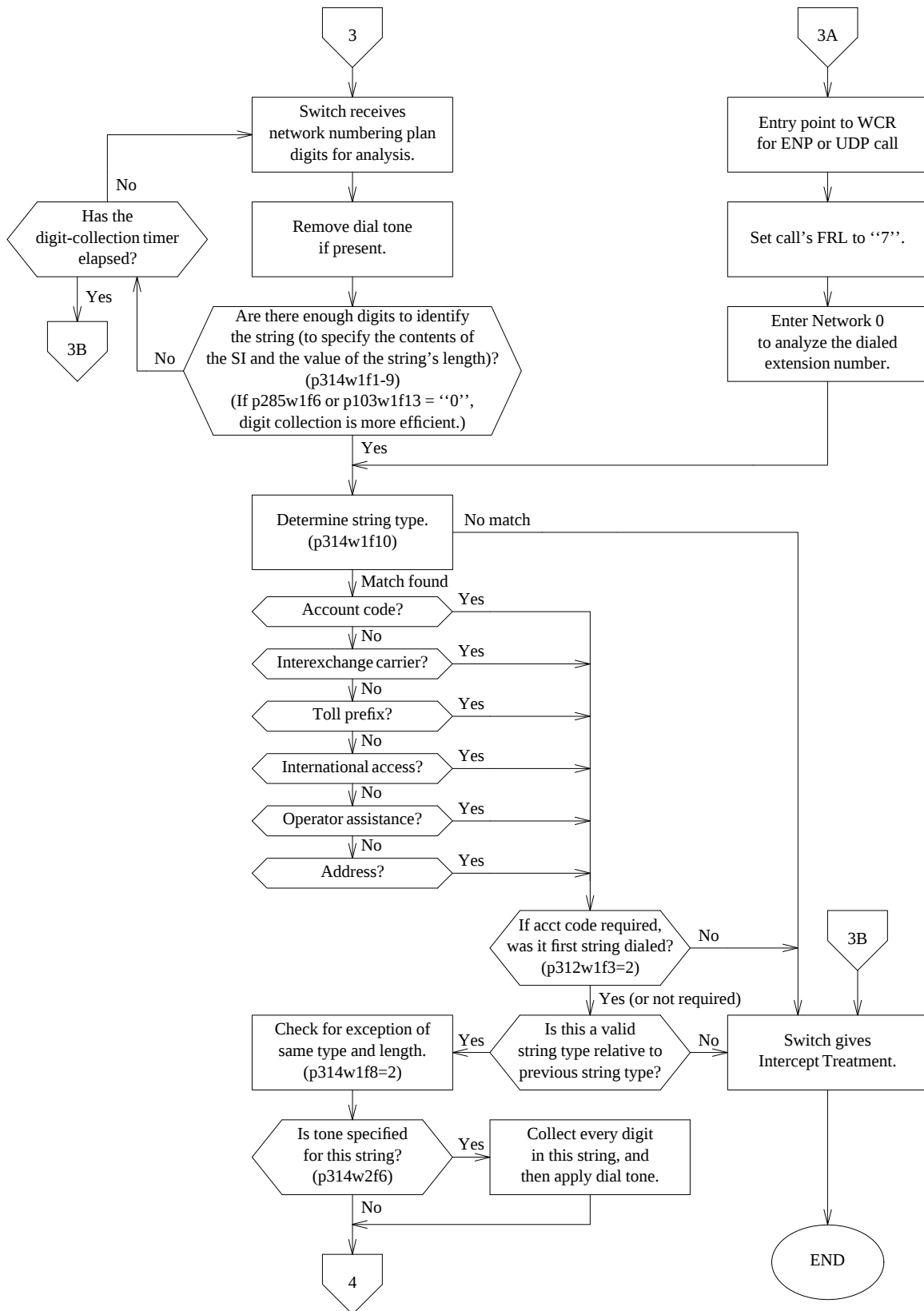


Figure 4-3. Network Digit Analysis — String Identification

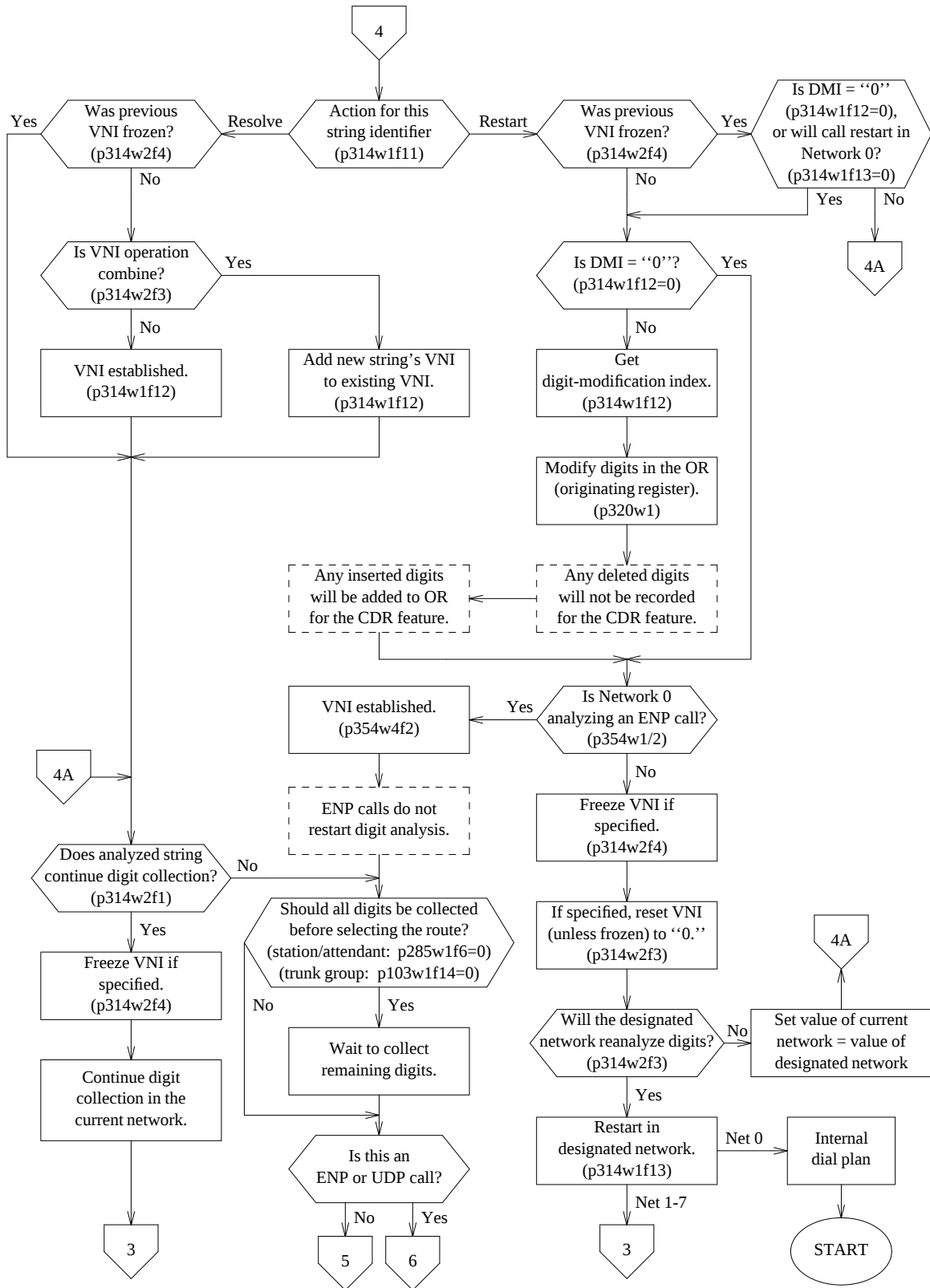


Figure 4-4. Network Digit Analysis — Determine VNI

4-6 WCR Feature Flow Diagram

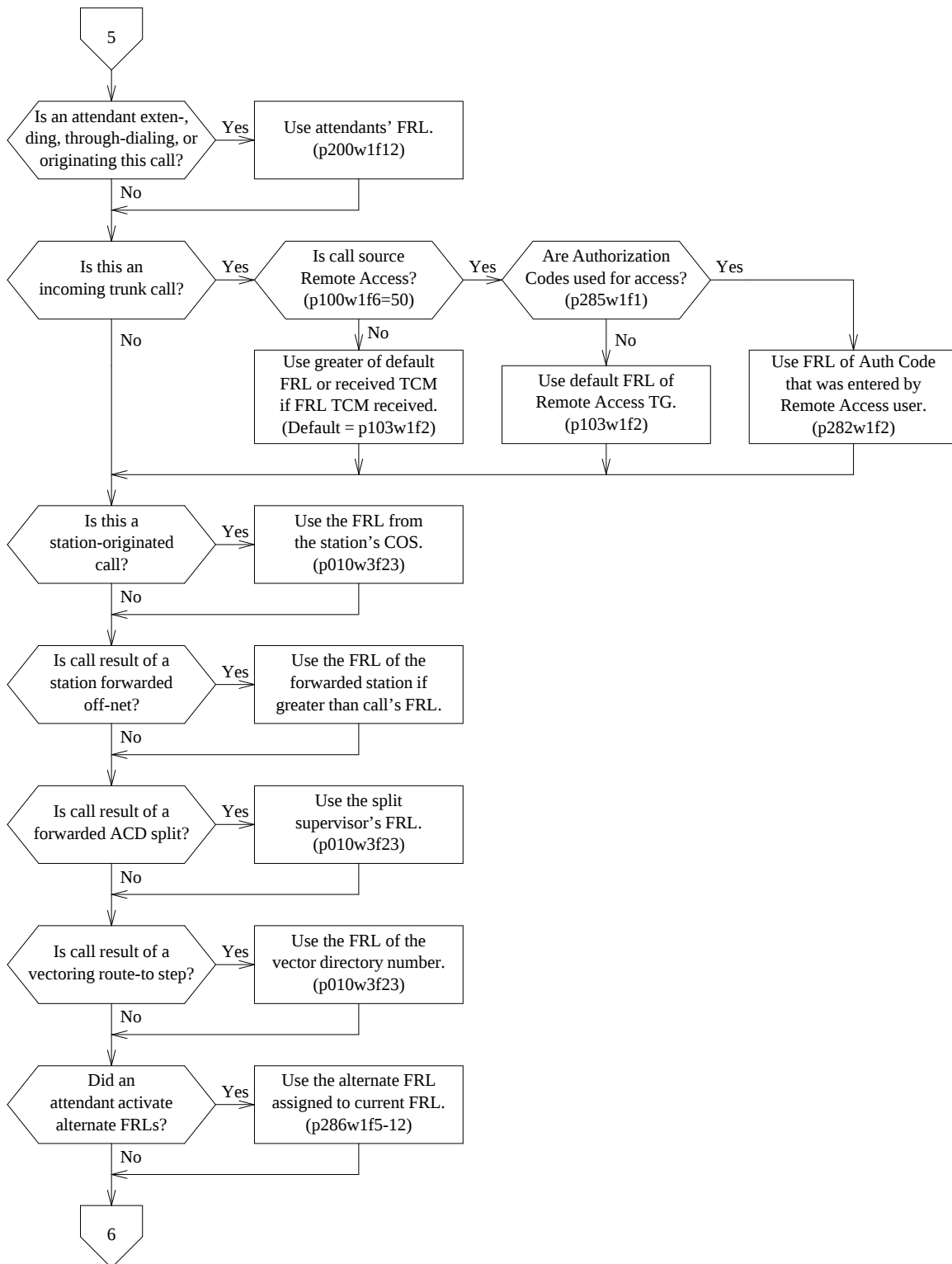


Figure 4-5. Determine Call's FRL

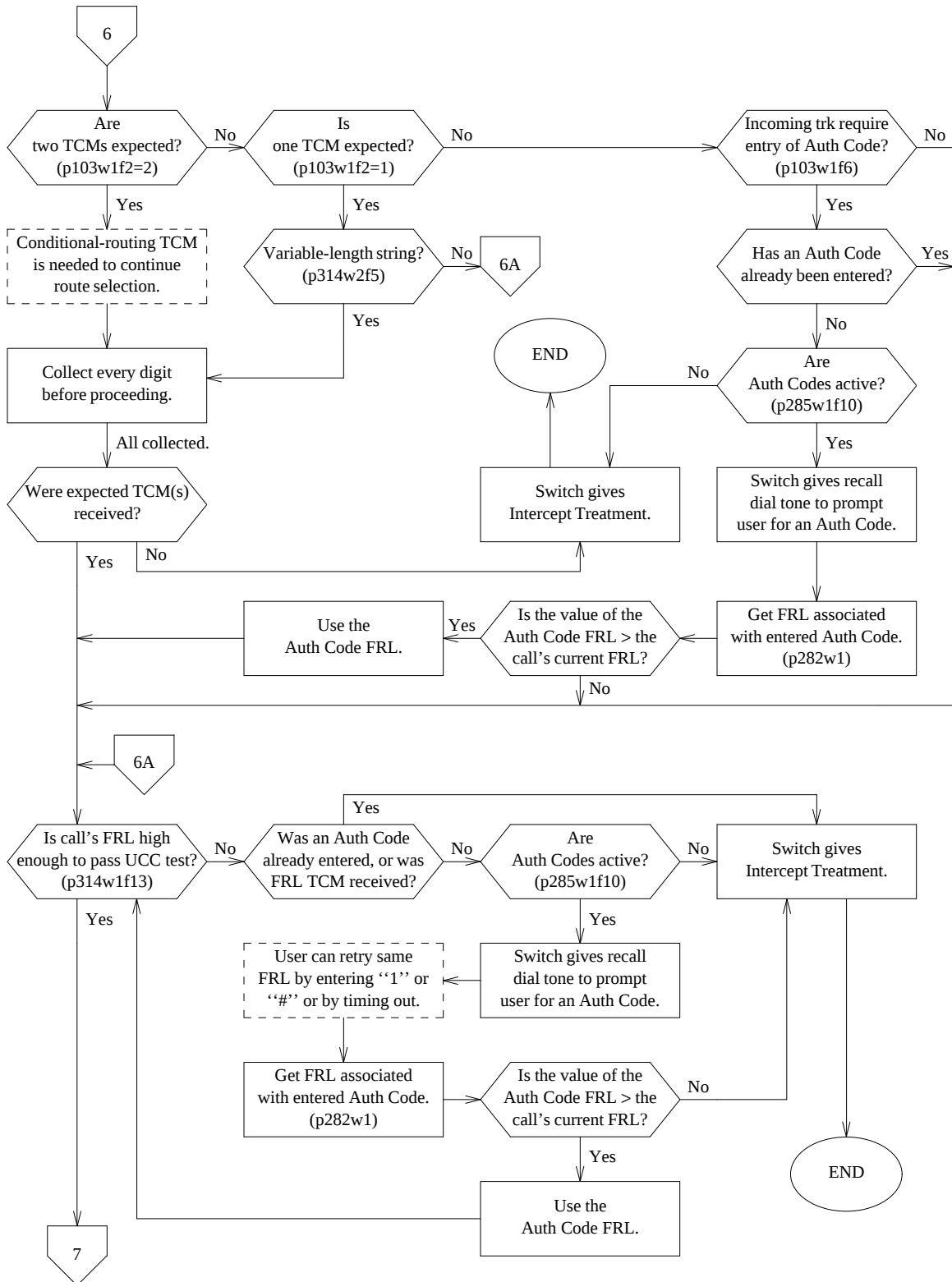


Figure 4-6. Check Permissions

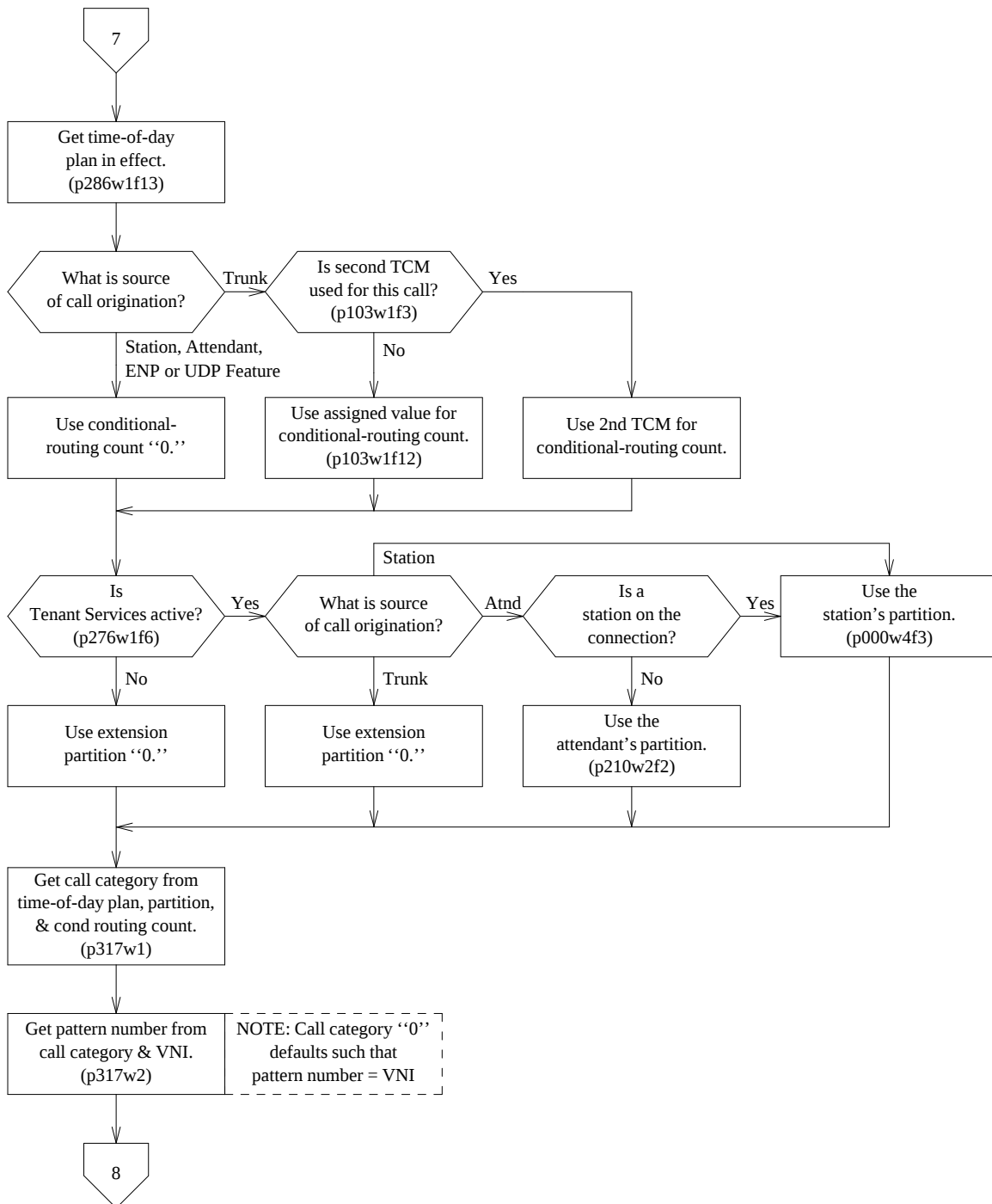


Figure 4-7. Pattern Selection

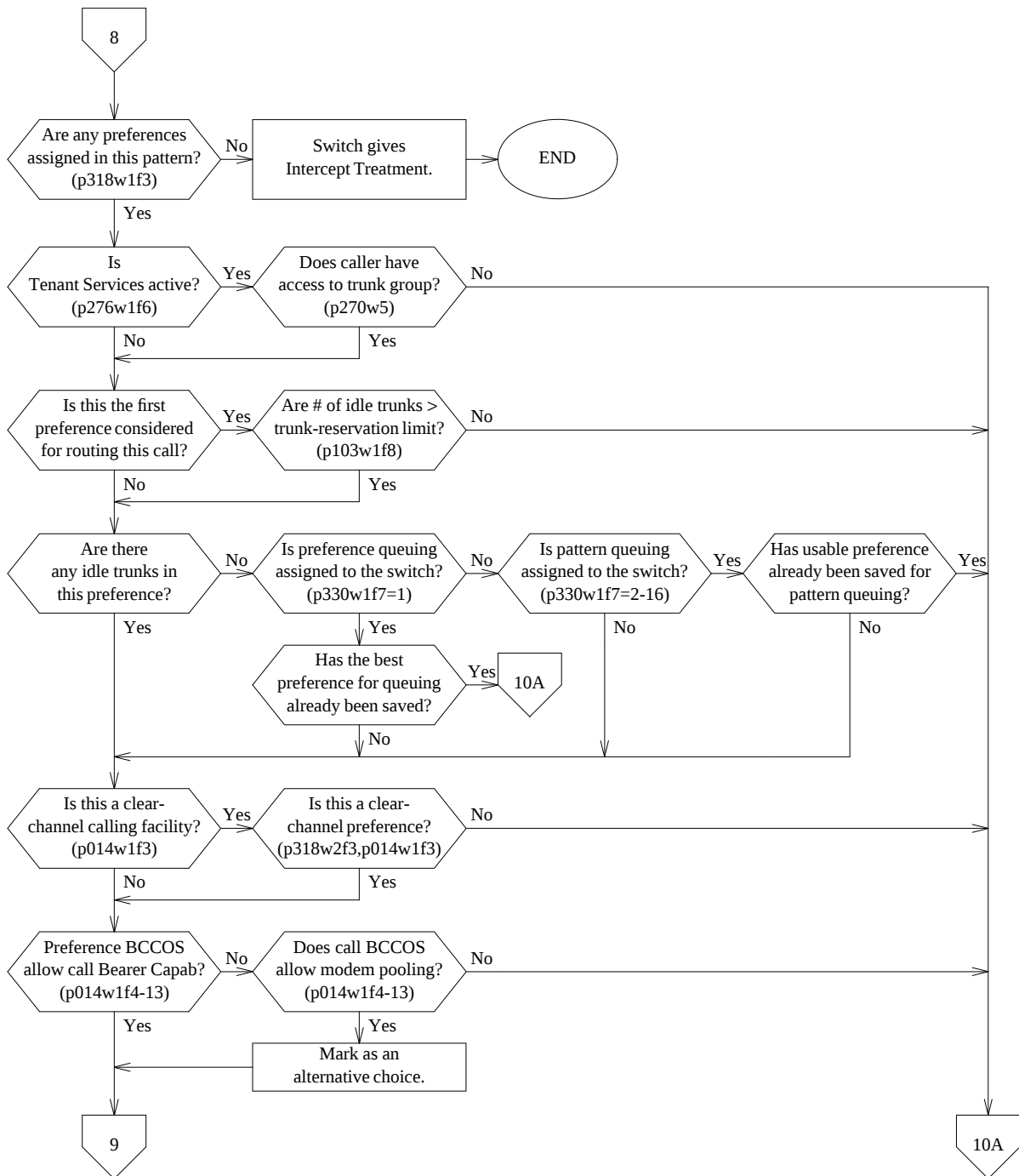


Figure 4-8. Preference Selection — Part 1 of 3

4-10 WCR Feature Flow Diagram

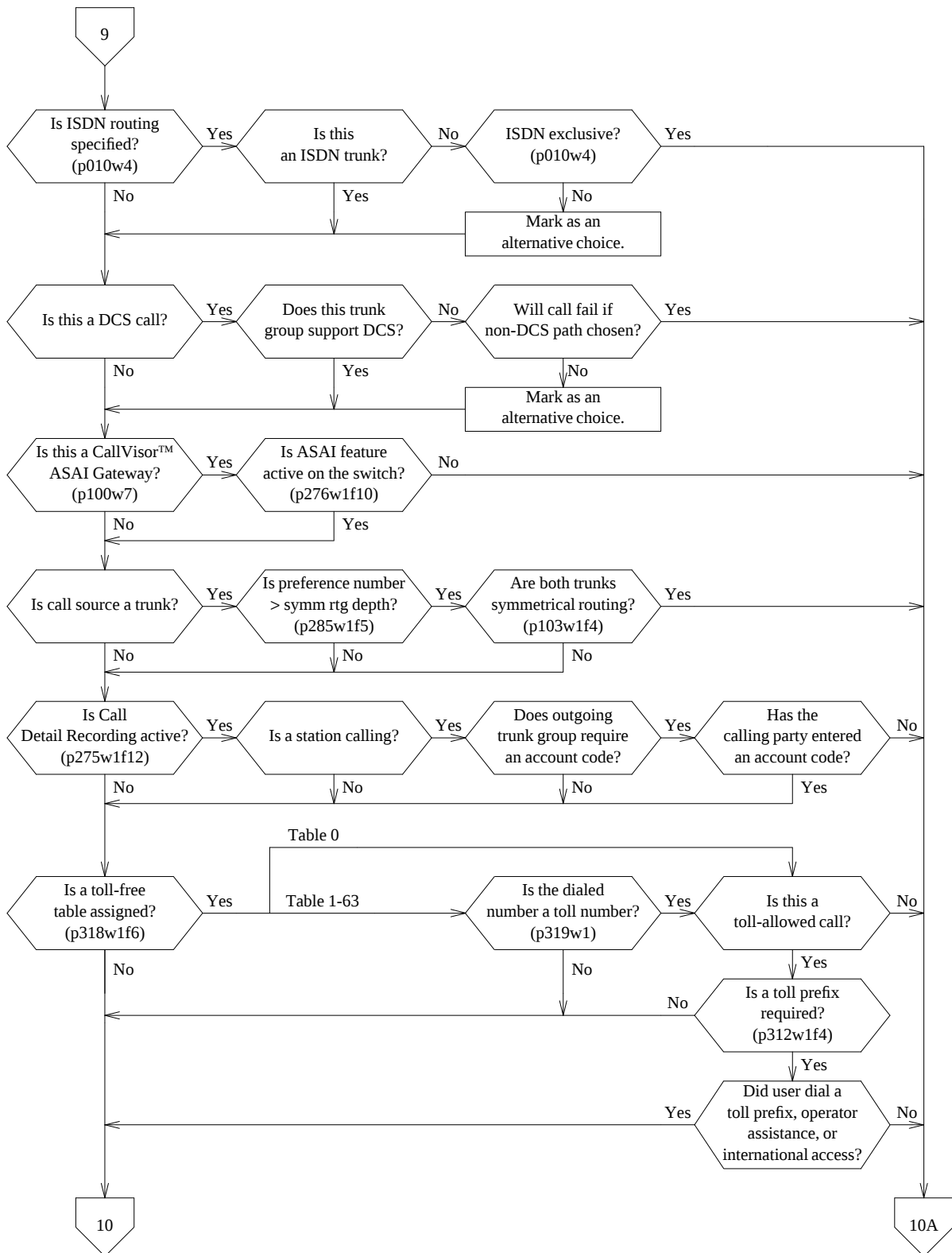


Figure 4-8. Preference Selection — Part 2 of 3

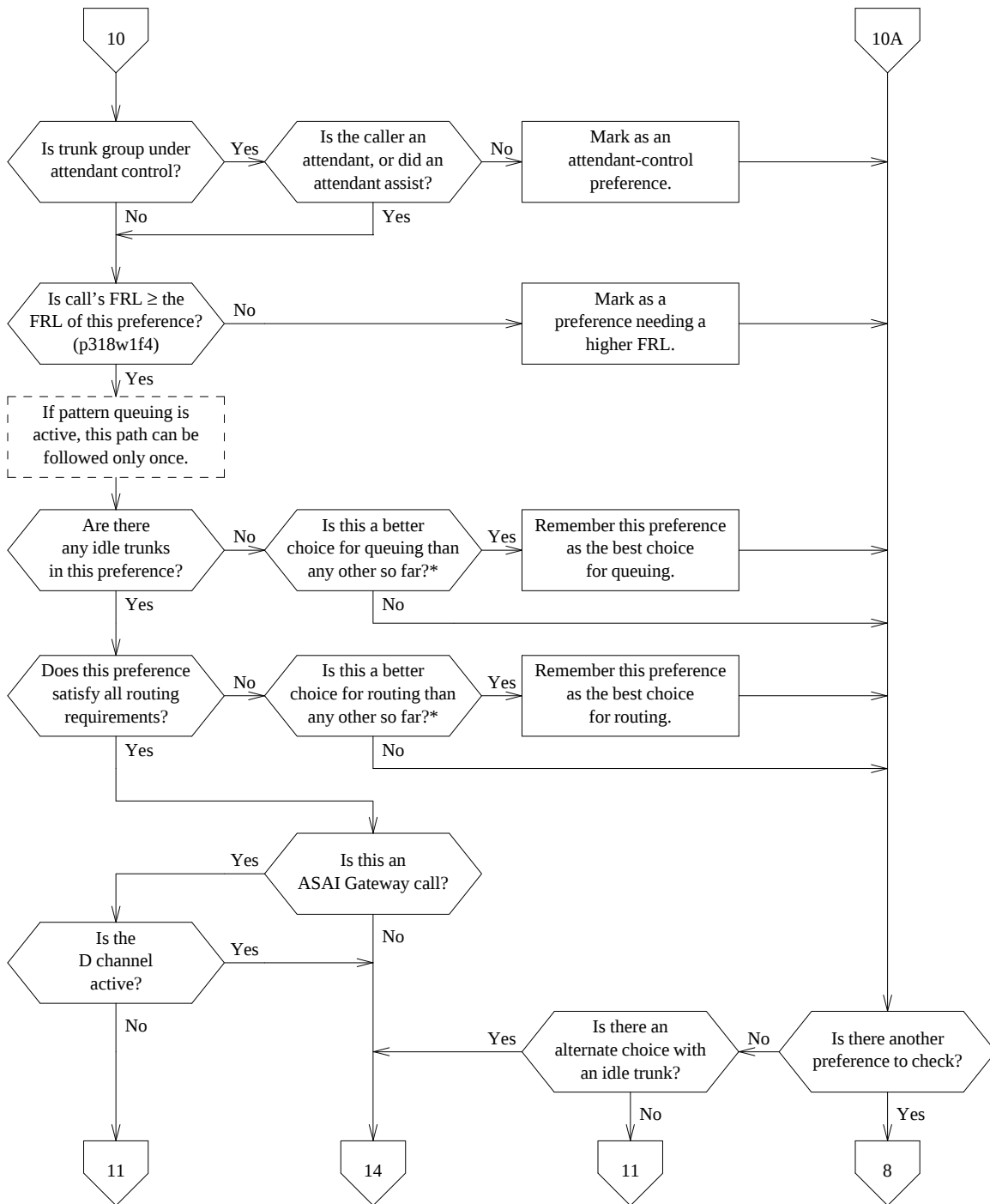


Figure 4-8. Preference Selection — Part 3 of 3

* Refer to the Preference Queuing definition in the Glossary for a list of the determining qualifications in descending order of priority.

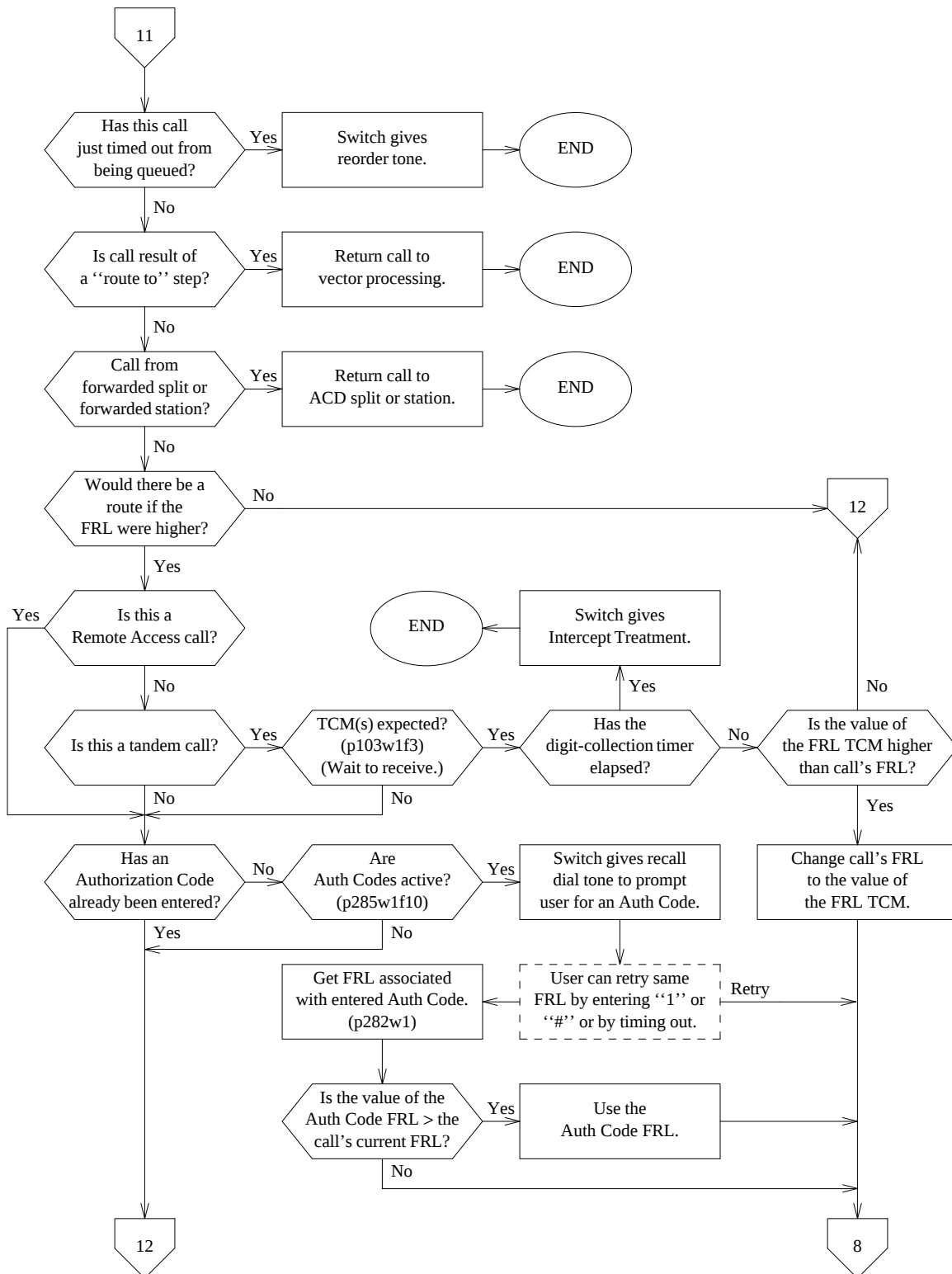


Figure 4-9. No Available Circuit

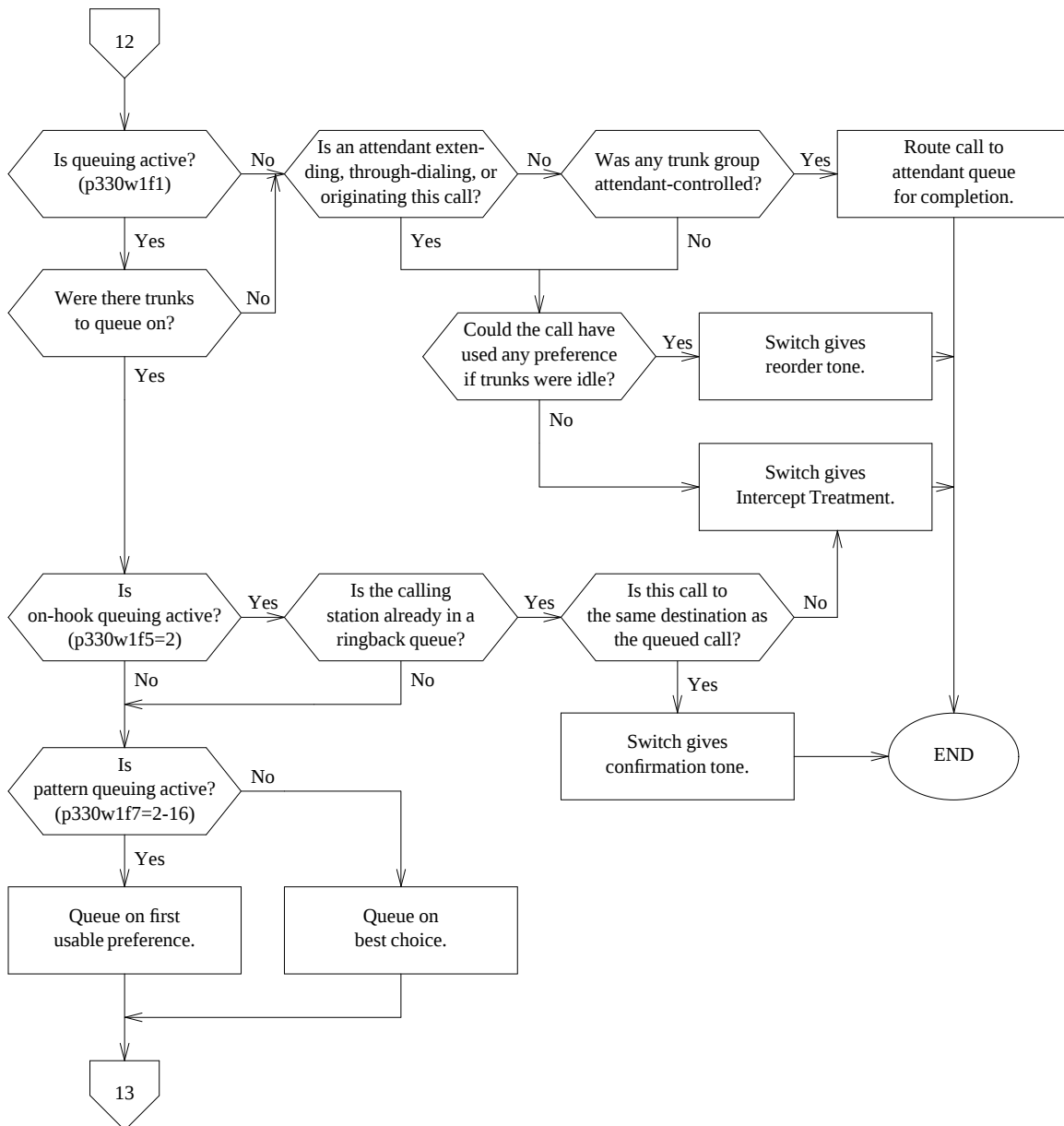


Figure 4-10. Queuing — Part 1 of 2

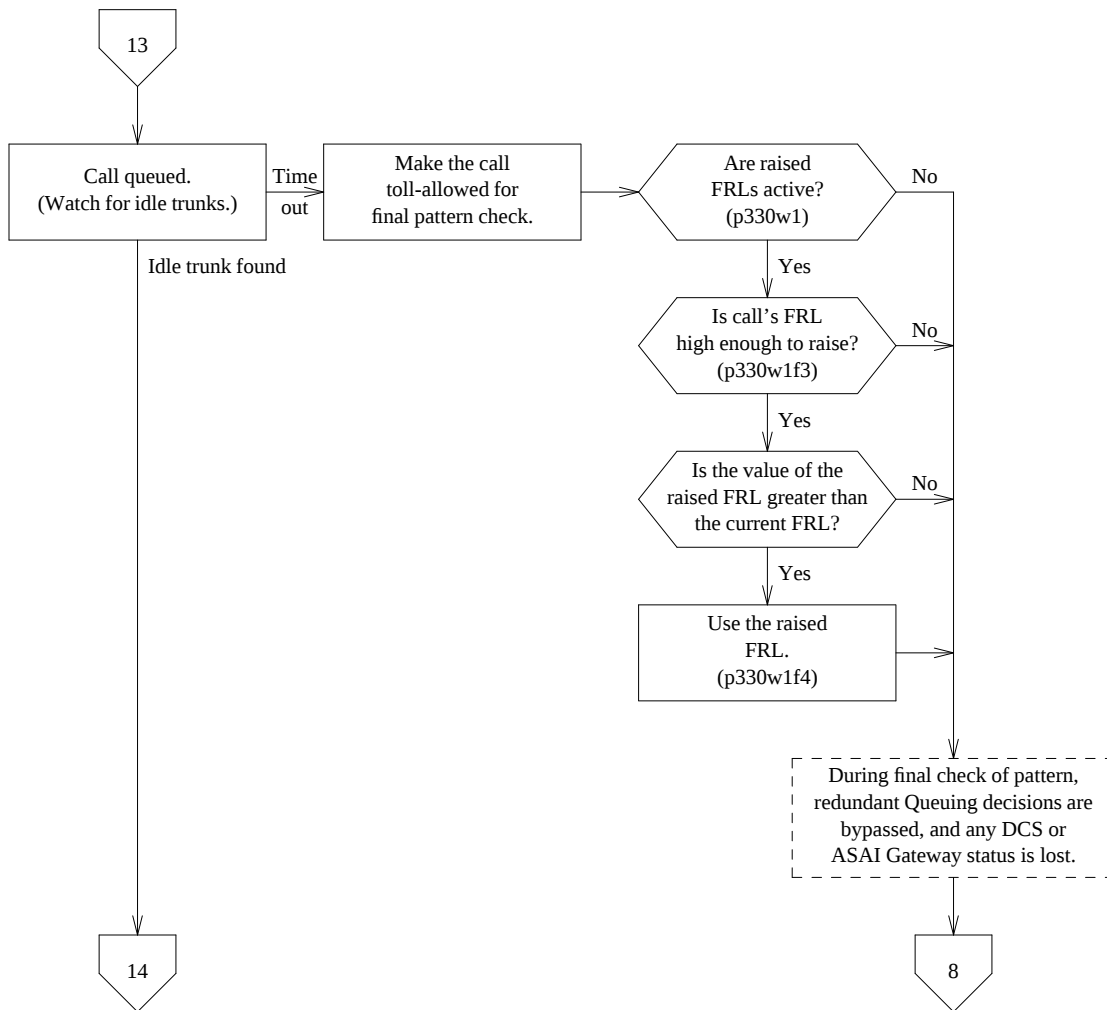


Figure 4-10. Queuing — Part 2 of 2

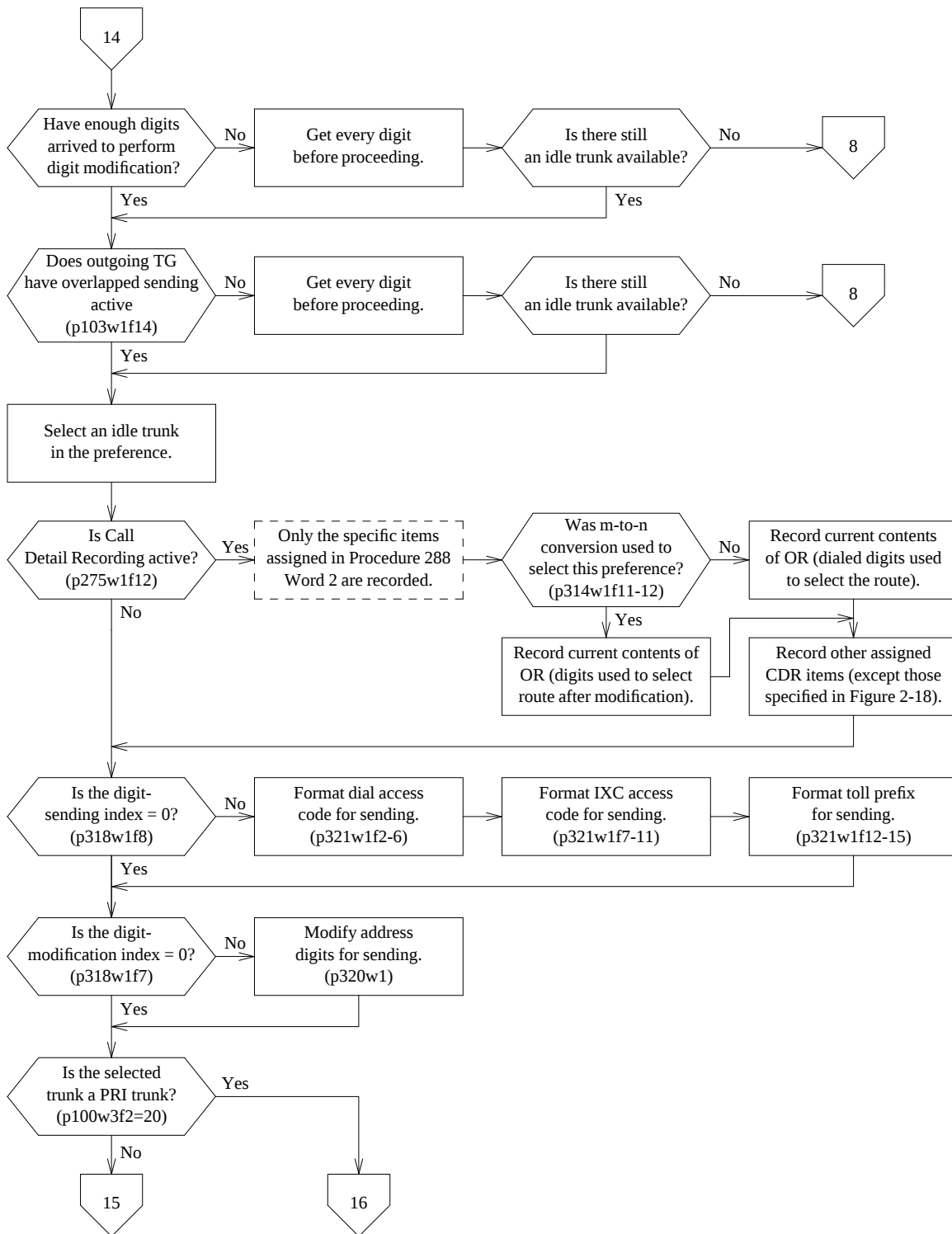


Figure 4-11. Digit Formatting and Modification

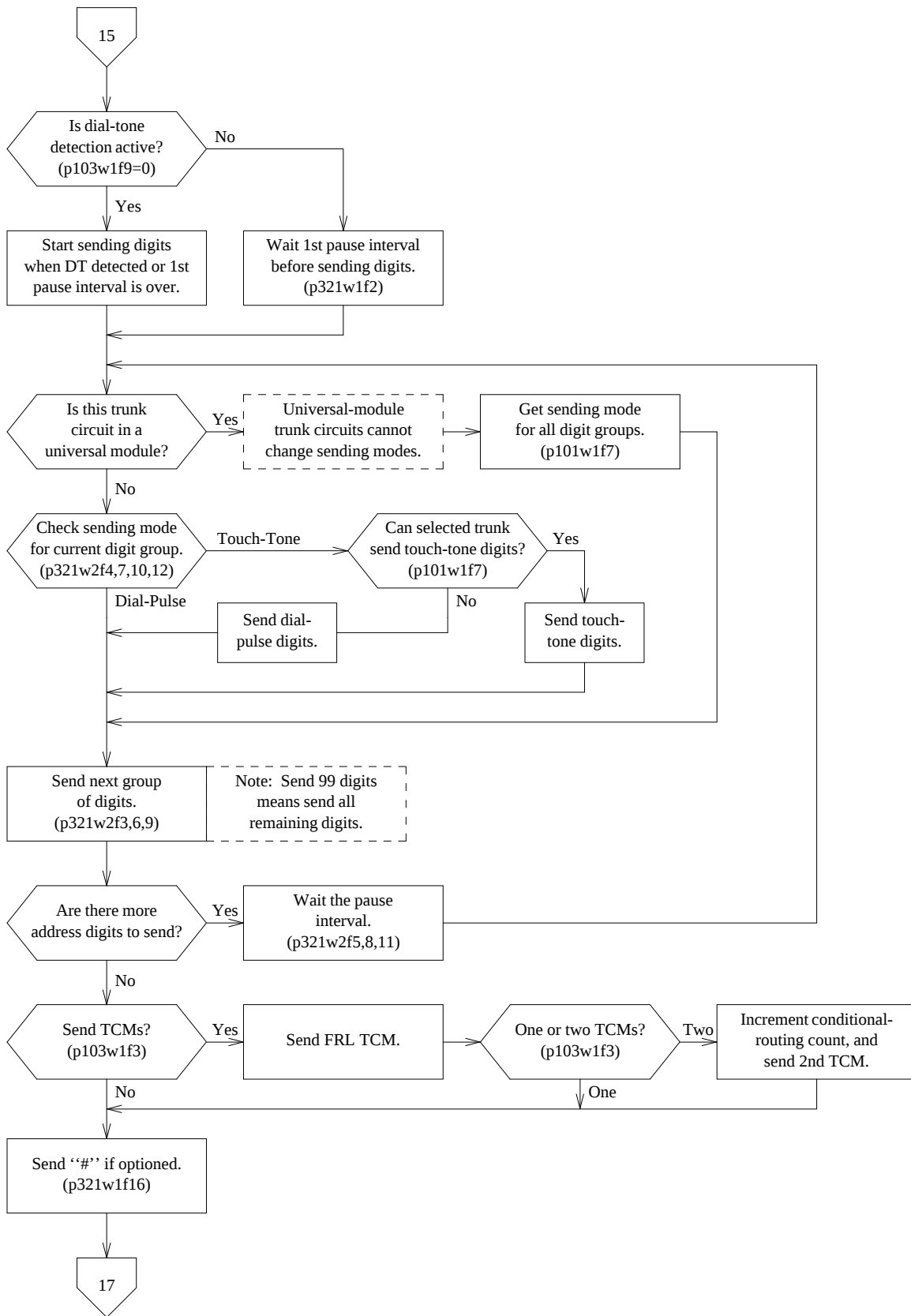
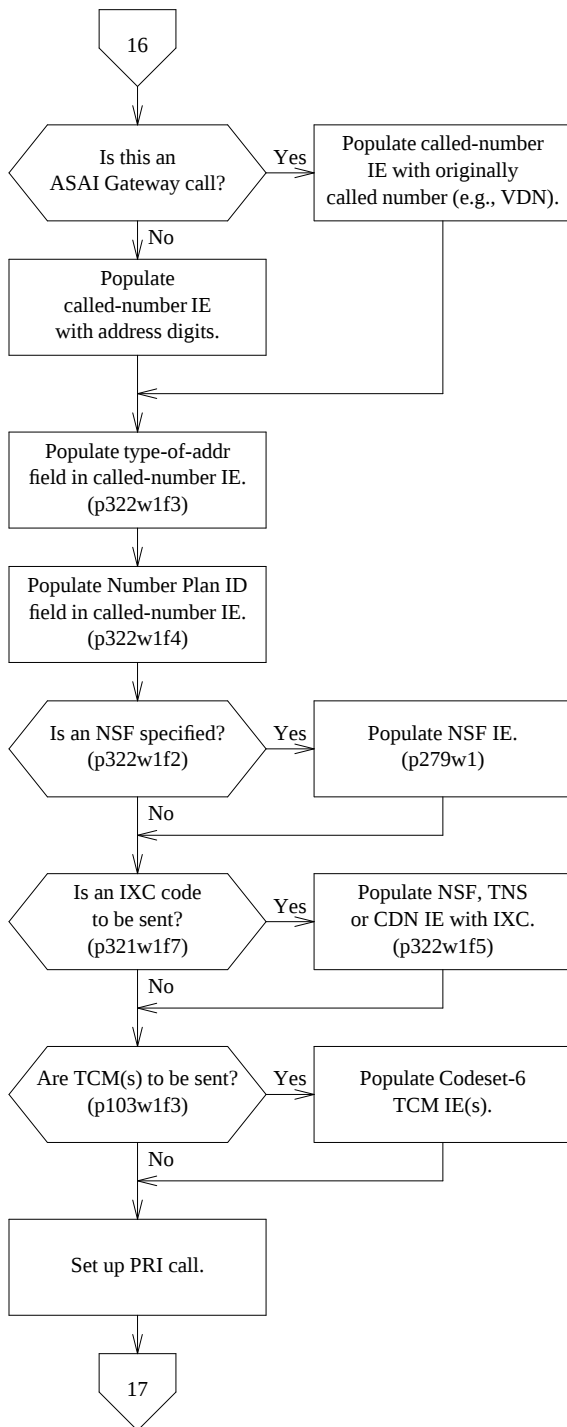


Figure 4-12. Digit Sending — Non-PRI

**Figure 4-13.** PRI Call Setup

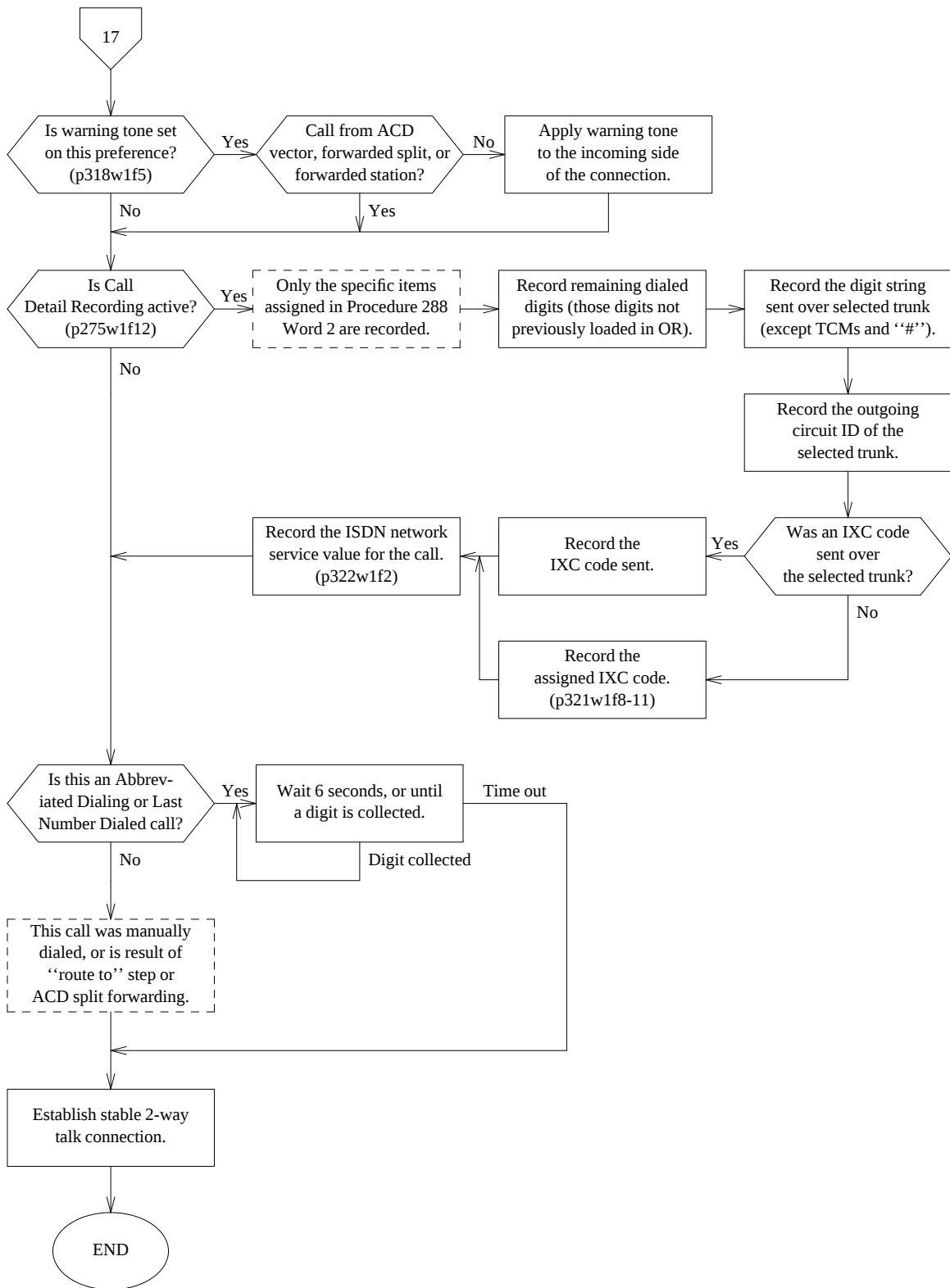


Figure 4-14. Establishing Stable Talk Connection

5. AAR/ARS vs WCR Comparative Administration

Chapter 5 reviews the pre-G2.2 routing functions and shows how the WCR feature can be assigned to emulate them. Although, the material in this chapter assumes a basic understanding of the Automatic Alternate Routing (AAR) and the Automatic Route Selection (ARS) features, a thorough understanding should not be necessary since the AAR/ARS and the corresponding WCR translations are segregated in context.

This chapter covers the following topics:

- Network trunk-group options
- Automatic Alternate Routing
- Automatic Route Selection
- Generalized route selection
- Toll prefix (dial “1”)
- Call Detail Recording
- Remote Access — no dial tone
- Digit collection — overlapped sending
- Digit prefixing
- Reserved digit
- AAR dial-tone suppression
- ISDN trunk groups
- Extension Number Portability
- RNX routing and uniform dial plan
- AUTOVON routing
- Traffic studies
- Upgrades

For each topic, the material first covers the function and its assignment in the pre-G2.2 routing environment, focusing on pre-G2.2 procedures drawn in the flipchart format. Then, after closing the first discussion with a solid horizontal line, the material covers the same function in the context of WCR routing, focusing on G2.2 procedures drawn in the Manager II format.

The contrasting administration formats should accommodate both readers who are more familiar with pre-G2.2 routing features and their assignment in the MAAP format, and readers who are less so. The contrasting formats and the horizontal dividing lines will also conceptually separate the translation modes when this manual is used for reference.

Those readers who are unfamiliar with pre-G2.2 AAR and ARS routing should concentrate on the WCR material following each horizontal line.

5.1 Network Trunk-Group Options

Before G2.2, Procedure 103 Fields 3 (network trunk), 4 (main/tandem), and 13 (second TCM) controlled several aspects of AAR and ARS. These fields have been removed for the WCR feature. This section describes how Fields 3, 4, and 13 affected AAR and ARS and describes the new fields provided for WCR.

5.1.1 Traveling Class Marks

FLTPCHART ISSUE 8		NETWORK - TRUNK GROUP TRANSLATION														845552223													
INPUT FIELDS: DISPLAY: 1 ADD: 1-15 REMOVE: NOT ALLOWED CHANGE: 2-15 NEXT DATA: NOT ALLOWED		SPECIAL ERROR CODES: 83-THE AAR/ARS PREFIX (FIELD 9) IS FOR TIE TRUNKS ONLY. IF THIS IS NOT A TIE TRUNK OR APLT TRUNK AND AAR/ARS IS AVAILABLE, FIELD 9 MUST BE A DASH. 85-FIELDS 3 AND 4 MUST BOTH BE SET TO 1 IN ORDER TO SET FIELD 13 TO 1. 86-THE ADDITIONAL DIGIT FOR DID MUST BE REMOVED IN PROC 101 WORD 1 BEFORE AAR/ARS PREFIX DIGIT CAN BE ADDED OR CHANGED.										NOTES: 1. WHEN ADDING A NEW TRUNK GROUP, PROC 100 WORD 1 MUST BE USED FIRST. 2. ENABLE FIELD 5 ONLY IF TRUNK GROUP IS TIE TRUNK OR APLT. 3. FRLS CAN ONLY BE ASSIGNED TO TRUNK GROUPS THAT ARE PART OF AN AAR/ARS PATTERN.																	
TRUNK GROUP 1		R F E L A S C T R V I L E I C L T T V I O N 2		N E T W O R K 3		M A I N / T A N D E M 4		I N C A O R M R T / A N A P G R L S T O 5		A C O U T D H E O R R E Z O A U T I R O E S N D 7		B A I L D L G O E W E O D N 7		TRUNK RESERVATION LIMIT 8		A P A R E / F A I R X S 9		P R P D E R C P E E P M S R A I U T O S S I O N G C H R O 10		A S C U O R D O A I U I T T I O N G A L 11		C O N D S E T C C O M N D 12		C O D L I L G E I C T T I O N 13		C A B P E A B R I E L I T Y 14		NETWORK TRK GRP TRANSL 103	

The first traveling class mark (TCM), the Facility Restriction Level (FRL) TCM, is sent and received over an intertandem trunk group (usually with trunk type “41”) when Fields 3 and 4 of Procedure 103 are both set to “1.”

If the FRL TCM is being sent, a second TCM, called the conditional routing TCM, can also be sent and received by setting Field 13 of Procedure 103 to “1.”

ENHANCED MODE - PROCEDURE: 103, WORD: 1
 NETWORK TRUNK GROUP TRANSLATION

1.	Trunk Group:	---	
2.	Facility Restriction Level:	-	
3.	Traveling Class Marks:	-	←
4.	Symmetrical Route:	-	←
5.	Incoming Tie/APLT Access to WCR:	-	
6.	Authorization Code Required:	-	
7.	Bridge-On Allowed:	-	
8.	Trunk Reservation Limit:	--	
9.	Dial Tone Detect Ignore:	-	
10.	Data Protection (Permanent):	-	
11.	Remote Access Echo Suppressor:	-	
12.	Conditional Routing:	-	
13.	Route Selection Method:	-	
14.	Outgoing Overlapped Sending:	-	
15.	Suppress Dial Tone:	-	

Connected to CC0 ON-LINE ♥

enter command:

2 Repeat 3 Form

Help Field Input Cmds

Beginning with G2.2, Field 3 of Procedure 103 Word 1 is used to assign the number of TCMs that a trunk group will send and receive. The legal values are:

Encode	Meaning
0	Do not send or expect to receive any TCMs
1	Send and expect to receive the FRL TCM
2	Send and expect to receive both TCMs

5.1.2 Subnetwork Trunking

Before G2.2, if Fields 3 and 4 of Procedure 103 Word 1 were both set to “1” so that one or two TCMs were sent and received over a trunk group, any subnetwork trunking assigned to an AAR/ARS preference *was not* performed for the preference’s trunk group.

Beginning with G2.2, the WCR feature executes subnetwork trunking assignments regardless of TCM sending assignments. For example, if Field 3 of Procedure 103 Word 1 is set to “1” or “2” so that one or two TCMs are sent and received over a trunk group, any digit modification assigned to a WCR preference in Procedures 318 and 320 or any digit grouping assigned in Procedure 321 *is* performed for the preference’s trunk group.

NOTE

WCR digit modification never applies to TCM digits. The switch always sends the assigned TCMs immediately after sending the last digit group over the trunk group.

5.1.3 Symmetrical Routing

FLTPCHART ISSUE 8		SYSTEM COS - NETWORK										845552223		
INPUT FIELDS: DISPLAY: NONE ADD: NOT ALLOWED REMOVE: NOT ALLOWED CHANGE: 1-10 & 12 SEE NOTES 2 & 3 NEXT DATA: NOT ALLOWED					SPECIAL ERROR CODES: 81- FIELDS 6 AND 7 MUST NOT BE THE SAME UNLESS BOTH ARE ZERO. A ZERO ENTERED IN FIELD 6 OR 7 INDICATES NO ACCOUNT CODE PREFIX OR RESERVED DIGIT. FIELD 6 OR 7 MUST NOT BE THE SAME AS THE FIRST DIGIT OF ANY LOCATION CODE (SEE PROC 321 WORD 4. 82- REMOVE REMOTE ACCESS TRUNK GROUP TERMINATION IN PROC 115 WORD 1 BEFORE CHANGING FROM SPEAKER VERIFICATION.					NOTES: 1. CHANGES MADE IN THIS PROCEDURE AFFECT THE TOTAL NETWORK. 2. THE EXTENSIONS IN FIELDS 8 AND 9 MUST BE ASSIGNED IN PROC 000 WORD 1 BEFORE ENTRY. 3. WHEN THE COS TRANSLATION IS DISPLAYED, DASHES APPEAR IN FIELDS ASSOCIATED WITH FEATURES THAT ARE NOT ACTIVE ON THIS SYSTEM. IN DOING A CHANGE ROUTINE, ONLY DASHES ARE PERMITTED IN THESE FIELDS.				
A C C R E E D I T I O N C O D E	NETWORK UNIFORM NUMBER PLAN		S Y M M E T R I C A L R O U T I N G	P R E F E R E N C E N U M B E R	R E S E R V E D D I G I T	E X T E N S I O N V E R I F I C A T I O N	R E M O T E M A I N T E N A N C E E X T E N S I O N	A U T H O R I Z A T I O N C O D E	R E S E R V E D D I G I T	S Y S T E M C O S	N E T W O R K			
	LOCATION CODE DIGITS	EXTENSION NUMBER DIGITS												
1	2	3	4	5	6	7	8	9	10	11	12	285		

Before G2.2, the symmetrical-routing depth was assigned in Field 5 of Procedure 285 Word 1. If a call arrived over a trunk group where Fields 3 and 4 of Procedure 103 Word 1 were both set to “1” and the symmetrical routing depth field was set to a nonzero value, then the incoming trunk group was part of a symmetrical route. After a pattern was selected for routing, an outgoing preference was ignored if the preference’s trunk group had Fields 3 and 4 of Procedure 103 Word 1 both set to “1” and if the preference’s number in the pattern was greater than the symmetrical routing depth.

Example: Suppose that the symmetrical-routing depth was set to “2” and that the pattern selected for routing contained four preferences referring to outgoing trunk groups with the following assignments in Procedure 103 Word 1.

1. Field 3 = “1,” Field 4 = “1”
2. Field 3 = “1,” Field 4 = “0”
3. Field 3 = “1,” Field 4 = “1”
4. Field 3 = “1,” Field 4 = “0”

A call arrived over a trunk group with Fields 3 and 4 of Procedure 103 Word 1 both set to “1.” If there were no available trunks in the trunk groups used by Preferences 1 and 2, then Preference 3 was examined. However, the AAR/ARS software skipped Preference 3 because the trunk group used by Preference 3 had both fields set to “1” and the preference number (3) was greater than the symmetrical routing depth (2). Preference 4 could be used because both fields of this preference’s trunk group were not set to “1” (Field 4 = “0”).

Beginning with G2.2, the symmetrical routing depth is still assigned in Field 5 of Procedure 285 Word 1. If a call arrives over a trunk group where the symmetrical routing field (Field 4) of Procedure 103 Word 1 is set to “1,” then the trunk group is part of a symmetrical route. And, if the symmetrical routing depth field is set to a nonzero value, then symmetrical routing occurs. After a pattern is selected for routing, an outgoing preference is ignored if the preference’s trunk group has Field 4 of Procedure 103 Word 1 set to “1” and if the preference’s number in the pattern is greater than the symmetrical routing depth.

To emulate the previous AAR/ARS operation for a G2.2 upgrade, set the G2.2 symmetrical route field (Field 4) to “1” for every trunk group (incoming and outgoing) where the pre-G2.2 network trunk (Field 3) and the main/tandem (Field 4) fields are both set to “1.” Set the G2.2 symmetrical route field to “0” for every trunk group where the pre-G2.2 network trunk and main/tandem fields are set either to “0, 0” or “1, 0.”

5.2 Automatic Alternate Routing

5.2.1 Location Code (RNX) to Pattern Number

FLIPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - ROUTING					845552223									
INPUT FIELDS: DISPLAY: SEE TABLE ON WORD 4B ADD: 1-5, SEE ERROR CODE 81 REMOVE: 1-5 CHANGE: 1-5 (AFTER DISPLAY ONLY) NEXT DATA: SEE TABLE ON WORD 4B		SPECIAL ERROR CODES: 81-AN ADD OR CHANGE ROUTINE CANNOT BE DONE TO A LOCATION CODE THAT BEGINS WITH THE CHARGE CODE PREFIX OR RESERVED DIGIT. (SEE PROC 285 WORD 1). 82-THIS CODE IS ALREADY ASSIGNED, USE THE CHANGE ROUTINE. 83-TO USE THE DISPLAY OR NEXT DATA ROUTINES. SEE WORD 4B. 84-FIRST DIGIT FIELD MUST BE SUPPLIED FOR FIVE-DIGIT DIALING PLANS ONLY IF IT IS A HOME RNX (PATTERN 641). 85-THE ENTERED LOCATION CODE (RNX) DOES NOT MAP TO THE ENTERED PATTERN NUMBER.					86-FIRST DIGIT FIELD MUST BE DASHED. YOU CANNOT ADMINISTER A PATTERN AND A FIRST DIGIT TO ONE RNX. 87-THE NODE NUMBER HAS PREVIOUSLY BEEN ASSIGNED TO A DIFFERENT PATTERN NUMBER. USE THE CHANGE ROUTINE. 88-A FIRST DIGIT CAN ONLY BE TRANSLATED IN A FIVE DIGIT DIALING PLAN. 89-THE NUMBER OF DIGITS IN THE LOCATION CODE HAS NOT BEEN SET IN PROC 285 WORD 1.									
WORD 4	LOCATION CODE (RNX)	NODE NUMBER	CALL CATEGORY	PATTERN NUMBER	F D I I R R S S T T	AAR-ROUTING										
						321										

Before G2.2, the AAR feature correlated dialed location codes with routing patterns according to the translations in Procedure 321 Word 4.

The following assignment caused the location code “374” to route over a preference in Pattern 51 (neglecting the node-number and call-category assignments and accepting the default values).

FLIPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - ROUTING					845552223									
INPUT FIELDS: DISPLAY: SEE TABLE ON WORD 4B ADD: 1-5, SEE ERROR CODE 81 REMOVE: 1-5 CHANGE: 1-5 (AFTER DISPLAY ONLY) NEXT DATA: SEE TABLE ON WORD 4B		SPECIAL ERROR CODES: 81-AN ADD OR CHANGE ROUTINE CANNOT BE DONE TO A LOCATION CODE THAT BEGINS WITH THE CHARGE CODE PREFIX OR RESERVED DIGIT. (SEE PROC 285 WORD 1). 82-THIS CODE IS ALREADY ASSIGNED, USE THE CHANGE ROUTINE. 83-TO USE THE DISPLAY OR NEXT DATA ROUTINES. SEE WORD 4B. 84-FIRST DIGIT FIELD MUST BE SUPPLIED FOR FIVE-DIGIT DIALING PLANS ONLY IF IT IS A HOME RNX (PATTERN 641). 85-THE ENTERED LOCATION CODE (RNX) DOES NOT MAP TO THE ENTERED PATTERN NUMBER.					86-FIRST DIGIT FIELD MUST BE DASHED. YOU CANNOT ADMINISTER A PATTERN AND A FIRST DIGIT TO ONE RNX. 87-THE NODE NUMBER HAS PREVIOUSLY BEEN ASSIGNED TO A DIFFERENT PATTERN NUMBER. USE THE CHANGE ROUTINE. 88-A FIRST DIGIT CAN ONLY BE TRANSLATED IN A FIVE DIGIT DIALING PLAN. 89-THE NUMBER OF DIGITS IN THE LOCATION CODE HAS NOT BEEN SET IN PROC 285 WORD 1.									
WORD 4	LOCATION CODE (RNX)	NODE NUMBER	CALL CATEGORY	PATTERN NUMBER	F D I I R R S S T T	AAR-ROUTING										
	3 7 4	3 7 4	0	5 1	—	321										

Beginning with G2.2, the WCR feature correlates a dialed location code with a virtual nodepoint identifier (VNI) in Procedure 314 Word 1.

In the following assignment, Network 2 is being used as the WCR routing network for AAR (that is, private-network) calls. Therefore, location codes are assigned to this routing network as string identifiers for 7-digit address strings and are analyzed by this routing network.

The following assignment would cause the location code “374” to resolve to VNI 51.

ENHANCED MODE - PROCEDURE: 314, WORD: 1

NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION

STRING IDENTIFIER

1. Digit 1:

3

2. Digit 2:

7

3. Digit 3:

4

4. Digit 4:

--

5. Digit 5:

--

6. Digit 6:

--

7. Segment:

1

8. Last Segment:

1

Last Segment - Add to Standard Network

9. String Length:

7

10. String Type:

6

Address

11. Action:

0

Resolve

12. Action Object:

51

Virtual Nodepoint Identifier

13. Action Attribute:

0

Facility Restriction Level

14. Network Number:

2

Connected to CC0 ON-LINE

MAJOR

MINOR

RUN TAPE

BUSY OUT

IN USE

WAIT

enter command: p314w1 3 7 4 ;;;1 1 7 6 0 51 0 2 axdx_

2 Repeat

3 Form

5 Help

6 Field

7 Input

8 Cmds

5.2.2 Network Uniform Numbering Plan

FLTPCHART

ISSUE 8

SYSTEM COS - NETWORK

845552223

INPUT FIELDS:

DISPLAY: NONE

ADD: NOT ALLOWED

REMOVE: NOT ALLOWED

CHANGE: 1-10 & 12 SEE NOTES 2 & 3

NEXT DATA: NOT ALLOWED

SPECIAL ERROR CODES:

81-FIELDS 6 AND 7 MUST NOT BE THE SAME UNLESS BOTH ARE ZERO. A ZERO ENTERED IN FIELD 6 OR 7 INDICATES NO ACCOUNT CODE PREFIX OR RESERVED DIGIT. FIELD 6 OR 7 MUST NOT BE THE SAME AS THE FIRST DIGIT OF ANY LOCATION CODE (SEE PROC 321

WORD 4:

82-REMOVE REMOTE ACCESS TRUNK GROUP TERMINATION IN PROC 115

WORD 1 BEFORE CHANGING FROM SPEAKER VERIFICATION.

NOTES:

1. CHANGES MADE IN THIS PROCEDURE AFFECT THE TOTAL NETWORK.

2. THE EXTENSIONS IN FIELDS 8 AND 9 MUST BE ASSIGNED IN PROC 000 WORD 1 BEFORE ENTRY.

3. WHEN THE COS TRANSLATION IS DISPLAYED, DASHES APPEAR IN FIELDS ASSOCIATED WITH FEATUREES THAT ARE NOT ACTIVE ON THIS SYSTEM. IN DOING A CHANGE ROUTINE, ONLY DASHES ARE PERMITTED IN THESE FIELDS.

ACRESUOITCDEDE

1

2

3

4

5

6

7

8

9

10

11

12

SYSTEM COS NETWORK

285

Before G2.2, the number of digits in the location codes and extension numbers contained in a private network were assigned in Fields 2 and 3 of Procedure 285 Word 1. Procedure 321 Word 4 then used these values to verify the number of digits entered in Field 1 (the location code field). For the previous example, Field 2 (number of digits in location code) would have been set to “3,” and Field 3 (number of extension digits) would have been set to “4.”

Beginning with G2.2, Fields 2 and 3 of Procedure 285 Word 1 are removed, and the switch does not enforce conformance with a uniform numbering plan for the strings assigned in Procedure 314 Word 1. Therefore, to provide a uniform numbering plan for a private network,

every private-network address string assigned in Procedure 314 Word 1 must have the same string length (Field 9) and every location code (usually assigned as the string identifier in Fields 1 and 2 or in Fields 1, 2, and 3) must have the same number of digits.

If a private network contains 2-digit location codes (for example, “37”) and 3-digit extension numbers, private-network numbers are usually assigned as shown in the following example. The location code is entered in Fields 1 and 2, and the string length (Field 9) is set to “5.”

ENHANCED MODE - PROCEDURE: 314, WORD: 1
 NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION

STRING IDENTIFIER

1. Digit 1:

2. Digit 2:

3. Digit 3:

4. Digit 4:

5. Digit 5:

6. Digit 6:

7. Segment:

8. Last Segment: Last Segment - Add to Standard Network

9. String Length:

10. String Type: Address

11. Action: Resolve

12. Action Object: Virtual Nodepoint Identifier

13. Action Attribute: Facility Restriction Level

14. Network Number:

Connected to CC0 ON-LINE ▼

enter command: p314w1 3 7 ;;;;1 1 5 6 0 51 0 2 axdx_

5.2.3 Home RNX with a 5-Digit Dial Plan

Before G2.2, private-network numbers were converted to extension numbers according to the translations in Procedure 321 Word 4. Using a network with a 5-digit dial plan where the digit “6” is assigned (in Procedure 350 Word 1) as the first digit of the extension numbers, this conversion would be made with the following assignment.

FLIPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - ROUTING					845552223
INPUT FIELDS: DISPLAY: SEE TABLE ON WORD 4B ADD: 1-5, SEE ERROR CODE 81 REMOVE: 1-5 CHANGE: 1-5 (AFTER DISPLAY ONLY) NEXT DATA: SEE TABLE ON WORD 4B		SPECIAL ERROR CODES: 81-AN ADD OR CHANGE ROUTINE CANNOT BE DONE TO A LOCATION CODE THAT BEGINS WITH THE CHARGE CODE PREFIX OR RESERVED DIGIT. (SEE PROC 285 WORD 1). 82-THIS CODE IS ALREADY ASSIGNED, USE THE CHANGE ROUTINE. 83-TO USE THE DISPLAY OR NEXT DATA ROUTINES, SEE WORD 4B. 84-FIRST DIGIT FIELD MUST BE SUPPLIED FOR FIVE-DIGIT DIALING PLANS ONLY IF IT IS A HOME RNX (PATTERN 641). 85-THE ENTERED LOCATION CODE (RNK) DOES NOT MAP TO THE ENTERED PATTERN NUMBER.			86-FIRST DIGIT FIELD MUST BE DASHED. YOU CANNOT ADMINISTER A PATTERN AND A FIRST DIGIT TO ONE RNK. 87-THE NODE NUMBER HAS PREVIOUSLY BEEN ASSIGNED TO A DIFFERENT PATTERN NUMBER. USE THE CHANGE ROUTINE. 88-A FIRST DIGIT CAN ONLY BE TRANSLATED IN A FIVE DIGIT DIALING PLAN. 89-THE NUMBER OF DIGITS IN THE LOCATION CODE HAS NOT BEEN SET IN PROC 285 WORD 1.		
WORD 4	LOCATION CODE (RNK)	NODE NUMBER	CALL CATEGORY	PATTERN NUMBER	F D I I R O S I T T	AAR-ROUTING	
3	7 4	— — —	— — —	— — —	6	321	
	1	2	3	4	5		

Beginning with G2.2, a home RNX (like any other RNX) is part of an address string in the WCR routing network for AAR calls. To specify that a specific RNX is a “home” RNX, assign Procedure 314 Word 1 so that digit analysis “restarts” in Network 0 (the WCR interface to the internal dialing plan). This is done by setting the action field (Field 11) to “1” and the action attribute field (Field 13) to “0.”

Meanwhile, digit modification changes the 7-digit AAR number into a 5-digit extension number. The digit-modification index “99” is used in this example, but the details of digit modification are not discussed here. For now, assume that the digit-modification index “99” deletes 3 digits and inserts the digit “6.”

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	3
2. Digit 2:	7
3. Digit 3:	4
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment: 1	
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	99 Digit Modification Index
13. Action Attribute:	0 Network Number
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 3 7 4 ;;;1 1 7 6 1 99 0 2 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

5.2.4 Home RNX with a 3- or 4-Digit Dial Plan

Before G2.2, private-network numbers were converted to extension numbers according to the translations in Procedure 321 Word 4. Using a network with a 3- or 4-digit dial plan, a home RNX was assigned by entering the value “641” in the pattern number field (Field 4). The following assignment would cause the switch to interpret the location code “37” as a home RNX (neglecting the node-number and call-category assignments and accepting the default values).

FLTPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - ROUTING		845552223	
INPUT FIELDS: DISPLAY: SEE TABLE ON WORD 4B ADD: 1-5, SEE ERROR CODE 81 REMOVE: 1-5 CHANGE: 1-5 (AFTER DISPLAY ONLY) NEXT DATA: SEE TABLE ON WORD 4B		SPECIAL ERROR CODES: 81-AN ADD OR CHANGE ROUTINE CANNOT BE DONE TO A LOCATION CODE THAT BEGINS WITH THE CHARGE CODE PREFIX OR RESERVED DIGIT. (SEE PROC 285 WORD 1). 82-THIS CODE IS ALREADY ASSIGNED, USE THE CHANGE ROUTINE. 83-TO USE THE DISPLAY OR NEXT DATA ROUTINES. SEE WORD 4B. 84-FIRST DIGIT FIELD MUST BE SUPPLIED FOR FIVE-DIGIT DIALING PLANS ONLY IF IT IS A HOME RNX (PATTERN 641). 85-THE ENTERED LOCATION CODE (RNX) DOES NOT MAP TO THE ENTERED PATTERN NUMBER.		86-FIRST DIGIT FIELD MUST BE DASHED. YOU CANNOT ADMINISTER A PATTERN AND A FIRST DIGIT TO ONE RNX. 87-THE NODE NUMBER HAS PREVIOUSLY BEEN ASSIGNED TO A DIFFERENT PATTERN NUMBER. USE THE CHANGE ROUTINE. 88-A FIRST DIGIT CAN ONLY BE TRANSLATED IN A FIVE DIGIT DIALING PLAN. 89-THE NUMBER OF DIGITS IN THE LOCATION CODE HAS NOT BEEN SET IN PROC 285 WORD 1.	
WORD 4	LOCATION CODE (RNX)	NODE NUMBER	CALL CATEGORY	PATTERN NUMBER	F D I T R G S I T
	3 7	3 7	0 6 4 1		
	1	2	3	4	5
					AAR-ROUTING
					321

Beginning with G2.2, a home RNX (like any other RNX) is part of an address string in the WCR routing network for AAR calls. To specify that a specific RNX is a “home” RNX, assign Procedure 314 Word 1 so that digit analysis “restarts” in Network 0 (the WCR interface to the internal dial plan). This is done by setting the action field (Field 11) to “1” and the action attribute field (Field 13) to “0.”

Meanwhile, digit modification changes the 5-digit AAR number into a 3-digit extension number. The digit-modification index “98” is used in this example, but the details of digit modification are not discussed here. For now, assume that the digit-modification index “98” deletes 2 digits.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	3
2. Digit 2:	7
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	5
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	98 Digit Modification Indexfier
13. Action Attribute:	0 Network Number
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 3 7 ;;;1 1 5 6 1 98 0 2 axdx_	
2 Repeat	3 Form
5 Help	6 Field 7 Input 8 Cmds

5.2.5 AAR Patterns

Before G2.2, AAR patterns were assigned in Procedure 321, and ARS patterns were assigned in Procedure 309. The AAR and ARS features had separate sets of patterns.

FLIPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - ROUTE TABLES										845552223	
INPUT FIELDS: DISPLAY: 1-2, OR 3 ADD: 1-10 REMOVE: SEE ERROR CODE 84 & NOTES 1 AND 2 CHANGE: 3-10 NEXT DATA: DISPLAY ALL PATTERNS AND PREFERENCES. NEXT DATA IS NOT ALLOWED ON FIELD 3.			SPECIAL ERROR CODES: 81-ASSIGN THIS TRUNK GROUP IN PROC 100 WORD 1 BEFORE USING THIS PROCEDURE. 82-A PATTERN AND PREFERENCE NUMBER IS ALREADY ASSIGNED. USE THE CHANGE ROUTINE. 83-ADD PREFERENCE NUMBERS IN ORDER, STARTING WITH 1. NO GAPS ALLOWED. 84-ONLY THE HIGHEST PREFERENCE NUMBER CAN BE REMOVED.							NOTES: 1. THE REMOVE ROUTINE DELETES ALL TRANSLATION DATA ASSOCIATED WITH THE PATTERN AND PREFERENCE NUMBERS, INCLUDING THAT USED IN WORDS 2 AND 3. 2. USE THE CHANGE ROUTINE TO MOVE DATA FROM HIGHER NUMBERED PREFERENCE NUMBERS DOWN AND THEN REMOVE THE HIGHEST ONE. THE DATA THEN NEEDS TO BE MOVED TO THE NEW PATTERN AND PREFERENCE NUMBER IN WORDS 2 AND 3. 3. WHEN FIELD 6 IS 1, THE LAST 4 DIGITS TO BE INSERTED DIGITS (WORD 3) MUST CONTAIN THE LDN OF THE DESTINATION.			
WORD 1	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	RS AT CO IN LI TE VE EL	W AT RO NN IE NG	O F F N ET	N DD B IE R L E E O TT F SB	D C I G S N O I D G R E N E A L	B X X A L O W E D	IXC/ISDN NETWORK IDENTIFIER	AAR-ROUTE TABLES		
	1	2	3	4	5	6	7	8	9	10	321		

Beginning with G2.2, all patterns for the WCR routing networks are assigned in Procedure 318. The WCR feature has a common set of 1,023 patterns that are used for both private- and public-network routing. It is possible for AAR and ARS calls to use the same pattern.

ENHANCED MODE - PROCEDURE: 318, WORD: 1
 WCR - NETWORK ROUTE TRANSLATION

1. Pattern Number:
 2. Preference Number:
 3. Trunk Group:
 4. Facility Restriction Level:
 5. Warning Tone: Warning on toll calls
 6. Toll-Free Index:
 7. Digit Modification Index:
 8. Digit Sending Index:
 9. ISDN Sending Index:

Connected to CC0 ON-LINE ♥

enter command:

Trunk-Group Number

Before G2.2, the number of the outgoing trunk group referenced by an AAR pattern's preference was assigned in Field 3 of Procedure 321 Word 1.

Beginning with G2.2, the number of the outgoing trunk group referenced by a WCR pattern's preference is assigned in Field 3 of Procedure 318 Word 1.

Facility Restriction Level

Before G2.2, an AAR preference's FRL was assigned in Field 4 of Procedure 321 Word 1.

Beginning with G2.2, a WCR preference's FRL is assigned in Field 4 of Procedure 318 Word 1.

Warning Tone

Warning tone for calls using a preference is assigned in Field 5 of both procedures. However, Field 5 of Procedure 318 Word 1 has an additional encode, "1," that only gives warning tone to the caller for toll calls.

To emulate the previous AAR warning-tone operation during a G2.2 upgrade, enter "2" in Field 5 to provide warning tone for every call that uses the preference.

Toll-Table Index

Before G2.2, toll-table indices were not assigned for AAR preferences.

Beginning with G2.2, toll-free-table indices are provided for the common set of WCR patterns (that is, private- and public-network patterns).

To assign all private-network numbers as toll-free, enter "—" in Field 6 of Procedure 318 Word 1 for the patterns used for private-network routing.

5-14 AAR/ARS vs WCR Comparative Administration

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number: ----
2.	Preference Number: --
3.	Trunk Group: ---
4.	Facility Restriction Level: -
5.	Warning Tone: -
6.	Toll-Free Index: -- All numbers are toll-free calls
7.	Digit Modification Index: ----
8.	Digit Sending Index: <input 40px;"="" style="width: 40px;" type="text" value="----" width:=""/>
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command:	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

Off-Net Indicator and "OXXX" Allowed

Before G2.2, the off-net indicator was assigned in Field 6 and "OXXX" allowed was assigned in Field 9 of Procedure 321 Word 1. These two fields worked with the AAR subnetwork trunking function to provide special processing of on-net and off-net DDD calls to an attendant at another switch.

FLIPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - ROUTE TABLES										845552223	
INPUT FIELDS: DISPLAY: 1-2, OR 3 ADD: 1-10 REMOVE: SEE ERROR CODE 84 & NOTES 1 AND 2 CHANGE: 3-10 NEXT DATA: DISPLAY ALL PATTERNS AND PREFERENCES. NEXT DATA IS NOT ALLOWED ON FIELD 3.			SPECIAL ERROR CODES: 81-ASSIGN THIS TRUNK GROUP IN PROC 100 WORD 1 BEFORE USING THIS PROCEDURE. 82-A PATTERN AND PREFERENCE NUMBER IS ALREADY ASSIGNED. USE THE CHANGE ROUTINE. 83-ADD PREFERENCE NUMBERS IN ORDER, STARTING WITH 1. NO GAPS ALLOWED. 84-ONLY THE HIGHEST PREFERENCE NUMBER CAN BE REMOVED.							NOTES: 1. THE REMOVE ROUTINE DELETES ALL TRANSLATION DATA ASSOCIATED WITH THE PATTERN AND PREFERENCE NUMBERS, INCLUDING THAT USED IN WORDS 2 AND 3. 2. USE THE CHANGE ROUTINE TO MOVE DATA FROM HIGHER NUMBERED PREFERENCE NUMBERS DOWN AND THEN REMOVE THE HIGHEST ONE. THE DATA THEN NEEDS TO BE MOVED TO THE NEW PATTERN AND PREFERENCE NUMBER IN WORDS 2 AND 3. 3. WHEN FIELD 6 IS 1, THE LAST 4 DIGITS TO BE INSERTED DIGITS (WORD 3) MUST CONTAIN THE LDN OF THE DESTINATION.			
WORD 1	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	R F S A T C O I N L I L T E Y V E L	W T R O N W N E N G	O F F - N E T	N D D S E L E C T I O N O T T F S B	D I G I T S I N T H E O F F S E T	O X X X A L L O W E D	IXC/ISDN NETWORK IDENTIFIER	AAR-ROUTE TABLES 321		
	1	2	3	4	5	6	7	8	9	10			

To use the special processing, an AAR preference was assigned to insert 7 or 10 digits [that is, the area code (if applicable), the office code, and the LDN] and to delete 3 digits (that is, the dialed location code).

On-Net Route: If the off-net indicator was set to “0” (on-net route), “0XXX” allowed was set to “0,” and the first digit of the dialed extension number was “0,” then the switch:

- Deleted every dialed digit
- Inserted any digits specified in Procedure 321 Word 3
- Appended the digit “0” to the previously inserted digits

The switch assumed that the caller could reach the remote attendant queue by dialing “0.”

If “0XXX” allowed was set to “1” or if the first digit of the dialed extension was not “0,” then the switch performed normal preference-level digit modification.

Off-Net IDDD Route: If the off-net indicator was set to “2” (IDDD route), the switch deleted three digits and inserted all digits specified except the last four digits. (Since the special attendant processing did not apply to IDDD calls, the AAR feature ignored the LDN portion of the inserted digits specified.)

Off-Net DDD Route: If the off-net indicator was set to “1” (off-net DDD route), special attendant processing might apply.

If a user dialed “0” as the first digit after the location code (for example, 374-0345), then the AAR feature applied “0XXX” processing to the call.

If “0XXX” extensions were not allowed at the receiving switch (Field 9 of Procedure 321 Word 1 = “0” at the sending switch), then the first digit “0” implied that the user was calling an attendant and the digits following the “0” were irrelevant. Therefore, the switch deleted every dialed digit and inserted every sending digit (including the LDN) so that the call would succeed.

If “0XXX” extensions were allowed at the receiving switch (Field 9 of Procedure 321 Word 1 = “1” at the sending switch), then the first digit “0” was inconclusive as to whether the user was calling an attendant. In this case, the sending switch collected all seven digits and compared the dialed extension digits to the value “0111.”

If the digit stream “RNX-0111” was dialed, the switch inferred that the caller was dialing an attendant. Therefore, the switch deleted every dialed digit and inserted every sending digit (including the LDN). If not, the switch inferred that the caller was dialing an extension. Therefore, the switch deleted three digits (the dialed RNX) and inserted every sending digit except the last four (thus allowing the dialed extension number to be sent).

Beginning with G2.2, the special processing for “0XXX” calls can be handled by assigning the string identifier “RNX-0111” to select and route according to a separate pattern from the one selected by the general RNX string identifier. Then, the preferences (which could certainly be the same trunk groups) in this separate pattern for the digits “RNX-0111” would be assigned to perform the necessary digit modification for routing calls to the attendant queue at the remote switch.

Example: Suppose there is an attendant at another private-network switch with the location code “755.” Assume that a listed directory number (LDN) for this switch is “2345” and that the internal dial plan of the switch is assigned to allow extension numbers beginning with the digit “0.”

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	7
2. Digit 2:	5
3. Digit 3:	5
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	51 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 7 5 5 ;;;1 1 7 6 0 51 0 2 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

Next: Assign the string identifier “7550111” to resolve to a different VNI, and assign the preferences (in the resulting pattern) that route over the public network (that is, the DDD routes) to change the string identifier “7550111” to “7552345.”

NOTE

The 7-digit string identifier “7550111” must be assigned in two segments since this string identifier contains more than six digits.

ENHANCED MODE - PROCEDURE: 314, WORD: 1
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION

STRING IDENTIFIER

1. Digit 1: 7
2. Digit 2: 5
3. Digit 3: 5
4. Digit 4: 0
5. Digit 5: 1
6. Digit 6: 1

7. Segment: 1
8. Last Segment: 0 Segment is not the last for this SI
9. String Length: --
10. String Type: -
11. Action: -
12. Action Object: ----
13. Action Attribute: -
14. Network Number: -

Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT

enter command: p314w1 7 5 5 0 1 1 1 0 axdx_

2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cnds

ENHANCED MODE - PROCEDURE: 314, WORD: 1
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION

STRING IDENTIFIER

1. Digit 1: 1
2. Digit 2: --
3. Digit 3: --
4. Digit 4: --
5. Digit 5: --
6. Digit 6: --

7. Segment: 2
8. Last Segment: 1 Last Segment - Add to Standard Network
9. String Length: 7
10. String Type: 6 Address
11. Action: 0 Resolve
12. Action Object: 52 Virtual Nodepoint Identifier
13. Action Attribute: 0 Facility Restriction Level
14. Network Number: 2

Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT

enter command: rs 1 ;;;;2 1 7 6 0 52 0 2 axdx_

2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cnds

If the internal dial plan of the receiving private-network switch does not allow extension numbers beginning with the digit “0,” then the routing switch need not distinguish between “755-0111” and other private-network numbers beginning with the digits “755-0.” Therefore, the string identifier that resolves to the separate VNI need only contain the four digits “7550.”

ENHANCED MODE - PROCEDURE: 314, WORD: 1
 NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION

STRING IDENTIFIER

1. Digit 1:

2. Digit 2:

3. Digit 3:

4. Digit 4:

5. Digit 5:

6. Digit 6:

7. Segment:

8. Last Segment: Last Segment - Add to Standard Network

9. String Length:

10. String Type: Address

11. Action: Resolve

12. Action Object: Virtual Nodepoint Identifier

13. Action Attribute: Facility Restriction Level

14. Network Number:

Connected to CC0 ON-LINE ♥

enter command: p314w1 7 5 5 0 ;;1 1 7 6 0 52 0 2 axdx_

Number of Deleted Digits

Before G2.2, the number of deleted digits was assigned to each AAR preference in Field 7 of Procedure 321 Word 1. A maximum of 7 digits could be deleted.

FLIPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - ROUTE TABLES										845552223	
INPUT FIELDS: DISPLAY: 1-2, OR 3 ADD: 1-10 REMOVE: SEE ERROR CODE 84 & NOTES 1 AND 2 CHANGE: 3-10 NEXT DATA: DISPLAY ALL PATTERNS AND PREFERENCES. NEXT DATA IS NOT ALLOWED ON FIELD 3.			SPECIAL ERROR CODES: 81-ASSIGN THIS TRUNK GROUP IN PROC 100 WORD 1 BEFORE USING THIS PROCEDURE. 82-A PATTERN AND PREFERENCE NUMBER IS ALREADY ASSIGNED. USE THE CHANGE ROUTINE. 83-ADD PREFERENCE NUMBERS IN ORDER, STARTING WITH 1. NO GAPS ALLOWED. 84-ONLY THE HIGHEST PREFERENCE NUMBER CAN BE REMOVED.							NOTES: 1. THE REMOVE ROUTINE DELETES ALL TRANSLATION DATA ASSOCIATED WITH THE PATTERN AND PREFERENCE NUMBERS, INCLUDING THAT USED IN WORDS 2 AND 3. 2. USE THE CHANGE ROUTINE TO MOVE DATA FROM HIGHER NUMBERED PREFERENCE NUMBERS DOWN AND THEN REMOVE THE HIGHEST ONE. THE DATA THEN NEEDS TO BE MOVED TO THE NEW PATTERN AND PREFERENCE NUMBER IN WORDS 2 AND 3. 3. WHEN FIELD 6 IS 1, THE LAST 4 DIGITS TO BE INSERTED DIGITS (WORD 3) MUST CONTAIN THE LDN OF THE DESTINATION.			
WORD 1	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	RS AT CO IN IL TE VE L	W AT RO NN IE N G	O F N E T	N D B I E R L E O T T F S B	D I G I T I N D E X A L L O W E D	IXC/ISDN NETWORK IDENTIFIER	AAR-ROUTE TABLES			
		1	2	3	4	5	6	7	8	9	10	321	

Beginning with G2.2, a digit-modification index is assigned to each preference in Field 7 of Procedure 318 Word 1. Enter a “0” in this field whenever digit modification is not desired for the preference. Enter the value of the corresponding digit-modification index (assigned in Procedure 320 Word 1) whenever digit modification is desired for the preference.

Procedure 320 specifies the number of deleted digits for each index. A maximum of 31 digits can be deleted.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number: ----
2.	Preference Number: --
3.	Trunk Group: ---
4.	Facility Restriction Level: -
5.	Warning Tone: -
6.	Toll-Free Index: --
7.	Digit Modification Index: 99
8.	Digit Sending Index: ---
9.	ISDN Sending Index: ----
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT enter command: _ 2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1.	Digit Modification Index: 99
2.	Digits To Delete: 3
3.	Segment Number: 1 Digits 1 to 8
INSERTION DIGITS	
4.	Digit 1, 9, 17, or 25: 6
5.	Digit 2, 10, 18, or 26: --
6.	Digit 3, 11, 19, or 27: --
7.	Digit 4, 12, 20, or 28: --
8.	Digit 5, 13, 21, or 29: --
9.	Digit 6, 14, 22, or 30: --
10.	Digit 7, 15, 23, or 31: --
11.	Digit 8, 16, 24: --
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT enter command: p320w1 99 3 1 6 cxdx_ 2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

Start of Digit Sending

Without Subnetwork Trunking: Before G2.2, the switch ignored subnetwork trunking assignments and the DC signal ignore field for intertandem tie-trunk groups (trunk groups with Fields 3 and 4 of Procedure 103 both set to "1.")

After the switch seized an outgoing trunk, an outgoing trunk sequence began. When the trunk sequence finished, the switch sent every digit. The outgoing trunk group's assigned touch-tone sending value (Field 7 of Procedure 101) determined whether the digits were sent in the touch-

tone or dial-pulse format.

FLTPCHART ISSUE 8		TRUNK GROUP CHARACTERISTICS										845552223				
INPUT FIELDS:		SPECIAL ERROR CODES:										85-TRUNKS ASSIGNED TO TRUNK GROUP IN PROC 150 WORD 1 AND/OR PROC 116 WORD 1 WITHOUT 24TH CHANNEL SIGNALING, CANNOT CHANGE AVO (FIELD 17) TO 1.				
DISPLAY: 1		81-WHEN ADDING A NEW TRUNK GROUP USE PROC 100 WORD 1 FIRST.										86-CANNOT ASSIGN AVO TO TRUNK TYPE OF INPUTTED TRUNK GROUP.				
ADD: 1-17		82-FIELD 14 IS ONLY USED WITH TIE TRUNKS.										ALLOWED TRUNK TYPES FOR AVO ARE 32-47, 70-78, 120, & THOSE THAT HAVE ISDN SIGNALING EXCEPT TRUNK TYPE 108 & 109.				
REMOVE: NOT ALLOWED		83-REMOVE ALL TRUNKS FROM THE TRUNK GROUP BEFORE CHANGING THE DCS ASSIGNMENT IN FIELD 5.										88-THE DCS TRUNK GROUP NUMBER MUST BE IN THE RANGE OF 18-255.				
CHANGE: 2-17		84-THIS TRUNK GROUP HAS AN ILLEGAL TRUNK TYPE FOR DCS. LEGAL TRUNK TYPES ARE 32-47 AND 73-78.										89-REMOVE THE AAR/ARS PREFIX DIGIT IN PROC 103 WORD 1 BEFORE ADDING OR CHANGING THE INCOMING PREFIX DIGIT FOR DID.				
NEXT DATA: NOT ALLOWED																
WORD 1	TRUNK GROUP	BALANCE	BRACKET	IPR	DCS	TOUCH TONE	TOUCH TONE	SMOOR	A.I.O.D. BILLING NUMBER	TIMED RECALL	PAD	TIE	FAL	DS	AVO	TRUNK GROUP CHAR
										TIME	LEVEL					
																101

Beginning with G2.2, digit-modification assignments and the equivalent of the DC signal ignore assignments are never ignored.

To emulate the pre-G2.2 operation, set a preference's digit-sending index (Field 8 of Procedure 318 Word 1) to "0." Then, an outgoing trunk sequence begins after the switch seizes an outgoing trunk. When the trunk sequence finishes, the switch sends every digit. Like pre-G2.2 administration, the outgoing trunk group's assigned touch-tone sending value (Field 7 of Procedure 101 Word 1) determines whether the digits are sent in the touch-tone or dial-pulse format.

ENHANCED MODE - PROCEDURE: 318, WORD: 1
 WCR - NETWORK ROUTE TRANSLATION

1. Pattern Number:
 2. Preference Number:
 3. Trunk Group:
 4. Facility Restriction Level:
 5. Warning Tone:
 6. Toll-Free Index:
 7. Digit Modification Index:
 8. Digit Sending Index: ←
 9. ISDN Sending Index:

Connected to CC0 ON-LINE ♥

enter command:

With Subnetwork Trunking — DC Signal Ignore: Before G2.2, the DC signal ignore field (Field 8 of Procedure 321 Word 1) specifies whether or not a *preference* should begin digit sending when the switch detects precise dial tone on the outgoing trunk. If this field is set to "0" (do not ignore signals), the switch sends the first digit group as soon as either precise dial tone is detected or the outgoing trunk sequence completes. If this field is set to "1" (ignore signals), the

switch ignores precise dial tone. Instead, the switch waits for the trunk sequence to finish and then waits for the pause interval assigned to Digit Group 1 (Field 3 of Procedure 321 Word 2) to elapse before sending digits.

FLIPCHART ISSUE 8				AUTOMATIC ALTERNATE ROUTING - ROUTE TABLES										845552223																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
INPUT FIELDS: DISPLAY: 1-2, OR 3 ADD: 1-10 REMOVE: SEE ERROR CODE 84 & NOTES 1 AND 2 CHANGE: 3-10 NEXT DATA: DISPLAY ALL PATTERNS AND PREFERENCES. NEXT DATA IS NOT ALLOWED ON FIELD 3.				SPECIAL ERROR CODES: 81-ASSIGN THIS TRUNK GROUP IN PROC 100 WORD 1 BEFORE USING THIS PROCEDURE. 82-A PATTERN AND PREFERENCE NUMBER IS ALREADY ASSIGNED. USE THE CHANGE ROUTINE. 83-ADD PREFERENCE NUMBERS IN ORDER, STARTING WITH 1. NO GAPS ALLOWED. 84-ONLY THE HIGHEST PREFERENCE NUMBER CAN BE REMOVED.								NOTES: 1. THE REMOVE ROUTINE DELETES ALL TRANSLATION DATA ASSOCIATED WITH THE PATTERN AND PREFERENCE NUMBERS, INCLUDING THAT USED IN WORDS 2 AND 3. 2. USE THE CHANGE ROUTINE TO MOVE DATA FROM HIGHER NUMBERED PREFERENCE NUMBERS DOWN AND THEN REMOVE THE HIGHEST ONE. THE DATA THEN NEEDS TO BE MOVED TO THE NEW PATTERN AND PREFERENCE NUMBER IN WORDS 2 AND 3. 3. WHEN FIELD 6 IS 1, THE LAST 4 DIGITS TO BE INSERTED DIGITS (WORD 3) MUST CONTAIN THE LDN OF THE DESTINATION.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
WORD 1	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	R S T A C O N N E C T I V E	W A T R O N N E T	O F N E T	N O D B I E L I E O T T F S B	D C I G N O R E N E A L	9 X X A L O W E D	IXC/ISDN NETWORK IDENTIFIER	AAR-ROUTE TABLES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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NOTE

If this field is set to "0," an assigned pause length for Digit Group 1 is ignored. Also, AAR and ARS do not allow a "0" pause length for Digit Group 1.

NOTE

The switch does not detect precise dial tone for trunk circuits in traditional modules. For these trunk circuits, the switch always finishes the outgoing trunk sequence before sending the digits.

Beginning with G2.2, the DC signal ignore field (Field 9 of Procedure 103 Word 1) specifies whether or not a *trunk group* should begin digit sending when the switch detects precise dial tone on the outgoing trunk. If this field is set to "0" (do not ignore signals), the switch sends the first digit group as soon as either precise dial tone is detected or the outgoing trunk sequence completes. If this field is set to "1" (ignore signals), the switch ignores precise dial tone. Instead, the switch waits for the trunk sequence to finish and then waits for the pause interval assigned to Digit Group 1 (Field 3 of Procedure 321 Word 2) to elapse before sending digits.

ENHANCED MODE - PROCEDURE: 103, WORD: 1	
NETWORK TRUNK GROUP TRANSLATION	
1.	Trunk Group: ---
2.	Facility Restriction Level: -
3.	Traveling Class Marks: -
4.	Symmetrical Route: -
5.	Incoming Tie/APLT Access to WCR: -
6.	Authorization Code Required: -
7.	Bridge-On Allowed: -
8.	Trunk Reservation Limit: --
9.	Dial Tone Detect Ignore: - ←
10.	Data Protection (Permanent): -
11.	Remote Access Echo Suppressor: -
12.	Conditional Routing: -
13.	Route Selection Method: -
14.	Outgoing Overlapped Sending: -
15.	Suppress Dial Tone: -

Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT

enter command: _

2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds

NOTE

If this field is set to “0,” an assigned pause length for Digit Group 1 is ignored. Also, AAR and ARS do not allow a “0” pause length for Digit Group 1.

NOTE

The switch does not detect precise dial tone for trunk circuits in traditional modules. For these trunk circuits, the switch always finishes the outgoing trunk sequence before sending the digits.

IXC/ISDN Network Identifier

Before G2.2, the interexchange carrier (IXC) code for an AAR preference was assigned in Field 10 of Procedure 321 Word 1. This field had several purposes:

- To populate the IXC portion of Call Detail Recording (CDR) records
- To code the IXC value in the network-specific facility (NSF) or the transit network selection (TNS) information element (IE) of an ISDN message
- To provide data for certain traffic measurements

FLTPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - ROUTE TABLES										845552223	
INPUT FIELDS: DISPLAY: 1-2, OR 3 ADD: 1-10 REMOVE: SEE ERROR CODE 84 & NOTES 1 AND 2 CHANGE: 3-10 NEXT DATA: DISPLAY ALL PATTERNS AND PREFERENCES. NEXT DATA IS NOT ALLOWED ON FIELD 3.			SPECIAL ERROR CODES: 81-ASSIGN THIS TRUNK GROUP IN PROC 100 WORD 1 BEFORE USING THIS PROCEDURE. 82-A PATTERN AND PREFERENCE NUMBER IS ALREADY ASSIGNED. USE THE CHANGE ROUTINE. 83-ADD PREFERENCE NUMBERS IN ORDER, STARTING WITH 1. NO GAPS ALLOWED. 84-ONLY THE HIGHEST PREFERENCE NUMBER CAN BE REMOVED.							NOTES: 1. THE REMOVE ROUTINE DELETES ALL TRANSLATION DATA ASSOCIATED WITH THE PATTERN AND PREFERENCE NUMBERS, INCLUDING THAT USED IN WORDS 2 AND 3. 2. USE THE CHANGE ROUTINE TO MOVE DATA FROM HIGHER NUMBERED PREFERENCE NUMBERS DOWN AND THEN REMOVE THE HIGHEST ONE. THE DATA THEN NEEDS TO BE MOVED TO THE NEW PATTERN AND PREFERENCE NUMBER IN WORDS 2 AND 3. 3. WHEN FIELD 6 IS 1, THE LAST 4 DIGITS TO BE INSERTED DIGITS (WORD 3) MUST CONTAIN THE LDN OF THE DESTINATION.			
WORD 1	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	FST AT CO IN IL TE YV EL	W AT RO NW IE NG	O F N E T	NDD BIE RGL IE OTT FSB	D C I G S N IO GR NE AL	0 X X X A L L O W E D	IXC/ISDN NETWORK IDENTIFIER	AAR-ROUTE TABLES		
	1	2	3	4	5	6	7	8	9	10	321		

Beginning with G2.2, the IXC code is part of the digit-sending translations (Procedure 321) referred to by a preference's digit-sending index (Procedure 318 Word 1). To assign an IXC code for a preference, assign a digit-sending index to the preference in Field 8 of Procedure 318 Word 1. Also, enter the digits of the IXC code in Fields 7 through 11 of Procedure 321 Word 1.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number: ----
2.	Preference Number: --
3.	Trunk Group: ---
4.	Facility Restriction Level: -
5.	Warning Tone: -
6.	Toll-Free Index: --
7.	Digit Modification Index: ----
8.	Digit Sending Index: 101 ←
9.	ISDN Sending Index: ----
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: _	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

ENHANCED MODE - PROCEDURE: 321, WORD: 1	
WCR - DIGIT SENDING TRANSLATION	
1. Digit Sending Index: 101	
DIAL ACCESS CODE (DAC)	
2. Send DAC Flag: 0	
DAC DIGITS	
3. Digit 1: --	4. Digit 2: -
5. Digit 3: -	6. Digit 4: -
INTEREXCHANGE CARRIER (IXC) ←	
7. Send IXC Flag: 2 Send dialed IXC or else send assigned IXC	
CIC DIGITS	
8. Digit 1: 2	9. Digit 2: 8
10. Digit 3: 8	11. Digit 4: -
TOLL PREFIX	
12. Send Toll Prefix Flag: 0	
TOLL PREFIX DIGITS	
13. Digit 1: -	14. Digit 2: -
15. Digit 3: -	
16. Send Pound Sign Flag: 0	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p321w1 101 ;;;;1 2 8 8 cxdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

WCR uses the assigned IXC code for the same purposes as the AAR and ARS features. However, the WCR feature also allows the caller to dial an IXC code.

If the switch sends an IXC code as part of the digit stream, the WCR feature records the sent IXC code (either the code originally dialed or subsequently changed) for the CDR record. If not, the WCR feature records the assigned IXC code for the CDR record.

IXC traffic data is collected in a similar manner. If an IXC code is sent with the digit stream, the WCR feature pegs the sent IXC code for traffic analysis. If not, the WCR feature pegs the assigned IXC code for traffic analysis.

For an ISDN call, the WCR feature populates the NSF or the TNS IE with the IXC code to be sent as part of the call setup. If an IXC is not sent with an ISDN call, the IE is not populated.

Digit Modification

Before G2.2, AAR allowed the switch administrator to delete up to 7 digits (Field 7 of Procedure 321 Word 1) and insert up to 20 digits (Procedure 321 Words 2 and 3).

FLIPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - ROUTE TABLES										845552223		
INPUT FIELDS: DISPLAY: 1-2, OR 3 ADD: 1-10 REMOVE: SEE ERROR CODE 84 & NOTES 1 AND 2 CHANGE: 3-10 NEXT DATA: DISPLAY ALL PATTERNS AND PREFERENCES. NEXT DATA IS NOT ALLOWED ON FIELD 3.			SPECIAL ERROR CODES: 81-ASSIGN THIS TRUNK GROUP IN PROC 100 WORD 1 BEFORE USING THIS PROCEDURE. 82-A PATTERN AND PREFERENCE NUMBER IS ALREADY ASSIGNED. USE THE CHANGE ROUTINE. 83-ADD PREFERENCE NUMBERS IN ORDER, STARTING WITH 1. NO GAPS ALLOWED. 84-ONLY THE HIGHEST PREFERENCE NUMBER CAN BE REMOVED.							NOTES: 1. THE REMOVE ROUTINE DELETES ALL TRANSLATION DATA ASSOCIATED WITH THE PATTERN AND PREFERENCE NUMBERS, INCLUDING THAT USED IN WORDS 2 AND 3. 2. USE THE CHANGE ROUTINE TO MOVE DATA FROM HIGHER NUMBERED PREFERENCE NUMBERS DOWN AND THEN REMOVE THE HIGHEST ONE. THE DATA THEN NEEDS TO BE MOVED TO THE NEW PATTERN AND PREFERENCE NUMBER IN WORDS 2 AND 3. 3. WHEN FIELD 6 IS 1, THE LAST 4 DIGITS TO BE INSERTED DIGITS (WORD 3) MUST CONTAIN THE LDN OF THE DESTINATION.				
WORD 1	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	RS AT CO IN LL TE VE EL	W AT RO NN IE NG	O FF NE T	N DD B IE RL IE OTT FSB	D IG S NO IO GE NE AL	0 X X A L L O WE D	IXC/ISDN NETWORK IDENTIFIER	AAR-ROUTE TABLES			
	1	2	3	4	5	6	7	8	9	10		321		

FLIPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - SUBNET TRUNKING										845552223		
INPUT FIELDS: DISPLAY: 1-2 ADD: 1-13 (FIELD 3 MUST CONTAIN VALID DATA) REMOVE: 3-13 (ALSO REMOVES DATA IN WORD 3) CHANGE: 1-13 (FIELD 3 MUST CONTAIN VALID DATA) NEXT DATA: DISPLAYS ALL ASSIGNED PATTERNS & PREFERENCES			SPECIAL ERROR CODES: 81-A PATTERN AND PREFERENCE MUST FIRST BE ASSIGNED IN WORD 1. 82-THIS GROUP IS ALREADY ASSIGNED. USE THE CHANGE ROUTINE. 83-IF NUMBER OF DIGITS (FIELDS 4, 7 OR 10) IS ZERO OR DASH, SIGNALING (FIELDS 5, 8, 11 OR 13) MUST BE DASH. 84-ADD GROUPS FROM LEFT TO RIGHT STARTING WITH GROUP ONE. NO GAPS ALLOWED 85-PAUSE LENGTH FOR GROUP 1 (FIELD 3) CANNOT BE ZERO. 86-PAUSE LENGTH MUST BE AN EVEN NUMBER AND BE 16 OR LESS.							FIELD LIMITS:: FIELD 1: 1-640 FIELD 2: 1-16 FIELD 3: 2-16 (EVEN) FIELDS 4, 7, 10: -, 0-15 FIELDS 5, 8, 11, 13: - = NOT ASSIGNED 0 = TOUCH-TONE SIGNALS ARE OUT PULSED 1 = ROTARY SIGNALS ARE OUT PULSED FIELDS 6, 9, 12: -, 2-16 (EVEN)				
WORD 2	PATTERN NUMBER	PREFERENCE NUMBER	PAUSE LENGTH (SECONDS)	GROUP ONE		GROUP TWO		GROUP THREE		GROUP FOUR		AAR - SUBNET TRUNKING		
	1	2	3	NUMBER OF DIGITS	SIG NAL AL T ING	PAUSE LENGTH (SECONDS)	NUMBER OF DIGITS	SIG NAL AL T ING	PAUSE LENGTH (SECONDS)	NUMBER OF DIGITS	SIG NAL AL T ING	321		
	1	2	3	4	5	6	7	8	9	10	11	12	13	

FLIPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - DIGITS INSERTED										845552223		
INPUT FIELDS: DISPLAY: 1-3 ADD: 1-11 (1-4 MUST CONTAIN DATA) REMOVE: NOT ALLOWED (USE WORDS 1 AND 2) CHANGE: 4-11 (1-4 MUST CONTAIN DATA) NEXT DATA: DISPLAYS ALL ASSIGNED PATTERNS & PREFERENCES			SPECIAL ERROR CODES: 81-A PATTERN AND PREFERENCE NUMBER MUST FIRST BE ASSIGNED IN WORD 1. 82-A PATTERN AND PREFERENCE NUMBER IS ALREADY ASSIGNED. USE THE CHANGE ROUTINE. 83-ENTER DIGITS IN FIELDS 4-11 WITHOUT GAPS. 84-THE ADD ROUTINE IS ALLOWED ONLY IF AT LEAST ONE DIGIT HAS BEEN ENTERED.							NOTES: 1. IF PROC 321 WORD 1, FIELD 6 EQUALS 1 FOR THIS PATTERN AND PREFERENCE, THE LAST FOUR DIGITS INSERTED MUST BE THE LDN FIELD LIMITS: FIELD 1: 1-640 FIELD 2: 1-16 FIELD 3: 1 = DIGITS 1-8 2 = DIGITS 9-16 3 = DIGITS 17-20 FIELDS 4-11: -, 0-9, 11 (*), 12 (#)				
WORD 3	PATTERN NUMBER	PREFERENCE NUMBER	SE DIG IT IN T	DIGIT SEGMENTS ONE, TWO, AND THREE								AAR-DIGITS INSERTED		
	1	2	3	DIGIT 1, 9 OR 17	DIGIT 2, 10 OR 18	DIGIT 3, 11 OR 19	DIGIT 4, 12 OR 20	DIGIT 5 OR 13	DIGIT 6 OR 14	DIGIT 7 OR 15	DIGIT 8 OR 16	321		
	1	2	3	4	5	6	7	8	9	10	11			

The AAR feature ignored digit-modification assignments for an outgoing intertandem tie-trunk group (Fields 3 and 4 of Procedure 103 = “1”) serving as a preference. The AAR feature only executed digit modification when Fields 3 and 4 of the preference’s outgoing trunk group were set to “0,0” or to “1,0.”

Beginning with G2.2, WCR allows the switch administrator to delete up to 31 digits and insert up to 31 digits. The digit-modification index used by a preference is assigned in Field 7 of Procedure 318 Word 1. Field 2 of Procedure 320 Word 1 specifies the number of deleted digits and Fields 4 through 11 specify the actual inserted digits for the digit-modification index.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number: ----
2.	Preference Number: --
3.	Trunk Group: ---
4.	Facility Restriction Level: -
5.	Warning Tone: -
6.	Toll-Free Index: --
7.	Digit Modification Index: ----
8.	Digit Sending Index: 102
9.	ISDN Sending Index: ----
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT enter command: 2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1.	Digit Modification Index: 102
2.	Digits To Delete: 6
3.	Segment Number: 1 Digits 1 to 8
INSERTION DIGITS	
4.	Digit 1, 9, 17, or 25: 2
5.	Digit 2, 10, 18, or 26: 7
6.	Digit 3, 11, 19, or 27: 7
7.	Digit 4, 12, 20, or 28: --
8.	Digit 5, 13, 21, or 29: --
9.	Digit 6, 14, 22, or 30: --
10.	Digit 7, 15, 23, or 31: --
11.	Digit 8, 16, 24: --
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT enter command: p320w1 102 6 1 2 7 7 cxdx_ 2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

NOTE

When used as part of WCR *preference* administration (Procedure 318), digit modification only applies to the *address* digits of a digit string. Digit modification does not modify an account code, toll prefix, IXC code, or TCM portions of a digit stream.

When used for m-to-n conversion (Procedure 314), digit modification can apply to any portion of the digit stream.

Example: Suppose that a user dials the address string “3744424” and that WCR has already selected a preference for routing. However, the switch administrator wants to change the dialed digits and send the digits “2554424” over the outgoing trunk.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	3
2. Digit 2:	7
3. Digit 3:	4
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1
Last Segment - Add to Standard Network	
9. String Length:	7
10. String Type:	6
Address	
11. Action:	0
Resolve	
12. Action Object:	51
Virtual Nodepoint Identifier	
13. Action Attribute:	0
Facility Restriction Level	
14. Network Number:	2
Connected to CC0 ON-LINE ♥	
MAJOR	MINOR
RUN TAPE	BUSY OUT
IN USE	WAIT
enter command: p314w1 3 7 4 ;;1 1 7 6 0 51 0 2 axdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

[In this case, the string identifier “374” resolves to VNI 51. Assuming that call categories are not assigned, VNI 51 causes the WCR software to select a preference in Pattern 51. In Procedure 318 Word 1, the selected preference in Pattern 51 is assigned with a digit-modification index (for example, “15”).]

The attributes of this digit-modification index would be assigned in Procedure 320 Word 1 in the following manner.

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index:	15
2. Digits To Delete:	3
3. Segment Number:	1 Digits 1 to 8
INSERTION DIGITS	
4. Digit 1, 9, 17, or 25:	2
5. Digit 2, 10, 18, or 26:	5
6. Digit 3, 11, 19, or 27:	5
7. Digit 4, 12, 20, or 28:	--
8. Digit 5, 13, 21, or 29:	--
9. Digit 6, 14, 22, or 30:	--
10. Digit 7, 15, 23, or 31:	--
11. Digit 8, 16, 24:	--
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 15 3 1 2 5 5 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

(If multiple WCR preferences need to perform the same digit modification, all of these preferences can use the same digit-modification index. In the previous example, Pattern 51 might contain two preferences, each needing to delete 3 digits and to insert the digits “255.” If this were the case, both preferences could use the digit-modification index “15.”)

Subnetwork Trunking

Before G2.2, the AAR translations to send digits in groups were assigned in Procedure 321 Word 3. The switch administrator could assign up to four digit groups. The pause interval before sending each digit group could range from 0 to 16 seconds (in 2-second increments), and each group could contain from 1 to 15 digits in either the touch-tone or dial-pulse format.

NOTE

Trunk circuits in universal modules could not change the sending format of digit groups. For these circuits, the switch sent every digit in the digit stream according to the entry in Field 7 of Procedure 101 Word 1.

The AAR feature ignored subnetwork trunking assignments for preferences containing intertandem tie-trunk groups (that is, Fields 3 and 4 of Procedure 103 = “1”). The subnetwork trunking function only executed when the entries in Fields 3 and 4 of Procedure 103 were either equal to (“0,” “0”) or (“1,” “0”) respectively.

NOTE

In contrast, the subnetwork trunking function of the ARS feature only executed when the entries in these fields were equal to (“1,” “0”) respectively.

Beginning with G2.2, the WCR translations to send digits in groups are assigned in two procedures. A digit-sending index is assigned in Field 8 of Procedure 318 Word 1 that refers to specific digit-sending attributes assigned in Procedure 321 Word 2. In this procedure, the switch administrator can assign up to four digit groups. The pause interval before sending each digit group can range from 0 to 16 seconds (in 2-second increments), and each group may contain from 1 to 31 digits in either the touch-tone or dial-pulse format.

NOTE

Trunk circuits in universal modules cannot change the sending format of digit groups. For these circuits, the switch sends every digit in the digit stream according to the entry in Field 7 of Procedure 101 Word 1.

The WCR feature does *not* ignore these translations for preferences containing intertandem tie-trunk groups (that is, trunk groups where the WCR software also sends TCMs).

Example: Suppose that a user dials the address string “3744567” and that the WCR feature has already selected a preference for routing. However, the switch administrator wants to send the leading digits “374” in the dial-pulse format, pause 4 seconds, and then send the remaining digits in the dial-pulse format.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	3
2. Digit 2:	7
3. Digit 3:	4
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	51 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 3 7 4 ;;1 1 7 6 0 51 0 2 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

[In this case, the string identifier “374” resolves to VNI 51. Assuming that call categories are not assigned, VNI 51 causes the WCR software to select a preference in Pattern 51. In Procedure 318 Word 1, the selected preference in Pattern 51 is assigned with a digit-sending index (for example, “15”).]

The attributes of this digit-sending index would be assigned in Procedure 321 Word 2 in the following manner.

ENHANCED MODE - PROCEDURE: 321, WORD: 2	
WCR - DIGIT GROUPING FOR SENDING	
1. Digit Sending Index: 15	
GROUP ONE 2. Pause Length: 0 3. Number of Digits: 3 4. Mode: 1 Rotary	
GROUP TWO 5. Pause Length: 4 6. Number of Digits: 99 Send All Remaining Digits 7. Mode: 1 Rotary	
GROUP THREE 8. Pause Length: -- 9. Number of Digits: -- 10. Mode: -	
GROUP FOUR 11. Pause Length: -- 12. Mode: -	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p321w2 15 0 3 1 4 99 1 axdx_	
 2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds 	

(If multiple WCR preferences need to perform the same digit grouping, all of these preferences can use the same digit-sending index. In the previous example, Pattern 51 might contain two preferences each needing to send 3 rotary digits, pause 4 seconds, and then send the remaining digits in the dial-pulse format. If this were the case, both preferences could use the digit-modification index “15.”)

ISDN Trunk Type

Before G2.2, when a preference (assigned in Procedure 321 Word 1) corresponded to a trunk group with the ISDN dynamic trunk type “120” (assigned in Field 6 of Procedure 100 Word 1), Field 3 of Procedure 321 Word 5 gave the AAR preference a specific trunk type.

R2V4 flipchart

FLIPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - ISDN AND OTHER FEATURE PARAMETERS		845552223	
INPUT FIELDS: DISPLAY: 1-2 & 4 ADD: 1-9 REMOVE: 3-9 CHANGE: 3-9 NEXT DATA: DISPLAYS ALL ASSIGNED PATTERNS AND PREFERENCES. CANNOT BE USED ON FIELD 4.		SPECIAL ERROR CODES: 81-ASSIGN A TRUNK GROUP FOR THIS ROUTE IN WORD 1 FIRST. 82-INVALID TRUNK TYPE. FIELD 3 MUST BE DASHED IF THE PRE-ASSIGNED TRUNK TYPE IN PROC 100 IS NOT ISDN DYNAMIC. 83-TRUNK TYPE INCOMPATIBLE. SEE VALID ENCODES FOR FIELD 3.		FIELD LIMITS: FIELD 1: 1-649 FIELD 2: 1-16	
WORD 5	PATTERN NUMBER	PREF NUMBER	ISDN TRUNK TYPE	NETWORK SERVICE VALUE	ISDN AAR- TRANSLATION
		1		2	
		3		4	
		5		6	
		7		8	
		9			

G2.1 flipchart emulation

FLIPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - ISDN AND OTHER FEATURE PARAMETERS				845552223	
INPUT FIELDS: DISPLAY: 1-2 & 4 ADD: 1-5 REMOVE: 3-5 CHANGE: 3-5 NEXT DATA: DISPLAYS ALL ASSIGNED PATTERNS AND PREFERENCES. CANNOT BE USED ON FIELD 4.		SPECIAL ERROR CODES: 81-ASSIGN A TRUNK GROUP FOR THIS ROUTE IN WORD 1 FIRST. 82-INVALID TRUNK TYPE. FIELD 3 MUST BE DASHED IF THE PRE-ASSIGNED TRUNK TYPE IN PROC 100 IS NOT ISDN DYNAMIC. 83-TRUNK TYPE INCOMPATIBLE. SEE VALID ENCODES FOR FIELD 3.		FIELD LIMITS: FIELD 1: 1-640 FIELD 2: 1-16 FIELD 5: 1-255			
WORD 5	PATTERN NUMBER	PREF NUMBER	ISDN TRUNK TYPE	NETWORK SERVICE VALUE	BEARER CAPABILITY COS	ISDN AAR-TRANSLATION	
	1	2	3	4	5	321	

Beginning with G2.2, this field is no longer needed and therefore removed.

Network-Service Value

Before G2.2, a network-service value (NSV) was assigned to an AAR preference in Field 4 of Procedure 321 Word 5.

Beginning with G2.2, an NSV is assigned to a WCR preference in two procedures. An ISDN sending index is assigned in Field 9 of Procedure 318 Word 1 that refers to the specific ISDN feature parameters assigned in Procedure 322 Word 1. The NSV is assigned in Field 2 of this procedure.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number: ----
2.	Preference Number: --
3.	Trunk Group: ---
4.	Facility Restriction Level: -
5.	Warning Tone: -
6.	Toll-Free Index: --
7.	Digit Modification Index: ----
8.	Digit Sending Index: ---
9.	ISDN Sending Index: 19 ←
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: _	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

ENHANCED MODE - PROCEDURE: 322, WORD: 1
 WCR - OUTGOING ISDN FEATURE PARAMETERS

1. ISDN Sending Index:
 2. ISDN Network Service Value: ←
 3. Type of Address:
 4. Numbering Plan Identification:
 5. IXC Option:

Connected to CC0 ON-LINE ♥

enter command:

2 Repeat 3 Form

5 Help 6 Field 7 Input 8 Cmds

Bearer Capability

For R2V4, a Bearer Capability was assigned to an AAR preference in Fields 5 through 9 of Procedure 321 Word 5.

For G2.1, a Bearer Capability class of service was assigned to an AAR preference in Field 5 of Procedure 321 Word 5.

Beginning with G2.2, a Bearer Capability class of service is assigned to a WCR preference in Field 3 of Procedure 318 Word 2.

ENHANCED MODE - PROCEDURE: 318, WORD: 2
WCR - NETWORK ROUTE TRANSLATION

1. Pattern Number:

2. Preference Number:

3. Bearer Capability COS: <-----

Connected to CC0 ON-LINE ♥

enter command:

5.2.6 AAR-to-ARS Crossover

Before G2.2, AAR-to-ARS crossover was an automatic capability of the AAR software. If a user dialed the AAR access code followed by destination address digits with one of the following characteristics:

- The digit “0” is the first digit (that is, an operator-assisted or an international call)
- The digits “X0X” are the leading digits (that is, a public-network telephone number including an area code)
- The digits “X1X” are the leading digits (that is, a public-network telephone number including an area code or a public-network service code)
- The digits “11X” are the leading digits (that is, a public-network service code using this format)

The AAR software recognized the dialed digits as a public-network address and passed the call to the ARS software for routing.

Beginning with G2.2, AAR-to-ARS crossover does not automatically occur. The switch administrator must explicitly assign the WCR feature to pass the desired public-network address strings (that a user dials after a routing-network access code other than Routing Network 1) to public-network digit analysis (that is, WCR Routing Network 1) for subsequent routing. This is done in Procedure 314 Word 1 by assigning the action “1” (restart) in Field 11, and the action attribute “1” (restart in Network 1) in Field 13.

To emulate the pre-G2.2 operation (assuming that Routing Network 2 is being used to analyze private-network numbers), the previously listed digit strings are assigned to crossover to Routing Network 1 in the following manner.

Crossing Over the Leading Address Digit “0” to Network 1

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	0
2. Digit 2:	--
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	1
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	0 Digit Modification Index
13. Action Attribute:	1 Network Number
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 0 ;;;;1 1 1 6 1 0 1 2 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

Crossing Over the Leading Address Digit “X0X” to Network 1

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	2
2. Digit 2:	0
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1
Last Segment - Add to Standard Network	
9. String Length:	2
10. String Type:	6
Address	
11. Action:	1
Restart	
12. Action Object:	0
Digit Modification Index	
13. Action Attribute:	1
Network Number	
14. Network Number:	2
Connected to CC0 ON-LINE ♥	
MAJOR	MINOR
RUN TAPE	BUSY OUT
IN USE	WAIT
enter command: p314w1 2 0 ;;;1 1 2 6 1 0 1 2 axdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

NOTE

Provide the corresponding assignments for the string identifiers “30,” “40,” “50,” ... “90.”

NOTE

If, as described in Section 5.5.4, Network 1 uses the digit “1” as a 10-digit preindicator, then make the following change to the previous assignments. Assign a digit-modification index in Field 12 that inserts the digit “1” so that Network 2 correctly sends 11 digits (including the “1” prefix) to Network 1.

NOTE

If the private network where this G2.2 resides uses “nontraditional” location codes (RNXs), location codes with “0” or “1” as the second digit, then the previous assignments must be modified so that the digit-analysis network for private-network routing (usually Network 2) can properly discriminate the nontraditional location codes from area codes.

As an example, suppose that a new switch with the location code “908” is being added to the private network. When this occurs, Network 2 must both be able to route 7-digit private-network addresses (with the string identifier “908”) to their destinations and crossover 10-digit public-network addresses (with the same string identifier) to Network 1. As expected, Network 2 should be assigned to resolve a 7-digit string (with the string identifier “908”) to a VNI. However, the previously assigned 2-digit string (with the string identifier “90”) must also be changed to a 10-digit string. Otherwise, as described in Example 8 of Section 2.1.5, the NDA software would have the undesired result of always selecting the 7-digit string as the best candidate.

Crossing Over the Leading Address Digits “X1X” to Network 1

ENHANCED MODE - PROCEDURE: 314, WORD: 1

NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION

STRING IDENTIFIER

1. Digit 1:

2

2. Digit 2:

1

3. Digit 3:

--

4. Digit 4:

--

5. Digit 5:

--

6. Digit 6:

--

7. Segment:

1

8. Last Segment:

1

Last Segment - Add to Standard Network

9. String Length:

2

10. String Type:

6

Address

11. Action:

1

Restart

12. Action Object:

0

Digit Modification Index

13. Action Attribute:

1

Network Number

14. Network Number:

2

Connected to CC0 ON-LINE

MAJOR

MINOR

RUN TAPE

BUSY OUT

IN USE

WAIT

enter command: p314w1 2 1 ;;;;1 1 2 6 1 0 1 2 axdx_

2 Repeat

3 Form

5 Help

6 Field

7 Input

8 Cmds

NOTE

Provide the corresponding assignments for the string identifiers “31,” “41,” “51,” ... “91.”

NOTE

If, as described in Section 5.5.4, Network 1 uses the digit “1” as a 10-digit preindicator, then make the following change to the previous assignment. Assign a digit-modification index in Field 12 that inserts the digit “1” so that Network 2 correctly sends 11 digits (including the “1” prefix) to Network 1.

NOTE

If the private network where this G2.2 resides uses “nontraditional” location codes (RNXs), location codes with “0” or “1” as the second digit, then the previous assignments must be modified so that the digit-analysis network for private-network routing (usually Network 2) can properly discriminate the nontraditional location codes from area codes.

As an example, suppose that a new switch with the location code “918” is being added to the private network. When this occurs, Network 2 must both be able to route 7-digit private-network addresses (with the string identifier “918”) to their destinations and crossover 10-digit public-network addresses (with the same string identifier) to Network 1. As expected, Network 2 should be assigned to resolve a 7-digit string (with the string identifier “918”) to a VNI. However, the previously assigned 2-digit string (with the string identifier “90”) must also be changed to a 10-digit string. Otherwise, as described in Example 8 of Section 2.1.5, the NDA software would have the undesired result of always selecting the 7-digit string as the best candidate.

Crossing Over the Leading Address Digit "11X" to Network 1

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	1
2. Digit 2:	1
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	2
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	0 Digit Modification Index
13. Action Attribute:	1 Network Number
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 1 1 ;;;;1 1 2 6 1 0 1 2 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

5.2.7 Automatic Routing via Pattern 1

Before G2.2, if a user dialed the AAR dial access code (DAC) followed by a location code that was not assigned in Procedure 321 Word 4, the call automatically routed using Pattern 1. When Pattern 1 was unassigned, the switch returned Intercept Treatment to the caller. When Pattern 1 was assigned, the switch routed the call using Pattern 1.

FLIPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - ROUTING				845552223
INPUT FIELDS: DISPLAY: SEE TABLE ON WORD 4B ADD: 1-5, SEE ERROR CODE 81 REMOVE: 1-5 CHANGE: 1-5 (AFTER DISPLAY ONLY) NEXT DATA: SEE TABLE ON WORD 4B		SPECIAL ERROR CODES: 81-AN ADD OR CHANGE ROUTINE CANNOT BE DONE TO A LOCATION CODE THAT BEGINS WITH THE CHARGE CODE PREFIX OR RESERVED DIGIT. (SEE PROC 285 WORD 1). 82-THIS CODE IS ALREADY ASSIGNED, USE THE CHANGE ROUTINE. 83-TO USE THE DISPLAY OR NEXT DATA ROUTINES. SEE WORD 4B. 84-FIRST DIGIT FIELD MUST BE SUPPLIED FOR FIVE-DIGIT DIALING PLANS ONLY IF IT IS A HOME RNK (PATTERN 641). 85-THE ENTERED LOCATION CODE (RNK) DOES NOT MAP TO THE ENTERED PATTERN NUMBER. 86-FIRST DIGIT FIELD MUST BE DASHED. YOU CANNOT ADMINISTER A PATTERN AND A FIRST DIGIT TO ONE RNK. 87-THE NODE NUMBER HAS PREVIOUSLY BEEN ASSIGNED TO A DIFFERENT PATTERN NUMBER. USE THE CHANGE ROUTINE. 88-A FIRST DIGIT CAN ONLY BE TRANSLATED IN A FIVE DIGIT DIALING PLAN. 89-THE NUMBER OF DIGITS IN THE LOCATION CODE HAS NOT BEEN SET IN PROC 285 WORD 1.				AAR-ROUTING 321
WORD 4	LOCATION CODE (RNK)	NODE NUMBER	CALL CATEGORY	PATTERN NUMBER	F D I I R G S I T T	
	1	2	3	4	5	

Beginning with G2.2, automatic routing via Pattern 1 does not occur. Every valid location code must be assigned in Procedure 314. When a user dials a WCR DAC followed by an unassigned location code, the switch returns Intercept Treatment to the caller.

To emulate the pre-G2.2 operation, assign all 7-digit numbers (that are not otherwise assigned in Procedure 314) to resolve to a VNI where Pattern 1 is used for routing.

Assuming that call categories are not assigned, VNI 1 causes the WCR software to select a preference in Pattern 1. The following example assigns all otherwise unassigned 7-digit strings beginning with the digit “2” to resolve to VNI 1. (Provide similar administration for the leading digits “3” through “9.”)

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	2
2. Digit 2:	--
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	1 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 2 ;;;;1 1 7 6 0 1 0 2 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

5.3 Automatic Route Selection

5.3.1 Office Codes in the Home NPA

Before G2.2, a routing designator was assigned for each office code in the home NPA in Procedure 311 Word 1.

FLIPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION OFFICE AND SERVICE CODES FOR HOME NPA		845552223	
INPUT FIELDS: DISPLAY: 1 ADD: 1-2 REMOVE: 1-2 CHANGE: 2 NEXT DATA: DISPLAY ALL OFFICE CODES WITH ASSIGNED ROUTING DESIGNATORS OTHER THAN 1.		NOTES: 1. A REMOVE ROUTING CAUSES DESIGNATOR 1 (INTERCEPT) TO BE PUT IN TRANSLATION FOR THE OFFICE CODE OR SERVICE CODE. 2. WHEN THE OFFICE CODE FIELD IS LESS THAN 200 AND THE MIDDLE DIGIT IS 0 OR 1, THE NPA TRANSLATION IS UPDATED. WHEN GREATER THAN 199 THE HOME NPA TRANSLATION IS UPDATED. 3. TO ASSIGN A ROUTING DESIGNATOR FOR '01X' CALLS, ENTER 1 IN FIELD 1.		FIELD LIMITS: FIELD 1 = 0-9, 10-19, 100-109, 110, 119, 200-999 FIELD 2 = 1-64	
WORD 1	OFFICE CODE	ROUTING DESIGNATOR FOR ALL PLANS	ARS - HOME NPA		
	1	2	311		

Beginning with G2.2, a VNI is assigned for each office code in the home NPA in Procedure 314 Word 1.

ENHANCED MODE - PROCEDURE: 314, WORD: 1

NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION

STRING IDENTIFIER

1. Digit 1:

2. Digit 2:

3. Digit 3:

4. Digit 4:

5. Digit 5:

6. Digit 6:

7. Segment:

8. Last Segment: Last Segment - Add to Standard Network

9. String Length:

10. String Type: Address

11. Action: Resolve

12. Action Object: Virtual Nodepoint Identifier

13. Action Attribute: Facility Restriction Level

14. Network Number:

Connected to CC0 ON-LINE ♥

enter command: p314w1 5 3 8 ;;;1 1 7 6 0 51 0 1 axdx_

5.3.2 Service Codes — X11

Before G2.2, a routing designator was assigned for each service code such as “911” in Procedure 311 Word 1.

FLIPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION OFFICE AND SERVICE CODES FOR HOME NPA		845552223
INPUT FIELDS: DISPLAY: 1 ADD: 1-2 REMOVE: 1-2 CHANGE: 2 NEXT DATA: DISPLAY ALL OFFICE CODES WITH ASSIGNED ROUTING DESIGNATORS OTHER THAN 1.		NOTES: 1. A REMOVE ROUTING CAUSES DESIGNATOR 1 (INTERCEPT) TO BE PUT IN TRANSLATION FOR THE OFFICE CODE OR SERVICE CODE. 2. WHEN THE OFFICE CODE FIELD IS LESS THAN 200 AND THE MIDDLE DIGIT IS 0 OR 1, THE NPA TRANSLATION IS UPDATED. WHEN GREATER THAN 199 THE HOME NPA TRANSLATION IS UPDATED. 3. TO ASSIGN A ROUTING DESIGNATOR FOR '01X' CALLS, ENTER 1 IN FIELD 1.		FIELD LIMITS: FIELD 1 = 0-9, 10-19, 100-109, 110, 119, 200-999 FIELD 2 = 1-64
WORD 1	OFFICE CODE	ROUTING DESIGNATOR FOR ALL PLANS	ARS - HOME NPA	
	9 1 1	1 8	311	
	1	2		

Beginning with G2.2, a VNI is assigned for each service code in Procedure 314 Word 1.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	9
2. Digit 2:	1
3. Digit 3:	1
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	3
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	51 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 9 1 1 ;;;1 1 3 6 0 51 0 1 axdx_	
2 Repeat	3 Form
5 Help	6 Field 7 Input 8 Cmds

The WCR feature does not require that digits with the service-code format (X11) serve only as 3-digit strings. For example, the digits “811” could be a string identifier for a 7-digit public-network number.

ENHANCED MODE - PROCEDURE: 314, WORD: 1
 NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION

STRING IDENTIFIER

1. Digit 1:

2. Digit 2:

3. Digit 3:

4. Digit 4:

5. Digit 5:

6. Digit 6:

7. Segment:

8. Last Segment: Last Segment - Add to Standard Network

9. String Length:

10. String Type: Address

11. Action: Resolve

12. Action Object: Virtual Nodepoint Identifier

13. Action Attribute: Facility Restriction Level

14. Network Number:

Connected to CC0 ON-LINE ♥

enter command: p314w1 8 1 1 ;;;1 1 7 6 0 51 0 1 axdx_

5.3.3 3-Digit Translation — Foreign NPAs

Before G2.2, three routing designators were assigned for each area code in Procedure 311 Word 2. There was one routing designator for each time-of-day plan.

FLIPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION - AREA CODE FOR FOREIGN NPA										845552223			
INPUT FIELDS: DISPLAY: 1-2 ADD: 1-12 REMOVE: NOT ALLOWED CHANGE: 3-12 NEXT DATA: DISPLAYS ALL AREA CODES WITH ASSOCIATED ROUTING DESIGNATORS OTHER THAN 1.			SPECIAL ERROR CODES: 81-IF SIX-DIGIT TRANSLATION IS TO BE USED FOR AN NPA, ENTER A 6 IN FIELD 2. THERE MUST BE DATA IN AT LEAST ONE ROUTING DESIGNATOR FIELD. WHEN THREE AND SIX DIGIT TRANSLATION ARE BOTH USED, THE SIX DIGIT TRANSLATION MUST BE ADDED OR CHANGED FIRST.								82-IF THREE DIGIT TRANSLATION IS TO BE USED, ENTER A 3 IN FIELD 2. DASHES MUST BE PRESENT IN FIELDS (6-12). ALSO, THERE MUST BE DATA IN AT LEAST ONE OF THE THREE DIGIT TRANSLATION ROUTING DESIGNATOR FIELDS. SIX DIGIT TRANSLATION MUST BE PRESENT FOR ANY DASHED THREE DIGIT PATTERN FIELD.				
WORD 2	AREA CODE	NT URD WAT BNG EST RLT AS OT FIO N	ROUTING DESIGNATORS										ARS - FOREIGN NPA		
	2 1 2	2	ROUTING DESIGNATOR 1	ROUTING DESIGNATOR 2	ROUTING DESIGNATOR 3	ROUTING DESIGNATOR 4	ROUTING DESIGNATOR 5	ROUTING DESIGNATOR 6	ROUTING DESIGNATOR 7	ROUTING DESIGNATOR 8	ROUTING DESIGNATOR 9	ROUTING DESIGNATOR 10	ROUTING DESIGNATOR 11	ROUTING DESIGNATOR 12	311
	1	2	3	4	5	6	7	8	9	10	11	12			

Beginning with G2.2, a VNI is assigned for each area code in Procedure 314 Word 1. For WCR, time-of-day plans (to be discussed later) are part of generalized route selection (GRS). The following example assigns the area code “212” to resolve to VNI 53.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	2
2. Digit 2:	1
3. Digit 3:	2
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	10
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	53 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 2 1 2 1 ;;;1 1 10 6 0 53 0 1 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

5.3.4 6-Digit Translation — Foreign NPA Plus Office Code

Before G2.2, up to 10 routing designators were assigned for each area code in Procedure 311 Word 2.

FLIPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION - AREA CODE FOR FOREIGN NPA										845552223	
INPUT FIELDS: DISPLAY: 1-2 ADD: 1-12 REMOVE: NOT ALLOWED CHANGE: 3-12 NEXT DATA: DISPLAYS ALL AREA CODES WITH ASSOCIATED ROUTING DESIGNATORS OTHER THAN 1.		SPECIAL ERROR CODES: 81-IF SIX-DIGIT TRANSLATION IS TO BE USED FOR AN NPA, ENTER A 6 IN FIELD 2. THERE MUST BE DATA IN AT LEAST ONE ROUTING DESIGNATOR FIELD. WHEN THREE AND SIX DIGIT TRANSLATION ARE BOTH USED, THE SIX DIGIT TRANSLATION MUST BE ADDED OR CHANGED FIRST.										82-IF THREE DIGIT TRANSLATION IS TO BE USED, ENTER A 3 IN FIELD 2. DASHES MUST BE PRESENT IN FIELDS (6-12). ALSO, THERE MUST BE DATA IN AT LEAST ONE OF THE THREE DIGIT TRANSLATION ROUTING DESIGNATOR FIELDS. SIX DIGIT TRANSLATION MUST BE PRESENT FOR ANY DASHED THREE DIGIT PATTERN FIELD.	
WORD 2	AREA CODE	ROUTING DESIGNATORS										ARS - FOREIGN NPA	
	4 1 5 6	ROUTING DESIGNATOR 1	ROUTING DESIGNATOR 2	ROUTING DESIGNATOR 3	ROUTING DESIGNATOR 4	ROUTING DESIGNATOR 5	ROUTING DESIGNATOR 6	ROUTING DESIGNATOR 7	ROUTING DESIGNATOR 8	ROUTING DESIGNATOR 9	ROUTING DESIGNATOR 10	311	
	1 2	3	4	5	6	7	8	9	10	11	12		

The routing designator that each office code in a specific area code uses is assigned in Procedure 311 Word 3.

FLTPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION - SIX-DIGIT TRANSLATION		845552223	
INPUT FIELDS: DISPLAY: 1-2 ADD: 1-3 REMOVE: NOT ALLOWED CHANGE: 3 NEXT DATA: DISPLAYS ALL OFFICE CODES WITHIN AN AREA CODE ASSIGNED OR DEFAULTED ON A ROUTING DESIGNATOR OTHER THAN 1.		SPECIAL ERROR CODES: 81-SIX-DIGIT TRANSLATION MUST EXIST TO USE THIS WORD. USE WORD 2 TO ASSIGN SIX-DIGIT ROUTING DESIGNATORS. 82-ROUTING DESIGNATOR NUMBER (FIELD 3) MUST BE ASSIGNED IN SIX DIGIT TRANSLATION (PROC 311 WORD 2) BEFORE IT CAN BE USED HERE.		NOTES: 1. IN THE ABSENCE OF AN ASSIGNED ROUTING DESIGNATOR, OFFICE CODES DEFAULT TO THE FIRST ROUTING DESIGNATOR (PROC 311, WORD 2) OR, IF THE FIRST ROUTING DESIGNATOR IS DASHED, DEFAULT TO ROUTING DESIGNATOR 1. ROUTING DESIGNATOR 1 IS NORMALLY USED TO ROUTE TO INTERCEPT. FIELD LIMITS: FIELD 1: 200-219, 300-319...900-919 FIELD 2: 200-999 FIELD 3: 1-64	
WORD 3	NPA (AREA CODE)	OFFICE CODE	ROUTING DESIGNATOR	ARS - DIGIT TRANSLATION	
	1	2	3	311	

Beginning with G2.2, a VNI is assigned for an area-code/office-code string in Procedure 314 Word 1. The WCR feature removes the limitation of allowing only 10 possible routes for each area code.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	4
2. Digit 2:	1
3. Digit 3:	5
4. Digit 4:	5
5. Digit 5:	3
6. Digit 6:	8
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	10
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	51 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 4 1 5 5 3 8 1 1 10 6 0 51 0 1 axdx_	
2 Repeat	3 Form
5 Help	6 Field 7 Input 8 Cmds

FLTPCHART ISSUE 8		TEN - DIGIT CONVERSION										845552223	
INPUT FIELDS:			SPECIAL ERROR CODES:							NOTES:			
DISPLAY: 1-3, 1-4, 1-5, 1-6 ADD: 1-3, 1-4, 1-5, 1-6 & 7 REMOVE: 1-3, 1-4, 1-5, 1-6 CHANGE: 1-3, 1-4, 1-5, 1-6 & 7 NEXT DATA: DISPLAYS ALL THE CONVERSION NUMBERS ASSIGNED TO BE CONVERTED TO A RNK LOCATION CODE.			81-NUMBER IS ASSIGNED AS A CONTROLLED NUMBER IN PROC 313 WORD 1. 82-PART OF THIS BLOCK IS CURRENTLY TRANSLATED. 83-THE 6-DIGIT TABLE IS FULL 84-THE 7-DIGIT TABLE IS FULL 85-THE 8-DIGIT TABLE IS FULL 86-THE 9-DIGIT TABLE IS FULL 87-THE 10-DIGIT TABLE IS FULL							1. YOU CANNOT HAVE A RNK WITH A FIRST DIGIT THE SAME AS THE CDR ACCOUNT CODE PREFIX OR RESERVED DIGIT ADMINISTERED IN PROC 285 WORD 1. FIELD LIMITS: FIELD 1: 220-299, 320-399..920-999 FIELD 2: 200-999 FIELD 3: 0-9 FIELDS 4-6: -, 0-9 FIELD 7: 221-999			
WORD 2	AREA CODE (NPA)	OFFICE CODE (NNX)	D I G I T	D I G I T	D I G I T	D I G I T	RNK (LOCATION CODE)	10-DIGIT CONVERSION					
	1	2	3	4	5	6	7	312					

Beginning with G2.2, m-to-n conversion is assigned in Procedure 314 Word 1 and Procedure 320 Word 1. The WCR feature can convert dialed digit strings of other than 10 digits to routing digit strings of other than 7 digits. The restart action is assigned to the digit string needing conversion in Field 12 of Procedure 314 Word 1. Also, the desired digit-modification attributes are assigned in Procedure 320 Word 1.

Example: Suppose that every 10-digit number with the leading digits “415-538-2” should be converted to a 7-digit number with the location code “465” and then routed using Routing Network 2 (the usual routing network for AAR calls).

The following assignment would cause these 10-digit numbers to modify the dialed digits according to digit-modification index “17” and then to crossover to Routing Network 2.

NOTE

The 7-digit string identifier “4155382” must be assigned in two segments since this string identifier contains more than six digits.

ENHANCED MODE - PROCEDURE: 314, WORD: 1 NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	4
2. Digit 2:	1
3. Digit 3:	5
4. Digit 4:	5
5. Digit 5:	3
6. Digit 6:	8
7. Segment:	1
8. Last Segment:	0 Segment is not the last for this SI
9. String Length:	--
10. String Type:	-
11. Action:	-
12. Action Object:	----
13. Action Attribute:	-
14. Network Number:	-
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 4 1 5 5 3 8 1 0 axdx_	
2 Repeat	3 Form
5 Help	6 Field 7 Input 8 Cmds

ENHANCED MODE - PROCEDURE: 314, WORD: 1 NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	2
2. Digit 2:	--
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	2
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	10
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	17 Digit Modification Index
13. Action Attribute:	2 Network Number
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: rs 2 ;;;;2 1 10 6 1 17 2 1 axdx_	
2 Repeat	3 Form
5 Help	6 Field 7 Input 8 Cmds

The following assignment would cause digit-modification index “17” to delete six digits and insert the digits “465.”

ENHANCED MODE - PROCEDURE: 320, WORD: 1 WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index: 17 2. Digits To Delete: 6 3. Segment Number: 1 Digits 1 to 8	
INSERTION DIGITS 4. Digit 1, 9, 17, or 25: 4 5. Digit 2, 10, 18, or 26: 6 6. Digit 3, 11, 19, or 27: 5 7. Digit 4, 12, 20, or 28: -- 8. Digit 5, 13, 21, or 29: -- 9. Digit 6, 14, 22, or 30: -- 10. Digit 7, 15, 23, or 31: -- 11. Digit 8, 16, 24: --	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 17 6 1 4 6 5 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

5.3.6 Unauthorized Call Control

Before G2.2, unauthorized call control was assigned in Procedure 275 and Procedure 313. The unauthorized call control FRL was assigned in Field 10 of Procedure 275 Word 3. The blocked public-network telephone numbers were assigned in Fields 1 through 6 of Procedure 313 Word 1. Thus, every controlled number had the same FRL.

FLIPCHART ISSUE 8		SYSTEM COS - MISCELLANEOUS										84552223															
INPUT FIELDS: DISPLAY: NONE ADD: NOT ALLOWED REMOVE: NOT ALLOWED CHANGE: 1, 14 NEXT DATA: NOT ALLOWED				CAUTIONS: FAILURE TO PROVIDE A LOCAL SWITCH NUMBER (FIELD 8) MAY RESULT IN LOST MESSAGES WHEN USING DCS CENTRALIZED MESSAGING. SPECIAL ERROR CODES: 81-REMOVE EXTENSION TRANSLATION IN PROC 350 WORD 1. 82-WHEN A LOCAL SWITCH NUMBER IS PROVIDED, THE TYPE MUST BE SPECIFIED IN FIELD 7. 83-THE TYPE (FIELD 7) CANNOT BE SPECIFIED WITHOUT A LOCAL SWITCH NUMBER IN FIELD 8.										84-NUMBER PORTABILITY CAN BE SPECIFIED ONLY IF MULTI-PREMISE AND STANDARD NETWORK ARE SPECIFIED IN PROC 276 WORD 1 AND A 4 OR 5-DIGIT DIAL PLAN IS SPECIFIED IN PROC 350 WORD 1. 85-THE LOCAL SWITCH NUMBER IN FIELD 8 IS ALREADY ASSIGNED AS A NODE NUMBER; IT MUST FIRST BE REMOVED IN PROC 354.													
TOLL CALL DATA		CALL COVERAGE		ABBREV DIAL		MULTI MACHINE NODES										C A L L F O L L O W T R O L L		D E M P A A N S D S W P O R R I D N T		S M D R D E F A U L T V A R I A B L E T I M E R		I N F O R D R R M I M I A A N L T A I L O N S		S M B O L R O C C A A A L G L E S		SYSTEM COS - MISCELLANEOUS	
WORD 3	DIAL 1 FOR TOLL	HOME NPA	R I C E N A S T L P E E N V R S A L E	C O V E R A G E P O I N T D O N ' T A N S I N T E R V A L	S Y L S S I S T E M E T E M	S A Y L C T S E E T S M S	T Y P E	S W I T C H T Y P E	C A S M A I N S W I T C H N U M B E R	10	11	12	13	14	15	16	17	18	19	20							
1			2	3		4	5	6	7			8		9	10	11	12	13	14	15							
275																											

ENHANCED MODE - PROCEDURE: 314, WORD: 1 NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER 1. Digit 1: 4 2. Digit 2: -- 3. Digit 3: -- 4. Digit 4: -- 5. Digit 5: -- 6. Digit 6: --	
7. Segment: 2 8. Last Segment: 1 Last Segment - Add to Standard Network 9. String Length: 10 10. String Type: 6 Address 11. Action: 0 Resolve 12. Action Object: 53 Virtual Nodepoint Identifier 13. Action Attribute: 6 Facility Restriction Level 14. Network Number: 1	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: rs 4 ;;;;2 1 10 6 0 53 6 1 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

5.3.7 Operator-Assisted Calls

Before G2.2, the routing designator for operator-assisted calls was assigned in Procedure 311 Word 1.

FLIPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION OFFICE AND SERVICE CODES FOR HOME NPA		845552223
INPUT FIELDS: DISPLAY: 1 ADD: 1-2 REMOVE: 1-2 CHANGE: 2 NEXT DATA: DISPLAY ALL OFFICE CODES WITH ASSIGNED ROUTING DESIGNATORS OTHER THAN 1.	NOTES: 1. A REMOVE ROUTING CAUSES DESIGNATOR 1 (INTERCEPT) TO BE PUT IN TRANSLATION FOR THE OFFICE CODE OR SERVICE CODE. 2. WHEN THE OFFICE CODE FIELD IS LESS THAN 200 AND THE MIDDLE DIGIT IS 0 OR 1, THE NPA TRANSLATION IS UPDATED. WHEN GREATER THAN 199 THE HOME NPA TRANSLATION IS UPDATED. 3. TO ASSIGN A ROUTING DESIGNATOR FOR '01X' CALLS, ENTER 1 IN FIELD 1.	FIELD LIMITS: FIELD 1 = 0-9, 10-19, 100-109, 110, 119, 200-999 FIELD 2 = 1-64		
WORD 1	OFFICE CODE 0	ROUTING DESIGNATOR FOR ALL PLANS 5	1	ARS - HOME NPA 311

The ARS feature used the same routing designator for the dialed digits “0,” “00,” “0 + 7 digits,” and “0 + 10 digits.”

The ARS feature automatically sent a “#” digit (as an end-of-sending digit) for operator-assisted calls.

The ARS feature did *not* apply dial “1” restrictions (Procedure 275 Word 3) to operator-assisted calls.

Beginning with G2.2, a VNI for operator-assisted calls is assigned in Procedure 314 Words 1 and 2. The following assignment causes the digit "0" followed by any number of digits to resolve to VNI 53.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	0
2. Digit 2:	--
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	1
10. String Type:	5 Operator Assistance
11. Action:	0 Resolve
12. Action Object:	53 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 0 ;;;;1 1 1 5 0 53 0 1 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

ENHANCED MODE - PROCEDURE: 314, WORD: 2	
NETWORK DIGIT ANALYSIS - STRING ATTRIBUTE SPECIFICATION	
1. Continue:	0 Terminate Digit Collection
2. Restart Analysis:	0
3. VNI Operation:	0 Reset VNI to ''0''
4. Freeze VNI:	0 Do Not Freeze
5. Maximum Length:	31 ←
6. Tone:	0 No Dial Tone Added
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: w2 cf5 31 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

When Field 5 (maximum string length) is assigned in Word 2, every digit stream longer than the length specified in Field 9 of Word 1 and shorter than the length specified in Field 5 of Word 2 will resolve to the VNI specified in Field 12 of Word 1.

The WCR feature will send a “#” digit (as an end-of-sending digit) when the attributes of the digit-sending index are assigned to do so. To send a trailing “#” for an operator-assisted call, specify a digit-sending index in Field 8 of Procedure 318 Word 1. Also, enter “1” in Field 16 (send “#”) of Procedure 321 Word 1.

NOTE

This assignment will also cause the switch to send a “#” for nonoperator-assisted calls that use the same digit-sending index.

ENHANCED MODE - PROCEDURE: 318, WORD: 1
WCR - NETWORK ROUTE TRANSLATION

1.	Pattern Number:	----	
2.	Preference Number:	--	
3.	Trunk Group:	---	
4.	Facility Restriction Level:	-	
5.	Warning Tone:	-	
6.	Toll-Free Index:	--	
7.	Digit Modification Index:	----	
8.	Digit Sending Index:	33	←
9.	ISDN Sending Index:	----	

Connected to CC0 ON-LINE ♥

enter command:

ENHANCED MODE - PROCEDURE: 321, WORD: 1 WCR - DIGIT SENDING TRANSLATION	
1. Digit Sending Index: 33	
DIAL ACCESS CODE (DAC) 2. Send DAC Flag: 0	
DAC DIGITS 3. Digit 1: -- 4. Digit 2: - 5. Digit 3: - 6. Digit 4: -	
INTEREXCHANGE CARRIER (IXC) 7. Send IXC Flag: 0	
CIC DIGITS 8. Digit 1: - 9. Digit 2: - 10. Digit 3: - 11. Digit 4: -	
TOLL PREFIX 12. Send Toll Prefix Flag: 0	
TOLL PREFIX DIGITS 13. Digit 1: - 14. Digit 2: - 15. Digit 3: -	
16. Send Pound Sign Flag: 1 Send "'#' <—	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p321w1 33 ;;;;;;;;;;;;;1 cxdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

5.3.8 International Routing — “01” and “011”

Before G2.2, international routing was assigned in Procedures 311 Word 1 and 312 Word 3.

FLIPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION OFFICE AND SERVICE CODES FOR HOME NPA		845552223
INPUT FIELDS: DISPLAY: 1 ADD: 1-2 REMOVE: 1-2 CHANGE: 2 NEXT DATA: DISPLAY ALL OFFICE CODES WITH ASSIGNED ROUTING DESIGNATORS OTHER THAN 1.		NOTES: 1. A REMOVE ROUTING CAUSES DESIGNATOR 1 (INTERCEPT) TO BE PUT IN TRANSLATION FOR THE OFFICE CODE OR SERVICE CODE. 2. WHEN THE OFFICE CODE FIELD IS LESS THAN 200 AND THE MIDDLE DIGIT IS 0 OR 1, THE NPA TRANSLATION IS UPDATED. WHEN GREATER THAN 199 THE HOME NPA TRANSLATION IS UPDATED. 3. TO ASSIGN A ROUTING DESIGNATOR FOR '01X' CALLS, ENTER 1 IN FIELD 1.		FIELD LIMITS: FIELD 1 = 0-9, 10-19, 100-109, 110, 119, 200-999 FIELD 2 = 1-64
WORD 1	OFFICE CODE	ROUTING DESIGNATOR FOR ALL PLANS	ARS - HOME NPA	
	1	5 5	311	

FLIPCHART ISSUE 8		INTERNATIONAL ROUTING		845552223
INPUT FIELDS: DISPLAY: 1-16 ADD: 1-17 REMOVE: 1-1 CHANGE: 1-17 NEXT DATA: DISPLAYS ALL THE INTERNATIONAL ROUTING NUMBERS.		SPECIAL ERROR CODES: 81-THIS NUMBER IS ASSIGNED AS A CONTROLLED NUMBER IN PROC 313 WORD 1. 82-ALL OR PART OF THIS NUMBER IS CURRENTLY TRANSLATED. 83-THE SIX-DIGIT TABLE IS FULL. 84-THE SEVEN-DIGIT TABLE IS FULL. 85-THE EIGHT-DIGIT TABLE IS FULL. 86-THE NINE-DIGIT TABLE IS FULL. 87-THE TEN-DIGIT TABLE IS FULL.		88-THE ELEVEN-DIGIT TABLE IS FULL. 89-THE TWELVE-DIGIT TABLE IS FULL. 90-THE THIRTEEN-DIGIT TABLE IS FULL. 91-THE FOURTEEN-DIGIT TABLE IS FULL. 92-THE FIFTEEN-DIGIT TABLE IS FULL. 93-THE SIXTEEN-DIGIT TABLE IS FULL. 94-THE SEVENTEEN-DIGIT TABLE IS FULL. 95-THE EIGHTEEN-DIGIT TABLE IS FULL.
WORD 3	INTERNATIONAL ACCESS CODE	ROUTING DESIGNATOR TO ALL PLANS	INTERNATIONAL ROUTING	
	0 1 1	5 4	312	

5-54 AAR/ARS vs WCR Comparative Administration

To emulate the pre-G2.2 operation of Procedure 311 Word 1, assign all calls with the leading dialed digits "01" or "011" and containing from 7 to 31 digits to resolve to a VNI (for example, VNI 54).

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	0
2. Digit 2:	1
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	4 International
11. Action:	0 Resolve
12. Action Object:	54 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 0 1 ;;;1 1 7 4 0 54 0 1 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

ENHANCED MODE - PROCEDURE: 314, WORD: 2	
NETWORK DIGIT ANALYSIS - STRING ATTRIBUTE SPECIFICATION	
1. Continue:	0 Terminate Digit Collection
2. Restart Analysis:	0
3. VNI Operation:	0 Reset VNI to ''0''
4. Freeze VNI:	0 Do Not Freeze
5. Maximum Length:	31 ←
6. Tone:	0 No Dial Tone Added
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: w2 cf5 31 cxdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

To emulate the pre-G2.2 operation of Procedure 312 Word 3, assign all calls with specific leading dialed digits (for example, “0114158”) and containing from 7 to 31 digits to resolve to a different VNI (for example, VNI 55).

Procedure 314 Word 1 allows the switch to select a route based on as many as 18 leading digits (that is, 3 6-digit segments). In the following example, the 7-digit string identifier “0114158” is assigned in two segments since this string identifier contains seven digits.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	0
2. Digit 2:	1
3. Digit 3:	1
4. Digit 4:	4
5. Digit 5:	1
6. Digit 6:	5
7. Segment:	1
8. Last Segment:	0 Segment is not the last for this SI.
9. String Length:	--
10. String Type:	-
11. Action:	-
12. Action Object:	----
13. Action Attribute:	-
14. Network Number:	-
Connected to CC0 ON-LINE ▼ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 0 1 1 4 1 5 1 0 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	8
2. Digit 2:	--
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	2
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	4 International
11. Action:	0 Resolve
12. Action Object:	55 Virtual Nodepoint Idnetifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ▼ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: rs 8 ;;;;2 1 7 4 0 55 0 1 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

ENHANCED MODE - PROCEDURE: 314, WORD: 2	
NETWORK DIGIT ANALYSIS - STRING ATTRIBUTE SPECIFICATION	
1.	Continue: 0 Terminate Digit Collection
2.	Restart Analysis: 0
3.	VNI Operation: 0 Reset VNI to ''0''
4.	Freeze VNI: 0 Do Not Freeze
5.	Maximum Length: 31 ←
6.	Tone: 0 No Dial Tone Added
Connected to CC0 ON-LINE ♥	
MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: w2 cf5 31 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

The WCR feature sends a “#” digit (as an end-of-sending digit) when the attributes of the digit-sending index are assigned to do so. To send a trailing “#” for an international call, specify a digit-sending index in Field 8 of Procedure 318 Word 1. Also, enter “1” in Field 16 (send “#”) of Procedure 321 Word 1.

NOTE

This assignment will also cause the switch to send a “#” for noninternational calls that use the same digit-sending index.

ENHANCED MODE - PROCEDURE: 318, WORD: 1
WCR - NETWORK ROUTE TRANSLATION

1.	Pattern Number:	----	
2.	Preference Number:	--	
3.	Trunk Group:	---	
4.	Facility Restriction Level:	-	
5.	Warning Tone:	-	
6.	Toll-Free Index:	--	
7.	Digit Modification Index:	----	
8.	Digit Sending Index:	34	←
9.	ISDN Sending Index:	----	

Connected to CC0 ON-LINE ♥

MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT

enter command: _

2 Repeat 3 Form

5 Help 6 Field 7 Input 8 Cmds

ENHANCED MODE - PROCEDURE: 321, WORD: 1					
WCR - DIGIT SENDING TRANSLATION					
1. Digit Sending Index: 34					
DIAL ACCESS CODE (DAC)					
2. Send DAC Flag: 0					
DAC DIGITS					
3. Digit 1: --	4. Digit 2: -	5. Digit 3: -	6. Digit 4: -		
INTEREXCHANGE CARRIER (IXC)					
7. Send IXC Flag: 0					
CIC DIGITS					
8. Digit 1: -	9. Digit 2: -	10. Digit 3: -	11. Digit 4: -		
TOLL PREFIX					
12. Send Toll Prefix Flag: 0					
TOLL PREFIX DIGITS					
13. Digit 1: -	14. Digit 2: -	15. Digit 3: -			
16. Send Pound Sign Flag: 1 Send "'#' <-----					
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT					
enter command: p321w1 34 ;;;;;;;;;;;;;;1 cxdx_					
2 Repeat	3 Form	5 Help		6 Field	7 Input
8 Cmds					

5.3.9 Automatic Routing via Pattern 1

Before G2.2, if a user dialed an ARS DAC followed by a destination code that was not assigned in Procedure 311 or 312, the call automatically routed using Pattern 1. When Pattern 1 was unassigned, the switch returned Intercept Treatment to the caller. When Pattern 1 was assigned, the switch routed the call using Pattern 1.

Beginning with G2.2, automatic routing via Pattern 1 does not occur. Every valid destination code must be assigned in Procedure 314. When a user dials a WCR DAC followed by an unassigned public-network digit string, the switch returns Intercept Treatment to the caller.

To emulate the pre-G2.2 operation for 7-digit public-network numbers, assign all 7-digit numbers (that are not otherwise assigned in Procedure 314) to resolve to a VNI where Pattern 1 is used for routing.

Assuming that call categories are not assigned, VNI 1 causes the WCR software to select a preference in Pattern 1. The following example assigns all otherwise unassigned 7-digit (office code) strings beginning with the digit "2" to resolve to VNI 1. (Provide similar administration for the leading digits "3" through "9.")

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	2
2. Digit 2:	--
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	1 Virtual Nodepoint Idnetifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥	
MAJOR	MINOR
RUN TAPE	BUSY OUT
IN USE	WAIT
enter command: p314w1 2 ;;;;1 1 7 6 0 1 0 1 axdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

The following example assigns all otherwise unassigned 10-digit (area code plus office code) strings beginning with the digit “2” to resolve to VNI 1. (Provide similar administration for the leading digits “3” through “9.”)

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	2
2. Digit 2:	--
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	10
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	1 Virtual Nodepoint Idnetifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥	
MAJOR	MINOR
RUN TAPE	BUSY OUT
IN USE	WAIT
enter command: p314w1 2 ;;;;1 1 10 6 0 1 0 1 axdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

If the 1-digit string “0” is not assigned as an operator-assistance string identifier in Procedure 314 Word 1, then “0” must also resolve to a VNI where Pattern 1 is used for routing.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	0
2. Digit 2:	--
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	1
10. String Type:	5 Operator Assistance
11. Action:	0 Resolve
12. Action Object:	1 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 0 ;;;;1 1 1 5 0 1 0 1 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

ENHANCED MODE - PROCEDURE: 314, WORD: 2	
NETWORK DIGIT ANALYSIS - STRING ATTRIBUTE SPECIFICATION	
1. Continue:	0 Terminate Digit Collection
2. Restart Analysis:	0
3. VNI Operation:	0 Reset VNI to ''0''
4. Freeze VNI:	0 Do Not Freeze
5. Maximum Length:	31 ←
6. Tone:	0 No Dial Tone Added
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: w2 cf5 31 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

5.3.10 Home NPA Routing

Before G2.2, when a user dialed a 10-digit number (including the home NPA assigned in Field 2 of Procedure 275 Word 3) for a local call that could have been dialed as a 7-digit number, the ARS software ignored the dialed NPA for routing. Instead, the ARS software used the routing designator assigned to the dialed office code (Procedure 311 Word 1) for routing.

FLIPCHART ISSUE 8		SYSTEM COS - MISCELLANEOUS										845552223											
INPUT FIELDS:				CAUTIONS:										84-NUMBER PORTABILITY CAN BE SPECIFIED ONLY IF MULTI-PREMISE AND STANDARD NETWORK ARE SPECIFIED IN PROC 276 WORD 1 AND A 4 OR 5-DIGIT DIAL PLAN IS SPECIFIED IN PROC 350 WORD 1. 85-THE LOCAL SWITCH NUMBER IN FIELD 8 IS ALREADY ASSIGNED AS A NODE NUMBER; IT MUST FIRST BE REMOVED IN PROC 354.									
DISPLAY: NONE				FAILURE TO PROVIDE A LOCAL SWITCH NUMBER (FIELD 8) MAY RESULT IN LOST MESSAGES WHEN USING DCS CENTRALIZED MESSAGING.																			
ADD: NOT ALLOWED				SPECIAL ERROR CODES:																			
REMOVE: NOT ALLOWED				81-REMOVE EXTENSION TRANSLATION IN PROC 350 WORD 1.																			
CHANGE: 1, -14				82-WHEN A LOCAL SWITCH NUMBER IS PROVIDED, THE TYPE MUST BE SPECIFIED IN FIELD 7.																			
NEXT DATA: NOT ALLOWED				83-THE TYPE (FIELD 7) CANNOT BE SPECIFIED WITHOUT A LOCAL SWITCH NUMBER IN FIELD 8.																			
TOLL CALL DATA		CALL COVERAGE		ABBRV DIAL		MULTI MACHINE NODES		C A L L		D E M P A A N S D S W O R D I N T		S M D R D E F A U L T V A R I A B L E T I M E R		I N F O R M A T I O N		S M B D L R O C K K A A L G L E S		SYSTEM COS - MISCELLANEOUS					
WORD 3	DIAL 1 FOR TOLL	HOME NPA	R I C E N A S T L P E R S A L E	COVERAGE POINT DON'T ANSWERS INTERVAL	S Y L S S I S Z E T E H	S A Y L C S I C S E S S	TYPE	SWITCH TYPE	CAS MAIN SWITCH NUMBER											275			
	1	3 0 3	2	3	4	5	6	7	8	9	10	11	12	13	14								

FLIPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION OFFICE AND SERVICE CODES FOR HOME NPA										845552223											
INPUT FIELDS:				NOTES:										FIELD LIMITS:									
DISPLAY: 1				1. A REMOVE ROUTING CAUSES DESIGNATOR 1 (INTERCEPT) TO BE PUT IN TRANSLATION FOR THE OFFICE CODE OR SERVICE CODE.										FIELD 1 = 0-9, 10-19, 100-109, 110, 119, 200-999									
ADD: 1-2				2. WHEN THE OFFICE CODE FIELD IS LESS THAN 200 AND THE MIDDLE DIGIT IS 0 OR 1, THE NPA TRANSLATION IS UPDATED. WHEN GREATER THAN 199 THE HOME NPA TRANSLATION IS UPDATED.										FIELD 2 = 1-64									
REMOVE: 1-2				3. TO ASSIGN A ROUTING DESIGNATOR FOR '01X' CALLS, ENTER 1 IN FIELD 1.																			
CHANGE: 2																							
NEXT DATA: DISPLAY ALL OFFICE CODES WITH ASSIGNED ROUTING DESIGNATORS OTHER THAN 1.																							
WORD 1	OFFICE CODE	ROUTING DESIGNATOR FOR ALL PLANS																		ARS - HOME NPA			
	5 3 8	1	2																	311			

Beginning with G2.2, the WCR feature does not ignore a dialed home NPA unless instructed by translations in Procedure 314 Word 1.

To emulate the pre-G2.2 operation for home NPA routing, the home NPA must be assigned as a string identifier in Procedure 314 Word 1. Assuming that the home NPA is "303," the following assignment would cause Routing Network 1 to collect the 10-digit string, delete the home NPA, and then restart in the same routing network where digit analysis can continue without the NPA. Then, according to the office-code translations in Procedure 314 Word 1, the WCR feature can route the call according to the dialed office code.

ENHANCED MODE - PROCEDURE: 314, WORD: 1
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION

STRING IDENTIFIER

1. Digit 1:
2. Digit 2:
3. Digit 3:
4. Digit 4:
5. Digit 5:
6. Digit 6:
7. Segment:
8. Last Segment: Last Segment - Add to Standard Network
9. String Length:
10. String Type: Address
11. Action: Restart
12. Action Object: Digit Modification Index
13. Action Attribute: Network Number
14. Network Number:

Connected to CC0 ON-LINE ♥

enter command: p314w1 3 0 3 ;;1 1 10 6 1 128 1 1 axdx_

ENHANCED MODE - PROCEDURE: 320, WORD: 1
WCR - NETWORK DIGIT MODIFICATION

1. Digit Modification Index:
2. Digits To Delete:
3. Segment Number: No Digits to Insert

INSERTION DIGITS

4. Digit 1, 9, 17, or 25:
5. Digit 2, 10, 18, or 26:
6. Digit 3, 11, 19, or 27:
7. Digit 4, 12, 20, or 28:
8. Digit 5, 13, 21, or 29:
9. Digit 6, 14, 22, or 30:
10. Digit 7, 15, 23, or 31:
11. Digit 8, 16, 24:

Connected to CC0 ON-LINE ♥

enter command: p320w1 128 3 0 cxdx_

5.3.11 “555” Routing

Before G2.2, when a user dialed the office code “555,” the ARS software ignored the dialed NPA for routing. Instead, the ARS software routed the call using the routing designator assigned to home-NPA office code “555” in Fields 1 and 2 of Procedure 311 Word 1.

If the office code “555” was not specifically entered in Field 1, the ARS software routed the call using Routing Designator 1. Assuming that call categories were not assigned, Routing Designator 1 caused the ARS software to select a preference in Pattern 1.

FLTPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION OFFICE AND SERVICE CODES FOR HOME NPA		845552223	
INPUT FIELDS: DISPLAY: 1 ADD: 1-2 REMOVE: 1-2 CHANGE: 2 NEXT DATA: DISPLAY ALL OFFICE CODES WITH ASSIGNED ROUTING DESIGNATORS OTHER THAN 1.		NOTES: 1. A REMOVE ROUTING CAUSES DESIGNATOR 1 (INTERCEPT) TO BE PUT IN TRANSLATION FOR THE OFFICE CODE OR SERVICE CODE. 2. WHEN THE OFFICE CODE FIELD IS LESS THAN 200 AND THE MIDDLE DIGIT IS 0 OR 1, THE NPA TRANSLATION IS UPDATED. WHEN GREATER THAN 199 THE HOME NPA TRANSLATION IS UPDATED. 3. TO ASSIGN A ROUTING DESIGNATOR FOR '01X' CALLS, ENTER 1 IN FIELD 1.		FIELD LIMITS: FIELD 1 = 0-9, 10-19, 100-109, 110, 119, 200-999 FIELD 2 = 1-64	
WORD 1	OFFICE CODE	ROUTING DESIGNATOR FOR ALL PLANS	ARS - HOME NPA		
	5 5 5	8 2	311		

Beginning with G2.2, the WCR software does not ignore a dialed NPA for “555” routing unless instructed by translations in Procedure 314 Word 1.

To emulate the pre-G2.2 operation for “555” routing, the dialed digits “NPA-555” must be assigned as the exception wild-card string identifier “***555” in Procedure 314 Word 1 so that this string identifier resolves to the same VNI that the local office-code string identifier “555” resolves to.

The following assignments resolve the string identifiers “555” and “***555” to VNI 82.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	5
2. Digit 2:	5
3. Digit 3:	5
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	82 Virtual Nodepoint Idnetifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 5 5 5 ;;1 1 7 6 0 82 0 1 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	*
2. Digit 2:	*
3. Digit 3:	*
4. Digit 4:	5
5. Digit 5:	5
6. Digit 6:	5
7. Segment:	1
8. Last Segment:	2 Last Segment - Add to Exception Network
9. String Length:	10
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	82 Virtual Nodepoint Idnetifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 11 11 11 5 5 5 1 2 10 6 0 82 0 1 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

“800-555” Routing

Before G2.2, when a user dialed the digits “800-555-XXXX,” the ARS software did not route the call according to the “555” translations. Instead, the call was routed according to the translations in Word 2 (3-digit foreign NPA translation) or Word 3 (6-digit foreign NPA translation) of Procedure 311 for the “800 area code.”

If the area code “800” was not specifically entered in Field 1 of either word, the ARS software routed the call using Routing Designator 1. Assuming that call categories were not assigned, Routing Designator 1 caused the ARS software to select a preference in Pattern 1.

FLIPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION - AREA CODE FOR FOREIGN NPA										845552223			
INPUT FIELDS: DISPLAY: 1-2 ADD: 1-12 REMOVE: NOT ALLOWED CHANGE: 3-12 NEXT DATA: DISPLAYS ALL AREA CODES WITH ASSOCIATED ROUTING DESIGNATORS OTHER THAN 1.			SPECIAL ERROR CODES: 81-IF SIX-DIGIT TRANSLATION IS TO BE USED FOR AN NPA, ENTER A 6 IN FIELD 2. THERE MUST BE DATA IN AT LEAST ONE ROUTING DESIGNATOR FIELD. WHEN THREE AND SIX DIGIT TRANSLATION ARE BOTH USED, THE SIX DIGIT TRANSLATION MUST BE ADDED OR CHANGED FIRST.						82-IF THREE DIGIT TRANSLATION IS TO BE USED, ENTER A 3 IN FIELD 2. DASHES MUST BE PRESENT IN FIELDS (6-12). ALSO, THERE MUST BE DATA IN AT LEAST ONE OF THE THREE DIGIT TRANSLATION ROUTING DESIGNATOR FIELDS. SIX DIGIT TRANSLATION MUST BE PRESENT FOR ANY DASHED THREE DIGIT PATTERN FIELD.						
WORD 2	AREA CODE	NT URD NPA 1 BNG ESI RLT AS OF IO N2	ROUTING DESIGNATOR 1	ROUTING DESIGNATOR 2	ROUTING DESIGNATOR 3	ROUTING DESIGNATOR 4	ROUTING DESIGNATOR 5	ROUTING DESIGNATOR 6	ROUTING DESIGNATOR 7	ROUTING DESIGNATOR 8	ROUTING DESIGNATOR 9	ROUTING DESIGNATOR 10	ROUTING DESIGNATOR 11	ROUTING DESIGNATOR 12	ARS - FOREIGN NPA
	8 0 0														311

FLIPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION - SIX-DIGIT TRANSLATION										845552223			
INPUT FIELDS: DISPLAY: 1-2 ADD: 1-3 REMOVE: NOT ALLOWED CHANGE: 3 NEXT DATA: DISPLAYS ALL OFFICE CODES WITHIN AN AREA CODE ASSIGNED OR DEFAULTED ON A ROUTING DESIGNATOR OTHER THAN 1.			SPECIAL ERROR CODES: 81-SIX-DIGIT TRANSLATION MUST EXIST TO USE THIS WORD. USE WORD 2 TO ASSIGN SIX-DIGIT ROUTING DESIGNATORS. 82-ROUTING DESIGNATOR NUMBER (FIELD 3) MUST BE ASSIGNED IN SIX DIGIT TRANSLATION (PROC 311 WORD 2) BEFORE IT CAN BE USED HERE.						NOTES: 1. IN THE ABSENCE OF AN ASSIGNED ROUTING DESIGNATOR, OFFICE CODES DEFAULT TO THE FIRST ROUTING DESIGNATOR (PROC 311, WORD 2) OR, IF THE FIRST ROUTING DESIGNATOR IS DASHED, DEFAULT TO ROUTING DESIGNATOR 1. ROUTING DESIGNATOR 1 IS NORMALLY USED TO ROUTE TO INTERCEPT. FIELD LIMITS: FIELD 1: 200-219, 300-319...900-919 FIELD 2: 200-999 FIELD 3: 1-64						
WORD 3	NPA (AREA CODE)	OFFICE CODE	ROUTING DESIGNATOR												ARS - DIGIT TRANSLATION
	8 0 0	5 5 5													311

To emulate the pre-G2.2 operation for 6-digit “800-555” routing, the dialed digits “800555” are assigned as an exception string identifier in Procedure 314 Word 1 so that this string identifier resolves to a different VNI than the wild-card string identifier “***555” resolves to.

The following assignment resolves the string identifier “800555” to VNI (for example, “286”) for special treatment.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	8
2. Digit 2:	0
3. Digit 3:	0
4. Digit 4:	5
5. Digit 5:	5
6. Digit 6:	5
7. Segment:	1
8. Last Segment:	2 Last Segment - Add to Exception Network
9. String Length:	10
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	286 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 8 0 0 5 5 1 2 10 6 0 286 0 1 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

5.3.12 Time-of-Day Plans

Before G2.2, the ARS feature supported three time-of-day plans. Plan numbers were entered as part of the pattern translations in Procedure 309. Each pattern contained three preference lists — one list for each time-of-day plan.

FLTPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION - ROUTE TABLES										845552223	
INPUT FIELDS: DISPLAY: 1-3, 4 ADD: 1-12 REMOVE: 1-12 ALSO REMOVES ALL DATA IN WORDS 3 AND 4 CHANGE: 4-12 NEXT DATA: DISPLAY ALL ASSIGNED PREFERENCES AND PATTERNS NOT ALLOWED ON FIELD 4.				SPECIAL ERROR CODES: 81-ADD PREFERENCE NUMBERS STARTING WITH 1. DO NOT LEAVE GAPS. 82-REMOVE PREFERENCE NUMBERS STARTING WITH THE HIGHEST NUMBER. WHEN REMOVING A SMALLER NUMBER, MOVE THE HIGHER ONES TO FILL GAPS.				NOTES: 1. ONLY ONE ARS PLAN CAN BE ACTIVE AT A TIME. 2. PATTERN 1 IS NORMALLY RESERVED FOR INTERCEPT. 3. THE LOWER THE PREFERENCE NUMBER, THE HIGHER THE PREFERENCE. 4. IT IS RECOMMENDED THAT YOU DO NOT ASSIGN A TRUNK GROUP WITH TRUNK TYPE 30 TO AN ARS PATTERN. 5. FACILITY RESTRICTION LEVEL 0 IS THE LOWEST LEVEL OF ACCESS, 7 IS THE HIGHEST LEVEL OF ACCESS.					
WORD 1	ARS PLAN	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	R F S A T C O N I N T E L E V E L	W A T R O N N I E N G	D I S T A N T A R E A C O D E (NPA)	F O R E N T O L L	T O L L T A B L E I N D E X	D D I E G L I E T T S E D	D C I G S N I O R N E A L	I X C /I S D N N E T W O R K I D E N T I F I E R	A R S -R O U T E T A B L E S
3	6	4	1	6									309
1		2	3	4	5	6	7	8	9	10	11	12	

Beginning with G2.2, the WCR feature supports seven time-of-day plans. However, WCR time-of-day routing is assigned as part of call-category translations. (Refer to Section 5.4.2, *Time-of-Day Plan*, for information about time-of-day routing assignments.)

5.3.13 ARS Patterns

Before G2.2, ARS patterns were assigned in Procedure 309, and AAR patterns were assigned in Procedure 321. The ARS and AAR features had separate sets of patterns.

FLIPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION - ROUTE TABLES										845552223	
INPUT FIELDS: DISPLAY: 1-3, 4 ADD: 1-12 REMOVE: 1-12 ALSO REMOVES ALL DATA IN WORDS 3 AND 4 CHANGE: 4-12 NEXT DATA: DISPLAY ALL ASSIGNED PREFERENCES AND PATTERNS NOT ALLOWED ON FIELD 4.				SPECIAL ERROR CODES: 81-ADD PREFERENCE NUMBERS STARTING WITH 1. DO NOT LEAVE GAPS. 82-REMOVE PREFERENCE NUMBERS STARTING WITH THE HIGHEST NUMBER. WHEN REMOVING A SMALLER NUMBER, MOVE THE HIGHER ONES TO FILL GAPS.				NOTES: 1. ONLY ONE ARS PLAN CAN BE ACTIVE AT A TIME. 2. PATTERN 1 IS NORMALLY RESERVED FOR INTERCEPT. 3. THE LOWER THE PREFERENCE NUMBER, THE HIGHER THE PREFERENCE. 4. IT IS RECOMMENDED THAT YOU DO NOT ASSIGN A TRUNK GROUP WITH TRUNK TYPE 30 TO AN ARS PATTERN. 5. FACILITY RESTRICTION LEVEL 0 IS THE LOWEST LEVEL OF ACCESS, 7 IS THE HIGHEST LEVEL OF ACCESS.					
WORD 1	ARS PLAN	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	R F S T A T C O N L I T E V E L	W A T R O N T E N G	DISTANT AREA CODE (NPA)	S O R D T O L L	TOLL TABLE INDEX	D D I E G L I T T S E D	D I G S N T O G R A L	IXC/ISDN NETWORK IDENTIFIER	ARS-ROUTE TABLES
	1	2	3	4	5	6	7	8	9	10	11	12	309

Beginning with G2.2, all patterns for the WCR routing networks are assigned in Procedure 318. The WCR feature has a common set of 1,024 patterns that are used for both public- and private-network routing. It is possible for ARS and AAR calls to use the same pattern.

ENHANCED MODE - PROCEDURE: 318, WORD: 1
 WCR - NETWORK ROUTE TRANSLATION

1. Pattern Number:
 2. Preference Number:
 3. Trunk Group:
 4. Facility Restriction Level:
 5. Warning Tone: Warning on toll calls
 6. Toll-Free Index:
 7. Digit Modification Index:
 8. Digit Sending Index:
 9. ISDN Sending Index:

Connected to CC0 ON-LINE ▼

enter command:

Trunk-Group Number

Before G2.2, the number of the outgoing trunk group referenced by a pattern's preference was assigned in Field 4 of Procedure 309 Word 1.

Beginning with G2.2, the number of the outgoing trunk group referenced by a pattern's preference is assigned in Field 3 of Procedure 318 Word 1.

Facility Restriction Level

A preference's FRL (0 to 7) is assigned in Field 5 of Procedure 309 Word 1.

A preference's FRL (0 to 7) is assigned in Field 4 of Procedure 318 Word 1.

Warning Tone

Before G2.2, warning tone for calls using a preference was assigned in Field 6 of Procedure 309 Word 1. When assigned, the ARS software only gave warning tone to the caller for toll calls.

Beginning with G2.2, warning tone for calls using a preference is assigned in Field 5 of Procedure 318 Word 1. However this field has an additional encode, "2," that gives warning tone to the caller for every call using the preference.

To emulate the previous ARS warning-tone operation during a G2.2 upgrade, enter "1" in Field 5 to provide warning tone for toll calls that use the preference.

Home NPA at Distant End of Route and Toll-Table Index

Before G2.2, these two fields (Fields 7 and 9 of Procedure 309 Word 1), used in conjunction with the home NPA of the switch (Field 2 of Procedure 275 Word 3), determined whether an ARS call was a toll call or a local call.

FLIPCHART ISSUE 8					AUTOMATIC ROUTE SELECTION - ROUTE TABLES												845552223			
INPUT FIELDS: DISPLAY: 1-3, 4 ADD: 1-12 REMOVE: 1-12 ALSO REMOVES ALL DATA IN WORDS 3 AND 4 CHANGE: 4-12 NEXT DATA: DISPLAY ALL ASSIGNED PREFERENCES AND PATTERNS NOT ALLOWED ON FIELD 4.					SPECIAL ERROR CODES: 81-ADD PREFERENCE NUMBERS STARTING WITH 1. DO NOT LEAVE GAPS. 82-REMOVE PREFERENCE NUMBERS STARTING WITH THE HIGHEST NUMBER. WHEN REMOVING A SMALLER NUMBER, MOVE THE HIGHER ONES TO FILL GAPS.								NOTES: 1. ONLY ONE ARS PLAN CAN BE ACTIVE AT A TIME. 2. PATTERN 1 IS NORMALLY RESERVED FOR INTERCEPT. 3. THE LOWER THE PREFERENCE NUMBER, THE HIGHER THE PREFERENCE. 4. IT IS RECOMMENDED THAT YOU DO NOT ASSIGN A TRUNK GROUP WITH TRUNK TYPE 30 TO AN ARS PATTERN. 5. FACILITY RESTRICTION LEVEL 0 IS THE LOWEST LEVEL OF ACCESS, 7 IS THE HIGHEST LEVEL OF ACCESS.							
WORD 1	ARS PLAN	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	R F S T A T I O N I N T E L L I G E N C E	W A T R O N N I N G	DISTANT AREA CODE (NPA)	F O R E N T O L L	TOLL TABLE INDEX	D D I E G L I T T S E D	D C I G S N O G R E N E A L	IXC/ISDN NETWORK IDENTIFIER	ARS-ROUTE TABLES							
1	1	2	3	4	5	6	7	8	9	10	11	12	309							

FLTPCHART ISSUE 8		SYSTEM COS - MISCELLANEOUS										845552223			
INPUT FIELDS:				CAUTIONS:						84-NUMBER PORTABILITY CAN BE SPECIFIED ONLY IF MULTI-PREMISE AND STANDARD NETWORK ARE SPECIFIED IN PROC 278 WORD 1 AND A 4 OR 5-DIGIT DIAL PLAN IS SPECIFIED IN PROC 350 WORD 1.					
DISPLAY: NONE				FAILURE TO PROVIDE A LOCAL SWITCH NUMBER (FIELD 8) MAY RESULT IN LOST MESSAGES WHEN USING DCS CENTRALIZED MESSAGING.						85-THE LOCAL SWITCH NUMBER IN FIELD 8 IS ALREADY ASSIGNED AS A NODE NUMBER; IT MUST FIRST BE REMOVED IN PROC 354.					
ADD: NOT ALLOWED				SPECIAL ERROR CODES:											
REMOVE: NOT ALLOWED				81-REMOVE EXTENSION TRANSLATION IN PROC 350 WORD 1.											
CHANGE: 1,-14				82-WHEN A LOCAL SWITCH NUMBER IS PROVIDED, THE TYPE MUST BE SPECIFIED IN FIELD 7.											
NEXT DATA: NOT ALLOWED				83-THE TYPE (FIELD 7) CANNOT BE SPECIFIED WITHOUT A LOCAL SWITCH NUMBER IN FIELD 8.											
TOLL CALL DATA		CALL COVERAGE		ABBRV DIAL		MULTI MACHINE NODES		C A L L		D E M P		I N F O		S M B D L	
WORD 3	DIAL 1 FOR TOLL	HOME NPA	R I C E N A S T L O R E N V R S A E L	COVERAGE POINT DON'T ANSWER INTERVAL	S Y L S	S A Y L C	TYPE	SWITCH TYPE	CAS MAIN SWITCH NUMBER	S M D R	T E R M	I N F O	S M B D L		
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15
SYSTEM COS - MISCELLANEOUS															
275															

The ARS feature identified a call as a toll call if:

- An international or an operator-assisted number was dialed and the home NPA of the switch did not equal the NPA at the distant end.
- A 10-digit number was dialed and the dialed NPA was not equal to the home NPA of the switch or the NPA at the distant end.
- A 7-digit number was dialed and Toll Table 0 was assigned.
- A 7-digit number was dialed, a toll table was assigned, and the specific office code dialed was marked as toll in the toll table.

Beginning with G2.2, the WCR feature determines whether a call is a toll call or a local call according to the entry in the toll-free-table index field (Field 6 of Procedure 318 Word 1). If “—” is entered in this field, then the WCR feature considers every call a toll-free call. If “0” is entered, then the WCR feature considers every call a toll call.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number:
2.	Preference Number:
3.	Trunk Group:
4.	Facility Restriction Level:
5.	Warning Tone:
6.	Toll-Free Index: All numbers are toll-free calls
7.	Digit Modification Index:
8.	Digit Sending Index:
9.	ISDN Sending Index:
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command:	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

If a *nonzero* index is entered, then the WCR feature considers every call as toll except for calls to the addresses specified in the toll-free table. The WCR feature makes no toll-status assumptions based on the call's address (for example, 7 digits versus 10 digits, the presence or absence of an international access code). The status of a call's address in the toll-free table is the *only* indicator as to whether a call is toll or toll-free.

Home NPA at Distant End of Route and Digit Insertion

Before G2.2, the ARS feature used the distant end NPA to determine whether to prepend an undialed NPA before sending the digits. Whenever a user dialed a 7-digit number and the home NPA of the switch did not equal the distant end NPA, the ARS feature inserted the home NPA of the switch before sending the digits.

FLTPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION - ROUTE TABLES										845552223	
INPUT FIELDS: DISPLAY: 1-3, 4 ADD: 1-12 REMOVE: 1-12 ALSO REMOVES ALL DATA IN WORDS 3 AND 4 CHANGE: 4-12 NEXT DATA: DISPLAY ALL ASSIGNED PREFERENCES AND PATTERNS NOT ALLOWED ON FIELD 4.				SPECIAL ERROR CODES: 81-ADD PREFERENCE NUMBERS STARTING WITH 1. DO NOT LEAVE GAPS. 82-REMOVE PREFERENCE NUMBERS STARTING WITH THE HIGHEST NUMBER. WHEN REMOVING A SMALLER NUMBER, MOVE THE HIGHER ONES TO FILL GAPS.				NOTES: 1. ONLY ONE ARS PLAN CAN BE ACTIVE AT A TIME. 2. PATTERN 1 IS NORMALLY RESERVED FOR INTERCEPT. 3. THE LOWER THE PREFERENCE NUMBER, THE HIGHER THE PREFERENCE. 4. IT IS RECOMMENDED THAT YOU DO NOT ASSIGN A TRUNK GROUP WITH TRUNK TYPE 39 TO AN ARS PATTERN. 5. FACILITY RESTRICTION LEVEL 0 IS THE LOWEST LEVEL OF ACCESS, 7 IS THE HIGHEST LEVEL OF ACCESS.					
WORD 1	ARS PLAN	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	RS ATCO IN L E V E L	W AT RO N E G	DISTANT AREA CODE (NPA)	FOR N D T O 1 L L	TOLL TABLE INDEX	DE IG L E T T E S E D	DI G N S I O G R E N E A L	IXC/ISDN NETWORK IDENTIFIER	ARS-ROUTE TABLES
	1	2	3	4	5	6	2 0 1	7	8	9	10	11	309

Beginning with G2.2, this field is no longer needed and therefore removed. Whenever desired, digit modification can be used to insert the home NPA of the switch. If a user dials a 7-digit number and the WCR software selects a preference for which the home NPA should be inserted, the preference's translations must include an assigned digit-modification index in Field 7 of Procedure 318 Word 1. In turn, the attributes of this index are assigned to delete zero digits and to insert three digits (the home NPA) in Procedure 320 Word 1.

NOTE

Using this explicit method to insert the home NPA for 7-digit calls, 7- and 10-digit numbers must use separate patterns with different digit-modification indices.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number: ----
2.	Preference Number: --
3.	Trunk Group: ---
4.	Facility Restriction Level: -
5.	Warning Tone: -
6.	Toll-Free Index: --
7.	Digit Modification Index: 112 ←
8.	Digit Sending Index: ---
9.	ISDN Sending Index: ----
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command:	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cnds	

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1.	Digit Modification Index: 112
2.	Digits To Delete: 0
3.	Segment Number: 1 Digits 1 to 8
INSERTION DIGITS	
4.	Digit 1, 9, 17, or 25: 3
5.	Digit 2, 10, 18, or 26: 0
6.	Digit 3, 11, 19, or 27: 3
7.	Digit 4, 12, 20, or 28: --
8.	Digit 5, 13, 21, or 29: --
9.	Digit 6, 14, 22, or 30: --
10.	Digit 7, 15, 23, or 31: --
11.	Digit 8, 16, 24: --
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 112 0 1 3 0 3 cxdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cnds	

Home NPA at Distant End of Route and Digit Deletion

Before G2.2, the ARS feature used the distant end NPA to determine whether to delete the dialed NPA before sending the digits. Whenever a user dialed a 10-digit number and the dialed NPA equaled the distant end NPA, the ARS feature deleted the dialed NPA before sending the digits.

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FLTPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION - ROUTE TABLES										845552223	
INPUT FIELDS: DISPLAY: 1-3, 4 ADD: 1-12 REMOVE: 1-12 ALSO REMOVES ALL DATA IN WORDS 3 AND 4 CHANGE: 4-12 NEXT DATA: DISPLAY ALL ASSIGNED PREFERENCES AND PATTERNS NOT ALLOWED ON FIELD 4.				SPECIAL ERROR CODES: 81-ADD PREFERENCE NUMBERS STARTING WITH 1. DO NOT LEAVE GAPS. 82-REMOVE PREFERENCE NUMBERS STARTING WITH THE HIGHEST NUMBER. WHEN REMOVING A SMALLER NUMBER, MOVE THE HIGHER ONES TO FILL GAPS.				NOTES: 1. ONLY ONE ARS PLAN CAN BE ACTIVE AT A TIME. 2. PATTERN 1 IS NORMALLY RESERVED FOR INTERCEPT. 3. THE LOWER THE PREFERENCE NUMBER, THE HIGHER THE PREFERENCE. 4. IT IS RECOMMENDED THAT YOU DO NOT ASSIGN A TRUNK GROUP WITH TRUNK TYPE 30 TO AN ARS PATTERN. 5. FACILITY RESTRICTION LEVEL 0 IS THE LOWEST LEVEL OF ACCESS, 7 IS THE HIGHEST LEVEL OF ACCESS.					
WORD 1	ARS PLAN	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	RS FAC IN TEL	W AT RO N IE N G	DISTANT AREA CODE (NPA)	SO ER N D TO LL	TOLL TABLE INDEX	DD IE GL IE TT SE D	DCI G SN IO GR NE AL	IXC/ISDN NETWORK IDENTIFIER	ARS-ROUTE TABLES
	1	2	3	4	5	6	2 0 1	7	8	9	10	11	309

Beginning with G2.2, this field is no longer needed and therefore removed. Whenever desired, digit modification can be used to delete the dialed NPA. If a user dials a 10-digit number and the WCR software selects a preference for which the NPA should be deleted, the preference's translations must include an assigned digit-modification index in Field 7 of Procedure 318 Word 1. In turn, the attributes of this index are assigned to delete three digits and to insert zero digits in Procedure 320 Word 1.

NOTE

Using this explicit method to delete the NPA for 10-digit calls, 7- and 10-digit numbers must use separate patterns with different digit-modification indices.

ENHANCED MODE - PROCEDURE: 318, WORD: 1
 WCR - NETWORK ROUTE TRANSLATION

1. Pattern Number:
 2. Preference Number:
 3. Trunk Group:
 4. Facility Restriction Level:
 5. Warning Tone:
 6. Toll-Free Index:
 7. Digit Modification Index: ←
 8. Digit Sending Index:
 9. ISDN Sending Index:

Connected to CC0 ON-LINE ♥

enter command:

Send “1” for Toll

FLIPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION - ROUTE TABLES										845552223		
INPUT FIELDS: DISPLAY: 1-3, 4 ADD: 1-12 REMOVE: 1-12 ALSO REMOVES ALL DATA IN WORDS 3 AND 4 CHANGE: 4-12 NEXT DATA: DISPLAY ALL ASSIGNED PREFERENCES AND PATTERNS NOT ALLOWED ON FIELD 4.					SPECIAL ERROR CODES: 81-ADD PREFERENCE NUMBERS STARTING WITH 1. DO NOT LEAVE GAPS. 82- REMOVE PREFERENCE NUMBERS STARTING WITH THE HIGHEST NUMBER. WHEN REMOVING A SMALLER NUMBER, MOVE THE HIGHER ONES TO FILL GAPS.					NOTES: 1. ONLY ONE ARS PLAN CAN BE ACTIVE AT A TIME. 2. PATTERN 1 IS NORMALLY RESERVED FOR INTERCEPT. 3. THE LOWER THE PREFERENCE NUMBER, THE HIGHER THE PREFERENCE. 4. IT IS RECOMMENDED THAT YOU DO NOT ASSIGN A TRUNK GROUP WITH TRUNK TYPE 30 TO AN ARS PATTERN. 5. FACILITY RESTRICTION LEVEL 0 IS THE LOWEST LEVEL OF ACCESS, 7 IS THE HIGHEST LEVEL OF ACCESS.				
WORD 1	ARS PLAN	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	R F S A T C O I N L I T V E L	W A T R O N N I E N G	DISTANT AREA CODE (NPA)	F O R E N D I L L	TOLL TABLE INDEX	D D I E G L I T T S E D	D C I G S N O I G R E N E A L	IXC/ISDN NETWORK IDENTIFIER	ARS-ROUTE TABLES	
1		2	3	4	5	6	7	8	9	10	11	12	309	

- No calls
- All 10-digit calls
- Toll calls

Beginning with G2.2, a WCR preference is assigned to send “1” for toll as part of the digit-sending index in Field 12 of Procedure 321 Word 1.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number: ----
2.	Preference Number: --
3.	Trunk Group: ---
4.	Facility Restriction Level: -
5.	Warning Tone: -
6.	Toll-Free Index: --
7.	Digit Modification Index: ----
8.	Digit Sending Index: 105 ←
9.	ISDN Sending Index: ----

Connected to CC0 ON-LINE ♥

enter command: _

ENHANCED MODE - PROCEDURE: 321, WORD: 1	
WCR - DIGIT SENDING TRANSLATION	
1. Digit Sending Index: 105	
DIAL ACCESS CODE (DAC)	
2. Send DAC Flag: 0	
DAC DIGITS	
3. Digit 1: --	4. Digit 2: -
5. Digit 3: -	6. Digit 4: -
INTEREXCHANGE CARRIER (IXC)	
7. Send IXC Flag: 0	
CIC DIGITS	
8. Digit 1: -	9. Digit 2: -
10. Digit 3: -	11. Digit 4: -
TOLL PREFIX ←	
12. Send Toll Prefix Flag: 2 Toll calls: send dialed or else assigned	
TOLL PREFIX DIGITS	
13. Digit 1: 1	14. Digit 2: -
15. Digit 3: -	
16. Send Pound Sign Flag: 0	

Connected to CC0 ON-LINE ♥

enter command: p321w1 105 ;;;;;;;;;;;2 1 cxdx_

A WCR preference can be assigned to send a “1” for:

- No calls
- All calls
- Toll calls

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number: ----
2.	Preference Number: --
3.	Trunk Group: ---
4.	Facility Restriction Level: -
5.	Warning Tone: -
6.	Toll-Free Index: --
7.	Digit Modification Index: 99 ←
8.	Digit Sending Index: ---
9.	ISDN Sending Index: ----
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command:	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1.	Digit Modification Index: 99
2.	Digits To Delete: 3 ←
3.	Segment Number: 1 Digits 1 to 8
INSERTION DIGITS	
4.	Digit 1, 9, 17, or 25: 6
5.	Digit 2, 10, 18, or 26: --
6.	Digit 3, 11, 19, or 27: --
7.	Digit 4, 12, 20, or 28: --
8.	Digit 5, 13, 21, or 29: --
9.	Digit 6, 14, 22, or 30: --
10.	Digit 7, 15, 23, or 31: --
11.	Digit 8, 16, 24: --
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 99 3 1 6 cxdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

NOTE

Refer to the Digit Modification portion of Section 5.2.5, *AAR Patterns*, for more information about digit modification.

ENHANCED MODE - PROCEDURE: 318, WORD: 1	
WCR - NETWORK ROUTE TRANSLATION	
1.	Pattern Number: ----
2.	Preference Number: --
3.	Trunk Group: ---
4.	Facility Restriction Level: -
5.	Warning Tone: -
6.	Toll-Free Index: 12 ←
7.	Digit Modification Index: ----
8.	Digit Sending Index: ---
9.	ISDN Sending Index: ----
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command:	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

ENHANCED MODE - PROCEDURE: 319, WORD: 1	
NETWORK TOLL-FREE INDEX	
SEARCH	
1.	Toll-Free Index: 12
ROUTING STRING IDENTIFIER	
2.	Digit 1: 5
3.	Digit 2: 3
4.	Digit 3: 8
5.	Digit 4: -
6.	Digit 5: -
7.	Digit 6: -
8.	Digit 7: -
DISPLAY ONLY	
9.	Toll-Free: 1 Toll-Free
10.	Number of Free Blocks: ----
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p319w1 12 5 3 8 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

DC Signal Ignore

Refer to the DC Signal Ignore portion of Section 5.2.5, *AAR Patterns*, for information about digit sending and the DC signal ignore field.

IXC/ISDN Network Identifier

Refer to the IXC/ISDN Network Identifier portion of Section 5.2.5, *AAR Patterns*, for information about the uses of the IXC field.

Digit Modification

Refer to the Digit Modification portion of Section 5.2.5, *AAR Patterns*, for information about digit modification.

Subnetwork Trunking

Refer to the Subnetwork Trunking portion of Section 5.2.5, *AAR Patterns*, for information about subnetwork trunking.

ISDN Trunk Type

Before G2.2, when a preference (assigned in Procedure 309 Word 1) corresponded to a trunk group with the ISDN dynamic trunk type “120” (assigned in Field 6 of Procedure 100 Word 1), Field 4 of Procedure 309 Word 5 gave the ARS preference a specific trunk type.

R2V4 flipchart

FLIPCHART ISSUE 8					AUTOMATIC ROUTE SELECTION - ISDN AND OTHER FEATURE PARAMETERS										845552223									
INPUT FIELDS:					SPECIAL ERROR CODES: 81-ASSIGN A TRUNK GROUP TO THIS ROUTE IN PROC 100 WORD 1 FIRST. 82-INVALID TRUNK TYPE. FIELD 4 MUST BE DASHED IF THE PRE-ASSIGNED TRUNK TYPE IN PROC 100 IS NOT ISDN DYNAMIC. 83-TRUNK TYPE INCOMPATIBLE. SEE VALID ENCODES FOR FIELD 4.										FIELD LIMITS: FIELD 1: 1-3 FIELD 2: 1-64 FIELD 3: 1-16									
DISPLAY: 1-3 ADD: 1-10 REMOVE: 4-10 CHANGE: 4-10 NEXT DATA: DISPLAYS EACH ASSIGNED ROUTE ENTRY BASED ONLY ON THE DATA IN FIELDS 1-3																								
					BEARER CAPABILITY										ARS PARAMETERS									
WORD 5	ARS PLAN	PATTERN NUMBER	PREF NUMBER	ISDN DYNAMIC TRUNK TYPE	NETWORK SERVICE VALUE	V O I C E	M O D A E T A	M O D A E T A	M O D A E T A	M O D A E T A														
						1	2	3	4	5														
	1	2	3	4	5	6	7	8	9	10														
															309									

G2.1 flipchart emulation

FLIPCHART ISSUE 8				AUTOMATIC ROUTE SELECTION - ISDN AND OTHER FEATURE PARAMETERS												845552223																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
INPUT FIELDS:				SPECIAL ERROR CODES: 81-ASSIGN A TRUNK GROUP TO THIS ROUTE IN PROC 100 WORD 1 FIRST. 82-INVALID TRUNK TYPE. FIELD 4 MUST BE DASHED IF THE PRE-ASSIGNED TRUNK TYPE IN PROC 100 IS NOT ISDN DYNAMIC. 83-TRUNK TYPE INCOMPATIBLE. SEE VALID ENCODES FOR FIELD 4.								FIELD LIMITS: FIELD 1: 1-3 FIELD 2: 1-64 FIELD 3: 1-16 FIELD 6: 1-255																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
DISPLAY: 1-3 ADD: 1-6 REMOVE: 4-6 CHANGE: 4-6 NEXT DATA: DISPLAYS EACH ASSIGNED ROUTE ENTRY BASED ONLY ON THE DATA IN FIELDS 1-3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
WORD 5	ARS PLAN	PATTERN NUMBER	PREF NUMBER	ISDN DYNAMIC TRUNK TYPE	NETWORK SERVICE VALUE	BEARER CAPABILITY COS				ARS PARAMETERS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	1	2	3	4	5	6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							</

Beginning with G2.2, this field is no longer needed and therefore removed.

Network-Service Value

Before G2.2, a network-service value (NSV) was assigned to an ARS preference in Field 5 of Procedure 321 Word 5.

Beginning with G2.2, an NSV is assigned to a WCR preference in two procedures. An ISDN sending index is assigned in Field 9 of Procedure 318 Word 1 that refers to the specific ISDN feature parameters assigned in Procedure 322 Word 1. The NSV is assigned in Field 2 of this procedure.

ENHANCED MODE - PROCEDURE: 318, WORD: 1
WCR - NETWORK ROUTE TRANSLATION

1.	Pattern Number:	----
2.	Preference Number:	--
3.	Trunk Group:	---
4.	Facility Restriction Level:	-
5.	Warning Tone:	-
6.	Toll-Free Index:	--
7.	Digit Modification Index:	----
8.	Digit Sending Index:	---
9.	ISDN Sending Index:	19 ←

Connected to CC0 ON-LINE ♥

MAJOR

MINOR

RUN TAPE

BUSY OUT

IN USE

WAIT

enter command: _

2 Repeat

3 Form

5 Help

6 Field

7 Input

8 Cnds

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ENHANCED MODE - PROCEDURE: 322, WORD: 1 WCR - OUTGOING ISDN FEATURE PARAMETERS	
1.	ISDN Sending Index: 19
2.	ISDN Network Service Value: --- ←
3.	Type of Address: -
4.	Numbering Plan Identification: --
5.	IXC Option: -
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT enter command: 2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

Bearer Capability

Before G2.1, a Bearer Capability was assigned to an ARS preference in Fields 6 through 10 of Procedure 309 Word 5.

R2V4 flipchart

FLIPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION - ISDN AND OTHER FEATURE PARAMETERS										845552223	
INPUT FIELDS: DISPLAY: 1-3 ADD: 1-10 REMOVE: 4-10 CHANGE: 4-10 NEXT DATA: DISPLAYS EACH ASSIGNED ROUTE ENTRY BASED ONLY ON THE DATA IN FIELDS 1-3				SPECIAL ERROR CODES: 81-ASSIGN A TRUNK GROUP TO THIS ROUTE IN PROC 100 WORD 1 FIRST. 82-INVALID TRUNK TYPE. FIELD 4 MUST BE DASHED IF THE PRE-ASSIGNED TRUNK TYPE IN PROC 100 IS NOT ISDN DYNAMIC. 83-TRUNK TYPE INCOMPATIBLE. SEE VALID ENCODES FOR FIELD 4.						FIELD LIMITS: FIELD 1: 1-3 FIELD 2: 1-64 FIELD 3: 1-16			
WORD 5	ARS PLAN	PATTERN NUMBER	PREF NUMBER	ISDN DYNAMIC TRUNK TYPE	NETWORK SERVICE VALUE	BEARER CAPABILITY					ARS PARAMETERS		
1	2	3	4	5	6	7	8	9	10	11	12	13	
1	1	2	3	4	5	6	7	8	9	10	11	12	
309													

For G2.1, a Bearer Capability class of service was assigned to an ARS preference in Field 6 of Procedure 309 Word 5.

G2.1 flipchart emulation

FLIPCHART ISSUE 0				AUTOMATIC ROUTE SELECTION - ISDN AND OTHER FEATURE PARAMETERS				845552223			
INPUT FIELDS: DISPLAY: 1-3 ADD: 1-6 REMOVE: 4-6 CHANGE: 4-6 NEXT DATA: DISPLAYS EACH ASSIGNED ROUTE ENTRY BASED ONLY ON THE DATA IN FIELDS 1-3				SPECIAL ERROR CODES: 81-ASSIGN A TRUNK GROUP TO THIS ROUTE IN PROC 100 WORD 1 FIRST; 82-INVALID TRUNK TYPE. FIELD 4 MUST BE DASHED IF THE PRE-ASSIGNED TRUNK TYPE IN PROC 100 IS NOT ISDN DYNAMIC. 83-TRUNK TYPE INCOMPATIBLE. SEE VALID ENCODES FOR FIELD 4.				FIELD LIMITS: FIELD 1: 1-3 FIELD 2: 1-64 FIELD 3: 1-16 FIELD 6: 1-255			
WORD 5	ARS PLAN	PATTERN NUMBER	PREF NUMBER	ISDN DYNAMIC TRUNK TYPE	NETWORK SERVICE VALUE	BEARER CAPABILITY COS	ARS PARAMETERS				
	1	2	3	4	5	6	309				

Beginning with G2.2, a Bearer Capability class of service is assigned to a WCR preference in Field 3 of Procedure 318 Word 2.

ENHANCED MODE - PROCEDURE: 318, WORD: 2

WCR - NETWORK ROUTE TRANSLATION

1. Pattern Number:

2. Preference Number:

3. Bearer Capability COS: ←

Connected to CC0 ON-LINE ♥

enter command:

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FLTPCHART ISSUE 8		ARS CALL CATEGORIES FOR EXTENSION PARTITIONS		845552223	
INPUT FIELDS: DISPLAY: 1 OR 3 ADD: NOT ALLOWED REMOVE: NOT ALLOWED CHANGE: 1 AND 3 NEXT DATA: DISPLAYS EXTENSION PARTITIONS ASSIGNED TO EACH CALL CATEGORY		SPECIAL ERROR CODES: 81-BOTH FIELDS 1 AND 3 MUST HAVE VALID DATA BEFORE DOING A CHANGE ROUTINE.		FIELD LIMITS: FIELD 1: -, 0-63 FIELD 3: -, 0-999	
WORD 2	CALL CATEGORY	RESERVED	EXTENSION PARTITION	ARS CALL CATEGORY 320	
	1	2	3		

FLTPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION CALL CATEGORY FOR ATTENDANT PARTITIONS		845552223	
INPUT FIELDS: DISPLAY: 1 OR 3 ADD: NOT ALLOWED REMOVE: NOT ALLOWED CHANGE: 1 AND 3 NEXT DATA: DISPLAYS ASSIGNED ATTENDANT PARTITIONS FOR EACH CALL CATEGORY		SPECIAL ERROR CODES: 81-BOTH FIELDS 1 AND 3 MUST HAVE VALID DATA BEFORE DOING A CHANGE ROUTINE.		FIELD LIMITS: FIELD 1: -, 0-63 FIELD 3: -, 0-40	
WORD 3	CALL CATEGORY	RESERVED	ATTENDANT PARTITION	ARS CALL CATEGORY 320	
	1	2	3		

A pattern number was assigned to each node number/call-category pair in Procedure 314 Word 1.

FLTPCHART ISSUE 8		ARS ROUTING TENANT SERVICES		845552223	
INPUT FIELDS: DISPLAY: 1-2 ADD: 1-3 REMOVE: 1-3 CHANGE: 1-3 NEXT DATA: NOT ALLOWED		NOTES: 1. WHEN THE TENANT SERVICE FEATURE IS NOT ACTIVE, ONLY CALL CATEGORY 0 IS USED. 2. FOR CALL CATEGORY 0 IN A NONPARTITIONED SWITCH, THE ROUTING DESIGNATOR EQUALS THE PATTERN NUMBER. THIS CAN BE CHANGED IF NECESSARY.		FIELD LIMITS: FIELD 1: 1-64 FIELD 2: 0-63 FIELD 3: 1-64	
WORD 1	ROUTING DESIGNATOR	ARS CALL CATEGORY	ARS PATTERN NUMBER	ARS ROUTING 314	
	1	2	3		

Beginning with G2.2, digit analysis within the WCR feature determines a VNI for subsequent call routing. Then, GRS combined the VNI and a call category to select a pattern. WCR call categories are assigned in Procedure 317 Word 1.

ENHANCED MODE - PROCEDURE: 317, WORD: 1

GRS - NETWORK CALL CATEGORY DEFINITION

1. Call Category: ---

2. Plan: -

3. Conditional Routing Count: -

PARTITION

4. Partition Type: -

5. Partition Number: ---

Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT

enter command: _

2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cnds

A pattern number is assigned to each VNI/call-category pair in Procedure 317 Word 2.

ENHANCED MODE - PROCEDURE: 317, WORD: 2

GRS - NETWORK ROUTING

1. Virtual Nodepoint Identifier: 51

2. Call Category: 100

3. Pattern Number: 50

Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT

enter command: p317w2 51 100 50 axdx_

2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cnds

5.4.1 Example 1 — Conditional Routing Count

Based on the conditional-routing count, a switch administrator wants to route AAR calls to three different patterns.

Before G2.2, the location code (for example, “755”) was assigned to use three separate patterns (for example, “50,” “51,” and “52”) according to the call category of the call.

FLIPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - ROUTING					845552223									
INPUT FIELDS: DISPLAY: SEE TABLE ON WORD 4B ADD: 1-5, SEE ERROR CODE 81 REMOVE: 1-5 CHANGE: 1-5 (AFTER DISPLAY ONLY) NEXT DATA: SEE TABLE ON WORD 4B		SPECIAL ERROR CODES: 81-AN ADD OR CHANGE ROUTINE CANNOT BE DONE TO A LOCATION CODE THAT BEGINS WITH THE CHARGE CODE PREFIX OR RESERVED DIGIT. (SEE PROC 285 WORD 1). 82-THIS CODE IS ALREADY ASSIGNED, USE THE CHANGE ROUTINE. 83-TO USE THE DISPLAY OR NEXT DATA ROUTINES. SEE WORD 4B. 84-FIRST DIGIT FIELD MUST BE SUPPLIED FOR FIVE-DIGIT DIALING PLANS ONLY IF IT IS A HOME RNX (PATTERN 641). 85-THE ENTERED LOCATION CODE (RNX) DOES NOT MAP TO THE ENTERED PATTERN NUMBER.					86-FIRST DIGIT FIELD MUST BE DASHED. YOU CANNOT ADMINISTER A PATTERN AND A FIRST DIGIT TO ONE RNX. 87-THE NODE NUMBER HAS PREVIOUSLY BEEN ASSIGNED TO A DIFFERENT PATTERN NUMBER. USE THE CHANGE ROUTINE. 88-A FIRST DIGIT CAN ONLY BE TRANSLATED IN A FIVE DIGIT DIALING PLAN. 89-THE NUMBER OF DIGITS IN THE LOCATION CODE HAS NOT BEEN SET IN PROC 285 WORD 1.									
WORD 4	LOCATION CODE (RNX)	NODE NUMBER	CALL CATEGORY	PATTERN NUMBER	F D I R G S I T T	AAR-ROUTING										
	7 5 5	7 5 5	0	5 0	—	321										
	1	2	3	4												

FLIPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - ROUTING					845552223									
INPUT FIELDS: DISPLAY: SEE TABLE ON WORD 4B ADD: 1-5, SEE ERROR CODE 81 REMOVE: 1-5 CHANGE: 1-5 (AFTER DISPLAY ONLY) NEXT DATA: SEE TABLE ON WORD 4B		SPECIAL ERROR CODES: 81-AN ADD OR CHANGE ROUTINE CANNOT BE DONE TO A LOCATION CODE THAT BEGINS WITH THE CHARGE CODE PREFIX OR RESERVED DIGIT. (SEE PROC 285 WORD 1). 82-THIS CODE IS ALREADY ASSIGNED, USE THE CHANGE ROUTINE. 83-TO USE THE DISPLAY OR NEXT DATA ROUTINES. SEE WORD 4B. 84-FIRST DIGIT FIELD MUST BE SUPPLIED FOR FIVE-DIGIT DIALING PLANS ONLY IF IT IS A HOME RNX (PATTERN 641). 85-THE ENTERED LOCATION CODE (RNX) DOES NOT MAP TO THE ENTERED PATTERN NUMBER.					86-FIRST DIGIT FIELD MUST BE DASHED. YOU CANNOT ADMINISTER A PATTERN AND A FIRST DIGIT TO ONE RNX. 87-THE NODE NUMBER HAS PREVIOUSLY BEEN ASSIGNED TO A DIFFERENT PATTERN NUMBER. USE THE CHANGE ROUTINE. 88-A FIRST DIGIT CAN ONLY BE TRANSLATED IN A FIVE DIGIT DIALING PLAN. 89-THE NUMBER OF DIGITS IN THE LOCATION CODE HAS NOT BEEN SET IN PROC 285 WORD 1.									
WORD 4	LOCATION CODE (RNX)	NODE NUMBER	CALL CATEGORY	PATTERN NUMBER	F D I R G S I T T	AAR-ROUTING										
	7 5 5	7 5 5	1	5 1	—	321										
	1	2	3	4												

FLIPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - ROUTING					845552223									
INPUT FIELDS: DISPLAY: SEE TABLE ON WORD 4B ADD: 1-5, SEE ERROR CODE 81 REMOVE: 1-5 CHANGE: 1-5 (AFTER DISPLAY ONLY) NEXT DATA: SEE TABLE ON WORD 4B		SPECIAL ERROR CODES: 81-AN ADD OR CHANGE ROUTINE CANNOT BE DONE TO A LOCATION CODE THAT BEGINS WITH THE CHARGE CODE PREFIX OR RESERVED DIGIT. (SEE PROC 285 WORD 1). 82-THIS CODE IS ALREADY ASSIGNED, USE THE CHANGE ROUTINE. 83-TO USE THE DISPLAY OR NEXT DATA ROUTINES. SEE WORD 4B. 84-FIRST DIGIT FIELD MUST BE SUPPLIED FOR FIVE-DIGIT DIALING PLANS ONLY IF IT IS A HOME RNX (PATTERN 641). 85-THE ENTERED LOCATION CODE (RNX) DOES NOT MAP TO THE ENTERED PATTERN NUMBER.					86-FIRST DIGIT FIELD MUST BE DASHED. YOU CANNOT ADMINISTER A PATTERN AND A FIRST DIGIT TO ONE RNX. 87-THE NODE NUMBER HAS PREVIOUSLY BEEN ASSIGNED TO A DIFFERENT PATTERN NUMBER. USE THE CHANGE ROUTINE. 88-A FIRST DIGIT CAN ONLY BE TRANSLATED IN A FIVE DIGIT DIALING PLAN. 89-THE NUMBER OF DIGITS IN THE LOCATION CODE HAS NOT BEEN SET IN PROC 285 WORD 1.									
WORD 4	LOCATION CODE (RNX)	NODE NUMBER	CALL CATEGORY	PATTERN NUMBER	F D I R G S I T T	AAR-ROUTING										
	7 5 5	7 5 5	2	5 2	—	321										
	1	2	3	4												

Conditional routing counts “0” to “2” were assigned to use call categories “0” to “2,” respectively.

FLIPCHART ISSUE 8		AAR CALL CATEGORY CONDITIONAL ROUTING		845552223	
INPUT FIELDS: DISPLAY: 1 OR 2 ADD: NOT ALLOWED REMOVE: NOT ALLOWED CHANGE: 1 OR 1-2 NEXT DATA: 1 OR 2, SEE NOTE 1		NOTES: 1. IF FIELD 1 IS ENTERED AND FIELD 2 IS DASHED, NEXT DATA DISPLAYS ALL AAR CONDITIONAL ROUTE COUNT. IF FIELD 2 IS ENTERED AND FIELD 1 IS DASHED, NEXT DATA DISPLAYS A CALL CATEGORY AND THEN THE AAR CONDITIONAL ROUTING COUNT.		FIELD LIMITS: FIELD 1: 0-2 (0 IS THE DEFAULT CALL CATEGORY) FIELD 2: -, 0-2 = NUMBER OF SATELLITE LINKS USED	
WORD 1	CALL CATEGORY	AAR C R O C N U O D T U T I N N T L G	AAR CALL CATEGORY		
	0	0	320		
	1	2			

FLIPCHART ISSUE 8		AAR CALL CATEGORY CONDITIONAL ROUTING		845552223	
INPUT FIELDS: DISPLAY: 1 OR 2 ADD: NOT ALLOWED REMOVE: NOT ALLOWED CHANGE: 1 OR 1-2 NEXT DATA: 1 OR 2, SEE NOTE 1		NOTES: 1. IF FIELD 1 IS ENTERED AND FIELD 2 IS DASHED, NEXT DATA DISPLAYS ALL AAR CONDITIONAL ROUTE COUNT. IF FIELD 2 IS ENTERED AND FIELD 1 IS DASHED, NEXT DATA DISPLAYS A CALL CATEGORY AND THEN THE AAR CONDITIONAL ROUTING COUNT.		FIELD LIMITS: FIELD 1: 0-2 (0 IS THE DEFAULT CALL CATEGORY) FIELD 2: -, 0-2 = NUMBER OF SATELLITE LINKS USED	
WORD 1	CALL CATEGORY	AAR C R O C N U O D T U T I N N T L G	AAR CALL CATEGORY		
	1	1	320		
	1	2			

FLIPCHART ISSUE 8		AAR CALL CATEGORY CONDITIONAL ROUTING		845552223	
INPUT FIELDS: DISPLAY: 1 OR 2 ADD: NOT ALLOWED REMOVE: NOT ALLOWED CHANGE: 1 OR 1-2 NEXT DATA: 1 OR 2, SEE NOTE 1		NOTES: 1. IF FIELD 1 IS ENTERED AND FIELD 2 IS DASHED, NEXT DATA DISPLAYS ALL AAR CONDITIONAL ROUTE COUNT. IF FIELD 2 IS ENTERED AND FIELD 1 IS DASHED, NEXT DATA DISPLAYS A CALL CATEGORY AND THEN THE AAR CONDITIONAL ROUTING COUNT.		FIELD LIMITS: FIELD 1: 0-2 (0 IS THE DEFAULT CALL CATEGORY) FIELD 2: -, 0-2 = NUMBER OF SATELLITE LINKS USED	
WORD 1	CALL CATEGORY	AAR C R O C N U O D T U T I N N T L G	AAR CALL CATEGORY		
	2	2	320		
	1	2			

Beginning with G2.2, the location code “755” is assigned to resolve to VNI 51.

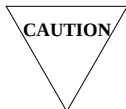
ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	7
2. Digit 2:	5
3. Digit 3:	5
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment: 1	
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	51 Virtual Nodepoint Idnetifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 7 5 5 ;;1 1 7 6 0 51 0 2 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cnds	

Conditional routing counts “0” to “2” are assigned to use call categories “100” to “102” respectively. The sample translations assume the Tenant Services feature is not active. [If Tenant Services is active, then enter “9” (all partitions) in Field 4.]

ENHANCED MODE - PROCEDURE: 317, WORD: 1	
GRS - NETWORK CALL CATEGORY DEFINITION	
1. Call Category:	100
2. Plan:	7 Plan Number
3. Conditional Routing Count:	0 No Conditional Routes Used
PARTITION	
4. Partition Type:	- Tenant Services Feature Not Active
5. Partition Number:	--- Not Applicable
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p317w1 100 7 0 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cnds	

ENHANCED MODE - PROCEDURE: 317, WORD: 1 GRS - NETWORK CALL CATEGORY DEFINITION	
1.	Call Category: 101
2.	Plan: 7 Plan Number
3.	Conditional Routing Count: 1 One Conditional Route Used
PARTITION	
4.	Partition Type: - Tenant Services Feature Not Active
5.	Partition Number: --- Not Applicable
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT enter command: rs 101 7 1 axdx_ 2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

ENHANCED MODE - PROCEDURE: 317, WORD: 1 GRS - NETWORK CALL CATEGORY DEFINITION	
1.	Call Category: 102
2.	Plan: 7 Plan Number
3.	Conditional Routing Count: 2 Two Conditional Routes Used
PARTITION	
4.	Partition Type: - Tenant Services Feature Not Active
5.	Partition Number: --- Not Applicable
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT enter command: rs 102 7 2 axdx_ 2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	



Carefully assign any “9” or “999” global entries in Fields 2 through 5 of Procedure 317 Word 1. When specific translations already reside in the Procedure 317 translation table, subsequent global entries will *overwrite* the specific translations. Therefore, during mass translations, always assign the global entries first.

VNI 51 with Call Categories 100 to 102 is assigned to use Patterns 50 to 52, respectively.

ENHANCED MODE - PROCEDURE: 317, WORD: 2 GRS - NETWORK ROUTING	
1. Virtual Nodepoint Identifier: 51 2. Call Category: 100 3. Pattern Number: 50	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p317w2 51 100 50 axdx_ 2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

ENHANCED MODE - PROCEDURE: 317, WORD: 2 GRS - NETWORK ROUTING	
1. Virtual Nodepoint Identifier: 51 2. Call Category: 101 3. Pattern Number: 51	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: rs 51 101 51 axdx_ 2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds	

5.4.2 Example 2 — Time-of-Day Plan

Before G2.2, an office code (for example, “538”) was assigned to use a routing designator (for example, “51”).

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Also, plan numbers were entered as part of pattern administration in Procedure 309 Word 1.

FLTPCHART ISSUE 8				AUTOMATIC ROUTE SELECTION - ROUTE TABLES										845552223	
INPUT FIELDS: DISPLAY: 1-3, 4 ADD: 1-12 REMOVE: 1-12 ALSO REMOVES ALL DATA IN WORDS 3 AND 4 CHANGE: 4-12 NEXT DATA: DISPLAY ALL ASSIGNED PREFERENCES AND PATTERNS NOT ALLOWED ON FIELD 4.				SPECIAL ERROR CODES: 81-ADD PREFERENCE NUMBERS STARTING WITH 1. DO NOT LEAVE GAPS. 82-REMOVE PREFERENCE NUMBERS STARTING WITH THE HIGHEST NUMBER. WHEN REMOVING A SMALLER NUMBER, MOVE THE HIGHER ONES TO FILL GAPS.				NOTES: 1. ONLY ONE ARS PLAN CAN BE ACTIVE AT A TIME. 2. PATTERN 1 IS NORMALLY RESERVED FOR INTERCEPT. 3. THE LOWER THE PREFERENCE NUMBER, THE HIGHER THE PREFERENCE. 4. IT IS RECOMMENDED THAT YOU DO NOT ASSIGN A TRUNK GROUP WITH TRUNK TYPE 30 TO AN ARS PATTERN. 5. FACILITY RESTRICTION LEVEL 0 IS THE LOWEST LEVEL OF ACCESS, 7 IS THE HIGHEST LEVEL OF ACCESS.							
WORD 1	ARS PLAN	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	R S T A T I O N I N T E R V E L	W A T R O N N E N G	DISTANT AREA CODE (NPA)	F O R N D T O L	TOLL TABLE INDEX	D I E G L I T T S E D	D C I G S N T O G R E A L	IXC/ISDN NETWORK IDENTIFIER			ARS-ROUTE TABLES
	1	5	1	1 0 0											309

(Fields 5 through 12 left blank for this example.)

FLTPCHART ISSUE 8				AUTOMATIC ROUTE SELECTION - ROUTE TABLES										845552223	
INPUT FIELDS: DISPLAY: 1-3, 4 ADD: 1-12 REMOVE: 1-12 ALSO REMOVES ALL DATA IN WORDS 3 AND 4 CHANGE: 4-12 NEXT DATA: DISPLAY ALL ASSIGNED PREFERENCES AND PATTERNS NOT ALLOWED ON FIELD 4.				SPECIAL ERROR CODES: 81-ADD PREFERENCE NUMBERS STARTING WITH 1. DO NOT LEAVE GAPS. 82-REMOVE PREFERENCE NUMBERS STARTING WITH THE HIGHEST NUMBER. WHEN REMOVING A SMALLER NUMBER, MOVE THE HIGHER ONES TO FILL GAPS.				NOTES: 1. ONLY ONE ARS PLAN CAN BE ACTIVE AT A TIME. 2. PATTERN 1 IS NORMALLY RESERVED FOR INTERCEPT. 3. THE LOWER THE PREFERENCE NUMBER, THE HIGHER THE PREFERENCE. 4. IT IS RECOMMENDED THAT YOU DO NOT ASSIGN A TRUNK GROUP WITH TRUNK TYPE 30 TO AN ARS PATTERN. 5. FACILITY RESTRICTION LEVEL 0 IS THE LOWEST LEVEL OF ACCESS, 7 IS THE HIGHEST LEVEL OF ACCESS.							
WORD 1	ARS PLAN	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	R S T A T I O N I N T E R V E L	W A T R O N N E N G	DISTANT AREA CODE (NPA)	F O R N D T O L	TOLL TABLE INDEX	D I E G L I T T S E D	D C I G S N T O G R E A L	IXC/ISDN NETWORK IDENTIFIER			ARS-ROUTE TABLES
	2	5	1	1 0 0											309

(Fields 5 through 12 left blank for this example.)

FLTPCHART ISSUE 8				AUTOMATIC ROUTE SELECTION - ROUTE TABLES										845552223	
INPUT FIELDS: DISPLAY: 1-3, 4 ADD: 1-12 REMOVE: 1-12 ALSO REMOVES ALL DATA IN WORDS 3 AND 4 CHANGE: 4-12 NEXT DATA: DISPLAY ALL ASSIGNED PREFERENCES AND PATTERNS NOT ALLOWED ON FIELD 4.				SPECIAL ERROR CODES: 81-ADD PREFERENCE NUMBERS STARTING WITH 1. DO NOT LEAVE GAPS. 82-REMOVE PREFERENCE NUMBERS STARTING WITH THE HIGHEST NUMBER. WHEN REMOVING A SMALLER NUMBER, MOVE THE HIGHER ONES TO FILL GAPS.				NOTES: 1. ONLY ONE ARS PLAN CAN BE ACTIVE AT A TIME. 2. PATTERN 1 IS NORMALLY RESERVED FOR INTERCEPT. 3. THE LOWER THE PREFERENCE NUMBER, THE HIGHER THE PREFERENCE. 4. IT IS RECOMMENDED THAT YOU DO NOT ASSIGN A TRUNK GROUP WITH TRUNK TYPE 30 TO AN ARS PATTERN. 5. FACILITY RESTRICTION LEVEL 0 IS THE LOWEST LEVEL OF ACCESS, 7 IS THE HIGHEST LEVEL OF ACCESS.							
WORD 1	ARS PLAN	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	R S T A T I O N I N T E R V E L	W A T R O N N E N G	DISTANT AREA CODE (NPA)	F O R N D T O L	TOLL TABLE INDEX	D I E G L I T T S E D	D C I G S N T O G R E A L	IXC/ISDN NETWORK IDENTIFIER			ARS-ROUTE TABLES
	3	5	1	1 0 0											309

(Fields 5 through 12 left blank for this example.)

Beginning with G2.2, an office code (for example, “538”) is assigned to resolve to VNI 51.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	5
2. Digit 2:	3
3. Digit 3:	8
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	7
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	51 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 5 3 8 ;;1 1 7 6 0 51 0 1 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cnds

Also, time-of-day plan numbers are used to create call categories. [The following administration assumes that Tenant Services is not active. If Tenant Services is active, then enter “9” (all partitions) in Field 4.]

ENHANCED MODE - PROCEDURE: 317, WORD: 1	
GRS - NETWORK CALL CATEGORY DEFINITION	
1. Call Category:	200
2. Plan:	1 Plan Number
3. Conditional Routing Count:	9 0, 1, or 2 Conditional Routes Used
PARTITION	
4. Partition Type:	-- Tenant Services Feature Not Active
5. Partition Number:	--- Not Applicable
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p317w1 200 1 9 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cnds

ENHANCED MODE - PROCEDURE: 317, WORD: 1	
GRS - NETWORK CALL CATEGORY DEFINITION	
1.	Call Category: 201
2.	Plan: 2 Plan Number
3.	Conditional Routing Count: 9 0, 1, or 2 Conditional Routes Used
PARTITION	
4.	Partition Type: - Tenant Services Feature Not Active
5.	Partition Number: --- Not Applicable
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: rs 201 2 9 axdx_	
	2 Repeat 3 Form
5 Help 6 Field 7 Input 8 Cnds	

ENHANCED MODE - PROCEDURE: 317, WORD: 1	
GRS - NETWORK CALL CATEGORY DEFINITION	
1.	Call Category: 202
2.	Plan: 3 Plan Number
3.	Conditional Routing Count: 9 0, 1, or 2 Conditional Routes Used
PARTITION	
4.	Partition Type: - Tenant Services Feature Not Active
5.	Partition Number: --- Not Applicable
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: rs 202 3 9 axdx_	
	2 Repeat 3 Form
5 Help 6 Field 7 Input 8 Cnds	

Also, VNI 51 using Call Categories 200 to 202 is assigned to select Patterns 150 to 152, respectively. Patterns 150 to 152 are assigned to use Trunk Groups 100 to 102, respectively, serving as Preference 1.

In effect, what was ARS Pattern 51 (with three time-of-day options) is split in WCR Patterns 150, 151, and 152.

ENHANCED MODE - PROCEDURE: 317, WORD: 2	
GRS - NETWORK ROUTING	
1. Virtual Nodepoint Identifier: 51	
2. Call Category: 200	
3. Pattern Number: 150	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: w2 51 200 150 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

ENHANCED MODE - PROCEDURE: 317, WORD: 2	
GRS - NETWORK ROUTING	
1. Virtual Nodepoint Identifier: 51	
2. Call Category: 201	
3. Pattern Number: 151	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: rs 51 201 151 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

ENHANCED MODE - PROCEDURE: 317, WORD: 2	
GRS - NETWORK ROUTING	
1. Virtual Nodepoint Identifier: 51 2. Call Category: 202 3. Pattern Number: 152	

Connected to CC0 ON-LINE ♥

MAJOR

MINOR

RUN TAPE

BUSY OUT

IN USE

WAIT

enter command: rs 51 202 152 axdx_

2 Repeat

3 Form

5 Help

6 Field

7 Input

8 Cmds

5.4.3 Example 3 — Time-of-Day Plan and Partition Number

Based on the caller's partition number and on the time-of-day plan in effect, a switch administrator wants to route ARS calls to different patterns.

Before G2.2, an office code (for example, “538”) was assigned to use a routing designator (for example, “51”).

FLIPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION OFFICE AND SERVICE CODES FOR HOME NPA		845552223	
INPUT FIELDS:		NOTES: 1. A REMOVE ROUTING CAUSES DESIGNATOR 1 (INTERCEPT) TO BE PUT IN TRANSLATION FOR THE OFFICE CODE OR SERVICE CODE. 2. WHEN THE OFFICE CODE FIELD IS LESS THAN 200 AND THE MIDDLE DIGIT IS 0 OR 1, THE NPA TRANSLATION IS UPDATED. WHEN GREATER THAN 199 THE HOME NPA TRANSLATION IS UPDATED. 3. TO ASSIGN A ROUTING DESIGNATOR FOR '01X' CALLS, ENTER 1 IN FIELD 1.		FIELD LIMITS: FIELD 1 = 0-9, 10-19, 100-109, 110, 119, 200-999 FIELD 2 = 1-64	
DISPLAY: 1 ADD: 1-2 REMOVE: 1-2 CHANGE: 2 NEXT DATA: DISPLAY ALL OFFICE CODES WITH ASSIGNED ROUTING DESIGNATORS OTHER THAN 1.					
WORD 1	OFFICE CODE	ROUTING DESIGNATOR FOR ALL PLANS	ARS - HOME NPA 311		

Also, Procedure 320 Word 2 was used to create call categories for the extension partitions (for example, Partitions 18 through 21). In the following example, suppose that Extension Partitions 18 and 19 used Call Category 7 and Extension Partitions 20 and 21 used Call Category 9.

FLTPCHART ISSUE 8		ARS CALL CATEGORIES FOR EXTENSION PARTITIONS		845552223
INPUT FIELDS: DISPLAY: 1 OR 3 ADD: NOT ALLOWED REMOVE: NOT ALLOWED CHANGE: 1 AND 3 NEXT DATA: DISPLAYS EXTENSION PARTITIONS ASSIGNED TO EACH CALL CATEGORY		SPECIAL ERROR CODES: 81-BOTH FIELDS 1 AND 3 MUST HAVE VALID DATA BEFORE DOING A CHANGE ROUTINE.		FIELD LIMITS: FIELD 1: -, 0-63 FIELD 3: -, 0-999
WORD 2	CALL CATEGORY 7	RESERVED	EXTENSION PARTITION 1 8	ARS CALL CATEGORY 320

FLTPCHART ISSUE 8		ARS CALL CATEGORIES FOR EXTENSION PARTITIONS		845552223
INPUT FIELDS: DISPLAY: 1 OR 3 ADD: NOT ALLOWED REMOVE: NOT ALLOWED CHANGE: 1 AND 3 NEXT DATA: DISPLAYS EXTENSION PARTITIONS ASSIGNED TO EACH CALL CATEGORY		SPECIAL ERROR CODES: 81-BOTH FIELDS 1 AND 3 MUST HAVE VALID DATA BEFORE DOING A CHANGE ROUTINE.		FIELD LIMITS: FIELD 1: -, 0-63 FIELD 3: -, 0-999
WORD 2	CALL CATEGORY 7	RESERVED	EXTENSION PARTITION 1 9	ARS CALL CATEGORY 320

FLTPCHART ISSUE 8		ARS CALL CATEGORIES FOR EXTENSION PARTITIONS		845552223
INPUT FIELDS: DISPLAY: 1 OR 3 ADD: NOT ALLOWED REMOVE: NOT ALLOWED CHANGE: 1 AND 3 NEXT DATA: DISPLAYS EXTENSION PARTITIONS ASSIGNED TO EACH CALL CATEGORY		SPECIAL ERROR CODES: 81-BOTH FIELDS 1 AND 3 MUST HAVE VALID DATA BEFORE DOING A CHANGE ROUTINE.		FIELD LIMITS: FIELD 1: -, 0-63 FIELD 3: -, 0-999
WORD 2	CALL CATEGORY 9	RESERVED	EXTENSION PARTITION 2 0	ARS CALL CATEGORY 320

FLTPCHART ISSUE 8		ARS CALL CATEGORIES FOR EXTENSION PARTITIONS		845552223
INPUT FIELDS: DISPLAY: 1 OR 3 ADD: NOT ALLOWED REMOVE: NOT ALLOWED CHANGE: 1 AND 3 NEXT DATA: DISPLAYS EXTENSION PARTITIONS ASSIGNED TO EACH CALL CATEGORY		SPECIAL ERROR CODES: 81-BOTH FIELDS 1 AND 3 MUST HAVE VALID DATA BEFORE DOING A CHANGE ROUTINE.		FIELD LIMITS: FIELD 1: -, 0-63 FIELD 3: -, 0-999
WORD 2	CALL CATEGORY 9	RESERVED	EXTENSION PARTITION 2 1	ARS CALL CATEGORY 320

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Also, each routing-designator/call-category pair was assigned to resolve to the appropriate patterns (for example, Patterns 55 and 65).

FLIPCHART ISSUE 8		ARS ROUTING TENANT SERVICES		845552223	
INPUT FIELDS: DISPLAY: 1-2 ADD: 1-3 REMOVE: 1-3 CHANGE: 1-3 NEXT DATA: NOT ALLOWED		NOTES: 1. WHEN THE TENANT SERVICE FEATURE IS NOT ACTIVE, ONLY CALL CATEGORY 0 IS USED. 2. FOR CALL CATEGORY 0 IN A NONPARTITIONED SWITCH, THE ROUTING DESIGNATOR EQUALS THE PATTERN NUMBER. THIS CAN BE CHANGED IF NECESSARY.		FIELD LIMITS: FIELD 1: 1-64 FIELD 2: 0-63 FIELD 3: 1-64	
WORD 1	ROUTING DESIGNATOR	ARS CALL CATEGORY	ARS PATTERN NUMBER	ARS ROUTING	
	5 1	7	5 5	314	
	1	2	3		

FLIPCHART ISSUE 8		ARS ROUTING TENANT SERVICES		845552223	
INPUT FIELDS: DISPLAY: 1-2 ADD: 1-3 REMOVE: 1-3 CHANGE: 1-3 NEXT DATA: NOT ALLOWED		NOTES: 1. WHEN THE TENANT SERVICE FEATURE IS NOT ACTIVE, ONLY CALL CATEGORY 0 IS USED. 2. FOR CALL CATEGORY 0 IN A NONPARTITIONED SWITCH, THE ROUTING DESIGNATOR EQUALS THE PATTERN NUMBER. THIS CAN BE CHANGED IF NECESSARY.		FIELD LIMITS: FIELD 1: 1-64 FIELD 2: 0-63 FIELD 3: 1-64	
WORD 1	ROUTING DESIGNATOR	ARS CALL CATEGORY	ARS PATTERN NUMBER	ARS ROUTING	
	5 1	9	6 5	314	
	1	2	3		

Also, plan numbers were entered as part of pattern administration in Procedure 309 Word 1.

FLIPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION - ROUTE TABLES										845552223	
INPUT FIELDS: DISPLAY: 1-3, 4 ADD: 1-12 REMOVE: 1-12 ALSO REMOVES ALL DATA IN WORDS 3 AND 4 CHANGE: 4-12 NEXT DATA: DISPLAY ALL ASSIGNED PREFERENCES AND PATTERNS NOT ALLOWED ON FIELD 4.				SPECIAL ERROR CODES: 81-ADD PREFERENCE NUMBERS STARTING WITH 1. DO NOT LEAVE GAPS. 82-REMOVE PREFERENCE NUMBERS STARTING WITH THE HIGHEST NUMBER. WHEN REMOVING A SMALLER NUMBER, MOVE THE HIGHER ONES TO FILL GAPS.				NOTES: 1. ONLY ONE ARS PLAN CAN BE ACTIVE AT A TIME. 2. PATTERN 1 IS NORMALLY RESERVED FOR INTERCEPT. 3. THE LOWER THE PREFERENCE NUMBER, THE HIGHER THE PREFERENCE. 4. IT IS RECOMMENDED THAT YOU DO NOT ASSIGN A TRUNK GROUP WITH TRUNK TYPE 30 TO AN ARS PATTERN. 5. FACILITY RESTRICTION LEVEL 0 IS THE LOWEST LEVEL OF ACCESS, 7 IS THE HIGHEST LEVEL OF ACCESS.					
WORD 1	ARS PLAN	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	R F S A T C O N I L T T V E L	W T R O N I E N G	DISTANT AREA CODE (NPA)	F O R N D T O L	TOLL TABLE INDEX	D D I E G L I E T T S D	D I G S N I O G R E A L	IXC/ISDN NETWORK IDENTIFIER	ARS-ROUTE TABLES
	1	5 5	1	1 1 0									309

(Fields 5 through 12 left blank for this example.)

FLIPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION - ROUTE TABLES										845552223	
INPUT FIELDS: DISPLAY: 1-3, 4 ADD: 1-12 REMOVE: 1-12 ALSO REMOVES ALL DATA IN WORDS 3 AND 4 CHANGE: 4-12 NEXT DATA: DISPLAY ALL ASSIGNED PREFERENCES AND PATTERNS NOT ALLOWED ON FIELD 4.				SPECIAL ERROR CODES: 81-ADD PREFERENCE NUMBERS STARTING WITH 1. DO NOT LEAVE GAPS. 82-REMOVE PREFERENCE NUMBERS STARTING WITH THE HIGHEST NUMBER. WHEN REMOVING A SMALLER NUMBER, MOVE THE HIGHER ONES TO FILL GAPS.				NOTES: 1. ONLY ONE ARS PLAN CAN BE ACTIVE AT A TIME. 2. PATTERN 1 IS NORMALLY RESERVED FOR INTERCEPT. 3. THE LOWER THE PREFERENCE NUMBER, THE HIGHER THE PREFERENCE. 4. IT IS RECOMMENDED THAT YOU DO NOT ASSIGN A TRUNK GROUP WITH TRUNK TYPE 30 TO AN ARS PATTERN. 5. FACILITY RESTRICTION LEVEL 0 IS THE LOWEST LEVEL OF ACCESS, 7 IS THE HIGHEST LEVEL OF ACCESS.					
WORD 1	ARS PLAN	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	R F S A T C O N I L T T V E L	W T R O N I E N G	DISTANT AREA CODE (NPA)	F O R N D T O L	TOLL TABLE INDEX	D D I E G L I E T T S D	D I G S N I O G R E A L	IXC/ISDN NETWORK IDENTIFIER	ARS-ROUTE TABLES
	1	2 5 5	1	1 1 1 1									309

(Fields 5 through 12 left blank for this example.)

FLIPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION - ROUTE TABLES										845552223	
INPUT FIELDS: DISPLAY: 1-3, 4 ADD: 1-12 REMOVE: 1-12 ALSO REMOVES ALL DATA IN WORDS 3 AND 4 CHANGE: 4-12 NEXT DATA: DISPLAY ALL ASSIGNED PREFERENCES AND PATTERNS NOT ALLOWED ON FIELD 4.				SPECIAL ERROR CODES: 81-ADD PREFERENCE NUMBERS STARTING WITH 1. DO NOT LEAVE GAPS. 82-REMOVE PREFERENCE NUMBERS STARTING WITH THE HIGHEST NUMBER. WHEN REMOVING A SMALLER NUMBER, MOVE THE HIGHER ONES TO FILL GAPS.				NOTES: 1. ONLY ONE ARS PLAN CAN BE ACTIVE AT A TIME. 2. PATTERN 1 IS NORMALLY RESERVED FOR INTERCEPT. 3. THE LOWER THE PREFERENCE NUMBER, THE HIGHER THE PREFERENCE. 4. IT IS RECOMMENDED THAT YOU DO NOT ASSIGN A TRUNK GROUP WITH TRUNK TYPE 30 TO AN ARS PATTERN. 5. FACILITY RESTRICTION LEVEL 0 IS THE LOWEST LEVEL OF ACCESS, 7 IS THE HIGHEST LEVEL OF ACCESS.					
WORD 1	ARS PLAN	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	R F S A T C O N I L T T V E L	W T R O N I E N G	DISTANT AREA CODE (NPA)	F O R N D T O L	TOLL TABLE INDEX	D D I E G L I E T T S D	D I G S N I O G R E A L	IXC/ISDN NETWORK IDENTIFIER	ARS-ROUTE TABLES
	1	3 5 5	1	1 1 1 2									309

(Fields 5 through 12 left blank for this example.)

FLIPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION - ROUTE TABLES										845552223	
INPUT FIELDS: DISPLAY: 1-3, 4 ADD: 1-12 REMOVE: 1-12 ALSO REMOVES ALL DATA IN WORDS 3 AND 4 CHANGE: 4-12 NEXT DATA: DISPLAY ALL ASSIGNED PREFERENCES AND PATTERNS NOT ALLOWED ON FIELD 4.				SPECIAL ERROR CODES: 81-ADD PREFERENCE NUMBERS STARTING WITH 1. DO NOT LEAVE GAPS. 82-REMOVE PREFERENCE NUMBERS STARTING WITH THE HIGHEST NUMBER. WHEN REMOVING A SMALLER NUMBER, MOVE THE HIGHER ONES TO FILL GAPS.				NOTES: 1. ONLY ONE ARS PLAN CAN BE ACTIVE AT A TIME. 2. PATTERN 1 IS NORMALLY RESERVED FOR INTERCEPT. 3. THE LOWER THE PREFERENCE NUMBER, THE HIGHER THE PREFERENCE. 4. IT IS RECOMMENDED THAT YOU DO NOT ASSIGN A TRUNK GROUP WITH TRUNK TYPE 30 TO AN ARS PATTERN. 5. FACILITY RESTRICTION LEVEL 0 IS THE LOWEST LEVEL OF ACCESS, 7 IS THE HIGHEST LEVEL OF ACCESS.					
WORD 1	ARS PLAN	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	R F S A T C O N I L T T V E L	W T R O N I E N G	DISTANT AREA CODE (NPA)	F O R N D T O L	TOLL TABLE INDEX	D D I E G L I E T T S D	D I G S N I O G R E A L	IXC/ISDN NETWORK IDENTIFIER	ARS-ROUTE TABLES
	1	6 5	1	1 1 1 3									309

(Fields 5 through 12 left blank for this example.)

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FLTPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION - ROUTE TABLES										845552223	
INPUT FIELDS: DISPLAY: 1-3, 4 ADD: 1-12 REMOVE: 1-12 ALSO REMOVES ALL DATA IN WORDS 3 AND 4 CHANGE: 4-12 NEXT DATA: DISPLAY ALL ASSIGNED PREFERENCES AND PATTERNS NOT ALLOWED ON FIELD 4.				SPECIAL ERROR CODES: 81-ADD PREFERENCE NUMBERS STARTING WITH 1. DO NOT LEAVE GAPS. 82-REMOVE PREFERENCE NUMBERS STARTING WITH THE HIGHEST NUMBER. WHEN REMOVING A SMALLER NUMBER, MOVE THE HIGHER ONES TO FILL GAPS.				NOTES: 1. ONLY ONE ARS PLAN CAN BE ACTIVE AT A TIME. 2. PATTERN 1 IS NORMALLY RESERVED FOR INTERCEPT. 3. THE LOWER THE PREFERENCE NUMBER, THE HIGHER THE PREFERENCE. 4. IT IS RECOMMENDED THAT YOU DO NOT ASSIGN A TRUNK GROUP WITH TRUNK TYPE 39 TO AN ARS PATTERN. 5. FACILITY RESTRICTION LEVEL 0 IS THE LOWEST LEVEL OF ACCESS, 7 IS THE HIGHEST LEVEL OF ACCESS.					
WORD 1	ARS PLAN	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	R S T A T I O N I N T E L L I G E N C E	W A T R O N I N T E N G	DISTANT AREA CODE (NPA)	S O R T I N G O R D E R	TOLL TABLE INDEX	D I S T A N T A R E A C O D E	D I S T A N T A R E A C O D E	IXC/ISDN NETWORK IDENTIFIER	ARS-ROUTE TABLES
	2	6	5	1	1	1	4						309
	1	2	3	4	5	6	7	8	9	10	11	12	

(Fields 5 through 12 left blank for this example.)

FLTPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION - ROUTE TABLES										845552223	
INPUT FIELDS: DISPLAY: 1-3, 4 ADD: 1-12 REMOVE: 1-12 ALSO REMOVES ALL DATA IN WORDS 3 AND 4 CHANGE: 4-12 NEXT DATA: DISPLAY ALL ASSIGNED PREFERENCES AND PATTERNS NOT ALLOWED ON FIELD 4.				SPECIAL ERROR CODES: 81-ADD PREFERENCE NUMBERS STARTING WITH 1. DO NOT LEAVE GAPS. 82-REMOVE PREFERENCE NUMBERS STARTING WITH THE HIGHEST NUMBER. WHEN REMOVING A SMALLER NUMBER, MOVE THE HIGHER ONES TO FILL GAPS.				NOTES: 1. ONLY ONE ARS PLAN CAN BE ACTIVE AT A TIME. 2. PATTERN 1 IS NORMALLY RESERVED FOR INTERCEPT. 3. THE LOWER THE PREFERENCE NUMBER, THE HIGHER THE PREFERENCE. 4. IT IS RECOMMENDED THAT YOU DO NOT ASSIGN A TRUNK GROUP WITH TRUNK TYPE 39 TO AN ARS PATTERN. 5. FACILITY RESTRICTION LEVEL 0 IS THE LOWEST LEVEL OF ACCESS, 7 IS THE HIGHEST LEVEL OF ACCESS.					
WORD 1	ARS PLAN	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	R S T A T I O N I N T E L L I G E N C E	W A T R O N I N T E N G	DISTANT AREA CODE (NPA)	S O R T I N G O R D E R	TOLL TABLE INDEX	D I S T A N T A R E A C O D E	D I S T A N T A R E A C O D E	IXC/ISDN NETWORK IDENTIFIER	ARS-ROUTE TABLES
	3	6	5	1	1	1	5						309
	1	2	3	4	5	6	7	8	9	10	11	12	

(Fields 5 through 12 left blank for this example.)

Using the previous pre-G2.2 translations, a caller in Extension Partition 18 who dialed the number “9 (ARS DAC) + 538-3333” would access the ARS route-selection algorithm with Routing Designator 51. The caller’s partition number was mapped to Call Category 7. The combination of Routing Designator 51 and Call Category 7 mapped to Pattern 55. Assuming that Time-of-Day Plan 2 was active and that there was an available trunk in the first preference, the call routed over Trunk Group 111 in Pattern 55.

Beginning with G2.2, an office code (for example, “538”) is assigned to resolve to a VNI (for example, “51”).

ENHANCED MODE - PROCEDURE: 314, WORD: 1

NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION

STRING IDENTIFIER

1. Digit 1: 5

2. Digit 2: 3

3. Digit 3: 8

4. Digit 4: --

5. Digit 5: --

6. Digit 6: --

7. Segment: 1

8. Last Segment: 1 Last Segment - Add to Standard Network

9. String Length: 7

10. String Type: 6 Address

11. Action: 0 Resolve

12. Action Object: 51 Virtual Nodepoint Idnetifier

13. Action Attribute: 0 Facility Restriction Level

14. Network Number: 1

Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT

enter command: p314w1 5 3 8 ;;1 1 7 6 0 51 0 1 axdx_

2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cmds

Plan numbers and partition numbers are used to create call categories.

ENHANCED MODE - PROCEDURE: 317, WORD: 1
 GRS - NETWORK CALL CATEGORY DEFINITION

1. Call Category:

2. Plan: Plan Number

3. Conditional Routing Count: 0, 1, or 2 Conditional Routes Used

PARTITION

4. Partition Type: Extension Partition

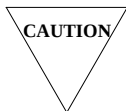
5. Partition Number:

Connected to CC0 ON-LINE ♥

enter command: p317w1 7 1 9 0 18 axdx_

Additional Commands

rs 7 1 9 0 19 ax	rs 8 2 9 0 18 ax	rs 9 3 9 0 18 ax
rs 27 1 9 0 20 ax	rs 8 2 9 0 19 ax	rs 9 3 9 0 19 ax
rs 27 1 9 0 21 ax	rs 28 2 9 0 20 ax	rs 29 3 9 0 20 ax
	rs 28 2 9 0 21 ax	rs 29 3 9 0 21 ax



Carefully assign any “9” or “999” global entries in Fields 2 through 5 of Procedure 317 Word 1. When specific translations already reside in the Procedure 317 translation table, subsequent global entries will *overwrite* the specific translations. Therefore, during mass translations, always assign the global entries first.

VNI 51 (using Call Categories 7 to 9 and 27 to 29) selects Patterns 150 to 155, respectively. Patterns 150 to 155 are assigned to route over Trunk Groups 110 to 115, respectively, serving as Preference 1.

In effect, what was ARS Pattern 55 (with three time-of-day options) is split in WCR Patterns 150, 151, and 152. Similarly, what was ARS Pattern 65 is split into WCR Patterns 153, 154, and 155.

ENHANCED MODE - PROCEDURE: 317, WORD: 2
 GRS - NETWORK ROUTING

1. Virtual Nodepoint Identifier:
 2. Call Category:
 3. Pattern Number:

Connected to CC0 ON-LINE ♥

enter command: rs 51 7 150 axdx_

Additional Commands

rs 51 27 153 ax	rs 51 8 151 ax	rs 51 9 152 ax
	rs 51 28 154 ax	rs 51 29 155 ax

Using the previous G2.2 translations, a caller in Extension Partition 18 who dials the number “9 (ARS DAC) + 538-3333” would access the WCR route-selection algorithm with VNI 51. The caller’s partition number (that is, Extension Partition 18) and the time-of-day plan in effect (assume Plan 2) are mapped to Call Category 8 for every possible conditional routing count.

Procedure 317 Word 2 then maps VNI 51 and Call Category 8 to Pattern 151.

5.5 Toll Prefix (Dial “1”)

5.5.1 Automatic Alternate Routing

Before G2.2, dialing the toll-prefix digit “1” was optional for calls routed by AAR translations (Procedure 321 Word 4).

FLTPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - ROUTING		845552223	
INPUT FIELDS: DISPLAY: SEE TABLE ON WORD 4B ADD: 1-5, SEE ERROR CODE 81 REMOVE: 1-5 CHANGE: 1-5 (AFTER DISPLAY ONLY) NEXT DATA: SEE TABLE ON WORD 4B		SPECIAL ERROR CODES: 81-AN ADD OR CHANGE ROUTINE CANNOT BE DONE TO A LOCATION CODE THAT BEGINS WITH THE CHARGE CODE PREFIX OR RESERVED DIGIT. (SEE PROC 285 WORD 1). 82-THIS CODE IS ALREADY ASSIGNED, USE THE CHANGE ROUTINE. 83-TO USE THE DISPLAY OR NEXT DATA ROUTINES. SEE WORD 4B. 84-FIRST DIGIT FIELD MUST BE SUPPLIED FOR FIVE-DIGIT DIALING PLANS ONLY IF IT IS A HOME RNK (PATTERN 641). 85-THE ENTERED LOCATION CODE (RNK) DOES NOT MAP TO THE ENTERED PATTERN NUMBER.		86-FIRST DIGIT FIELD MUST BE DASHED. YOU CANNOT ADMINISTER A PATTERN AND A FIRST DIGIT TO ONE RNK. 87-THE NODE NUMBER HAS PREVIOUSLY BEEN ASSIGNED TO A DIFFERENT PATTERN NUMBER. USE THE CHANGE ROUTINE. 88-A FIRST DIGIT CAN ONLY BE TRANSLATED IN A FIVE DIGIT DIALING PLAN. 89-THE NUMBER OF DIGITS IN THE LOCATION CODE HAS NOT BEEN SET IN PROC 285 WORD 1.	
WORD 4	LOCATION CODE (RNK)	NODE NUMBER	CALL CATEGORY	PATTERN NUMBER	F D I R G S T T
	1	2	3	4	5
					AAR-ROUTING
					321

If a caller dialed the **AAR** DAC followed by the prefix digit “1” and the address digits, then (if the call did not cross over to **ARS**) the digit “1” was *not* sent over the selected preference. If a caller dialed the same digits and the **AAR** feature passed the call to the **ARS** feature for subsequent routing, then the usual **ARS** dial “1” restrictions applied to the call.

Beginning with G2.2, private-network callers can be allowed to dial the toll-prefix digit “1” with the following translations. (These translations, like previous examples, assume that Routing Network 2 is being used as the WCR routing network for AAR calls.)

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	1
2. Digit 2:	--
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	1
10. String Type:	3 Toll Prefix
11. Action:	0 Resolve
12. Action Object:	0 VNI (No effect on route selection)
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 1 ;;;;1 1 1 3 0 0 0 2 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

ENHANCED MODE - PROCEDURE: 314, WORD: 2	
NETWORK DIGIT ANALYSIS - STRING ATTRIBUTE SPECIFICATION	
1. Continue:	1 Continue Digit Collection
2. Restart Analysis:	0 Inactive
3. VNI Operation:	0 Reset VNI to ''0''
4. Freeze VNI:	0 Do Not Freeze
5. Maximum Length:	0
6. Tone:	0 No Dial Tone Added
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: w2 1 cxdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

Using WCR, a digit-sending index determines whether the toll-prefix digit “1” is sent over the selected preference for a private-network call. To avoid sending the “1” prefix for private-network calls, enter “0” in Field 12 of Procedure 321 Word 1 for every digit-sending index required for Routing Network 2.

ENHANCED MODE - PROCEDURE: 321, WORD: 1
 WCR - DIGIT SENDING TRANSLATION

1. Digit Sending Index:

DIAL ACCESS CODE (DAC)

2. Send DAC Flag:

DAC DIGITS

3. Digit 1: 4. Digit 2: 5. Digit 3: 6. Digit 4:

INTEREXCHANGE CARRIER (IXC)

7. Send IXC Flag:

CIC DIGITS

8. Digit 1: 9. Digit 2: 10. Digit 3: 11. Digit 4:

TOLL PREFIX ←

12. Send Toll Prefix Flag: Do Not Send Toll Prefix

TOLL PREFIX DIGITS

13. Digit 1: 14. Digit 2: 15. Digit 3:

16. Send Pound Sign Flag:

Connected to CC0 ON-LINE ♥

enter command:

5.5.2 Automatic Route Selection

Before G2.2, the dial “1” option was assigned in Field 1 of Procedure 275 Word 3. The selected dial “1” option applied to ARS calls (not to AAR calls) and did not apply to public-network calls with the leading address digit “0” (operator-assisted or international calls).

FLIPCHART ISSUE 8		SYSTEM COS - MISCELLANEOUS										845552223																	
INPUT FIELDS: DISPLAY: NONE ADD: NOT ALLOWED REMOVE: NOT ALLOWED CHANGE: 1,-14 NEXT DATA: NOT ALLOWED			CAUTIONS: FAILURE TO PROVIDE A LOCAL SWITCH NUMBER (FIELD 8) MAY RESULT IN LOST MESSAGES WHEN USING DCS CENTRALIZED MESSAGING. SPECIAL ERROR CODES: 81-REMOVE EXTENSION TRANSLATION IN PROC 350 WORD 1. 82-WHEN A LOCAL SWITCH NUMBER IS PROVIDED, THE TYPE MUST BE SPECIFIED IN FIELD 7. 83-THE TYPE (FIELD 7) CANNOT BE SPECIFIED WITHOUT A LOCAL SWITCH NUMBER IN FIELD 8.							84-NUMBER PORTABILITY CAN BE SPECIFIED ONLY IF MULTI-PREMISE AND STANDARD NETWORK ARE SPECIFIED IN PROC 276 WORD 1 AND A 4 OR 5-DIGIT DIAL PLAN IS SPECIFIED IN PROC 350 WORD 1. 85-THE LOCAL SWITCH NUMBER IN FIELD 8 IS ALREADY ASSIGNED AS A NODE NUMBER; IT MUST FIRST BE REMOVED IN PROC 354.																			
WORD 3	DIAL 1 FOR TOLL	HOME NPA	RI CEN AST LPE LOR ENV RSA EL	CALL COVERAGE	COVERAGE POINT DOWN'T ANS INTERVAL	SYLS STI TSZ ETE H	S A YLC SCS TSE ETS	TYPE	SWITCH TYPE	CAS MAIN SWITCH NUMBER	CAL FL CROL NTROL	DEMP ANSDSW PORR IDNT	SMDR DEFAULT VARIABLE TIMER	T E O R R M I A A L	I N F D L R O C C K A A L G L E S	SYSTEM COS-MISCELLANEOUS													
	2	3	0	3												275													
	1			2	3		4	5	6	7			8	9	10	11	12	13	14										

The legal values for the ARS dial “1” option were:

Encode	Meaning
0	Not required
1	Required for all calls outside home NPA (that is, for all 10-digit calls)
2	Required for all toll calls

Beginning with G2.2, a dial “1” option is assigned on a per-network basis in Procedure 312 Word 1.

ENHANCED MODE - PROCEDURE: 312, WORD: 1

WCR - ORIGINAL NETWORK INFORMATION

1. Network Number:

2. Dial Tone Suppress:

3. CDR Account Code Required:

4. Dial Toll Prefix for Toll Calls: ←

Connected to CC0 ON-LINE ♥

MAJOR

MINOR

RUN TAPE

BUSY OUT

IN USE

WAIT

enter command: _

2 Repeat

3 Form

5 Help

6 Field

7 Input

8 Cmds

The legal values for the WCR dial “1” option are:

Encode	Meaning
0	Not required
1	Required for all toll calls

Within a particular routing network, the WCR toll-prefix option “1” does not apply to calls routed with either the string type “4” (international) or “5” (operator-assisted).

5.5.3 Dial “1” for Toll Calls

The following WCR translations provide dial “1” for toll calls (that is, the equivalent of the pre-G2.2 operation provided by entering a “2” in Field 1 of Procedure 275 Word 3).

For the ARS routing network (usually Network 1), enter a “1” in Field 4 of Procedure 312 Word 1.

ENHANCED MODE - PROCEDURE: 312, WORD: 1	
WCR - ORIGINAL NETWORK INFORMATION	
1. Network Number: [1] 2. Dial Tone Suppress: [0] Not Suppressed 3. CDR Account Code Required: [0] Not Required 4. Dial Toll Prefix for Toll Calls: [1] Required for Toll Calls	Connected to CC0 ON-LINE ♥ [MAJOR] [MINOR] [RUN TAPE] [BUSY OUT] [IN USE] [WAIT] enter command: p312w1 1 ;;1 cxdx_ [2 Repeat] [3 Form] [5 Help] [6 Field] [7 Input] [8 Cmds]

Also, assign the string identifier “1” as a 1-digit toll-prefix digit string for Routing Network 1.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	1
2. Digit 2:	--
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	1
10. String Type:	3 Toll Prefix
11. Action:	0 Resolve
12. Action Object:	0 VNI (No effect on route selection)
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 1 ;;;;1 1 1 3 0 0 0 1 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cnds

ENHANCED MODE - PROCEDURE: 314, WORD: 2	
NETWORK DIGIT ANALYSIS - STRING ATTRIBUTE SPECIFICATION	
1. Continue:	1 Continue Digit Collection
2. Restart Analysis:	0 Inactive
3. VNI Operation:	0 Reset VNI to ''0''
4. Freeze VNI:	0 Do Not Freeze
5. Maximum Length:	0
6. Tone:	0 No Dial Tone Added
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: w2 1 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cnds

5.5.4 Dial “1” for 10-Digit Calls

The following WCR translations provide dial “1” for 10-digit calls (that is, the equivalent of the pre-G2.2 operation provided by entering a “1” in Field 1 of Procedure 275 Word 3).

For the ARS routing network (usually Network 1), enter “0” in Field 4 of Procedure 312 Word 1.

ENHANCED MODE - PROCEDURE: 312, WORD: 1									
WCR - ORIGINAL NETWORK INFORMATION									
1.	Network Number:	1							
2.	Dial Tone Suppress:	0	Not Suppressed						
3.	CDR Account Code Required:	0	Not Required						
4.	Dial Toll Prefix for Toll Calls:	0	Not Required						
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT									
enter command: p312w1 1 dx_									
		2 Repeat	3 Form			5 Help	6 Field	7 Input	8 Cmds

Instead, this operation is assigned in Procedure 314 Word 1. For *every* foreign NPA previously assigned in pre-G2.2 Procedure 311 Words 2 and 3, prepend the digit “1” to the corresponding string identifier in WCR Procedure 314 Word 1 and change the string length accordingly.

Example: Suppose that the following ARS translations were assigned in Procedure 311 Word 2 and Procedure 275 Word 3. Area code “212” was assigned to resolve to Routing Designator 66 and dial “1” was assigned for 10-digit calls. The following WCR translations would provide equivalent service.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	1
2. Digit 2:	2
3. Digit 3:	1
4. Digit 4:	2
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	11
10. String Type:	6 Address
11. Action:	0 Resolve
12. Action Object:	66 Virtual Nodepoint Identifier
13. Action Attribute:	0 Facility Restriction Level
14. Network Number:	1
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 1 2 1 2 ;;1 1 11 6 0 66 0 1 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cnds

(Field 9, the string length, is set to “11” because the initial “1” digit is part of the address string.)

If a WCR routing network (usually Network 2) is also being assigned for AAR calls, then this network must be assigned to restart dial “1” calls to the ARS routing network (usually Network 1).

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	1
2. Digit 2:	--
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment: 1	
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	1
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	1 Digit Modification Index
13. Action Attribute:	1 Network Number
14. Network Number:	2
Connected to CC0 ON-LINE ♥	
MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 1 ;;;;1 1 1 6 1 1 1 2 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

This assignment allow callers to dial the digits:

network-2 DAC - 1 - 10 digits.

Then, Network 2 crosses over the address digits to Network 1 for subsequent routing.

NOTE

Using the previous assignment, callers are *not* allowed to dial “1” for AAR calls.

NOTE

Implicit in the previous assignment, the digit “1” is part of an *address* string and is, therefore, not considered a *toll prefix* by the switch. Since the switch recognized the “1” as an address digit, the “send prefix” field (Field 12 of Procedure 321 Word 1) in the selected preference’s digit-sending index has no effect on the dialed “1.” Therefore, if the “1” digit should not be sent, digit modification must be assigned to delete the digit.

5.6 Call Detail Recording

5.6.1 Account Codes

Before G2.2, an account code could be required for every ARS call by entering a “2” in Field 12 of Procedure 275 Word 1. The account-code length was assigned in Field 13 of Procedure 275 Word 1.

FLTPCHART ISSUE 8		SYSTEM COS - AI00 AND OTHER FEATURES															845552223		
INPUT FIELDS: DISPLAY: NONE ADD: NOT ALLOWED REMOVE: NOT ALLOWED CHANGE: 1-18 NEXT DATA: NOT ALLOWED					SPECIAL ERROR CODES: 87-USE PROC 850 TEST 2 TO BUSY-OUT THE DCIU. NOTES: 1. ENTER LEADING ZEROS IN FIELD 2 IF SIGNIFICANT. FOR EXAMPLE, IF 04 WAS ENTERED, IT WOULD BE APPENDED TO A TWO-DIGIT NUMBER TO MAKE A VALID FOUR-DIGIT NUMBER (04XX). 2. DISABLING SYSTEM CALL WAITING IN FIELD 5 DISABLES BOTH ATTENDANT AND EXTENSION CALL WAITING. IF ONLY ATTENDANT CALL WAITING IS DESIRED, DISABLE EXTENSION CALL WAITING USING PROC 010 WORD 1.										FIELD LIMITS: FIELD 1: * = NOT USED 0 = DISABLED 1 = ENABLED FIELD 2: -, 0-99 FIELD 3: -, 0-99 (IN 0.1 SECOND INCREMENTS) FIELD 4: -, 0-9999				
WORD 1	AI00				SMDR/CDR										SYS COS-AI00 & FEATURES				
	S T A T U S	P R E F I X D I G I T S	A N I D E L A Y T I M I N G	A U X I L I A R Y B I L L I N G N U M B E R	W C A T I N G	A D P T M E A S U R E M E N T C U L E /	P A G E I A N L G /	D I D I /	D U P L I C A T E D	O M N I S H I O C L D	S T A T U S	A C C O U N T C O D E L E N G T H	I O N U C T A O G L M O L I S N N G /	T I E A E N D T E R M U N K I N G	T R K R C K A T L O I N G	D C I U	C H A E C H O E R Y	275	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	

If an account code was required for all ARS calls, one dialing sequence was allowed.

CDR DAC - account code - ARS DAC - address digits

The switch returned dial tone after a caller dialed an account code.

An account code could be required for every call that accessed a specific trunk group by way of both:

- The trunk-group dial access code
- The ARS or AAR preference-selection process

by entering a “2” in Field 8 of Procedure 101 Word 1.

FLTPCHART ISSUE 8		TRUNK GROUP CHARACTERISTICS															845552223					
INPUT FIELDS: DISPLAY: 1 ADD: 1-17 REMOVE: NOT ALLOWED CHANGE: 2-17 NEXT DATA: NOT ALLOWED					SPECIAL ERROR CODES: 81-WHEN ADDING A NEW TRUNK GROUP USE PROC 100 WORD 1 FIRST. 82-FIELD 14 IS ONLY USED WITH TIE TRUNKS. 83-REMOVE ALL TRUNKS FROM THE TRUNK GROUP BEFORE CHANGING THE DCS ASSIGNMENT IN FIELD 5. 84-THIS TRUNK GROUP HAS AN ILLEGAL TRUNK TYPE FOR DCS. LEGAL TRUNK TYPES ARE 32-47 AND 73-78.										85-TRUNKS ASSIGNED TO TRUNK GROUP IN PROC 150 WORD 1 AND/OR PROC 116 WORD 1 WITHOUT 24TH CHANNEL SIGNALING, CANNOT CHANGE AVO (FIELD 17) TO 1. 86-CANNOT ASSIGN AVO TO TRUNK TYPE OF INPUTTED TRUNK GROUP. ALLOWED TRUNK TYPES FOR AVO ARE 32-47, 70-78, 120, & THOSE THAT HAVE ISDN SIGNALING EXCEPT TRUNK TYPE 108 & 109. 88-THE DCS TRUNK GROUP NUMBER MUST BE IN THE RANGE OF 18-255. 89-REMOVE THE AAR/ARS PREFIX DIGIT IN PROC 103 WORD 1 BEFORE ADDING OR CHANGING THE INCOMING PREFIX DIGIT FOR DID.							
WORD 1	TRUNK GROUP				B A L A N C E	B R A E T V E R S Y A L	I P N R C E O F M I X I N G	DCS	T O U C I H N T O N E	T O U C O H U T T O N E	C D R A C T I V E	A.I.O.D. BILLING NUMBER			TIMED RECALL		P A D G R O U P	T I E T O L L	F A E L P A L T O L T U W R E S E D S	D S I S P C E O R N V N I E S C I T O N	A V O	TRUNK GROUP CHAR
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	101			

If an account code was required to access a specific trunk group, one dialing sequence was provided for direct (non-AAR/ARS) access to the trunk group.

CDR DAC - account code - trunk-group DAC - address digits

Although account codes may not have been required for every ARS call, the usual account-code dialing sequence for ARS calls still allowed access to ARS preferences with trunk groups (that required account codes for access) serving as the preference's physical trunk facility.

CDR DAC - account code - ARS DAC - address digits

However, if an ARS user merely dialed the sequence:

ARS DAC - address digits

the ARS software skipped any trunk groups that required a dialed account code during preference selection.

Although account codes were never required for every AAR call, a user was allowed to dial either of two dialing sequences to enter an account code during an AAR call. Both of these dialing sequences allowed access to AAR preferences with trunk groups (that required account codes for access) serving as the preference's physical trunk facility.

CDR DAC - account code - AAR DAC - address digits

and

AAR DAC + Account-Code Prefix Digit + Account Code + Address Digits

The switch returned dial tone after a caller dialed an account code.

The account-code prefix digit, used in the second dialing sequence, was assigned for AAR calls in Field 6 of Procedure 285 Word 1.

FLIPCHART ISSUE 8				SYSTEM COS - NETWORK										845552223			
INPUT FIELDS:				SPECIAL ERROR CODES:							NOTES:						
DISPLAY: NONE				81-FIELDS 6 AND 7 MUST NOT BE THE SAME UNLESS BOTH ARE ZERO. A ZERO ENTERED IN FIELD 6 OR 7 INDICATES NO ACCOUNT CODE PREFIX OR RESERVED DIGIT. FIELD 6 OR 7 MUST NOT BE THE SAME AS THE FIRST DIGIT OF ANY LOCATION CODE (SEE PROC 321 WORD 4. 82-REMOVE REMOTE ACCESS TRUNK GROUP TERMINATION IN PROC 115 WORD 1 BEFORE CHANGING FROM SPEAKER VERIFICATION.							1. CHANGES MADE IN THIS PROCEDURE AFFECT THE TOTAL NETWORK.						
ADD: NOT ALLOWED											2. THE EXTENSIONS IN FIELDS 8 AND 9 MUST BE ASSIGNED IN PROC 000 WORD 1 BEFORE ENTRY.						
REMOVE: NOT ALLOWED											3. WHEN THE COS TRANSLATION IS DISPLAYED, DASHES APPEAR IN FIELDS ASSOCIATED WITH FEATURES THAT ARE NOT ACTIVE ON THIS SYSTEM. IN DOING A CHANGE ROUTINE, ONLY DASHES ARE PERMITTED IN THESE FIELDS.						
CHANGE: 1-10 & 12 SEE NOTES 2 & 3																	
NEXT DATA: NOT ALLOWED																	
A C C O U N T C O D E	NETWORK UNIFORM NUMBER PLAN		S Y S T E M C O S	P R E F I X D I G I T	R E M O T E A C C E S S	E X T E N S I O N	R E M O T E M A I N T E N A N C E E X T E N S I O N	A U D I O R E C O R D E D	R E S E R V E D	S U P P O R T E D	S Y S T E M C O S N E T W O R K	285					
	LOCATION CODE DIGITS	EXTENSION NUMBER DIGITS															
1	2	3	4	5	6	7	8	9	10	11	12						

However, if an AAR user merely dialed the sequence:

AAR DAC - address digits

the AAR software skipped any trunk groups that required a dialed account code during preference selection.

Beginning with G2.2, one of the options provided by Field 12 of Procedure 275 Word 1 is moved to Procedure 312 Word 1. A “1” is still entered in Field 12 of Procedure 275 Word 1 to enable CDR. However, an entry of “2” is no longer available since required account-code dialing is assigned on a per-network basis.

To force callers to dial account codes before placing ARS calls, enter “1” in Field 3 of Procedure 312 Word 1 for the ARS routing network (usually Routing Network 1).

ENHANCED MODE - PROCEDURE: 312, WORD: 1
 WCR - ORIGINAL NETWORK INFORMATION

1. Network Number:
2. Dial Tone Suppress: Not Suppressed
3. CDR Account Code Required: Required, Must Dial Before WCR DAC
4. Dial Toll Prefix for Toll calls: Not Required

Connected to CC0 ON-LINE ♥

enter command: p312w1 1 ;1 cxdx_

The entries for Field 13 (account-code length) of Procedure 275 Word 1 and Field 8 of Procedure 101 Word 1 are unchanged. However, the account-code length in Procedure 275 Word 1 only applies to account codes dialed after the CDR DAC in the following digit format.

CDR DAC - account code - AAR DAC - address digits

The account-code length does not apply to account codes dialed after a WCR network DAC and an account-code prefix digit. In fact, the account-code prefix digit is removed from Procedure 285 Word 1. Instead, the entire account code is a string type assigned in Procedure 314.

If a G2.2 switch administrator wants to assign 12-digit account codes with “3” as the prefix digit, then the account-code length is still assigned in Procedure 275 Word 1 for calls where the CDR DAC is dialed.

ENHANCED MODE - PROCEDURE: 275, WORD: 1	
SYSTEM COS - AIOD AND OTHER FEATURES	
AIOD	
1. Status:	-
2. Prefix Digits:	--
3. ANI Delay Timing:	--
4. Aux ANI Trunk Billing Number:	----
5. Tandem Tie Trunk:	-
6. Trunk-Trunk Calling:	-
7. DCIU:	-
8. Cache Memory:	-
5. Call Waiting:	-
6. Multiappearance/Data Module:	-
7. Paging/Code Calling:	-
9. DID/CCSA Digits:	-
10. Duplicated:	-
11. Music On Hold:	-
CALL DETAIL RECORDING (CDR)	
12. Status:	-
13. Account-Code Length:	12 ←
14. Incoming/Outgoing Calls:	-
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: _	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cnds	

However, to allow a user to dial calls in the digit format:

WCR network DAC - account-code prefix digit - account code - address digits

then Procedure 314 Words 1 and 2 should be translated accordingly.

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	3
2. Digit 2:	--
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	13
10. String Type:	1 Account Code
11. Action:	1 Restart
12. Action Object:	77 Digit Modification Index
13. Action Attribute:	2 Network Number
14. Network Number:	2
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 3 ;;;;1 1 13 1 1 77 2 2 axdx_	
2 Repeat 3 Form 5 Help 6 Field 7 Input 8 Cnds	

ENHANCED MODE - PROCEDURE: 314, WORD: 2	
NETWORK DIGIT ANALYSIS - STRING ATTRIBUTE SPECIFICATION	
1. Continue:	1 Continue Digit Collection
2. Restart Analysis:	1 Do Not Reanalyze After Conversion
3. VNI Operation:	0 Reset VNI to ''0''
4. Freeze VNI:	0 Do Not Freeze
5. Maximum Length:	0
6. Tone:	1 Dial Tone Added
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: w2 1 1 ;;1 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cnds

Digit-modification index “77” is assigned to delete one digit (the account-code prefix digit) and to insert no digits.

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index:	77
2. Digits To Delete:	1
3. Segment Number:	0 No Digits to Insert
INSERTION DIGITS	
4. Digit 1, 9, 17, or 25:	--
5. Digit 2, 10, 18, or 26:	--
6. Digit 3, 11, 19, or 27:	--
7. Digit 4, 12, 20, or 28:	--
8. Digit 5, 13, 21, or 29:	--
9. Digit 6, 14, 22, or 30:	--
10. Digit 7, 15, 23, or 31:	--
11. Digit 8, 16, 24:	--
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 77 1 0 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cnds

The account-code prefix digit can be recorded in CDR records. However, the previous translations delete the prefix digit so that it will not be recorded.

The previous translations in Procedure 314 Word 1 cause Network 2 to recognize digit strings that begin with “3” and are 13 digits long (that is, the prefix digit + 12 account-code digits) as account codes. Word 2 instructs the switch to apply dial tone and to continue collecting digits after collecting the account code.

Dialing Two Account Codes

Before G2.2, the switch allowed a user to dial two account codes for the same call in the format:

CDR DAC - acct code - AAR DAC - acct-code prefix - acct code - address digits

When this digit sequence was dialed, the CDR feature recorded only the second account code for the call.

Beginning with G2.2, the WCR feature does not allow a user to dial more than one account code for the same call. If a user dials an account code both before and after dialing the WCR DAC, the switch returns Intercept Treatment to the caller.

Dialing "1" Followed by an Account Code

Before G2.2, the AAR feature allowed a user to dial "1" before an account code in the format:

AAR DAC - 1 - account-code prefix - account code - address digits

Beginning with G2, the WCR feature does not allow a user to dial a the digit "1" before an account code unless it specifically assigned in the string translations of Procedure 314. If not specifically assigned and if a user dials the digits:

WCR DAC - 1 - account code

the switch returns Intercept Treatment to the caller. Instead, the caller must dial:

WCR DAC - account code - 1 - address digits

5.6.2 Dialed Number

Before G2.2, the CDR feature recorded the "dialed number" (that is, the digits actually dialed by the caller).

Beginning with G2.2, the CDR feature can record two different sets of digits including:

- The digits used for route selection
- The digits sent over the outgoing trunk group

The standard-format CDR records contain the digits used for route selection.

The digits used for route selection *differ* from the originally dialed digits (or "dialed number") whenever digit modification (or "m-to-n conversion") changes the digit contents of the originating register (OR) during digit analysis and before the WCR feature selects the route for a call. Whenever the dialed digits do not undergo digit modification during digit analysis, the digits used for route selection are the same as the dialed digits.

Example: Suppose that a user dials the digits “303-465-4444.” During digit analysis, digit modification converts the digits to “374-4444,” and resolves this new string to a VNI. Based on the VNI, the WCR route-selection algorithm selects a preference, and then digit modification converts the digits to “54444” for sending. In this case, the CDR feature would record the digits “3744444” in the “routed-on” field and the digits “54444” in the “sent” field.

5.6.3 Interexchange Carrier Code

Refer to the IXC/ISDN Network Identifier portion of Section 5.2.5, *AAR Patterns*, for information about the uses of the IXC field.

5.7 Remote Access — No Dial Tone

Before G2.2, a value of “2” could be entered in Field 3 of Procedure 103 Word 1.

FLIPCHART ISSUE 8		NETWORK - TRUNK GROUP TRANSLATION													845552223	
INPUT FIELDS: DISPLAY: 1 ADD: 1-15 REMOVE: NOT ALLOWED CHANGE: 2-15 NEXT DATA: NOT ALLOWED			SPECIAL ERROR CODES: 83-THE AAR/ARS PREFIX (FIELD 9) IS FOR TIE TRUNKS ONLY. IF THIS IS NOT A TIE TRUNK OR APLT TRUNK AND AAR/ARS IS AVAILABLE, FIELD 9 MUST BE A DASH. 85-FIELDS 3 AND 4 MUST BOTH BE SET TO 1 IN ORDER TO SET FIELD 13 TO 1. 86-THE ADDITIONAL DIGIT FOR DID MUST BE REMOVED IN PROC 101 WORD 1 BEFORE AAR/ARS PREFIX DIGIT CAN BE ADDED OR CHANGED.										NOTES: 1. WHEN ADDING A NEW TRUNK GROUP, PROC 100 WORD 1 MUST BE USED FIRST. 2. ENABLE FIELD 5 ONLY IF TRUNK GROUP IS TIE TRUNK OR APLT. 3. FRLS CAN ONLY BE ASSIGNED TO TRUNK GROUPS THAT ARE PART OF AN AAR/ARS PATTERN.			
TRUNK GROUP 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15			NETWORK TRK GRP TRANSL 103													

When this was done for a Remote Access trunk group, a Remote Access caller who dialed the AAR or ARS DAC (to access outgoing facilities) did not receive dial tone after dialing the DAC. The switch used this operation as a method of defeating echo suppressors in the incoming public-network portion of Remote Access calls. Otherwise, whenever an echo suppressor had already been added to a Remote Access connection, the caller was unable to break dial tone.

Field 11 of Procedure 103 Word 1 provided another method for defeating public-network echo suppressors. Field 11 specified the type of tone the switch returned for Remote Access calls. The options were:

Encode	Meaning
— or 0	Dial tone
1	Precursor tone, followed by dial tone
2	Abbreviated dial tone (1/2 second of dial tone, followed by silence)

Beginning with G2.2, Field 3 of Procedure 103 is removed, and the special operation of not returning dial tone after a user dials the WCR DAC is moved to Field 15. To emulate the operation provided when the value of Field 3 was set to “2,” set the value of Field 15 to “1.”

Field 11 of Procedure 103 Word 1 and its three encodes are retained.

ENHANCED MODE - PROCEDURE: 103, WORD: 1
NETWORK TRUNK GROUP TRANSLATION

1.	Trunk Group:	---	
2.	Facility Restriction Level:	-	
3.	Traveling Class Marks:	-	
4.	Symmetrical Route:	-	
5.	Incoming Tie/APLT Access to WCR:	-	
6.	Authorization Code Required:	-	
7.	Bridge-On Allowed:	-	
8.	Trunk Reservation Limit:	--	
9.	Dial Tone Detect Ignore:	-	
10.	Data Protection (Permanent):	-	
11.	Remote Access Echo Suppressor:	-	←
12.	Conditional Routing:	-	
13.	Route Selection Method:	-	
14.	Outgoing Overlapped Sending:	-	
15.	Suppress Dial Tone:	-	←

Connected to CC0 ON-LINE ♥

enter command: _

5.8 Digit Collection — Overlapped Sending

Before G2.2, the digit collection field (Field 14 of Procedure 103 Word 1) specified whether every digit must be collected before digit sending began over an outgoing trunk group.

FLIPCHART ISSUE 8		NETWORK - TRUNK GROUP TRANSLATION												845552223			
INPUT FIELDS: DISPLAY: 1 ADD: 1-15 REMOVE: NOT ALLOWED CHANGE: 2-15 NEXT DATA: NOT ALLOWED			SPECIAL ERROR CODES: 83-THE AAR/ARS PREFIX (FIELD 9) IS FOR TIE TRUNKS ONLY. IF THIS IS NOT A TIE TRUNK OR APLT TRUNK AND AAR/ARS IS AVAILABLE, FIELD 9 MUST BE A DASH. 85-FIELDS 3 AND 4 MUST BOTH BE SET TO 1 IN ORDER TO SET FIELD 13 TO 1. 86-THE ADDITIONAL DIGIT FOR DID MUST BE REMOVED IN PROC 101 WORD 1 BEFORE AAR/ARS PREFIX DIGIT CAN BE ADDED OR CHANGED.												NOTES: 1. WHEN ADDING A NEW TRUNK GROUP, PROC 100 WORD 1 MUST BE USED FIRST. 2. ENABLE FIELD 5 ONLY IF TRUNK GROUP IS TIE TRUNK OR APLT. 3. FRLS CAN ONLY BE ASSIGNED TO TRUNK GROUPS THAT ARE PART OF AN AAR/ARS PATTERN.		
TRUNK GROUP 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15			REFERENCE TRUNK GROUP 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15												NETWORK TRK GRP TRANSL 103		

The valid encodes for this field were:

Encode	Meaning
0	Do not collect all digits before sending (default)
1	Collect all digits before sending

Beginning with G2.2, Fields 13 and 14 of Procedure 103 Word 1 and Field 6 of Procedure 285 specify whether every digit must be collected before digit sending begins over an outgoing trunk group.

ENHANCED MODE - PROCEDURE: 103, WORD: 1
 NETWORK TRUNK GROUP TRANSLATION

1.	Trunk Group:	---	
2.	Facility Restriction Level:	-	
3.	Traveling Class Marks:	-	
4.	Symmetrical Route:	-	
5.	Incoming Tie/APLT Access to WCR:	-	
6.	Authorization Code Required:	-	
7.	Bridge-On Allowed:	-	
8.	Trunk Reservation Limit:	--	
9.	Dial Tone Detect Ignore:	-	
10.	Data Protection (Permanent):	-	
11.	Remote Access Echo Suppressor:	-	
12.	Conditional Routing:	-	
13.	Route Selection Method:	-	←
14.	Outgoing Overlapped Sending:	-	←
15.	Suppress Dial Tone:	-	

Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT

enter command:

2 Repeat
 3 Form
 5 Help
 6 Field
 7 Input
 8 Cmds

ENHANCED MODE - PROCEDURE: 285, WORD: 1	
SYSTEM COS - NETWORK	
1. Remote Access Code Required:	☐
3. Interdigit Timing Interval Length:	--
4. ACA Enable:	☐
5. Symmetrical Routing Depth:	--
6. WCR Route-Selection Method:	0 ←
8. Extension For Trunk Verification:	-----
9. Remote Maintenance Extension:	-----
10. Authorization Codes:	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command:	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

Field 14 of Procedure 103 Word 1 translates the same information as the pre-G2.2 field. However, since the switch operates more efficiently when WCR digit analysis can neglect overlapped sending, the values of the encodes are reversed to change the default value. The valid encodes for this field are:

Encode	Meaning
0	Collect all digits before sending (default)
1	Do not collect all digits before sending

Field 13 of Procedure 103 Word 1 specifies (on a per-incoming trunk group basis) when the WCR route-selection algorithm should begin. If Field 13 is set to “0,” route selection begins after every digit (in the digit stream) is collected, and overlapped sending does not occur. If Field 13 is set to “1,” route selection begins as soon as digit analysis determines a VNI, and overlapped sending can occur.

Field 6 of Procedure 285 Word 1 specifies (on a per-switch basis for extensions and attendants) when the WCR route-selection algorithm should begin. If Field 6 is set to “0,” route selection begins after every digit (in the digit stream) is collected, and overlapped sending does not occur. If Field 6 is set to “1,” route selection begins as soon as digit analysis determines a VNI, and overlapped sending can occur.

To emulate the pre-G2.2 overlapped-sending operation during a G2.2 upgrade, set the value of Procedure 285 Word 1 Field 6 to “1.” Also, for every incoming and 2-way trunk group, set the value of Procedure 103 Word 1 Field 13 to “1.” Also, for every incoming and 2-way trunk group, set Field 14 of Procedure 103 Word 1 to the opposite numerical value assigned on the pre-G2.2 switch.

5.9 Digit Prefixing

Before G2.2, there were three trunk-group prefixes.

The single-digit AAR/ARS prefix for incoming trunk groups was assigned in Field 9 of Procedure 103 Word 1.

FLIPCHART ISSUE 8				NETWORK - TRUNK GROUP TRANSLATION												845552223					
INPUT FIELDS:				SPECIAL ERROR CODES: 83-THE AAR/ARS PREFIX (FIELD 9) IS FOR TIE TRUNKS ONLY. IF THIS IS NOT A TIE TRUNK OR APTL TRUNK AND AAR/ARS IS AVAILABLE, FIELD 9 MUST BE A DASH. 85-FIELDS 3 AND 4 MUST BOTH BE SET TO 1 IN ORDER TO SET FIELD 13 TO 1. 86-THE ADDITIONAL DIGIT FOR DID MUST BE REMOVED IN PROC 101 WORD 1 BEFORE AAR/ARS PREFIX DIGIT CAN BE ADDED OR CHANGED.												NOTES: 1. WHEN ADDING A NEW TRUNK GROUP, PROC 100 WORD 1 MUST BE USED FIRST. 2. ENABLE FIELD 5 ONLY IF TRUNK GROUP IS TIE TRUNK OR APTL. 3. FRLS CAN ONLY BE ASSIGNED TO TRUNK GROUPS THAT ARE PART OF AN AAR/ARS PATTERN.					
TRUNK GROUP		R F E A S L E R V I C L I T I O N	N E T W O R K	M A I N / T R U N K G R O U P	I N C O M M U N I C A T I O N	A C T I O N C O D E	B R A N C H I N G	TRUNK RESERVATION LIMIT	A R S / A A R P R E F I X	P R E F I X D I G I T	A S S I G N M E N T	C O D E R E C E P T I O N	S E T C C O D E	C O D E D I L I G E N C Y	C A P A B I L I T Y	NETWORK TRK GRP TRANSL					
		1	2	3		4	5	6		8	9	10	11	12	13	14	15	103			

A single-digit prefix for DID trunk groups was assigned in Field 4 of Procedure 101 Word 1.

FLIPCHART ISSUE 8			TRUNK GROUP CHARACTERISTICS										845552223									
INPUT FIELDS:			SPECIAL ERROR CODES: 81-WHEN ADDING A NEW TRUNK GROUP USE PROC 100 WORD 1 FIRST. 82-FIELD 14 IS ONLY USED WITH TIE TRUNKS. 83-REMOVE ALL TRUNKS FROM THE TRUNK GROUP BEFORE CHANGING THE DCS ASSIGNMENT IN FIELD 5. 84-THIS TRUNK GROUP HAS AN ILLEGAL TRUNK TYPE FOR DCS. LEGAL TRUNK TYPES ARE 32-47 AND 73-78.								85-TRUNKS ASSIGNED TO TRUNK GROUP IN PROC 150 WORD 1 AND/OR PROC 116 WORD 1 WITHOUT 24TH CHANNEL SIGNALING, CANNOT CHANGE AVD (FIELD 17) TO 1. 86-CANNOT ASSIGN AVD TO TRUNK TYPE OF INPUTTED TRUNK GROUP. ALLOWED TRUNK TYPES FOR AVD ARE 32-47, 70-78, 120, & THOSE THAT HAVE ISDN SIGNALING EXCEPT TRUNK TYPE 108 & 109. 88-THE DCS TRUNK GROUP NUMBER MUST BE IN THE RANGE OF 18-255. 89-REMOVE THE AAR/ARS PREFIX DIGIT IN PROC 103 WORD 1 BEFORE ADDING OR CHANGING THE INCOMING PREFIX DIGIT FOR DID.											
WORD 1	TRUNK GROUP	B A L A N C E	B R A N C H I N G	I N C O M M U N I C A T I O N	DCS	T O U C H I N G	T O U C H O U T O N E	S M D R A C T I V E	A.I.O.D. BILLING NUMBER		TIMED RECALL		P A D D I N G	T I E T O L L	F A L S E P R E S E N T	D S I S P A L T O W N E S C I T O N	AVD	TRUNK GROUP CHAR				
											TIME	LEVEL										
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	101			

A 1- to 3-digit prefix for Main/Satellite trunk groups was assigned in Fields 6 through 8 of Procedure 104 Word 2.

FLIPCHART ISSUE 8		MAIN/SATELLITE - TRUNK GROUPS												845552223									
INPUT FIELDS:		SPECIAL ERROR CODES:												87-ENTER PREFIX DIGITS FROM FIELDS 6-8. NO GAPS ARE ALLOWED.									
DISPLAY: 1		81-NOT A MAIN/SATELLITE SYSTEM. SET THE MULTI-PREMISE BIT IN PROC 276 WORD 1, AND SET THE SYSTEM AS MAIN/SATELLITE IN PROC 104 WORD 1.												88-PROC 275 WORD 1, FIELD 9 MUST BE SET TO THE NUMBER OF DIGITS USED IN THE TERMINAL NUMBERING PLAN.									
ADD: NOT ALLOWED		82-THIS IS THE WRONG TRUNK TYPE FOR DEFERRED PREFIX/ACCESS CODE.												NOTES:									
REMOVE: NOT ALLOWED		84-DEFERRED PREFIX IS FOR THE MAIN ONLY. (FIELD 4 = 0)												1. WHEN THE NUMBER OF DIGITS TO BE SENT IN FIELD 3 AGREES WITH THE NUMBER TO BE SENT IN PROC 275 WORD 1 FIELD 9, THEN ALL DIGITS ARE SENT.									
CHANGE: 2 TO 8		85-TRANSFER ACTION TYPE IS FOR THE MAIN ONLY. (FIELD 5 = 0)																					
NEXT DATA: NOT ALLOWED		86-WRONG CALL TYPE.																					
WORD 2		TRUNK GROUP	T S R T U A N T K U S	D I S T I N C T	D P R E F I X	T R A C T I O N T Y P E	PREFIX DIGIT															MAIN/SATELLITE TRUNK GRPS	
							1	2	3													104	

Except for trunk groups with the ISDN dynamic trunk type (Trunk Type 120), only one of these fields could be assigned for each incoming (or 2-way) trunk group. However, both the AAR/ARS and the DID prefix digit could be assigned to the same ISDN dynamic trunk group. The switch determined which prefix to use according to the received NSF IE [or according to the translations in Procedure 116 Word 1 either if an NSF IE was not received or if the received NSF IE specified a feature (that is, Bit 6 of Octet 4 = 0).

Like non-ISDN trunk groups, ISDN trunk groups with a *non*-ISDN Dynamic trunk type were prefixed according to the trunk type assigned in Procedure 100 Word 1.

Beginning with G2.2, a 1- to 4-digit trunk-group prefix is assigned in a common group of fields — Fields 3 through 6 of Procedure 101 Word 3. Prefix digits are assigned to AAR/ARS, DID and Main/Satellite trunk groups in the same four fields.

ENHANCED MODE - PROCEDURE: 101, WORD: 3
 TRUNK GROUP CHARACTERISTICS - PREFIXING

1. Trunk Group:
 2. Type of Address:

PREFIX <-----
 3. Digit 1:
 4. Digit 2:
 5. Digit 3:
 6. Digit 4:

DISPLAY ONLY
 7. Signaling Type:

Connected to CC0 ON-LINE ♥

enter command:

As many as eight prefixes can be assigned to ISDN trunk groups (with any specific ISDN trunk type). The switch determines which prefix to used according to the “type-of-address” information in the called-number IE.

To assign prefix digits for non-Dynamic ISDN trunk groups so that a G2.2 switch operates like a pre-G2.2 switch, enter the same prefix digit(s) for all eight prefixes.

Example: Suppose that ISDN trunk group “38” resides on a G2.1 switch. The trunk type of this trunk group is “41,” and the AAR/ARS prefix digit for this trunk group is “9.” The following translations emulate the pre-G2.2 operation for a G2.2 upgrade.

ENHANCED MODE - PROCEDURE: 101, WORD: 3
 TRUNK GROUP CHARACTERISTICS - PREFIXING

1. Trunk Group:

2. Type of Address:

PREFIX

3. Digit 1:

4. Digit 2:

5. Digit 3:

6. Digit 4:

DISPLAY ONLY

7. Signaling Type:

Connected to CC0 ON-LINE ♥

enter command: p101w3 38 0 9 axdx_

Additional Commands

rs;38;4;9;axdx	rs;38;1;9;axdx	rs;38;2;9;axdx	rs;38;3;9;axdx
rs;38;5;9;axdx	rs;38;6;9;axdx	rs;38;7;9;axdx	rs;38;8;9;axdx

NOTE

If an ISDN trunk group has a DID trunk type, then assign the pre-G2.2 DID prefix digit to each of the eight type-of-address entries.

5.10 Reserved Digit

Before G2.2, a reserved digit could be assigned in Field 7 of Procedure 285 Word 1. This field was reserved for network feature codes which were never implemented.

FLIPCHART ISSUE 8		SYSTEM COS - NETWORK										845552223	
INPUT FIELDS: DISPLAY: NONE ADD: NOT ALLOWED REMOVE: NOT ALLOWED CHANGE: 1-19 & 12 SEE NOTES 2 & 3 NEXT DATA: NOT ALLOWED				SPECIAL ERROR CODES: 81-FIELDS 6 AND 7 MUST NOT BE THE SAME UNLESS BOTH ARE ZERO. A ZERO ENTERED IN FIELD 6 OR 7 INDICATES NO ACCOUNT CODE PREFIX OR RESERVED DIGIT. FIELD 6 OR 7 MUST NOT BE THE SAME AS THE FIRST DIGIT OF ANY LOCATION CODE (SEE PROC 321 WORD 4. 82-REMOVE REMOTE ACCESS TRUNK GROUP TERMINATION IN PROC 115 WORD 1 BEFORE CHANGING FROM SPEAKER VERIFICATION.				NOTES: 1. CHANGES MADE IN THIS PROCEDURE AFFECT THE TOTAL NETWORK. 2. THE EXTENSIONS IN FIELDS 8 AND 9 MUST BE ASSIGNED IN PROC 000 WORD 1 BEFORE ENTRY. 3. WHEN THE COS TRANSLATION IS DISPLAYED, DASHES APPEAR IN FIELDS ASSOCIATED WITH FEATUREES THAT ARE NOT ACTIVE ON THIS SYSTEM. IN DOING A CHANGE ROUTINE, ONLY DASHES ARE PERMITTED IN THESE FIELDS.					
A C C R E E S U O I T C R E D D E	NETWORK UNIFORM NUMBER PLAN		S Y S T E M C O D E T R A N S L A T I O N	A C C O U N T C O D E P R E F I X	R E S E R V E D D I G I T	E X T E N S I O N F O R T R U N K V E R I F I C A T I O N	R E M O T E M A I N T E N A N C E E X T E N S I O N	A U D I O S E N S I T I V E N E T W O R K	R E M O T E S E R V I C E S	S U P P L Y I N G S E R V I C E S	SYSTEM COS NETWORK		
	LOCATION CODE DIGITS	EXTENSION NUMBER DIGITS											
1	2	3	4	5	6	7	8	9	10	11	12	285	

Assigning the reserved digit caused two side effects. First, the account-code prefix digit could not be the same as the reserved digit. Second, location codes assigned in Procedure 321 Word 4 could not begin with the reserved digit.

Beginning with G2.2, the reserved digit field is removed since it is not needed.

Beginning with G2.2, WCR dial-tone suppression is assigned (on a per-digit analysis network basis) in Field 2 of Procedure 312 Word 1. When a “1” is entered in this field, the switch does not return dial tone after a user dials the DAC for the corresponding WCR digit-analysis network.

ENHANCED MODE - PROCEDURE: 312, WORD: 1	
WCR - ORIGINAL NETWORK INFORMATION	
1. Network Number:	2
2. Dial Tone Suppress:	1 Suppressed
3. CDR Account Code Required:	0 Not Required
4. Dial Toll Prefix for Toll Calls:	0 Not Required
Connected to CC0 ON-LINE ♥	
MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p312w1 2 1 cxdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

To emulate the pre-G2.2 system-wide operation for dial-tone suppression during a G2.2 upgrade, set the value of Procedure 312 Word 1 Field 2 to “1” for the AAR routing network (usually Routing Network 2).

Beginning with G2.2, the switch also suppresses dial tone for any incoming trunk group where Field 15 of Procedure 103 Word 1 is set to “1.”

ENHANCED MODE - PROCEDURE: 103, WORD: 1	
NETWORK TRUNK GROUP TRANSLATION	
1.	Trunk Group: ---
2.	Facility Restriction Level: -
3.	Traveling Class Marks: -
4.	Symmetrical Route: -
5.	Incoming Tie/APLT Access to WCR: -
6.	Authorization Code Required: -
7.	Bridge-On Allowed: -
8.	Trunk Reservation Limit: --
9.	Dial Tone Detect Ignore: -
10.	Data Protection (Permanent): -
11.	Remote Access Echo Suppressor: -
12.	Conditional Routing: -
13.	Route Selection Method: -
14.	Outgoing Overlapped Sending: -
15.	Suppress Dial Tone: 1 ←
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: _	
	2 Repeat 3 Form
5 Help 6 Field 7 Input 8 Cmds	

To emulate pre-G2.2 dial tone suppression for incoming trunk groups during a G2.2 upgrade, set the value of G2.2 Procedure 103 Word 1 Field 15 to “1” for every trunk group where Fields 3 and 4 of the pre-G2.2 Procedure 103 were set to “1” or where Field 3 was set to “2.”

5.12 ISDN Trunk Groups

5.12.1 Incoming to the Switch

Before G2.2, if the switch received a SETUP message on an ISDN trunk group and the network-specific facility (NSF) information element (IE) specified that the call was operator-assisted, the switch prepended a “0” digit to the digits contained in the called-number IE. If, in addition to the previous conditions, the type-of-address octet in the called-number IE specified an international call, the switch prepended the digits “01” to the digits contained in the called-number IE.

If the NSF IE did not specify an operator-assisted call, but the octet in the called-number IE specified an international call, the switch prepended the digits “011” to the digits contained in the called-number IE.

Example: Suppose that the switch received a SETUP message with an NSF IE that specified an operator-assisted call and with a Type-of-Address octet in the called-number IE that specified an international call. Also, suppose that the called-number IE contained the address digits “4442222.” After analyzing the contents of the SETUP message, the switch prepended the digits “01” to the address digits and routed the call using the digits “014442222.”

Beginning with G2.2, if the switch receives a SETUP message on an ISDN trunk group, the switch prepends the digits “0,” “01,” or “011” to the digits contained in the called-number IE in the same manner as a pre-G2.2 switch.

If the received SETUP message contains a transit network selection (TNS) or NSF IE that specifies an IXC for subsequent routing, the switch prepends the digits:

- “10” + 3-digit carrier identification code (CIC) for 5-digit IXC codes
- “101” + 4-digit CIC for 7-digit IXC codes

to the address digits before analyzing the digits and routing the call.

5.12.2 Outgoing from the Switch

Before G2.2, if the AAR/ARS feature selected a preference where the physical trunk facility for the subsequent connection was an ISDN trunk group, the switch automatically coded the numbering-plan and type-of-address octets in the called-number IE according to whether the specific call was:

- An AAR versus an ARS call
- An international or operator-assisted call, or neither

If the AAR/ARS call was an international or operator-assisted call, the switch automatically coded the correct information into the NSF IE.

Also, the switch automatically deleted the digits “0,” “01,” or “011” before populating the called-number IE with the address digits.

Example: Suppose that the switch received the digits “0114158911” and proceeded to route the call via the ARS feature. Also, suppose that the ARS feature selected a preference where an ISDN trunk group served as the physical trunk facility. As part of the ISDN call-setup procedure, the switch automatically deleted the digits “011” from the digit stream, populated the called-number IE with the address digits “4158911,” and specified the called-number IE’s type-of-address octet as an international call.

Beginning with G2.2, if the WCR feature selects a preference where the physical trunk facility for the subsequent connection is an ISDN trunk group, the switch codes the numbering-plan and type-of-address octets in the called-number IE according to the attributes of the preference’s ISDN sending index.

Field 9 of Procedure 318 Word 1 specifies the ISDN sending index for a preference.

ENHANCED MODE - PROCEDURE: 318, WORD: 1
 WCR - NETWORK ROUTE TRANSLATION

1.	Pattern Number:	----	
2.	Preference Number:	--	
3.	Trunk Group:	---	
4.	Facility Restriction Level:	-	
5.	Warning Tone:	-	
6.	Toll-Free Index:	--	
7.	Digit Modification Index:	----	
8.	Digit Sending Index:	---	
9.	ISDN Sending Index:	33	←

Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT

enter command: _

2 Repeat 3 Form

5 Help 6 Field 7 Input 8 Cmds

Fields 3 and 4 of Procedure 322 Word 1 specify the numbering plan and type of address to populate in the called-number IE.

ENHANCED MODE - PROCEDURE: 322, WORD: 1
 WCR - OUTGOING ISDN FEATURE PARAMETERS

1. ISDN Sending Index:
2. ISDN Network Service Value:
3. Type of Address: ←
4. Numbering Plan Identification: ←
5. IXC Option:

Connected to CC0 ON-LINE ♥

enter command:

The operator-assisted information in the NSF IE is populated according to the attributes (defined in Procedure 279 Word 1) of the network-service value (NSV) entered in Field 2 of Procedure 322 Word 1.

NOTE

Separate WCR patterns must be used for operator-assisted calls (leading “0”) and presubscribed operator-assisted calls (leading “00”) so that the NSF IE is populated correctly.

The WCR feature does not automatically delete the leading digits “0,” “01,” or “011” before populating the address digits in the called-number IE. Digit modification must delete these digits before they are sent over an ISDN trunk group.

Example: Suppose that the switch receives the digits “0114158911” and proceeds to route the call via the WCR feature. Also, suppose that the WCR feature selected a preference where an ISDN trunk group served as the physical trunk facility. To support the ISDN call-setup procedure, digit modification must be assigned to delete three digits (that is, the digits “011”) from the digit stream. The switch then populates the called-number IE with the remaining digits “4158911.”

NOTE

An implication of this change is that, when the WCR feature routes calls over ISDN trunk groups, separate WCR patterns must be used for AAR calls, domestic ARS calls, international ARS calls, domestic operator-assisted calls, and international operator-assisted calls so that the called-number and NSF IEs are populated correctly.

5.12.3 Operator-Assisted Calls and Presubscribed Common-Carrier Operator Service

Before G2.2, a network-service value (NSV) could be assigned to an ARS preference in Procedure 309 Word 5. However, Procedure 311 Word 1 selected the same pattern for operator-assisted (leading “0”) and presubscribed common-carrier operator service (leading “00”) calls. Therefore, since ARS would select the same preference for “0” and “00” calls, there was no explicit way to use separate NSVs (with different attributes) for the two call types.

To attenuate this problem, the G2.1 software was modified to handle “0” and “00” calls in a special way. When an ARS caller dialed the leading digits “0” or “00” and any NSV was explicitly assigned (Field 5 of Procedure 309 Word 5 ≠ —) to the selected preference, the switch ignored the assigned NSV and populated the NSF IE as either “operator-assisted” or “presubscribed common-carrier operator service.”

Beginning with G2.2, Procedure 314 Word 1 can resolve “0” and “00” calls to different VNIs allowing the WCR route-selection algorithm to select a different preference for each type of call. In turn, the switch can populate the NSF IE according to the attributes (defined in Procedure 279 Word 1) of each preference’s NSV entered in Field 2 of Procedure 322 Word 1.

The G2.2 switch does not execute special software to populate ISDN messages for calls with the leading address digits “0” or “00.” For these calls, like any other ISDN call, if an NSV is not specified for the selected WCR preference (in Procedure 322 Word 1), then the switch does not populate the NSF IE.

5.13 Extension Number Portability

Before G2.2, Extension Number Portability (also known as node-number routing) was assigned in Word 1 or Word 2 of Procedure 354, Word 4 of Procedure 321, and Word 1 of Procedure 322.

In Procedure 354 Word 1 or Word 2, an extension number (from within the private network) was assigned to the node number where the extension resided.

FLTPCHART ISSUE 8		EXTENSION GROUPS		845552223	
INPUT FIELDS: DISPLAY: 1 ADD: 1-2 OR 1-3, SEE ERROR CODES 81 & 82 REMOVE: SEE ERROR CODES 83, 84, & 85 CHANGE: 3 (ONLY IN A 5-DIGIT DIALING PLAN) NEXT DATA: DISPLAYS ASSIGNED BLOCKS OF EXTENSIONS		SPECIAL ERROR CODES: 81-FIRST DIGIT MUST BE PROPERLY ASSIGNED IN PROC 350 WORD 1. 82-THE FIRST EXTENSION MUST BE SMALLER THAN THE LAST EXTENSION AND THE FIRST EXTENSION MUST END IN 0 AND THE LAST EXTENSION MUST END IN 9. 83-EXTENSIONS MUST BE REMOVED IN PROC 000 WORD 1 BEFORE THE EXTENSION BLOCK CAN BE REMOVED OR CHANGED. 84-THE DAC, NODE, OR RNK EXTENSION MUST BE REMOVED IN PROC 354 WORD 2 BEFORE THE EXTENSION BLOCK CAN BE REMOVED OR CHANGED.		85-EXTENSION(S) MUST BE TAKEN OUT OF RECENT DISCONNECT USING PROC 003 WORD 1 BEFORE THE EXTENSION BLOCK CAN BE REMOVED OR CHANGED. 86-MUST HAVE A 4 OR 5-DIGIT DIALING PLAN TO CHANGE THE NODE NUMBER. THE NODE NUMBER CANNOT BE "THIS SWITCH" AND NUMBER PORTABILITY MUST BE SPECIFIED IN PROC 275 WORD 3. 87-NUMBER PORTABILITY MUST BE SPECIFIED IN PROC 275 WORD 3 TO ENTER A NODE NUMBER IN FIELD 3.	
WORD 1	FIRST EXTENSION	LAST EXTENSION	NODE NUMBER	DISPLAY ONLY	EXTENSION GROUPS
	1	2	3	BT LY OP CE K	354

FLTPCHART ISSUE 8		EXTENSION DESTINATION		845552223	
INPUT FIELDS: DISPLAY: 1 OR 2-6 ADD: 1-6, 1-7, OR 1 & 7 REMOVE: AFTER DISPLAY ONLY CHANGE: 2-6, 2-7, OR 2 & 7, SEE ERROR CODE 83 NEXT DATA: SEE NOTE 2 AND NEXT DATA TABLE		CAUTION: TO MAINTAIN DCS CENTRALIZED MESSAGING TRANSPARENCY, EACH EXTENSION ASSIGNED DAC, RNK, OR NODE NUMBER ROUTING (I.E. NOT LOCAL TO THIS SWITCH) MUST BE ASSOCIATED TO THE NODE ON WHICH IT RESIDES. FAILURE TO DO SO MAY RESULT IN LOST MESSAGES. SPECIAL ERRORS CODES: 81-ALREADY ASSIGNED AS A REGULAR EXTENSION (PROC 000 WORD 1). 82-ASSIGN THE TRUNK DIAL ACCESS CODE IN PROC 100 WORD 1 AND ASSIGN THE FEATURE DIAL CODE IN PROC 350 WORD 2.		83-TO CHANGE FROM ONE TYPE TO ANOTHER, DO A REMOVE THEN AN ADD ROUTINE, EXCEPT IF A TYPE 5 IS DISPLAYED (SEE FIELD 9). 84-CODE ASSIGNED WITH MORE DIGITS, E.G. BLOCK IS ALLOCATED (PROC 354 WORD 1). 85-EXTENSION IS IN RECENT DISCONNECT (PROC 003). 86-FOR RNK, (FIELD 2 - 2) ONLY ONE OR TWO DIGITS MAY BE ENTERED IN FIELD 1. 87-ASSIGN NUMBER PORTABILITY IN PROC 275 WORD 3 BEFORE ASSIGNING A NODE NUMBER, WHEN ASSIGNING NODE NUMBER STEERING.	
WORD 2	EXTENSION OR STEERING CODE	USE	RNK/DAC	DISPLAY ONLY	EXTENSION DESTINATION
	1	2	DIGIT 1 DIGIT 2 DIGIT 3 DIGIT 4	TRUNK GROUP FEATURE OR PARTITION	354

In Procedure 321 Word 4, a pattern number was assigned to a node number. The pattern number identified the specific AAR pattern that the switch would select to route calls destined for each specific private-network node.

FLTPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - ROUTING		845552223	
INPUT FIELDS: DISPLAY: SEE TABLE ON WORD 4B ADD: 1-5, SEE ERROR CODE 81 REMOVE: 1-5 CHANGE: 1-5 (AFTER DISPLAY ONLY) NEXT DATA: SEE TABLE ON WORD 4B		SPECIAL ERROR CODES: 81-AN ADD OR CHANGE ROUTINE CANNOT BE DONE TO A LOCATION CODE THAT BEGINS WITH THE CHARGE CODE PREFIX OR RESERVED DIGIT. (SEE PROC 285 WORD 1). 82-THIS CODE IS ALREADY ASSIGNED, USE THE CHANGE ROUTINE. 83-TO USE THE DISPLAY OR NEXT DATA ROUTINES, SEE WORD 4B. 84-FIRST DIGIT FIELD MUST BE SUPPLIED FOR FIVE-DIGIT DIALING PLANS ONLY IF IT IS A HOME RNK (PATTERN 641). 85-THE ENTERED LOCATION CODE (RNK) DOES NOT MAP TO THE ENTERED PATTERN NUMBER.		86-FIRST DIGIT FIELD MUST BE DASHED. YOU CANNOT ADMINISTER A PATTERN AND A FIRST DIGIT TO ONE RNK. 87-THE NODE NUMBER HAS PREVIOUSLY BEEN ASSIGNED TO A DIFFERENT PATTERN NUMBER. USE THE CHANGE ROUTINE. 88-A FIRST DIGIT CAN ONLY BE TRANSLATED IN A FIVE DIGIT DIALING PLAN. 89-THE NUMBER OF DIGITS IN THE LOCATION CODE HAS NOT BEEN SET IN PROC 285 WORD 1.	
WORD 4	LOCATION CODE (RNK)	NODE NUMBER	CALL CATEGORY	PATTERN NUMBER	AAR-ROUTING
	1	2	3	4	321

In Procedure 322 Word 1, a location code was assigned to the prefix digits of extension numbers (within the portability subnetwork). The switch used this assigned location code to convert the dialed extension number into a private-network number.

FLIPCHART ISSUE 8		PORTABILITY ROUTING		845552223	
INPUT FIELDS: DISPLAY: 1, 1 & 2 OR 3 ADD: 1, 2 & 3 OR 1 & 3 REMOVE: 1-3 CHANGE: 3, ONLY AFTER DISPLAY NEXT DATA: SEE NOTE 1		SPECIAL ERROR CODES: 81-FIRST DIGIT MUST BE PROPERLY ASSIGNED IN PROC 359 WORD 1. 82-DIGITS SPECIFIED IN FIELDS 1 & 2 ARE ALREADY ASSIGNED AN RNK, USE CHANGE. 83-ONLY AFTER DISPLAY IS CHANGE ALLOWED FOR FIELD 3.		NOTES: 1. NEXT DATA DISPLAYS THE RNK ASSOCIATED WITH THE NEXT FIRST AND SECOND DIGITS OR IF RNK IS ENTERED AND FIELDS 1 AND 2 ARE DASHED, IT DISPLAYS THE NEXT FIRST AND SECOND DIGITS ASSOCIATED WITH THE RNK. WHEN DISPLAYING THE RNK FOR A SPECIFIC FIRST DIGIT, IT DISPLAYS A DASH (-) IN THE SECOND DIGIT FIELD (FIELD 2). AT THE START OF A NEW FIRST DIGIT, THE SECOND DIGIT FIELD DISPLAYS A DASH, WHICH ALLOWS THE USER TO ADD OR CHANGE THE ENTIRE GROUP OF 10 RNK'S.	
WORD 1	D I G I T 1 2 1 2	LOCATION CODE (RNK) 3	PORTABILITY ROUTING 322		

Example: Assume that a user dialed the extension number “52005” and that the switch needed to route this call to Node Number 5 by sending the private-network digits “7512005” over the selected preference in Pattern 105.

FLIPCHART ISSUE 8		EXTENSION DESTINATION		845552223	
INPUT FIELDS: DISPLAY: 1 OR 2-6 ADD: 1-6, 1-7, OR 1 & 7 REMOVE: AFTER DISPLAY ONLY CHANGE: 2-6, 2-7, OR 2 & 7, SEE ERROR CODE 83 NEXT DATA: SEE NOTE 2 AND NEXT DATA TABLE		CAUTION: TO MAINTAIN DCS CENTRALIZED MESSAGING TRANSPARENCY, EACH EXTENSION ASSIGNED DAC, RNK, OR NODE NUMBER ROUTING (I.E. NOT LOCAL TO THIS SWITCH) MUST BE ASSOCIATED TO THE NODE ON WHICH IT RESIDES. FAILURE TO DO SO MAY RESULT IN LOST MESSAGES. SPECIAL ERRORS CODES: 81-ALREADY ASSIGNED AS A REGULAR EXTENSION (PROC 009 WORD 1). 82-ASSIGN THE TRUNK DIAL ACCESS CODE IN PROC 100 WORD 1 AND ASSIGN THE FEATURE DIAL CODE IN PROC 359 WORD 2.		83-TO CHANGE FROM ONE TYPE TO ANOTHER, DO A REMOVE THEN AN ADD ROUTINE, EXCEPT IF A TYPE 5 IS DISPLAYED (SEE FIELD 9). 84-CODE ASSIGNED WITH MORE DIGITS, E.G. BLOCK IS ALLOCATED (PROC 354 WORD 1). 85-EXTENSION IS IN RECENT DISCONNECT (PROC 003). 86-FOR RNK, (FIELD 2 - 2) ONLY ONE OR TWO DIGITS MAY BE ENTERED IN FIELD 1. 87-ASSIGN NUMBER PORTABILITY IN PROC 275 WORD 3 BEFORE ASSIGNING A NODE NUMBER, WHEN ASSIGNING NODE NUMBER STEERING.	
WORD 2	EXTENSION OR STEERING CODE 5 2 0 0 5	USE 3	RNK/DAC D I G I T 1 2 3 4 — — — —	NODE NUMBER 5	DISPLAY ONLY TRUNK GROUP FEATURE OR PARTITION CODE IN FIELD 1 CONFLICTS WITH THIS ASSIGNED 1, 2 OR 3 DIGIT CODE (SEE ERROR CODE 83)
					EXTENSION DESTINATION 354

FLIPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - ROUTING		845552223	
INPUT FIELDS: DISPLAY: SEE TABLE ON WORD 4B ADD: 1-5, SEE ERROR CODE 81 REMOVE: 1-5 CHANGE: 1-5 (AFTER DISPLAY ONLY) NEXT DATA: SEE TABLE ON WORD 4B		SPECIAL ERROR CODES: 81-AN ADD OR CHANGE ROUTINE CANNOT BE DONE TO A LOCATION CODE THAT BEGINS WITH THE CHARGE CODE PREFIX OR RESERVED DIGIT. (SEE PROC 285 WORD 1). 82-THIS CODE IS ALREADY ASSIGNED, USE THE CHANGE ROUTINE. 83-TO USE THE DISPLAY OR NEXT DATA ROUTINES. SEE WORD 4B. 84-FIRST DIGIT FIELD MUST BE SUPPLIED FOR FIVE-DIGIT DIALING PLANS ONLY IF IT IS A HOME RNK (PATTERN 641). 85-THE ENTERED LOCATION CODE (RNK) DOES NOT MAP TO THE ENTERED PATTERN NUMBER.		86-FIRST DIGIT FIELD MUST BE DASHED. YOU CANNOT ADMINISTER A PATTERN AND A FIRST DIGIT TO ONE RNK. 87-THE NODE NUMBER HAS PREVIOUSLY BEEN ASSIGNED TO A DIFFERENT PATTERN NUMBER. USE THE CHANGE ROUTINE. 88-A FIRST DIGIT CAN ONLY BE TRANSLATED IN A FIVE DIGIT DIALING PLAN. 89-THE NUMBER OF DIGITS IN THE LOCATION CODE HAS NOT BEEN SET IN PROC 285 WORD 1.	
WORD 4	LOCATION CODE (RNK) — — —	NODE NUMBER 5	CALL CATEGORY 0	PATTERN NUMBER 1 0 5	F D I T R G S I T —
					AAR-ROUTING 321

FLTPCHART ISSUE 8		PORTABILITY ROUTING		845552223
INPUT FIELDS: DISPLAY: 1, 1 & 2 OR 3 ADD: 1, 2 & 3 OR 1 & 3 REMOVE: 1-3 CHANGE: 3, ONLY AFTER DISPLAY NEXT DATA: SEE NOTE 1		SPECIAL ERROR CODES: 81-FIRST DIGIT MUST BE PROPERLY ASSIGNED IN PROC 359 WORD 1. 82-DIGITS SPECIFIED IN FIELDS 1 & 2 ARE ALREADY ASSIGNED AN RNK, USE CHANGE. 83-ONLY AFTER DISPLAY IS CHANGE ALLOWED FOR FIELD 3.		NOTES: 1. NEXT DATA DISPLAYS THE RNK ASSOCIATED WITH THE NEXT FIRST AND SECOND DIGITS OR IF RNK IS ENTERED AND FIELDS 1 AND 2 ARE DASHED, IT DISPLAYS THE NEXT FIRST AND SECOND DIGITS ASSOCIATED WITH THE RNK. WHEN DISPLAYING THE RNK FOR A SPECIFIC FIRST DIGIT, IT DISPLAYS A DASH (-) IN THE SECOND DIGIT FIELD (FIELD 2). AT THE START OF A NEW FIRST DIGIT, THE SECOND DIGIT FIELD DISPLAYS A DASH, WHICH ALLOWS THE USER TO ADD OR CHANGE THE ENTIRE GROUP OF 10 RNK'S.
WORD 1	DIGIT 1 5 1	DIGIT 2 2 2	LOCATION CODE (RNK) 7 5 1 1 2 3	PORTABILITY ROUTING 322

Within the previous example, Procedure 321 Word 4 could have been assigned in the following manner.

FLTPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - ROUTING		845552223
INPUT FIELDS: DISPLAY: SEE TABLE ON WORD 4B ADD: 1-5, SEE ERROR CODE 81 REMOVE: 1-5 CHANGE: 1-5 (AFTER DISPLAY ONLY) NEXT DATA: SEE TABLE ON WORD 4B		SPECIAL ERROR CODES: 81-AN ADD OR CHANGE ROUTINE CANNOT BE DONE TO A LOCATION CODE THAT BEGINS WITH THE CHARGE CODE PREFIX OR RESERVED DIGIT. (SEE PROC 285 WORD 1). 82-THIS CODE IS ALREADY ASSIGNED, USE THE CHANGE ROUTINE. 83-TO USE THE DISPLAY OR NEXT DATA ROUTINES. SEE WORD 4B. 84-FIRST DIGIT FIELD MUST BE SUPPLIED FOR FIVE-DIGIT DIALING PLANS ONLY IF IT IS A HOME RNK (PATTERN 641). 85-THE ENTERED LOCATION CODE (RNK) DOES NOT MAP TO THE ENTERED PATTERN NUMBER.		86-FIRST DIGIT FIELD MUST BE DASHED. YOU CANNOT ADMINISTER A PATTERN AND A FIRST DIGIT TO ONE RNK. 87-THE NODE NUMBER HAS PREVIOUSLY BEEN ASSIGNED TO A DIFFERENT PATTERN NUMBER. USE THE CHANGE ROUTINE. 88-A FIRST DIGIT CAN ONLY BE TRANSLATED IN A FIVE DIGIT DIALING PLAN. 89-THE NUMBER OF DIGITS IN THE LOCATION CODE HAS NOT BEEN SET IN PROC 285 WORD 1.
WORD 4	LOCATION CODE (RNK) 8 5 2 1	NODE NUMBER 5 2	CALL CATEGORY 0 1 0 5 3 4	AAR-ROUTING 321

When this was done, ENP calls to extension numbers (within the portability subnetwork) that routed to (or through) Node Number 5 used Pattern 105, and AAR calls with the dialed location code "852" also used Pattern 105.

Beginning with G2.2, Extension Number Portability is assigned in Word 1 or Word 2 of Procedure 354, Word 4 of Procedure 354, Word 1 of Procedure 314, Word 1 of Procedure 320.

Example: Assume that a user dials the extension number "52005" and that the switch needs to route this call to Node Number 5 by sending the private-network digits "7512005" over the selected preference in Pattern 105.

In Procedure 354 Word 1 or Word 2, an extension number (from within the private network) was assigned to the node number where the extension resides.

ENHANCED MODE - PROCEDURE: 354, WORD: 2	
EXTENSION DESTINATION	
1. Extension or Steering Code:	52005
2. Use: 3	Extension Assigned to an ENP Node Number
DAC	
3. Digit 1:	--
4. Digit 2:	-
5. Digit 3:	-
6. Digit 4:	-
7. Node Number:	5
DISPLAY ONLY	
8. Trunk Group, Feature, or Partition:	---
9. Code In Field 1 Conflicts:	---
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p354w2 52005 3 ;;;5 axdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cnds

In Procedure 354 Word 4, a VNI is assigned to a node number. The switch uses the specified VNI to select a route to the corresponding private-network node.

ENHANCED MODE - PROCEDURE: 354, WORD: 4	
NODE NUMBER TO VNI MAPPING	
1. Node Number:	5
2. Virtual Nodepoint Identifier:	105
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p354w4 5 105 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cnds

In Procedure 314 Word 1, the extension number is assigned to restart from Routing Network 0 to the AAR routing network (usually Routing Network 2).

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	5
2. Digit 2:	2
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1
Last Segment - Add to Standard Network	
9. String Length:	5
10. String Type:	6
Address	
11. Action:	1
Restart	
12. Action Object:	18
Digit Modification Index	
13. Action Attribute:	2
Network Number	
14. Network Number:	0
Connected to CC0 ON-LINE ♥	
MAJOR	MINOR
RUN TAPE	BUSY OUT
IN USE	WAIT
enter command: p314w1 5 2 ;;;;1 1 5 6 1 18 2 0 axdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

NOTE

This assignment will convert *any* extension number with the leading digits “52” into the format “751-XXXX.”

NOTE

For strict ENP routing needs, the 5-digit string with the string identifier “52” in Network 0 could have been assigned to restart digit analysis in any routing network. However, since CDR will record the DAC of the network that Network 0 is assigned to restart to, this practice will assure accurate CDR records for ENP calls. Also, to simplify the ongoing maintenance of WCR translations for numbers that can potentially either be routed by UDP or ENP, the normal digit-analysis network for private-network calls (usually Network 2) is recommended.

In Procedure 320 Word 1, the extension number is converted into a private-network number.

ENHANCED MODE - PROCEDURE: 320, WORD: 1
WCR - NETWORK DIGIT MODIFICATION

1. Digit Modification Index:

2. Digits To Delete:

3. Segment Number: Digits 1 to 8

INSERTION DIGITS

4. Digit 1, 9, 17, or 25:

5. Digit 2, 10, 18, or 26:

6. Digit 3, 11, 19, or 27:

7. Digit 4, 12, 20, or 28:

8. Digit 5, 13, 21, or 29:

9. Digit 6, 14, 22, or 30:

10. Digit 7, 15, 23, or 31:

11. Digit 8, 16, 24:

Connected to CC0 ON-LINE ♥

enter command: p320w1 18 1 1 7 5 1 cxdx_

Under the WCR feature, location codes and node numbers are assigned to resolve to a VNI in different procedures. To resolve location code “852” and Node Number 5 to the same VNI, enter the VNI in Procedure 314 Word 1 for the location code, and enter the same VNI in Procedure 354 Word 4 for the node number.

5.14 RNX Routing and UDP

Before G2.2, RNX Routing was assigned in Procedure 354 Word 2 and Procedure 321 Word 4.

In Procedure 354 Word 2, an extension number (within the private network) was associated with a location code (RNX) used to route the call.

FLIPCHART ISSUE 8		EXTENSION DESTINATION		845552223	
INPUT FIELDS: DISPLAY: 1 OR 2-6 ADD: 1-6, 1-7, OR 1 & 7 REMOVE: AFTER DISPLAY ONLY CHANGE: 2-6, 2-7, OR 2 & 7, SEE ERROR CODE 83 NEXT DATA: SEE NOTE 2 AND NEXT DATA TABLE		CAUTION: TO MAINTAIN DCS CENTRALIZED MESSAGING TRANSPARENCY, EACH EXTENSION ASSIGNED DAC, RNX, OR NODE NUMBER ROUTING (I.E. NOT LOCAL TO THIS SWITCH) MUST BE ASSOCIATED TO THE NODE ON WHICH IT RESIDES. FAILURE TO DO SO MAY RESULT IN LOST MESSAGES. SPECIAL ERROR CODES: 81-ALREADY ASSIGNED AS A REGULAR EXTENSION (PROC 000 WORD 1). 82-ASSIGN THE TRUNK DIAL ACCESS CODE IN PROC 100 WORD 1 AND ASSIGN THE FEATURE DIAL CODE IN PROC 350 WORD 2.		83-TO CHANGE FROM ONE TYPE TO ANOTHER, DO A REMOVE THEN AN ADD ROUTINE, EXCEPT IF A TYPE 5 IS DISPLAYED (SEE FIELD 9). 84-CODE ASSIGNED WITH MORE DIGITS, E.G. BLOCK IS ALLOCATED (PROC 354 WORD 1). 85-EXTENSION IS IN RECENT DISCONNECT (PROC 003). 86-FOR RNX, (FIELD 2 - 2) ONLY ONE OR TWO DIGITS MAY BE ENTERED IN FIELD 1. 87-ASSIGN NUMBER PORTABILITY IN PROC 275 WORD 3 BEFORE ASSIGNING A NODE NUMBER, WHEN ASSIGNING NODE NUMBER STEERING.	
WORD 2	EXTENSION OR STEERING CODE	USE	RNX/DAC		DISPLAY ONLY
	5 2	2	DIGIT 1	D G T	TRUNK GROUP FEATURE OR PARTITION
			7	5	CODE IN FIELD 1 CONFLICTS WITH THIS ASSIGNED 1, 2 OR 3 DIGIT CODE (SEE ERROR CODE 83)
			1	1	EXTENSION DESTINATION
					354

In Procedure 321 Word 4, pattern number was assigned to a location code. The pattern number identified the specific AAR pattern that the switch would select to route calls destined for each location code.

FLIPCHART ISSUE 8		AUTOMATIC ALTERNATE ROUTING - ROUTING		845552223	
INPUT FIELDS: DISPLAY: SEE TABLE ON WORD 4B ADD: 1-5, SEE ERROR CODE 81 REMOVE: 1-5 CHANGE: 1-5 (AFTER DISPLAY ONLY) NEXT DATA: SEE TABLE ON WORD 4B		SPECIAL ERROR CODES: 81-AN ADD OR CHANGE ROUTINE CANNOT BE DONE TO A LOCATION CODE THAT BEGINS WITH THE CHARGE CODE PREFIX OR RESERVED DIGIT. (SEE PROC 285 WORD 1). 82-THIS CODE IS ALREADY ASSIGNED, USE THE CHANGE ROUTINE. 83-TO USE THE DISPLAY OR NEXT DATA ROUTINES. SEE WORD 4B. 84-FIRST DIGIT FIELD MUST BE SUPPLIED FOR FIVE-DIGIT DIALING PLANS ONLY IF IT IS A HOME RNX (PATTERN 641). 85-THE ENTERED LOCATION CODE (RNX) DOES NOT MAP TO THE ENTERED PATTERN NUMBER.		86-FIRST DIGIT FIELD MUST BE DASHED. YOU CANNOT ADMINISTER A PATTERN AND A FIRST DIGIT TO ONE RNX. 87-THE NODE NUMBER HAS PREVIOUSLY BEEN ASSIGNED TO A DIFFERENT PATTERN NUMBER. USE THE CHANGE ROUTINE. 88-A FIRST DIGIT CAN ONLY BE TRANSLATED IN A FIVE DIGIT DIALING PLAN. 89-THE NUMBER OF DIGITS IN THE LOCATION CODE HAS NOT BEEN SET IN PROC 285 WORD 1.	
WORD 4	LOCATION CODE (RNX)	NODE NUMBER	CALL CATEGORY	PATTERN NUMBER	F D I I R G S T T
	7 5 1	7 5 1	0	1 0 5	
					AAR-ROUTING
					321

Beginning with G2.2, RNX routing is renamed uniform dial plan (UDP). UDP is assigned in Procedure 354 Word 2 and Procedure 314 Word 1.

In Procedure 354 Word 2, an extension number (within the private network) is assigned with a usage of “2.”

ENHANCED MODE - PROCEDURE: 354, WORD: 2	
EXTENSION DESTINATION	
1. Extension or Steering Code:	52
2. Use:	2 Extension Assigned to UDP
DAC	
3. Digit 1:	--
4. Digit 2:	-
5. Digit 3:	-
6. Digit 4:	-
7. Node Number:	---
DISPLAY ONLY	
8. Trunk Group, Feature, or Partition:	---
9. Code In Field 1 Conflicts:	---
Connected to CC0 ON-LINE ♥	
MAJOR	MINOR
RUN TAPE	BUSY OUT
IN USE	WAIT
enter command: p354w2 52 2 axdx_	
2 Repeat	3 Form
5 Help	6 Field
7 Input	8 Cmds

Once the translations in Procedure 314 Word 1 are applied to the call, the attributes of the digit-modification index convert the extension number into a private-network number.

Then the new address digits are restarted in the digit-analysis network where private-network location codes are assigned as string identifiers for private-network addresses (usually Network 2).

ENHANCED MODE - PROCEDURE: 314, WORD: 1	
NETWORK DIGIT ANALYSIS - DIAL PLAN DEFINITION	
STRING IDENTIFIER	
1. Digit 1:	5
2. Digit 2:	2
3. Digit 3:	--
4. Digit 4:	--
5. Digit 5:	--
6. Digit 6:	--
7. Segment:	1
8. Last Segment:	1 Last Segment - Add to Standard Network
9. String Length:	5
10. String Type:	6 Address
11. Action:	1 Restart
12. Action Object:	18 Digit Modification Index
13. Action Attribute:	2 Network Number
14. Network Number:	0
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p314w1 5 2 ;;;1 1 5 6 1 18 2 0 axdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

ENHANCED MODE - PROCEDURE: 320, WORD: 1	
WCR - NETWORK DIGIT MODIFICATION	
1. Digit Modification Index:	18
2. Digits To Delete:	1
3. Segment Number:	1 Digits 1 to 8
INSERTION DIGITS	
4. Digit 1, 9, 17, or 25:	7
5. Digit 2, 10, 18, or 26:	5
6. Digit 3, 11, 19, or 27:	1
7. Digit 4, 12, 20, or 28:	--
8. Digit 5, 13, 21, or 29:	--
9. Digit 6, 14, 22, or 30:	--
10. Digit 7, 15, 23, or 31:	--
11. Digit 8, 16, 24:	--
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p320w1 18 1 1 7 5 1 cxdx_	
2 Repeat	3 Form 5 Help 6 Field 7 Input 8 Cmds

Beginning with G2.2, the standard network option is no longer a prerequisite for AUTOVON. Without enabling the standard network option, the switch can infer either the toll or the nontoll DAC for WCR Network 1 in Fields 3 to 6 of Procedure 101 Word 3.

ENHANCED MODE - PROCEDURE: 101, WORD: 3
TRUNK GROUP CHARACTERISTICS - PREFIXING

1. Trunk Group:

2. Type of Address:

PREFIX <-----

3. Digit 1:

4. Digit 2:

5. Digit 3:

6. Digit 4:

DISPLAY ONLY

7. Signaling Type:

Connected to CC0 ON-LINE ♥

enter command: _

NOTE

AUTOVON routing is *not* assigned with the same procedures used to translate routing for WCR calls (for example, Procedures 314, 317, 318, 319, 320, and 321). On a G2.2 switch, Procedure 305 Words 1 and 2 are still the primary procedures used to translate routing for AUTOVON calls.

5.16 Traffic Studies

Before G2.2, the switch could measure the usage of both AAR and ARS patterns. Using Word 2 of Procedure 413 or 453, a user could count the number of calls that used a specified AAR or ARS pattern.

FLIPCHART ISSUE 8		TRAFFIC STUDIES SPECIAL MEASUREMENT GROUPS		845552223	
INPUT FIELDS: DISPLAY: 1 OR 1-2 ADD: 1-2 REMOVE: 1-2 CHANGE: NOT ALLOWED NEXT DATA: DISPLAYS ALL ASSIGNED ROUTING PATTERNS, OR CALL COVERAGE GROUPS, OR VDN'S (FIELD 2)		SPECIAL ERROR CODES: 83-THE DATA TABLE IS FULL. NOTES: 1. FIELD 3 COUNTS THE NUMBER OF PATTERNS OR CALL COVERAGE GROUPS TO BE STUDIED. MAXIMUM: AAR = 30, ARS = 16, CALL COVERAGE = 25.		FIELD LIMITS: FIELD 1: 1 = ARS 2 = AAR 3 = CALL COVERAGE FIELD 2: ARS = 1-64 AAR = 1-640 CALL COVERAGE = 1-4095 FIELD 3: 0-255	
WORD 2	TYPE	MEASUREMENT ITEM		DISPLAY ONLY NUMBER ASSIGNED	TRAFF STUDIES SPEC MEAS
	1	6 4		1 6	413
	1		2		3

FLIPCHART ISSUE 8		CUSTOMER TRAFFIC STUDIES SPECIAL MEASUREMENT GROUPS		845552223	
INPUT FIELDS: DISPLAY: 1 OR 1-2 ADD: 1-2 REMOVE: 1-2 CHANGE: NOT ALLOWED NEXT DATA: DISPLAYS ALL ASSIGNED ROUTING PATTERNS, OR CALL COVERAGE GROUPS, OR VDN'S (FIELD 2)		SPECIAL ERROR CODES: 83-THE DATA TABLE IS FULL. NOTES: 1. FIELD 3 COUNTS THE NUMBER OF PATTERNS OR CALL COVERAGE GROUPS TO BE STUDIED. MAXIMUM: AAR = 30, ARS = 16, CALL COVERAGE = 25.		FIELD LIMITS: FIELD 1: 1 = ARS 2 = AAR 3 = CALL COVERAGE FIELD 2: ARS = 1-64 AAR = 1-640 CALL COVERAGE = 1-4095 FIELD 3: 0-255	
WORD 2	TYPE	MEASUREMENT ITEM		DISPLAY ONLY NUMBER ASSIGNED	CUST TRAFF STDY SPEC MEAS
	2	6 4 0		3 0	453
	1		2		3

5.17 Toll Processing and Upgrades

5.17.1 Dial “1” for Toll

Before G2.2, the dial “1” for toll function of the ARS feature was assigned in Field 1 of Procedure 275 Word 3, and operated in a fairly straightforward manner.

FLTPCHART ISSUE 8		SYSTEM COS - MISCELLANEOUS										845552223									
INPUT FIELDS: DISPLAY: NONE ADD: NOT ALLOWED REMOVE: NOT ALLOWED CHANGE: 1,-14 NEXT DATA: NOT ALLOWED					CAUTIONS: FAILURE TO PROVIDE A LOCAL SWITCH NUMBER (FIELD 8) MAY RESULT IN LOST MESSAGES WHEN USING DCS CENTRALIZED MESSAGING. SPECIAL ERROR CODES: 81-REMOVE EXTENSION TRANSLATION IN PROC 350 WORD 1. 82-WHEN A LOCAL SWITCH NUMBER IS PROVIDED, THE TYPE MUST BE SPECIFIED IN FIELD 7. 83-THE TYPE (FIELD 7) CANNOT BE SPECIFIED WITHOUT A LOCAL SWITCH NUMBER IN FIELD 8.					84-NUMBER PORTABILITY CAN BE SPECIFIED ONLY IF MULTI-PREMISE AND STANDARD NETWORK ARE SPECIFIED IN PROC 276 WORD 1 AND A 4 OR 5-DIGIT DIAL PLAN IS SPECIFIED IN PROC 350 WORD 1. 85-THE LOCAL SWITCH NUMBER IN FIELD 8 IS ALREADY ASSIGNED AS A NODE NUMBER; IT MUST FIRST BE REMOVED IN PROC 354.											
WORD 3	DIAL 1 FOR TOLL	HOME NPA	RI CEN AST LPE ENV RSA EL	CALL COVERAGE	COVERAGE POINT DON'T ANS INTERVAL	SYLS S I T S Z E T E H	SYLC S I C T S E T E M S	TYPE	SWITCH TYPE	CAS MAIN SWITCH NUMBER	C A L L F C R O L N T R O L	D E M P A A N S D S W P O R R I D N T	SMDR DEFAULT VARIABLE TIMER	T E R D R M I M I A A N L T I O N	I N F O R C K A A L G L E S	S M B D L R O C K A A L G L E S	SYSTEM COS- MISCELLANEOUS				
	2	3	0	3													275				
	1			2	3			4	5	6	7			8	9	10	11				

If “2” (dial “1” for all toll calls) was entered in Field 1 and if the switch determined that a call was destined for a toll office code (based on the toll-table translations in Procedure 309 Words 1 and 2),* the switch verified that the caller dialed a “1” before allowing the call to proceed. (The switch did *not* correlate this toll function with the warning-tone entry in Field 6 of Procedure 309 Word 1.)

FLTPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION - ROUTE TABLES										845552223									
INPUT FIELDS: DISPLAY: 1-3, 4 ADD: 1-12 REMOVE: 1-12 ALSO REMOVES ALL DATA IN WORDS 3 AND 4 CHANGE: 4-12 NEXT DATA: DISPLAY ALL ASSIGNED PREFERENCES AND PATTERNS NOT ALLOWED ON FIELD 4.					SPECIAL ERROR CODES: 81-ADD PREFERENCE NUMBERS STARTING WITH 1. DO NOT LEAVE GAPS. 82-REMOVE PREFERENCE NUMBERS STARTING WITH THE HIGHEST NUMBER. WHEN REMOVING A SMALLER NUMBER, MOVE THE HIGHER ONES TO FILL GAPS.					NOTES: 1. ONLY ONE ARS PLAN CAN BE ACTIVE AT A TIME. 2. PATTERN 1 IS NORMALLY RESERVED FOR INTERCEPT. 3. THE LOWER THE PREFERENCE NUMBER, THE HIGHER THE PREFERENCE. 4. IT IS RECOMMENDED THAT YOU DO NOT ASSIGN A TRUNK GROUP WITH TRUNK TYPE 30 TO AN ARS PATTERN. 5. FACILITY RESTRICTION LEVEL 0 IS THE LOWEST LEVEL OF ACCESS, 7 IS THE HIGHEST LEVEL OF ACCESS.											
WORD 1	ARS PLAN	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	FS AT CO IN L I L T E V E L	W A R T W O L I N E G	DISTANT AREA CODE (NPA)	F S O E R N D T O 1 L L	TOLL TABLE INDEX	D D I E G L I E T T E S D	D C I G S N I O G R N E A L	IXC/ISDN NETWORK IDENTIFIER					ARS-ROUTE TABLES				
	1					0			6	3							309				
		1	2	3		4	5	6		7	8	9	10	11	12	13	14				

* A *toll* office code was assigned by entering the index in Field 9 of Procedure 309 Word 1 and by *not* entering the office code in Field 2 of Procedure 309 Word 2.

FLTPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION - TOLL TABLES		845552223	
INPUT FIELDS: DISPLAY: 1 OR 1-2 ADD: 1-3 REMOVE: NOT ALLOWED CHANGE: 3 NEXT DATA: DISPLAYS ALL OFFICE CODES THAT ARE MARKED AS LOCAL IN THE TOLL TABLE		SPECIAL ERROR CODES: 81-USE THE DISPLAY ROUTINE TO INITIATE A SEARCH AND USE THE NEXT DATA ROUTINE TO CONTINUE A SEARCH. NOTES: 1. FIELD 1 INDEXES ONE OF 63 POSSIBLE TOLL TABLES TO ASSIGN OFFICE CODES A TOLL OR LOCAL INDICATION. EACH OFFICE CODE AT THE DISTANT END OF A ROUTE (HOME NPA OF THE TRUNK GROUP) SHOULD BE ENTERED AND DESIGNATED TOLL OR LOCAL. THE TOLL TABLES ARE ASSIGNED TO PREFERENCES IN PROC 309 WORD 1.		2. AN OFFICE CODE HAS THE FORM NXX, WHERE N EQUALS ANY OF THE DIGITS 2-9, AND X EQUALS ANY OF THE DIGITS 0-9 3. ERRORS MADE USING THIS PROCEDURE COULD CAUSE TOLL CALLS TO BE MADE NONTOLL AND VICE VERSA. FIELD LIMITS: FIELD 1: 1-63 FIELD 2: 200-999 FIELD 3: 0 = TOLL (DEFAULT) 1 = LOCAL	
WORD 2	TOLL TABLE INDEX 6 3	OFFICE CODE (NXX) 2 2 4 0	TOLL LOCAL 0	ARS TOLL TABLE 309	

5.17.2 Send “1” for Toll

The send “1” for toll function of the ARS feature was assigned in Field 8 of Procedure 309 Word 1 and operated in a fairly straightforward manner.

FLTPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION - ROUTE TABLES		845552223	
INPUT FIELDS: DISPLAY: 1-3, 4 ADD: 1-12 REMOVE: 1-12 ALSO REMOVES ALL DATA IN WORDS 3 AND 4 CHANGE: 4-12 NEXT DATA: DISPLAY ALL ASSIGNED PREFERENCES AND PATTERNS NOT ALLOWED ON FIELD 4.		SPECIAL ERROR CODES: 81-ADD PREFERENCE NUMBERS STARTING WITH 1. DO NOT LEAVE GAPS. 82-REMOVE PREFERENCE NUMBERS STARTING WITH THE HIGHEST NUMBER. WHEN REMOVING A SMALLER NUMBER, MOVE THE HIGHER ONES TO FILL GAPS.		NOTES: 1. ONLY ONE ARS PLAN CAN BE ACTIVE AT A TIME. 2. PATTERN 1 IS NORMALLY RESERVED FOR INTERCEPT. 3. THE LOWER THE PREFERENCE NUMBER, THE HIGHER THE PREFERENCE. 4. IT IS RECOMMENDED THAT YOU DO NOT ASSIGN A TRUNK GROUP WITH TRUNK TYPE 30 TO AN ARS PATTERN. 5. FACILITY RESTRICTION LEVEL 0 IS THE LOWEST LEVEL OF ACCESS, 7 IS THE HIGHEST LEVEL OF ACCESS.	
WORD 1	ARS PLAN	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	RS AT CO IN IL TE VE L 0
1	1	2	3	4	5
					6
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for the preference. Field 6 of Procedure 309 Word 1 must have been set to “1” to deny access to toll preferences for toll-restricted calls.

FLIPCHART ISSUE 8		AUTOMATIC ROUTE SELECTION - ROUTE TABLES										845552223	
INPUT FIELDS: DISPLAY: 1-3, 4 ADD: 1-12 REMOVE: 1-12 ALSO REMOVES ALL DATA IN WORDS 3 AND 4 CHANGE: 4-12 NEXT DATA: DISPLAY ALL ASSIGNED PREFERENCES AND PATTERNS NOT ALLOWED ON FIELD 4.				SPECIAL ERROR CODES: 81-ADD PREFERENCE NUMBERS STARTING WITH 1. DO NOT LEAVE GAPS. 82-REMOVE PREFERENCE NUMBERS STARTING WITH THE HIGHEST NUMBER. WHEN REMOVING A SMALLER NUMBER, MOVE THE HIGHER ONES TO FILL GAPS.				NOTES: 1. ONLY ONE ARS PLAN CAN BE ACTIVE AT A TIME. 2. PATTERN 1 IS NORMALLY RESERVED FOR INTERCEPT. 3. THE LOWER THE PREFERENCE NUMBER, THE HIGHER THE PREFERENCE. 4. IT IS RECOMMENDED THAT YOU DO NOT ASSIGN A TRUNK GROUP WITH TRUNK TYPE 30 TO AN ARS PATTERN. 5. FACILITY RESTRICTION LEVEL 0 IS THE LOWEST LEVEL OF ACCESS, 7 IS THE HIGHEST LEVEL OF ACCESS.					
WORD 1	ARS PLAN	PATTERN NUMBER	PREF NUMBER	TRUNK GROUP	R F S T A T C O N I L I T Y V E L	W A R T N O I N R E G 1	DISTANT AREA CODE (NPA)	F S O R N D T O L 1	TOLL TABLE INDEX 6 3	D I G I T M O D I F I C A T I O N I N D E X	D I G I T S E N D I N G I N D E X	IXC/ISDN NETWORK IDENTIFIER	ARS-ROUTE TABLES 309

(Toll-restricted call not allowed to access preference.)

Beginning with G2.2, warning-tone translations have no effect on WCR preference selection. If the switch identifies an address as a toll destination and if the call is toll-restricted, the switch does *not* allow the call to access a pattern's preference (regardless of the warning-tone assignment).

ENHANCED MODE - PROCEDURE: 318, WORD: 1
 WCR - NETWORK ROUTE TRANSLATION

1. Pattern Number:
 2. Preference Number:
 3. Trunk Group:
 4. Facility Restriction Level:
 5. Warning Tone: Not Given
 6. Toll-Free Index: Index Number
 7. Digit Modification Index:
 8. Digit Sending Index:
 9. ISDN Sending Index:

Connected to CC0 ON-LINE ♥

enter command:

(Toll-restricted call not allowed to access preference.)

So, during an upgrade, how should the pre-G2.2 ARS toll translations be emulated using the WCR feature of the G2.2 switch? Although not always a good solution, porting the same warning-tone and toll-free translations from the pre-G2.2 switch to the G2.2 switch is both the recommended approach and the approach used by the TRACS upgrade software.

This direct mapping does not yield the same operation. For example, if an ARS preference is assigned with no warning tone (Field 6 of Procedure 309 Word 1 = 0) and as a toll preference (either Field 9 of Procedure 309 Word 1 = “0” or Field 3 of Procedure 309 Word 2 = “0”), calls using the same preference can behave differently on the new G2.2 switch than they did on the pre-G2.2 switch. For a call to the same destination, a G2.2 user who dials the nontoll WCR network-1 DAC is denied access to the preference, while a pre-G2.2 user who dials the nontoll ARS DAC is allowed access.

Another upgrade approach is to assume that if the pre-G2.2 preference’s warning-tone field (Field 6 of Procedure 309 Word 1) is set to “0,” then the corresponding G2.2 preference’s toll-free index field (Field 6 of Procedure 318 Word 1) should be set to “—” (that is, all calls are toll-free).

With this strategy, the preference-selection process is correctly upgraded. (That is, for a call to the same destination, both a G2.2 user who dials the nontoll network-1 DAC and a pre-G2.2 user who dials the nontoll ARS DAC can access the preference.) However, the dial “1” for toll and the send “1” for toll operations are *not* correctly upgraded. Since the G2.2 switch considers these calls nontoll calls, the switch does not enforce dial “1” restrictions or prepend a “1” to the digits sent.

A third upgrade approach is to examine the toll-table translations on the pre-G2.2 switch and to resolve the toll and nontoll calls to *separate* WCR patterns on the G2.2 switch. For the toll calls, a pattern’s preferences are assigned with a toll-free table of “—” (that is, all calls are toll-free) and with the attributes of the digit-sending index to send “1” for all calls. For the nontoll calls, a different pattern’s preferences are assigned with a toll-free table of “—” and with the attributes of the digit-sending index to not send a toll prefix.

With this strategy, the preference-selection process and the send “1” for toll operation are correctly upgraded. However the dial “1” for toll operation is *not* correctly upgraded. Since the G2.2 switch considers these calls nontoll calls, the switch does not enforce dial “1” restrictions.

6. WCR TRACS Upgrade Process

In previous sections of this manual, the WCR feature has been described from a variety of perspectives. Different sections have:

- Described the WCR's high-level software architecture
- Charted the detailed flow of calls through the WCR software
- Considered some specific WCR-routing attributes so that switch administrators can use the power and flexibility of WCR while avoiding its pitfalls
- Offered translation models to enhance pre-G2.2 routing or to adapt G2.2 routing to changes in a routing environment
- Discussed the individual concepts and functions of the pre-G2.2 routing features AAR and ARS
- Provided translation models (in the WCR administration format) that emulate pre-G2.2 routing concepts and functions

These perspectives should help the dynamic network-planning efforts in which many System 85 and Generic 2.1 switch administrators are continuously involved.

However, administrators of other System 85s and Generic 2.1s are less focused on the routing capabilities of the switch. Perhaps, these administrators primarily focus on planning and delivering other aspects of the rich feature set (in what might be a stand-alone switch) such as:

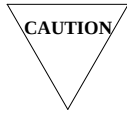
- Advanced call-center operations
- Shared telecommunications services
- Campus-wide telecommunications services
- Centralized and unified messaging capabilities
- Integrated voice/data communications

For some switch administrators, one or more of the previous alternative aspects may well be the primary motivation for a G2.2 upgrade. When this is the case, these administrators are less likely to energetically explore the enhanced routing capabilities of the WCR feature.

Even when WCR routing enhancements *are* the primary motivation for upgrading, TRACS serves to convert the pre-G2.2 translations into the new WCR translation format at a baseline level of the current networking operation. Allowing the TRACS software to emulate the existing routing translations enables switch administrators to consider the alternatives, plan the desired enhancements, and execute the enhancements in cooperation with the adjacent switches.

6.1 TRACS Upgrade Philosophy

For the previous reasons, during an upgrade to G2.2, TRACS strives to emulate the intent of the existing pre-G2.2 translations while conforming to the new WCR translation format.



As discussed in Section 5.17, a TRACS upgrade cannot replicate the warning tone assignment (in Field 6, of Procedure 309 Word 1) as the designator of a toll preference.

At some point in time, after an upgrade is finished, a G2.2 switch administrator (with either perspective regarding the new WCR feature) will need an understanding of the structure and content of the reformatted routing translations. The purpose of this chapter is to provide a foundation for this understanding.

6.2 TRACS Approach to Specific Upgrade Goals

6.2.1 Uses Upgrade Models Shown in Chapter 5

Chapter 5, *Comparative Administration*, discusses specific pre-G2.2 ARS/AAR routing functions, shows how those functions were administered, and then showed how those functions could be emulated using the new G2.2 WCR translation format. Throughout Chapter 5, the method shown to emulate each pre-G2.2 routing function is the *same* method which TRACS uses to build equivalent WCR translations during a TRACS upgrade.

Therefore, in addition to its apparent role as an information source for PBX routing translations, Chapter 5 can also serve to clarify the purpose and meaning of specific WCR translations after a TRACS upgrade.

6.2.2 Provides Explicit One-by-One Routing Translations

As discussed in Section 2.4.2 and shown throughout Chapter 5, TRACS emulates the explicit one-by-one routing translations that reside in most of the equivalent translation tables for the ARS and AAR features.* Therefore, during an upgrade, TRACS creates separate string assignments (in Procedure 314 Word 1) with separate string identifiers for each:

- 3-digit NNX assigned in the pre-G2.2 ARS Procedure 311 Word 1
- 3-digit NPA assigned in the pre-G2.2 ARS Procedure 311 Word 2
- 3-digit RNX assigned in the pre-G2.2 AAR Procedure 321 Word 4

* Section 2.4.2 discusses the advantages and disadvantages of this approach.

- 6-digit NPA/NNX assigned in the pre-G2.2 ARS Procedure 311 Word 3
- 7- to 10-digit NPA/NNX/X[XXX] assigned for 10- to 7-digit conversion in the pre-G2.2 ARS Procedure 312 Word 1 or Word 2
- 7- to 10-digit NPA/NNX/X[XXX] assigned for unauthorized call control in the pre-G2.2 ARS Procedure 313 Word 1
- 7- to 18-digit international address assigned in the pre-G2.2 ARS Procedure 312 Word 3

6.2.3 Gathers ARS and AAR Patterns into Shared Set of WCR Patterns

The pre-G2.2 ARS software provided for up to 64 routing patterns in as many as 3 time-of-day plans, and the pre-G2.2 AAR software provided for up to 640 routing patterns. However, the G2.2 WCR software allows the 7 routing networks to share up to 1023 patterns.

Since WCR patterns are now a shared resource of the 7 routing networks and since the WCR software provides a limited supply of patterns, TRACS:

- Separates the converted ARS and AAR pattern numbers within the set of 1023 WCR patterns
- Conserves the limited supply of WCR patterns for new routing applications or for use in Networks 3 through 7 by minimizing redundant pattern upgrades

To satisfy both of these objectives, TRACS upgrades ARS and AAR patterns in the following way. Since the ARS software was included in the basic pre-G2.2 feature set, this feature is more likely to be implemented than the extra-cost AAR feature. Therefore, TRACS reserves the lowest-numbered WCR pattern numbers (that is, WCR patterns “1” to “n”) for converted ARS patterns and, after skipping one pattern number, reserves the remaining WCR pattern numbers (that is, WCR patterns “n + 2” to “1023”) for converted AAR patterns.

For patterns in ARS Time-of-Day Plan 1, TRACS converts the existing patterns to WCR patterns “1” to (as high as) “64.” For other ARS patterns that need to be created, TRACS starts with pattern number “65” and then:

- Builds a WCR pattern for each ARS pattern in Plans 2 and 3 that differs from the patterns in ARS Plan 1
- Builds any additional WCR patterns needed by all three plans to emulate the hard-coded routing assumptions of the pre-G2.2 ARS software

For AAR patterns, TRACS starts with WCR pattern number:

$$n + 1 + \text{lowest AAR pattern number}$$

and then:

- Builds a WCR pattern (with the value “n + 1 + AAR pattern number”) for each different AAR pattern

- Builds any additional WCR patterns* needed to emulate the hard-coded routing assumptions of the pre-G2.2 AAR software

NOTE

After a TRACS upgrade, if a switch administrator needs to precisely correlate the resulting WCR pattern numbers with previous ARS/AAR pattern numbers, this information resides in a “Network Translation Cross-Reference” report which is available through TRACS.

6.2.4 Provides Explicit Translations for Implicit Routing Assumptions

To accurately emulate the existing AAR/ARS routing characteristics, TRACS supplies explicit WCR translations to compensate for some implicit routing assumptions embedded in the hard-coded pre-G2.2 AAR/ARS software.

Automatic Routing via Pattern 1

Before G2.2, as discussed in Section 5.2.7, if a user dialed the AAR dial access code (DAC) followed by a location code that was not assigned in Procedure 321 Word 4, the call automatically routed using AAR Pattern 1. Also, as discussed in Section 5.3.9, if a user dialed an ARS DAC followed by a destination code that was not assigned in Procedure 311 or 312, the call automatically routed using ARS Pattern 1.

If AAR Pattern 1 was defined for an AAR call or ARS Pattern 1 was defined for an ARS call, the switch routed the call using Pattern 1 of the appropriate feature. If not, the switch returned Intercept Treatment to the caller.

Beginning with G2.2, the WCR feature does not provide automatic routing via Pattern 1. Every valid AAR location code and every valid ARS destination code must be included in the string translations of Procedure 314. Otherwise, when a user dials a WCR DAC followed by an unassigned private- or public-network string, the switch returns Intercept Treatment to the caller.

During an upgrade to G2.2, TRACS handles Pattern-1 upgrades in the following manner.

If AAR or ARS Pattern 1 was *undefined* (providing Intercept Treatment for undefined numbers), then TRACS builds translations to resolve unassigned strings (that is, unassigned office codes and

* The specific algorithm used both to assign a number for an additional pattern and to correlate this pattern with its primary pattern is complex. However, each additional pattern number is located beneath its original pre-G2.2 pattern number in the text of the “Network Translation Cross-Reference” report.

area codes) to VNI 1, a VNI with no pattern assigned. Since WCR returns Intercept Treatment for calls that route to an empty pattern, the result is the same.

NOTE

For an undefined AAR or ARS Pattern 1, TRACS could have simply neglected to build any translations for unassigned office codes and area codes. However, although this approach would also provide the desired Intercept Treatment, it would also eliminate the possibility of exception routing for the unassigned strings. (According to digit-analysis rule “5,” the NDA software only checks for an exception match after the best match is made in the standard digit-analysis network.)

If AAR or ARS Pattern 1 was *defined* (providing automatic routing for undefined numbers), then TRACS builds translations to resolve any *specifically assigned* office codes and area codes to VNI 1 (for subsequent routing over Pattern 1) in the usual manner. However, TRACS also builds translations to resolve any *unassigned* strings (that is, unassigned office codes and area codes) to VNI 1. TRACS translates these unassigned strings according to the translation models provided for Pattern-1 routing in Sections 5.2.7 (AAR) and 5.3.9 (ARS).

555 Routing

Before G2.2, as discussed in Section 5.3.11, when a user dialed the office code “555,” the ARS software ignored the dialed area code (with the exception of the dialed area code “800”) for routing. Instead, the ARS software routed the call using the routing designator assigned to office code “555” (in Fields 1 and 2 of Procedure 311 Word 1) in the home NPA.

Beginning with G2.2, the WCR software does not ignore a dialed NPA for “555” routing unless instructed to by a string translation with the wild-card string identifier “***555” in Procedure 314 Word 1.

During an upgrade to G2.2, TRACS provides wild-card “555” routing to emulate the ARS area-code independent “555” routing. If the office code “555” and a routing designator were specifically assigned (in Fields 1 and 2 of Procedure 311 Word 1), then TRACS builds string translations (in Procedure 314 Word 1) to resolve the string identifier “***555” to an equivalent VNI. If not, then the resulting TRACS translations follow the usual rules for Pattern-1 routing:

- If ARS Pattern 1 was undefined, then the resulting TRACS translations do not include a string assignment for the string identifier “***555.”
- If ARS Pattern 1 was defined, then the resulting TRACS translations resolve the string identifier “***555” to VNI 1.

Off-Net Indicator and “0XXX” Allowed

Before G2.2, as discussed in the Off-Net Indicator and “0XXX” Allowed portion of Section 5.2.5, *AAR Patterns*, the AAR routing software provided special processing for off-net DDD calls to an attendant residing in another switch of the private network.

During an upgrade to G2.2, the WCR software requires and TRACS builds additional explicit string identifiers that resolve to the necessary additional patterns where each preference is assigned with the appropriate digit modification to emulate the pre-G2.2 operation.

NOTE

Many of the additional WCR patterns built during a TRACS AAR upgrade and mentioned in Section 6.2.3 are the result of this effort to emulate pre-G2.2 “0XXX” off-net routing.

Background Digit Modification

Before G2.2, the ARS/AAR routing software enabled certain routing functions, such as foreign exchange (FX) routing and tail-end hop off, by implicitly providing background digit modification. This background digit modification, like other hard-coded ARS/AAR routing assumptions, depended on the concreteness of the NANP (North American numbering plan).

To enable FX-type routing, the ARS/AAR software automatically:

- Deleted a dialed NPA whenever this NPA matched the home NPA at the distant end of the selected preference
- Inserted an undialed home NPA whenever this NPA did not match the home NPA at the distant end of the selected preference

Also, to enable tail-end hop off, the ARS software automatically inserted an undialed NPA whenever ARS public-network calls were routed over intertandem tie-trunk preference in the private network.

Beginning with G2.2, the previous digit modifications must be explicitly translated. So during an upgrade to G2.2, TRACS emulates the pre-G2.2 operation by creating digit-modification indices to perform these digit modifications.

NOTE

Many of the additional digit-modification indices built during a TRACS upgrade are the result of this effort to emulate the pre-G2.2 FX-type routing and tail-end hop off functions.

“#” as End-of-Sending Digit

Before G2.2, as discussed in Sections 5.3.7 and 5.3.8, the ARS feature automatically sent a “#” digit (as an end-of-sending digit) for non-ISDN operator-assisted and international calls.

Beginning with G2.2, the WCR feature sends a “#” digit (as an end-of-sending digit) whenever the attributes of the digit-sending index is assigned to do so. The WCR feature sends a trailing “#” for either an operator-assisted or international call, when a digit-sending index is specified in Field 8 of Procedure 318 Word 1 and when a “1” is entered in Field 16 (send “#”) of Procedure 321 Word 1.

During an upgrade to G2.2, TRACS emulates the pre-G2.2 operation by creating a digit-sending index assigned to send a trailing “#” and correlating this index with:

- Each non-ISDN preference associated with each VNI resolved to by a string with the operator-assistance (encode “5” in Field 10 of Procedure 314 Word 1) string type
- Each non-ISDN preference associated with each VNI resolved to by a string with the international (encode “4” in Field 10 of Procedure 314 Word 1) string type

Overlapped Sending

Before G2.2, as discussed in Section 5.8, the digit collection field (Field 14 of Procedure 103 Word 1) specified whether every digit must be collected before digit sending began over an outgoing trunk group.

The valid encodes for this field were:

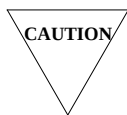
Encode	Meaning
0	Do not collect all digits before sending (default)
1	Collect all digits before sending

Beginning with G2.2, the outgoing overlapped sending field (Field 14 of Procedure 103 Word 1) translates the same information as the pre-G2.2 field. However, since the switch operates more efficiently when WCR digit analysis can neglect overlapped sending, the values of the encodes are reversed to change the default value. The valid encodes for this field are:

Encode	Meaning
0	Collect all digits before sending (default)
1	Do not collect all digits before sending

As described in Section 2.3.3, overlapped sending only delivers significant reductions in call-setup times for calls over *rotary* trunk groups. Therefore, to maximize switch efficiency after a G2.2 upgrade, TRACS *only* assigns overlapped sending for *rotary* trunk groups (serving as AAR/ARS preferences) that did not have the collect all digits bit set.

This upgrade practice implies that TRACS *changes* the overlapped sending assignment for touch-tone and ISDN trunk groups (serving as AAR/ARS preferences) that did *not* have the collect all digits bit set. Therefore, with a compelling reason to restore overlapped sending for a touch-tone or an ISDN preference after an upgrade, the administrator should change the value of G2.2 Procedure 103 Word 1 Field 14 to “1.”



Overlapped sending is not fully compatible with ISDN—PRI on the System 85 and Generic 2 switches. Therefore, after a TRACS upgrade, changing Field 14 to “1” for ISDN preferences is likely to cause unexpected and undesirable side effects.

ENHANCED MODE - PROCEDURE: 101, WORD: 3 TRUNK GROUP CHARACTERISTICS - PREFIXING	
1. Trunk Group: 18 (Incoming Trunk Group) 2. Type of Address: -	
PREFIX 3. Digit 1: 12 4. Digit 2: 8 (Inferred Network-2 DAC) 5. Digit 3: - 6. Digit 4: -	
DISPLAY ONLY 7. Signaling Type: 26 (E&M Wink Start In, Wink/Delay Dial Out)	
Connected to CC0 ON-LINE ♥ MAJOR MINOR RUN TAPE BUSY OUT IN USE WAIT	
enter command: p101w3 18 ce;12 8 cxdx_	
2 Repeat 3 Form	5 Help 6 Field 7 Input 8 Cmds

Reassigning the AAR DAC to have more than one digit would free the previously used single digit to serve as the leading digit of an extension-number block.

The new DAC can be assigned values such as:

- “#8” — to resemble the commonly used value of “8”
- “#2” — to allow access to the commonly used network for private-network routing (Network 2)

However, TRACS will give the Network-2 DAC the same single-digit value that was previously used for the AAR DAC. Therefore, if a multidigit Network-2 DAC is desired, then the value of this DAC must be changed after the upgrade. Also, any incoming (or 2-way) trunk groups that were upgraded to infer the old value of the Network-2 DAC must be reassigned to infer the new value.

6.3.1 Toll and Code Restriction Features

Like the pre-G2.2 AAR and ARS features, the Toll Restriction and Code Restriction software makes certain assumptions about the structure of the NANP. However, although these features are still available on the G2.2 switch, they will not be modified to support future changes in the NANP. Therefore, as the NANP evolves, G2.2 switch administrators must rely on the restrictive capabilities of the WCR feature to emulate Toll and Code Restriction.

Emulating these restriction features with the WCR feature will certainly necessitate changes to routing translations. However, especially with the use of separate routing networks, the restrictive capabilities of WCR are more than adequate for the task. The WCR toll-free tables and indices can fully emulate Toll Restriction, and the WCR unauthorized call control function can emulate Code Restriction.

Abbreviations

AAR	Automatic Alternate Routing
ACD	Automatic Call Distribution
APLT	Advanced Private Line Termination
ARS	Automatic Route Selection
ASAI	Adjunct/Switch Application Interface
BCC	Bearer Capability class
BCCOS	Bearer Capability class of service
CCITT	International Telephone and Telegraph Consultative Committee
CDR	Call Detail Recording
CIC	carrier identification code
CO	central office
COS	class of service
DAC	dial access code
DC	digit collection
DCP	digital communications protocol
DCS	Distributed Communications System
DDD	direct distance dialing
DID	Direct Inward Dialing
DMI	digit modification index
DOD	Direct Outward Dialing
DS1	Digital Service 1
DSI	digit-sending index
E&M	ear and mouth (trunk signaling)
ENP	Extension Number Portability
ESS™	Electronic Switching System
ETN	electronic tandem network
FP8	Feature Package 8 (Dimension® system)
FRL	Facility Restriction Level
FTS	federal telephone system
FX	foreign exchange
G2.2	Definity® Generic 2.2
GRS	generalized route selection
IDDD	international direct distance dialing
IE	information element
ISDN	Integrated Systems Digital Network
IXC	interexchange carrier
LATA	local access and transport area
LDN	listed directory number
LEC	local exchange carrier
MAAP	Maintenance and Administration Panel
NANP	North American numbering plan
NDA	network digit analysis
NPA	numbering plan area
NSF	network-specific facility

NSV	network-service value
OR	originating register
PBX	private branch exchange
POP	point of presence
PRI	primary rate interface
R2V4	Release 2, Version 4 (System 85)
SDN	Software Defined Network
SI	string identifier
TCM	traveling class mark
TG	trunk group
TNS	transit network selection
TRACS	Translation, Recovery, Additions, and Conversions System
UCC	unauthorized call control
UDP	uniform dial plan
VDN	vector directory number
VNI	virtual nodepoint identifier
WATS	Wide Area Telecommunications Service
WCR	World Class Routing

Glossary

account code	A dialed code used with the Call Detail Recording feature that allows a call to be charged to a specific department's or project's account.
Authorization Codes	Dialed codes that can override the Facility Restriction Levels (FRLs) of the facilities being used to place outgoing calls. Authorization Codes can also be used (in preference to the Barrier Code) to protect against unauthorized entry to a System 85 or Generic 2 on Remote Access trunks.
Bearer Capability	An ISDN category that specifies the types of telecommunications traffic (for example, compressed voice, voice, voice-grade data, and/or clear-channel data) that are <i>able</i> to travel over a given transmission facility.
Bearer Capability class of service (BCCOS)	A numeric code (from 1 to 255) that specifies the types of telecommunications traffic (from the possibilities defined by a facility's Bearer Capability) that are <i>allowed</i> to travel over a given transmission facility.
call category (before G2.2)	An index used by the Automatic Alternate Routing (AAR) feature to convert a node number into the number of the selected pattern. The AAR feature derived the call category from conditional-routing parameters. Also, an index used by the ARS feature to convert a routing designator into the number of the selected pattern. The ARS feature derived the call category from extension- or attendant-partition parameters. (Time-of-day routing was handled separately.)
call category (beginning with G2.2)	An index used by the generalized route selection (GRS) module of the World Class Routing (WCR) feature to convert a virtual nodepoint identifier (VNI) into the number of the selected pattern. The GRS module derives the call category by combining of conditional-routing, extension- or attendant-partition, and time-of-day parameters.
call forwarding—off net	A function of the Call Forwarding—Follow Me feature. Using this function, a user can forward all calls to a telephone in the public network. (Before G2.2, forwarding was not allowed to toll destinations in the public network.)

carrier identification code (CIC)	The portion of an interexchange carrier (IXC) code assigned in Fields 8 through 10 or 11 of Procedure 321 Word 1. In a traditional 5-digit IXC code of the form “10XXX,” the digits “XXX” comprise the CIC. In a newer 7-digit IXC code of the form “101XXXX,” the digits “XXXX” comprise the CIC.
class of service (COS)	A numeric code that specifies a group of features and calling privileges that together determine the calling privileges of a group of extension numbers.
conditional routing (before G2.2)	The only call-category attribute of the Automatic Alternate Routing (AAR) feature. AAR conditional routing counted and limited the number of conditional AAR preferences (for example, satellite hops) that tandem switches within an electronic tandem network (ETN) could select while routing an AAR call toward its destination. Each time an intervening switch selected a conditional route, the current conditional routing count was incremented and the current value was sent with the call as the second traveling class mark (TCM).
conditional routing (beginning with G2.2)	One of three call-category attributes of the World Class Routing (WCR) feature. WCR conditional routing counts and limits the number of conditional WCR preferences (for example, satellite hops) that switches within an electronic tandem network (ETN) can select while routing an Automatic Alternate Routing (AAR) call toward its destination. Each time an intervening switch selects a conditional route, the current conditional routing count is incremented and the current value is sent with the call as the second traveling class mark (TCM).
confirmation tone	Three short bursts of tone provided by the switch to confirm that the switch has accepted a feature activation or cancellation request.
continue (digit collection)	One of the two digit-collection attributes (that is, to either “continue” or “terminate” digit collection) assigned to a string in Field 1 of Procedure 314 Word 2. If this field is set to “1,” the network digit analysis (NDA) module keeps on collecting digits in anticipation of another string to analyze.
conversion resource	The combination of a trunk data module (TDM) and a modem that converts the digital format of digital communications protocol (DCP) data signals to an analog format suitable for transmission over analog trunk facilities. The reverse conversion (analog to digital) is also provided.

crossover (before G2.2)	The ability of the Automatic Alternate Routing (AAR) feature to hand-off the control of a call's routing to the Automatic Route Selection (ARS) feature, or vice-versa. (The AAR feature passed control to the ARS feature after receiving public-network digits over a private-network facility. The ARS feature passed control to the AAR feature after executing 10- to 7-digit conversion on a public-network address for subsequent private-network routing.)
crossover (beginning with G2.2)	The ability of the network digit analysis (NDA) software to restart digit analysis in another routing network.
dial-pulse addressing	A means of signaling consisting of regular momentary interruptions of a current path at the sending end. The number of these interruptions corresponds to the value of a digit or character. This method of address signaling is usually associated with rotary dial terminals. However, this method of signaling can also be used between switches.
digit analysis	A process performed by the network digit analysis (NDA) module of the World Class Routing (WCR) feature. The purpose of the NDA module is to deliver a virtual nodepoint identifier (VNI) to the generalized route selection (GRS) module by identifying and analyzing each incoming digit stream (either locally dialed or received over a trunk group) one string at a time. Identifying a digit stream involves finding the best match between the incoming digits and the accessed routing network's assigned strings (Procedure 314 Words 1 and 2) according to a prescribed set of rules described in Section 2.1.
digit-collection attribute	One of the two possible digit-analysis parameters (that is, to either "continue" or "terminate" digit collection) assigned to a string in Field 1 of Procedure 314 Word 2. If this field is set to the default value "0," the network digit analysis (NDA) module terminates digit collection after identifying and acting on the current string. If this field is set to "1," the NDA module continues digit collection in anticipation of another string.

digit-collection timer	One of two interdigit timers used by the switch to assist in digit collection. If the appropriate timer elapses during digit collection, then the switch assumes that every digit has been collected and, if possible, begins responding to the caller's request received in digit format. Ordinarily, the switch invokes the standard 10-second timer between consecutive digits to decide when every digit is collected. However, during WCR digit analysis, the switch can also invoke the assigned (Field 3 of Procedure 285 Word 1) timer to make the best match (that is, select the string with the correct string length from multiple candidate strings).
digit-modification index	A value from 0 to 4095 that identifies a specific set of digit-modification attributes assigned in Procedure 320 Word 1. A switch administrator can either enter a DMI in Field 12 of Procedure 314 Word 1 to invoke its assigned attributes during digit analysis or in Field 7 of Procedure 318 Word 1 to invoke its assigned attributes after a preference has been selected.
digit-sending index	A value from 0 to 511 that identifies a specific set of digit-sending attributes assigned in Procedure 321 Words 1 and 2. A switch administrator can enter a DSI in Field 8 of Procedure 318 Word 1 to invoke its assigned attributes after a preference has been selected.
equipment location	The location, or the corresponding numerical representation of the location, of a circuit within the switch. Equipment locations are represented by 7-digit numbers (for example, 01 2 3 12 0). The first and second digits identify a module. The third digit identifies a cabinet within the module. The fourth digit identifies a carrier within the cabinet. The fifth and sixth digits identify a slot within the carrier. The seventh digit identifies a circuit of the slot's circuit pack.
Facility Restriction Level (FRL)	An assigned number (from 0 to 7) that determines both the types of calls that can be made and the types of facilities (trunks) that can be used.
frozen VNI	A call's virtual nodepoint identifier (VNI) with a value that is already established and then is "permanently fixed" for the rest of digit analysis (even though subsequent strings in the digit stream may resolve to different VNIs) unless the NDA software finds an exception match for the current or subsequent string. With the exception of ENP calls, a call's VNI is established by first "resolving to" a VNI value (in Field 12 of Procedure 314 Word 1) and then, if assigned, "combining with" the value of the previous unfrozen VNI.)

head-end hop off	An Automatic Route Selection/World Class Routing (ARS/WCR) call-routing attribute of electronic tandem network (ETN) main and tandem switches. Using head-end hop off, a main or a tandem quickly routes a public-network call over a public-network trunk facility instead of routing the call part of the way over private-network trunk facilities.
home location code (home RNX)	In the context of G2.2 uniform dial plan (UDP) routing or pre-G2.2 RNX routing, the leading digits of a received private-network address that the receiving switch recognizes as specifying a local address. In the context of Extension Number Portability (ENP) routing, a location code that specifies an address as residing within a portability subnetwork.
home numbering plan area (HNPA)	The dialing plan area (area code in the public network) within which a private-network switch is located.
information element (IE)	A logical block of data in an ISDN control or signaling message containing call-related information.
interexchange carrier (IXC)	A telecommunications vendor that (usually) provides switching and transmission service for long-distance calls <i>outside</i> the local access and transport area (LATA).
local exchange carrier (LEC)	The telephone company that provides switching and transmission service for local calls and long-distance calls <i>within</i> the local access and transport area (LATA).
location code	In the pre-G2.2 Automatic Alternate Routing (AAR) context of uniform numbering [where every address within an electronic tandem network (ETN) has the same number of digits], either the leading two or three digits of a 5-, 6-, or (usually) 7-digit ETN address that uniquely specifies a switch within the network and identifies an address (containing those leading digits) as residing at that switch. Also called an “RN” or an “RNX.” In the G2.2 World Class Routing (WCR) context, although private-network switches do not have to conform to a uniform numbering plan, the leading digit(s) of an n-digit address that uniquely specifies a switch within the network.

m-to-n conversion	The expanded capability of 10- to 7-digit conversion provided by the World Class Routing (WCR) feature. During digit analysis, after recognizing an incoming digit stream as matching a specific string assigned in Procedure 314 Words 1 and 2, WCR can respond to the string's assigned attributes by modifying the contents of the digit stream and restarting digit analysis to (usually) a different routing network.
off-hook queuing	A form of the Queuing feature whereby the caller remains off-hook (with optional music) to wait for a trunk facility after the switch has queued a requested call.
overlapped sending	A routing process whereby the switch sends portions of a digit stream over an outgoing trunk as soon as the switch knows the specific trunk group to use and the digits to send. Using overlapped sending, the switch can send outgoing digits while subsequent digits in the digit stream have yet to be collected either from a local terminal or over an incoming trunk.
pattern (before G2.2)	An ordered list of up to 16 preferences that the Automatic Alternate Routing (AAR) or Automatic Route Selection (ARS) feature selects to route a call to its specified destination. As many as 640 patterns were provided for the AAR feature, and as many as 64 patterns were provided for the ARS feature.
pattern (beginning with G2.2)	An ordered list of up to 16 preferences that the World Class Routing (WCR) feature selects to route a call to its specified destination. As many as 1,023 patterns are provided for the WCR feature.
pattern queuing	A method of queuing an Automatic Alternate Routing (AAR)/Automatic Route Selection (ARS) call (beginning with R2V3 and before G2.2) or a World Class Routing (WCR) call (beginning with G2.2). Using pattern queuing, the switch queues the requested call on the first usable preference and then checks for an available trunk in from 1 to 16 preferences that the switch recognizes as acceptable for routing the call.

preference

One of up to 16 components of an Automatic Route Selection (ARS), Automatic Alternate Routing (AAR), or World Class Routing (WCR) pattern. Each preference is physically composed of an outgoing (or 2-way) trunk group. However, special translations are assigned to an ARS preference in Procedure 309, to an AAR preference in Procedure 321, and to a WCR preference in Procedure 318.

These translations give the preference additional characteristics that support and complement the assigned characteristics of its physical trunk facilities. Preference translations specify a trunk group's routing characteristics within a specific pattern.

preference queuing

A method of queuing an Automatic Alternate Routing (AAR)/Automatic Route Selection (ARS) call (beginning with R2V3 and before G2.2) or a World Class Routing (WCR) call (beginning with G2.2). Using preference queuing, the switch only queues the requested call on (and checks for an available trunk in) the preference that the switch recognizes as the best choice for queuing the call.

The switch determines the best preference for queuing according to the following list in descending order of priority:

- ISDN, DCS, Circuit Switch (most preferred)
- ISDN, Non-DCS, Circuit Switch
- Non-ISDN, DCS, Circuit Switch
- Non-ISDN, Non-DCS, Circuit Switch
- ISDN, DCS, Needs Conversion Resource
- ISDN, Non-DCS, Needs Conversion Resource
- Non-ISDN, DCS, Needs Conversion Resource
- Non-ISDN, Non-DCS, Needs Conversion Resource (least preferred)

Queuing

A feature of the System 85 and Generic 2 switch. During high traffic periods (at the expense of increased processor occupancy), the Queuing feature can reduce the dialing efforts of calling parties and can improve the utilization of outgoing trunk facilities.

In the context of pre-G2.2 Automatic Alternate Routing (AAR)/Automatic Route Selection (ARS) or G2.2 World Class Routing (WCR), the switch can automatically “queue” an outgoing or tandem call (that is, add information about the requested call to an ordered list of software records) when every accessible preference in the selected pattern is busy. Then, as facilities become available, the switch serves the requested call in sequence.

See also **pattern queuing**, **preference queuing**, **off-hook queuing**, and **ringback queuing**.

raised FRLs

Before G2.2, a function of the Automatic Alternate Routing (AAR) and Automatic Route Selection (ARS) features, and beginning with G2.2, a function of the World Class Routing (WCR) feature. After the switch queues a requested AAR/ARS/WCR call and the assigned time-in-queue limit elapses, the switch can raise the call's FRL for the final busy/idle-status check of accessible preferences in the selected pattern.

Just before the final pattern check, the pre-G2.2 FRL-raising algorithm substituted the value of the raised FRL (Field 4 of Procedure 330 Word 1) for the call's current FRL if the current FRL was greater than or equal to the assigned threshold FRL (Field 3 of Procedure 330 Word 1). However, the G2.2 algorithm only substitutes the value of the raised FRL for the current FRL if the value of the current FRL is:

- Greater than or equal to the assigned threshold FRL, *and*
- Less than the value of the raised FRL

recall dial tone

Confirmation tone, three short bursts of tone, followed by dial tone. In context of this manual, recall dial tone is an attribute of the Authorization Codes feature. If the Authorization Codes feature is active and if a call could route with a higher FRL, the switch returns recall dial tone to prompt the user for an Authorization Code. The user can then dial an Authorization Code to raise the call's FRL.

Remote Access

A feature of the System 85 and Generic 2 switch. The Remote Access feature allows external users of touch-tone telephones to access the switch from the public network and to use many of the switch's features like local station users.

In the context of pre-G2.2 Automatic Alternate Routing (AAR)/Automatic Route Selection (ARS) or G2.2 World Class Routing (WCR), Remote Access users, like local station users, can access the switch's routing capabilities. However, the switch can use one of three different methods to derive Facility Restriction Levels (FRLs) for Remote Access calls. Instead of deriving the FRL from a class of service (for example, Class of Service "31"), the switch will either apply the FRL of:

- Each Remote Access user's Authorization Code
- The incoming Remote Access trunk group accessing the switch
- An attendant who may be screening and extending Remote Access calls

to grant specific routing permissions for the outgoing portion of the call.

Remote Access trunk

A member of a trunk group that is assigned access to the Remote Access feature. A Remote Access trunk group is assigned trunk type "50" in Field 6 of Procedure 100 Word 1.

resolve

One of the two actions ("resolve" and "restart") of the network digit analysis (NDA) module. The NDA module determines the value of ("resolves to") the virtual nodepoint identifier (VNI) for the digit stream's current string by using the string's assigned VNI value (in Field 12 of Procedure 314 Word 1) after the resolve action is specified (with "0" in Field 11 of the same procedure).

restart

One of the two actions ("resolve" and "restart") of the network digit analysis (NDA) module. With the exception of Extension Number Portability (ENP) calls, the NDA module resumes operation ("restarts digit analysis") in the network specified (in Field 13 of Procedure 314 Word 1) after the restart action is specified (with "1" in Field 11 of the same procedure).

ringback queuing

A form of the Queuing feature whereby the switch returns confirmation tone as a requested call is queued, the caller hangs up (goes "on-hook") within 4 seconds to wait for a trunk facility, and the switch alerts the caller with 3-burst ringing when a facility becomes available. Also called on-hook queuing.

routing network	A collection of digit strings and their assigned attributes. The network digit analysis (NDA) software uses a string and its attributes (assigned in Procedure 314 Words 1 and 2) combined with the attributes of the network where the string resides (assigned in Procedure 312 Word 1) to take the appropriate action for the collected digits in a call.
string	The ordered digit contents of a string identifier <i>and</i> the assigned value of the string identifier's string length. According to a string's assigned attributes (in the rest of Procedure 314 Words 1 and 2) that are correlated with the two string components, the World Class Routing (WCR) software can receive an incoming digit stream, uniquely analyze its digit contents, modify the string's digits (if necessary), and uniquely route the subsequent call.
string identifier	The digits assigned in Fields 1 through 6 of Procedure 314 Word 1 that represent the initial digits of a string. The WCR software uses string identifiers to recognize strings during network digit analysis.
string length	The value assigned in Field 9 of Procedure 314 Word 1. A string length specifies the number of digits in an entire string (<i>not</i> in a string identifier).
subnetwork trunking	A function of the pre-G2.2 Automatic Alternate Routing (AAR) and Automatic Route Selection (ARS) features that deleted, inserted, and/or grouped the digits to be sent over the selected AAR/ARS preference. Subnetwork trunking altered the content and/or format of a preference's outgoing digit stream so that the adjacent switch could understand and correctly respond to the received digits. Although the G2.2 World Class Routing (WCR) feature has expanded capabilities to modify both the content and format of an outgoing digit stream for an adjacent switch, these capabilities are no longer referred to as "subnetwork trunking." Instead, when invoked by an index in Procedure 318 Word 1, the digit-modification module changes the content and the digit-sending module changes the format of outgoing digits after a preference is selected.
switch administrator	In the context of this manual, the person responsible for assigning the World Class Routing (WCR) feature on a Generic 2.2 switch.

tail-end hop off	An Automatic Route Selection (ARS) or World Class Routing (WCR) call-routing attribute of electronic tandem network (ETN) main and tandem switches. Using tail-end hop off, a main or a tandem routes a public-network call part of the way over private-network trunk facilities instead of initially routing the call over public-network facilities.
terminate (digit collection)	One of the two digit-collection attributes (that is, to either “continue” or “terminate” digit collection) assigned to a string in Field 1 of Procedure 314 Word 2. If this field is set to “0,” the network digit analysis (NDA) module ceases collecting digits (after identifying and acting on the current string) with no expectation of another string to analyze.
threshold FRL	The assigned FRL value (in Field 3 of Procedure 330 Word 1) used to decide whether raised FRLs should be invoked for an Automatic Alternate Routing (AAR), Automatic Route Selection (ARS), or World Class Routing (WCR) call that has just timed out of queue. Just before the final pattern check, the pre-G2.2 FRL-raising algorithm substituted the value of the raised FRL (Field 4 of Procedure 330 Word 1) for the call’s current FRL if the current FRL was greater than or equal to the threshold FRL. However, the G2.2 algorithm only substitutes the value of the raised FRL for the current FRL if the value of the current FRL is: • Greater than or equal to the value of the threshold FRL, <i>and</i> • Less than the value of the raised FRL
tie trunk	A telecommunications channel connecting two adjacent switching systems in a private network.
toll prefix	A leading digit of a numbering plan’s address that identifies the dialed number (for the benefit of the caller) as one that may incur toll charges. In locations where a toll prefix applies, the North American numbering plan (NANP) uses the digit “1” as the toll prefix.
toll table (before G2.2)	An attribute of the Automatic Route Selection (ARS) feature. A toll table is a software array (assigned in Procedure 309 Word 2) that identifies the local and toll office codes corresponding to the serving CO for a particular ARS preference. (By default, office codes were considered <i>toll</i> office codes.)

toll-free table (beginning with G2.2)	An attribute of the World Class Routing (WCR) feature. A toll-free table is a software array (assigned in Procedure 319 Word 1 and referenced by Field 6 of Procedure 318 Word 1) that identifies the local and toll string identifiers corresponding to a particular WCR preference. (By default, string identifiers not assigned to a toll-free table are considered <i>toll</i> destinations. Conversely, any string identifier assigned to a preference's toll-free table is considered a <i>local</i> destination.)
traditional module	An organized group of three to five cabinets that serves as a basic architectural component of the System 85 and Generic 2 switches. A traditional module contains a module control cabinet with a module control carrier (two in a fully duplicated switch). The entire module can have up to 12 carriers [composed of a mixture of port and Digital Service 1 (DS1) carriers] that can reside in the module control cabinet (2 or 3 in the remainder of the cabinet) and in port cabinets (up to 4 carriers per cabinet). Each port carrier within a traditional module can contain up to 16 port circuit packs. Each DS1 carrier within a traditional module can contain one or two DS1 circuit packs and/or from 4 to 16 port circuit packs (depending on DS1 usage within the carrier).
traffic	The flow of voice and data communications through a switching system.
traveling class mark	Routing information in digit format for subsequent switches that a switch can append to the outgoing digit stream for an outgoing or tandem call. One type of TCM provides an FRL for the call so that subsequent switches can know the call's routing privileges. Another type sends the conditional routing count (for example, accumulated satellite hops) for the call.
trunk group	A set of telecommunications channels (trunks) that connect one switch to another and that are translated with common functions.
variable-length string	A string with a number of digits that is allowed to vary between a minimum length (assigned in Field 9 of Procedure 314 Word 1) and a maximum length (assigned in Field 5 of Procedure 314 Word 2). The value of an entry in the maximum-length field must either be "0" or greater than the minimum length. If "0" is entered in the maximum-length field, the switch infers that the corresponding string has a <i>fixed</i> length equal to the entry in Field 9 of Word 1.

virtual nodepoint identifier (VNI)

An index number from 1 to 4095 that is the result of the network digit analysis (NDA) module of the World Class Routing (WCR) feature. For each incoming digit stream, the NDA software analyzes the digits and eventually resolves the digits to a VNI. [The VNI concept combines the pre-G2.2 concepts of the Automatic Alternate Routing (AAR) “node number” and the Automatic Route Selection (ARS) “routing designator.”]

Once the NDA module resolves an incoming digit stream to a VNI, the VNI is passed to the generalized route selection (GRS) module for use as one component in the pattern/preference selection process. Within this module, the GRS software derives the selected pattern number from the received VNI and its corresponding call category.

universal module

A 5-carrier cabinet that serves as a basic architectural component of the Generic 2 switch. A universal module contains a module-control carrier (two in a fully duplicated switch) and up to three port carriers. The port carriers in universal modules contain high-density circuit packs that enable the module’s reduction in size to a single cabinet. (The size of an earlier traditional module typically varies from three to five cabinets.)

warning tone

A tone applied by the System 85 or the Generic 2 to caution users of the switch. Warning tone can be applied by the Automatic Alternate Routing (AAR), Automatic Route Selection (ARS), and World Class Routing (WCR) features. These features can return warning tone during a call’s setup to advise the caller that the call is unexpectedly routing over higher-cost toll facilities.

wild-card digit

The digit “*” (encode “11”) entered as a digit of an exception string identifier in Procedure 314 Word 1. The World Class Routing (WCR) digit-analysis software interprets the digit “*” as matching *any* specific digit.

Within Procedure 314 Word 1, string identifiers with wild-card entries can only be assigned to an *exception* network (that is, Field 8 must be “2”). However, within the exception network, the digit-analysis software gives matching string identifiers with explicit entries precedence over matching wild-card string identifiers.

NOTE

This digit is not equivalent to the “*” digit on a touch-tone dial pad. Also, the wild-card “*” digit does not match with the special “*” and “#” touch-tone digits — only with the numerical digits “0” through “9.”

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